MINISTRY OF HEALTH & WELLNESS

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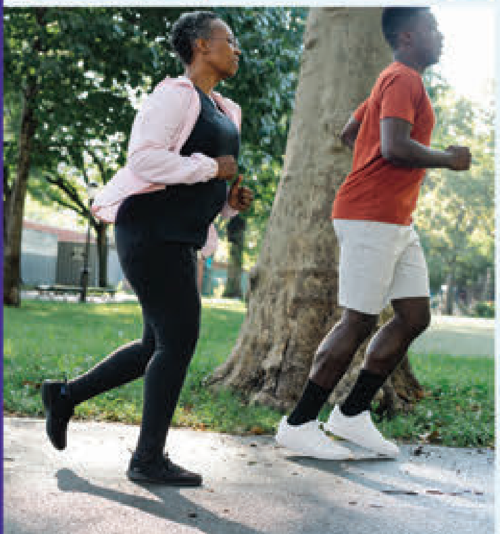
NATIONAL HEALTH FUND

The Jamaica Health and Lifestyle Survey

2016-17 (JHLS III)



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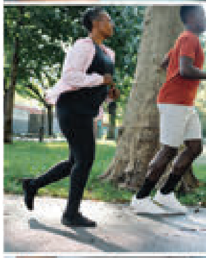




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First published in Jamaica, 2024 by
Ian Randle Publishers
16 Herb McKenley Drive
Box 686
Kingston 6
www.ianrandlepublishers.com

The Jamaica Health and Lifestyle Survey Writing Team[1] (2022)
The Jamaica Health and Lifestyle Survey III (2016 – 2017) TECHNICAL REPORT
Kingston, Jamaica

NATIONAL LIBRARY OF JAMAICA CATALOGUING-IN-PUBLICATION DATA

Names: Ministry of Health and Wellness, Jamaica. | Caribbean
Institute of Health Research, The University of the West Indies.
Title: The Jamaica Health and Lifestyle Survey 2016-17 (JHLS III).
Description: Kingston, Jamaica : Ian Randle Publishers, 2024.
Identifier: ISBN 9789768266956 (pbk).
Subjects: LCSH: Public health – Research - Jamaica. | Lifestyles – Jamaica.
Classification: DDC 362.1 -- dc23.

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Book and Cover Design by Ian Randle Publishers

Stock Photographs: www.freepik.com

Printed and Bound in the United States of America

Acknowledgements

Funding for the Jamaica Health and Lifestyle Survey 2017 (JHLS III) was provided by the National Health Fund and the Ministry of Health and Wellness, Jamaica. We thank the respondents who participated in the survey, the training and field staff, who worked to ensure the successful completion of the data collection and initial data management phases. We also wish to acknowledge the work of students from the Georgia College and State University, the National Health Fund Summer Employment Programme, and the University of Technology, Jamaica (UTech, JA) School of Mathematics and Statistics (SOMAS) Co-operative Education Programme, who assisted with compilation of various aspects of this report document. In addition, we acknowledge the support of the Epidemiological Research and Data Analysis Unit and the Finance and Budget Directorate in the Ministry of Health and Wellness, Jamaica; as well as the Caribbean Institute for Health Research (CAIHR) and the Office of Finance (OOF) of The University of the West Indies.

Executive Summary

The Jamaica Health and Lifestyle Survey 2017 (JHLS III)

Novie Younger-Coleman

The leading causes of death among Jamaicans between 2015 and 2018 were cardiovascular diseases (CVD), cancers (prostate and respiratory system for males, breast and cervix for females), Human Immunodeficiency Virus (HIV) and, among males, other respiratory system diseases.[1] As such, it is important that Jamaica's Ministry of Health and Wellness is provided with findings that can be used to monitor the occurrence of lifestyle indicators and CVD risk factors associated with these causes of death. Such monitoring will provide guidance for policy development aimed at mitigating the burden of these leading causes of death in the population. The findings needed by the Ministry of Health and Wellness can be obtained from studies, such as the Jamaica Health and Lifestyle Surveys (JHLSs). This third round of these surveys, the JHLS III, provided the opportunity to monitor not only the existing state of the nation's population but has also enabled the examination of secular trends in lifestyle and CVD risk indicators.

Data collection for the study was completed in 2017 and has provided nationally representative estimates of the distribution of socio-demographic factors, medical history, lifestyle practices, the occurrence of injuries and violence, health-seeking behaviours and features of the neighbourhoods. In addition to a report of the distribution of these estimates, this report of the findings includes the results of the qualitative research component of the JHLS III. The qualitative research study, the men's health questionnaire, and the neighbourhood questionnaire represented new components of survey compared with JHLS I and JHLS II. The literature gives evidence that the indices measured in the JHLS III are interrelated and can be monitored and studied to provide guidance for interventions and policy development that will redound to the benefit of Jamaica's social and economic development.

Specific Objectives

- Estimate the prevalence of NCDs, intentional and unintentional injuries, HIV/AIDS and other sexually related conditions, Chikungunya (ChikV) in the Jamaican population.
- Evaluate secular trends in NCDs, and HIV/AIDS and other sexually related conditions and their risk factors by comparing current prevalence estimates with estimates from previous lifestyle surveys.
- Estimate current prevalence, awareness, treatment and control levels for the NCDs and select complications, including chronic kidney disease, amputations and disability.
- Gain further insights into behavioural factors that influence NCDs, and gender-specific health issues.
- Investigate the effect of social and environmental factors and national policies on NCDs, STIs and injures and the impact that these factors may have on any health disparities.

1. https://statinja.gov.jm/Demo_SocialStats/newbirthdeathmarriage.aspx.

Methodology and Data Quality

A multistage sampling design was used to recruit 2,889 non-institutionalised resident Jamaicans aged 15 years and older to a cross-Sectional, interviewer-administered survey. The respondents provided data via a face-to-face interviewer administered questionnaire as well as measurement of anthropometry, blood pressure and pulse, assays of blood and urine samples. Data were also gathered using GIS data capture applications that captured the location of dwellings of respondents. Complete records of age, sex, and sampling design data were subsequently available from 2,807 respondents whose data were used to produce the estimates presented in this report. Data on demographic and socio-economic status, self-reported medical history, lifestyle practices, sexual and reproductive health were gathered via questionnaire. Anthropometric measurements enabled the estimation of body mass index (BMI), waist circumference and waist to hip ratio (WHR), while blood samples enabled determination of levels of biomedical measures, such as lipids, fasting glucose, glycosylated haemoglobin, total haemoglobin, creatinine, and chikungunya virus antibodies and urine samples enabled estimation of urine albumin levels. As part of efforts to safeguard data quality, interviewers were trained in all aspects of data collection, including use of biomedical data collection tools, questionnaire administration, the Kish methodology, map reading and the use of Geographic Information Systems (GIS) data collection mechanisms. Double entry of the data gathered as well as rigorous data cleaning and screening led to the production of weighted parish, age and sex distributions that mirrored the population distributions as obtainable from the demographic data provided by the Statistical Institute of Jamaica (STATIN).

Socio-demographic Status

As found in the JHLS II 2008 report, the Jamaican population of persons 15 years and older was predominantly of African origin, as 95.2% were classified as belonging to the Black race. The majority, 80.8%, also self-identified as belonging to the Christian religion, and 50.9% classified their union status as single, while 31.1% classified themselves as being in married or common law unions. While secondary-level education was the highest attained by 59.0%, only 16.7% had achieved post-secondary education, and 21.5% had attained primary/junior high school education as their highest level. A total of 56.4% of Jamaicans 15 years and older were classified as employed,[2] and the proportion of males employed was greater when compared with the proportion of females that were employed (Males: 67.4%, Females: 45.9%, $p<0.001$).

Non-communicable Diseases

Hypertension

Hypertension was defined using the criteria from The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7) and from the 2017 American College of Cardiology (ACC)/American Heart Association (AHA) guidelines. According to the JNC-7 guidelines, a hypertension case was defined as BP ≥140/90mmHg, while the ACC/AHA Guidelines defined a hypertension case as BP≥ 130/80mmHg. For this report, persons who indicated they were taking medication for hypertension were also classified as hypertension cases.

According to the ACC/AHA, criteria prevalence of this outcome was 57.6%, 58.3% among males, and 57.0% among females. According to the JNC-7 criteria the prevalence of hypertension among Jamaicans 15 years and older was 33.8%. Females had the greater burden of this condition compared with males (35.8% versus

2. Respondents were classified as employed if they gave a self-report that they were in full-time, part-time or seasonal employment as per item 1.9 on the questionnaire. See Appendix 1.

31.7%, $p<0.05$) and prevalence was most common among persons older than age 54 years, with estimates being 70.0%, 72.1% and 77.3% in the 55–64, 65–74, and 75 and older age groups, respectively. The prevalence of pre-hypertension among Jamaicans 15 years and older, based on the JNC-7 criteria, was 34.0 percent being 43.0% in males and 25.7% in females.

Based on the JNC-7 criteria, hypertension prevalence estimates for urban and rural residents were 33.0% and 35.2%, respectively. Parish-specific prevalence estimates revealed that St Thomas had the highest hypertension prevalence in both the males (51.3%) and the females (46.0%). Westmoreland had the lowest prevalence among males, at 19.9%, and St Catherine, at 26.5%, the lowest prevalence among females based on the JNC-7 criteria. Thus, among Jamaicans 15 years and older, the parish-specific total prevalence was highest in St. Thomas, at 48.7%, and lowest in St. Catherine, at 26.0%.

The prevalence estimates for awareness (out of all cases), treatment (out of all aware cases), and control (out of all cases on treatment) for hypertension were 59.0%, 70.2%, and 31.0%, respectively. Therefore, only 12.8% of all persons with hypertension were adequately controlled in 2017.

Among persons 15–74 years of age, prevalence of hypertension based on the JNC-7 criteria increased over the 2000–17 period, with estimates increasing from 20.8% in the 2000–2001 (JHLS I) survey to 25.2% in the 2007–8 (JHLS II) survey to 31.5% in the 2016 to 2017 (JHLS II) survey.

Diabetes

Diabetes was defined as fasting plasma glucose greater than or equal to 7.0 mmol/L or being on medication for diabetes (See Appendix 5). Among Jamaicans 15 years and older, prevalence of diabetes was 11.9%. The prevalence of diabetes was significantly higher among women (14.4%) than men (9.4%, $p<0.001$). Diabetes was most prevalent among Jamaicans 75 years and older, at 42.4%. Prevalence of impaired fasting glucose or pre-diabetes was 27.5% among Jamaicans 15 years and older, and similar in women (27.0%) and men (28.0%). Diabetes prevalence was similar in urban (12.7%) and rural (11.9%) areas. Parish-specific estimates revealed that, among women, diabetes prevalence was highest in Westmoreland (21.2%) and lowest in St Ann (8.8%) and St Mary (8.9%). Among men, diabetes prevalence was highest in Clarendon (18.6%) and Hanover (18.7%) and lowest in St Thomas (2.5%), Trelawny (3.8%) and St Mary (4.0%). The prevalence estimates for diabetes awareness (out of all cases), treatment (out of all aware cases), and control (out of all cases on treatment) were 57.9%, 92.5%, and 27.5% respectively. Therefore, only 14.7% of all persons with diabetes were adequately controlled in 2017. Among persons 15–74 years of age, the prevalence of diabetes increased from 7.1% in 2000–2001 (JHLS I) to 7.9% in 2007–2008 (JHLS II) and 10.2% in 2017.

High Total Cholesterol

Among Jamaicans 15 years and older the prevalence of and high total cholesterol, defined as total cholesterol ≥5.2mmol/l or being on medication for high cholesterol, was 24.6%. Females had the greater burden of this condition compared with males (31.0% versus 18.4%, $p<0.001$). Prevalence was most common among persons older than age 54 years, with estimates being 37.6%, 40.9%, and 42.5% in the 55–64, 65–74, and 75 and older age groups, respectively.

Prevalence estimates among urban and rural residents did not differ significantly, being 23.4 and 26.0%, respectively. Parish-specific prevalence estimates ranged from 15.1% in St Ann to 50.4% in St James. The respective prevalence estimates for awareness (out of all cases), treatment (out of all aware cases), and control (out of all cases on treatment) for the three conditions were 28.6%, 58.8%, and 35.1% for high cholesterol. Therefore, only 5.9% of all persons with high total cholesterol were adequately controlled in 2017.

Chronic Kidney Disease

The prevalence of chronic kidney disease (CKD) in the population of Jamaicans aged 15 years and older was 15.2% and was higher in females compared with males (17.6% versus 12.4%, $p<0.01$). Prevalence of this disease was also higher in rural compared with urban residents (18.5% versus 12.4%, $p<0.01$) and highest in the 75 and older age group, at 43.5% (Male: 36.0%, Females: 52.4%), compared with persons in age groups under 75 years of age. Prevalence of CKD differed significantly with the socio-economic status (SES) indices, educational level attained, and tertiles of household possessions, decreasing from 23.5% among those with primary education only to 10.8% in those who attained post-secondary education and from 21.1% among Jamaicans in the lowest tertile of household possessions to 9.4% among those in the highest tertile of household possessions.

Cardiovascular Disease Outcomes (Heart Attack and Stroke)

The prevalence of persons who had a history of a heart attack, 0.42%, or stroke, 1.15%, was low, possibly reflecting death among the majority of persons who had suffered these events. The prevalence estimates for these outcomes were highest among persons older than 54 years of age. For heart attack, the prevalence was 2.1% in the 55–64-year-olds, 1.3% in the 65–74-year-olds, and 1.4% among those 75 years and older. For stroke, prevalence was 4.3% in those 55–74 years old and 6.8% among those 75 years and older. Prevalence of stroke was higher among persons classified at low SES. For stroke, prevalence changed from 4.1% among persons who had attained primary education only, to less than 1% among those who attained higher education levels and from 2.2% among those at the lowest tertile of household possessions to 0.9 and 0.7% for persons in the middle and upper tertiles, respectively.

Sickle Cell Disease (SCD)

In keeping with estimates obtained in previous research, the prevalence estimated for sickle cell disease was 0.67% and that for the sickle trait was 10.9%. Based on results of laboratory tests, the parish-specific prevalence of the sickle trait (AS genotype) ranged from 4.1% in St Ann to 12.5% in St Elizabeth. Agreement statistics revealed that less than 50% of Jamaicans 15 years and older can be expected to know their true sickle cell disease or sickle cell trait status. More than 60% of females and more than 50% of males with the sickle trait (AS or SC genotype) reported that they were not at risk of having a child with sickle cell disease. More than 80% of Jamaicans aged 15 years and older and of females who previously had a live birth reported that they were never previously tested for SCD. In this population of Jamaicans, prevalence of persons who could recall their test results was less than 3%. Targeted interventions, that include enhanced effectiveness of the health care providers' communication of antenatal care test results, are needed to improve the prevalence of testing for SCD and awareness of disease and trait status so that occurrence of adverse SCD outcomes can be mitigated.

Overweight/Obesity

Among Jamaicans 15 years and older, the prevalence of obesity was 28.6%, overweight was 53.8%, and increased waist circumference or central obesity was 43.7%. The prevalence of each condition was significantly higher among women than men, being 67.6% versus 38.8% ($p<0.001$) for overweight/obesity (BMI $\geq 25 kg/m^2$), 41.2% versus 14.9% ($p<0.001$) for overweight, and 67.9% versus 17.5% ($p<0.001$) for increased waist circumference. There were no urban-rural differences for the prevalence of obesity and central obesity, but the prevalence of overweight was higher in urban residents, at 56.9%, compared with rural residents, 50.9%.

Of all the age groups studied, evidence of overweight was highest in persons 45–54 years old, at 69.7%, while the prevalence of obesity was highest in those 35–44 years old, at 38.7%. Parish-specific prevalence ranged from 32.2% in Manchester to 58.0% in Trelawny among females, and among males, prevalence ranged from 2% in Westmoreland to 20.2% in St Catherine. The prevalence of central obesity increased with the socio-economic indices, education level, and household possessions categories. The prevalence of central obesity increased from 46.2% among those who attained only primary education or lower to 51.0% in those who attained post-secondary education, while the prevalence of this condition increased from 39.5% in those in the lowest tertile of (0–5) household possessions to 50.5% in those in the highest tertile of (10–20) household items. The prevalence of obesity and central obesity decreased as the level of physical activity (PA) increased. For obesity, prevalence decreased from 35.4% among persons with low PA to 21.3% among those with high PA, while for central obesity, prevalence decreased from 50.0% in those at a low PA level to 32.5% in those at a high PA. Among men, the prevalence of obesity and central obesity also decreased as physical activity level increased but this was not so among women.

Asthma

Study participants were possible asthma cases or presumed to have a history of asthma[3] if they indicated that they had a history of asthma/wheezing and/or that they had been told by a health professional that they had asthma. Prevalence of possible/presumed asthma cases among Jamaicans 15 years and older was 11.2%, and there was no gender difference in the prevalence of this outcome (Males: 10.6%, Females: 11.7%). A current asthma case was a possible/presumed asthma who indicated they still had asthma and were currently taking conventional, herbal, or traditional medicine for their asthma or had visited a hospital or other emergency care facility within the previous year because of their asthma. Just under 4.5% of Jamaican 15 years and older were current cases with a larger prevalence among females compared with males (6.3% versus 2.5%, p<0.001).

Depression

Depression was studied in the survey. A respondent was classified as having depression if they had four or more symptoms, out of a particular set of six symptoms, within the month preceding their survey interview or reported suicidal ideation within the year preceding their interview. Prevalence of depression among Jamaicans 15 years and older was 14.3% and significantly higher among women (18.5%) than men (9.9%, p<0.001). This sex difference was demonstrated in rural dwellers (females: 17.3%, males: 7.3%, p< 0.001) and among urban dwellers (females: 19.2%, males: 12.3%, p<0.01). Parish-specific estimates showed prevalence of depression among women ranging from 4.7% in Trelawny to 28.9% in St Mary. Among men, prevalence ranged from just under 3% in St Elizabeth and Westmoreland to 16.7% in Manchester. Prevalence of depression was highest among persons 75 years and older (females 24.5%, males 15.1%) and varied significantly with age among the females (p<0.01) but not among the males. Prevalence estimates also exceeded 20% in females 15–24 and 25 to 34 years of age.

Among Jamaicans 15 years and older, 4.4% had considered suicide, 1.9% reported planning, and 1.3% reported attempting suicide. The prevalence of persons who had reported these outcomes was higher in females compared with males, 6.5 versus 2.2% for considering suicide, 3.1% versus 0.5% for planning suicide, and 2.1% versus 0.5% for attempting suicide.

Anaemia

The World Health Organization classifies males as having anaemia if their haemoglobin levels are below 13 g/dL and females if their levels are below 12 g/dL. Among Jamaicans 15 years and older, the prevalence of

3. In this report they are termed possible/presumed asthma cases.

anaemia was 25% among females, 9.5% among males, 17.6% overall, and differed with age in both males and females. Among males the prevalence of anaemia ranged from 0.8% in those 25–30 years old to 28.7% in males 75 years and older. Although among the females there was no statistically significant variation between ten-year age bands with respect to prevalence of anaemia estimates ranged from 11.4% among 55–64-year-olds to 29.9% in those 75 years and older. Among females of reproductive age, prevalence of anaemia was 28.5% and 17.4% in women 50 and older.

Anaemia prevalence varied with number of household possessions, ranging from 18.5% in men with 0–5 household possessions to 4.4% and 6.9% in those with 6–9 and 10–20 household possessions, respectively. Among women, prevalence was 27.4% in those with 0–5 household possessions and 32.9% and 15.3% in those with 6–9 and 10–20 household possessions, respectively. In both sexes, prevalence of anaemia differed with highest level of education attained, being higher in females who attained only up to primary (26.1%) and secondary (28.1%) education compared with 15.5% among females with post-secondary education. Prevalence of anaemia was 17.4% in males who attained only primary education, 6.3% in those attaining secondary education only, and 7.8% in those with post-secondary education.

Depleted iron stores, another indication of presence of anaemia, was defined as serum ferritin levels less than 15 µg/l. Prevalence of depleted iron stores was 17.8% in females and 1.9% in males. As shown for anaemia women of reproductive age had a higher prevalence of depleted iron stores, 24.4%, versus 4.3% in women 50 and older. Among males but not females the prevalence of depleted iron stores differed significantly with parish of residence. Prevalence among the males was 0.0% in six parishes namely St Catherine, St Elizabeth, Hanover, St Ann, Portland, and St Thomas and ranged from 1.6% in Clarendon to 12.5% in Westmoreland. Among the females the prevalence ranged from 2.8% in Trelawny to 37.1% in St Thomas.

Communicable Diseases

The Zika and Chikungunya Viruses

The proportion of Jamaicans 15 years and older classified as self-reported cases of chikungunya was 48.8% and exceeded the proportion, 24.2%, classified as suspected cases. The prevalence of self-reported, suspected and seropositive cases was 43.5%, 21.5% and 78.1%, respectively, among the males. Among the females, the respective estimates were 53.8%, 26.8% and 79.3% bringing the respective total population estimates to 48.8%, 24.2% and 78.8%. Prevalence of self-reported cases was highest, at 60.2%, among 35–44-year-olds and lowest, at 32.3%, among those 75 years and older. Prevalence of suspected Chikungunya was highest among the 35–44-year-olds, at 32.3%, and lowest among those 75 years and older at 14.6%. Prevalence of the seropositive status was highest at, 84.3% and 84.1%, in the 15–24 and 65–74-year-olds and was lowest among those 25 to 34 years of age, at 72.5%. Parish-specific prevalence of persons classified as self-reported, suspected and seropositive cases was highest in St Thomas, at 67.2%, Portland at 35.3%, and Kingston at 95.6%, respectively. Westmoreland had the lowest prevalence of self-reported cases, at 19.0%, and suspected cases, at 11.7%, while the lowest prevalence of the seropositive cases was 43.4% in Manchester.

The prevalence of self-reported cases of the zika virus was 6.0% among Jamaicans 15 years and older, while the prevalence of suspected cases in this population was 4.8%. The prevalence of self-reported cases was higher in females compared with males (7.7% versus 4.2%) but prevalence of suspected cases did not differ with sex. The prevalence of the self-reported and suspected cases of the Zika virus remained under 10% in each of the ten-year age bands and differed with age groups among the males but not among the females. Among the males, prevalence of self-reported cases ranged from a high of 9.2% among those 45–54 years of age to less than 1.5% among those 25–34 and older than 64 years of age. A similar distribution was observed for the prevalence of the suspected cases among the males. Among the females, prevalence of self-reported cases was between 6.0% and 9.6% in all age groups except for the 75 and older age group among whom prevalence was 0.7%. Prevalence of the suspected cases among females ranged from 5.0% in those 65–74 years of age to 7.4% in those 25–34 years of age and was at 0.7% among those in the 75 and over age group. Parish-specific prevalence of the self-reported cases of Zika virus was highest at 9.1% in the parish of Portland and lowest at 0.6% in the parish of Westmoreland, while prevalence of suspected cases ranged from 0.0% in Westmoreland to 8.0% in Portland.

Lifestyle Practices

Dietary Habits

Some 17.6% of Jamaicans 15 years and older consumed vegetables two or more times per day, and there was no statistically significant sex difference in the prevalence of this indicator. The prevalence of vegetable consumption was highest in persons with post-secondary education (25.4%) compared with persons who attained lower education levels. Similarly, prevalence of the outcome among persons with 10–20 household items (26.7%) was higher than prevalence among persons with fewer household items (6–9 items: 14.1%; 0–5 items: 12.1%).

Trends in fruit intake were similar to those for vegetable intake. Fruit was consumed two or more times per day by 12.0% of Jamaicans 15 years and older, with no statistically significant sex difference in prevalence of this outcome. As seen for vegetable intake, prevalence of fruit intake two or more times per day increased with SES from 9.9% in persons with primary education only to 18.0% among those with post-secondary education. Additionally, prevalence of fruit intake two or more times per day increased from 8.3% among persons with 0–5 household possessions to 16.0% among persons with 10–20 household possessions.

Sugar-sweetened beverages were consumed one time per day or more frequently by 32.6% of Jamaicans fifteen years and older. These proportions differed with age, education level, and household possessions categories in the total population and with area of residence among the males only. The middle SES categories defined using highest education level attained and number of household possessions, compared with the low and high SES categories had highest prevalence of consumption of sugar sweetened beverages more than once per day. For secondary level education, prevalence was 15.3% versus 10.4% in the primary and 8.0% in the post-secondary groups. For number of household possessions categories those with 6-9 items had prevalence of 12.8% versus 9.4% in those 0–5 items and 8.6% in those with 10–20 items. Rural males compared with urban males had higher prevalence (12.9% versus 8.4%) of consumption of sugar-sweetened beverages more than once per day, and age-group estimates showed that persons 44 years and younger had higher prevalence (ranging from 12.4% to 17.0%) of consumption of sugar-sweetened beverage more than once per day compared with those in the older age groups (among whom estimates ranged from 4.2% to 6.1%).

More females than males reported adding salt or salty sauce to their food at the Table (11.6% versus 8.1%) and receiving advice to reduce dietary intake of salt (32.0% versus 18.1%). More than 70% of Jamaicans 15 years and older were classified as having low or very low food security.

Physical Activity

The prevalence of high physical activity, as determined using the International Physical Activity Questionnaire, was significantly higher among men (48.6%) than women (25.9%, $p<0.0$). The prevalence of low physical activity level (PAL) was 43.8% among the females and 27.7% among the males. The prevalence of high physical activity was higher in rural residents (43.5% versus 31.8%), while prevalence of low physical activity was higher in urban residents (39.8% versus 31.1%). The distribution of the physical activity levels differed by age and sex. Prevalence of high PAL was highest among the 45–54-year-old males at 63.5% and highest in the 25–34-year-old females, at 31.2%. In both sexes, prevalence of high PAL was lowest in the 75 and older age group. Parish-specific prevalence of high PAL ranged from 69.3% in Clarendon to 14.8% in the parish of Kingston. Among the males and among the females, prevalence of high PAL was also highest in Clarendon and lowest in Kingston. Among the males but not the females, prevalence of high PAL differed with education level being highest at 50.6% among those with secondary education as their highest education level but less than 47% in the other education categories. Sex-specific and total population distributions of PALs also differed with occupation level. Prevalence of high PAL was highest among the skilled persons.

Substance Use

Prevalence estimates for the use of alcohol, tobacco products, and recreational drugs were obtained.

Alcohol Use: Among Jamaicans 15 years and older the prevalence of lifetime alcohol drinking was 60.7%; significantly higher in men (75.5%) than women (46.6%, p<0.0). While 58.3% of men were current drinkers, only 25.0% of women were, and the prevalence of those who never used alcohol was higher among women (53.4%) than men (24.5%, p<0.0). Prevalence of current alcohol use differed with parish of residence among the sexes. Among men, prevalence of current alcohol use ranged from 44.7% in St Catherine to 80.8% in St Ann. Among women, prevalence of current alcohol use ranged from 8.2% in Clarendon to 32.8% in St Andrew. Prevalence of binge drinking was also higher among men, 13.8%, compared with women, 3.5%. The prevalence of binge drinking also varied by parish, ranging from 3.4% in St Thomas to 14.1% in Kingston. Among Jamaicans who had consumed alcohol in the past year 10.6% were classified (using the AUDIT tool) as being at high risk of harm from alcohol abuse. Among 15 to 74-year-old Jamaicans, prevalence of harmful episodic drinking was estimated at 8.6% using the JHLS III data and 7.0% using the JHLS II data. Harmful episodic drinking was defined as a consumption of five or more drinks in a single day within the past (JHLS II) or six or more drinks in one sitting within the past month (JHLS III). Data that permitted use of this definition were not gathered in JHLS I.

Tobacco Use: Among Jamaicans 15 years and older the distributions of the tobacco use categories differed with sex. Prevalence of lifetime cigarette smoking was 24.2% and was higher among the males, at 39.8%, compared with females, at 10.1%. While 26.0% of males were current smokers, only 4.7% of females had this characteristic, and the prevalence of those who never used tobacco products was higher among females, at 89.9%, compared with males, at 60.2%. Parish-specific prevalence of current cigarette smoking ranged from 4.8% in Hanover to just over 20% in the parishes of St James and Portland. Of those who had a history of smoking, 69.4% of the total population, 59.6% of the males and 77.0% of the females started smoking at age 16 years or older indicating that more males compared with females started at age younger than 16 years.

Marijuana Use: The distributions of the marijuana use categories differed with sex among Jamaicans 15 years and older. Prevalence of lifetime marijuana smoking was 32.5% and this prevalence differed with sex (men 49.0%, women 16.8%, p<0.0). While 29.4% of males were current marijuana smokers only 4.8% of females had this characteristic and the prevalence of those who never used marijuana products was higher among females, at 83.2%, compared with males, at 51.0%.

Among the males, prevalence of current marijuana smoking differed significantly with all five socio-economic indices studied – unemployment status, occupation category, education level, weekly household income, and number of household possessions. Of the categories of the respective indices, among the males, prevalence was highest among those were in groups representing lower socioeconomic status.

Thus, estimates were highest among males who were unemployed (44.7%); were in unskilled occupations (37.4%); had secondary education as their highest level of education (34.2%); had weekly household income less than J$12,000.00 (33.6%); and were in the lowest tertile (0–5) of number of household possessions (37.8%). Among the females, prevalence of current marijuana smoking differed significantly with three of the five socio-economic indices studied, namely, occupation category, education level, and weekly household income. Prevalence estimates were thus highest among females who were in skilled occupations (8.9%); had secondary education as their highest education level (7.2%); and had weekly household income less than J$12,000.00 (8.0%). Among urban and among rural residents, prevalence of current marijuana smoking was approximately 17%.Parish-specific prevalence of current marijuana smoking ranged from 10.0% in Clarendon to 30.7% in Westmoreland.

Cocaine Use: Less than 1% of Jamaicans 15 years and older reported a history of cocaine use (men 1.3%, women 0.2%, total: 0.7%) and less than 0.5% had a history of use of other illicit hard drugs (men 0.5%, women 0.0003%, total: 0.3%).

Violence and Injuries

The report documented prevalence of persons who suffered, within the 12 months preceding their survey interview, injuries classified as unintentional (or accidental) and intentional (or violence related) that required medical attention. Unintentional injuries were classified as road-traffic accidents (RTA) injuries and as other unintentional injuries.

Unintentional Injuries: Less than 3% of Jamaicans reported suffering injuries due to road traffic accidents (RTA) or other unintentional injuries that required medical attention. Prevalence of these injuries was higher among males [RTA injuries - males: 1.8%, females: 0.4%, total: 1.1%; other unintentional injuries – males: 3.2%, females: 1.4%, total: 2.3%]. When examined based on age by sex categories, males 25–34 years of age had the highest prevalence (3.2%) of injures due to RTAs that required medical attention. Males 65–74 years of age had highest prevalence (6.8%) of other types of unintentional injuries needing medical attention. Prevalence of persons who suffered within the 12 months preceding their survey interview, RTA injuries that required medical attention ranged from 0.0% in the parishes of Portland, Trelawny, and Westmoreland to 5.0% in the parish of St Mary.

Seat Belt Use: Among Jamaicans 15 years and older the distributions of drivers, front seat passengers, and back seat passengers based on their seat belt use habits differed with sex. The distribution of motorcycle riders but not pillion riders based on helmet use habits also differed with sex in this population. Approximately 45% of male and female drivers reported that they always used a seat belt. More female (26.7%) than male drivers (18.9%) reported that they never used seat belts, while 36.3% of male and 28.4% of female drivers reported that they did not always use a seat belt. More female (41.9%) than male (34.6%) front seat passengers reported that they always used the seat belt while more male (49.7%) than female front (44.7%) seat passengers reported that they did not always use a seat belt. Among persons who were back seat passengers 82.8% of women and 85% of men reported that they never used the seat belt while 4.4% of male, and 2.6% of female back seat passengers reported that they always used the seat belt.

Helmets were not used by 77.9% of motorcycle riders among Jamaicans 15 years and older (males: 72.1%, females: 85.9%). The absence of seat belt used by drivers increased in prevalence from 13.3% in the 2000–2001 period to 22.8% in the 2016–17 period. The absence of seat belt used by front seat passengers also increased from 8.3% 2000–2001 to 14.5% in 2016–17. Absence of helmet use by motorcycle riders fell from 88.5% in 2000–2001 to 77.9% in 2016–17.

Violence and Related Injuries: Among Jamaicans 15 years and older, 99.2% reported that they had never suffered injury requiring medical attention as a result of a violent incident within the 12 months preceding their survey interview and 0.7% (or 87.5% of those who had suffered such injuries) said they had been involved in such incidents no more than two times within the same period. Of the Jamaicans who experienced violence-related injury, 12% indicated that their injury was inflicted by a gun shot, 29% suffered injury by a weapon that was not a firearm, 18% suffered injury from being slapped, pushed, or shoved (without use of a weapon), and 35% were injured by other means. Approximately 71% of injured Jamaicans could not indicate who was the perpetrator of their injury. Perpetrators were reported to be their child/brother/sister/other relative by 10.2%, a stranger by 8.6%, a friend or acquaintance by 6.3%, and an intimate partner by 1.8%.

Among Jamaicans 15 years and older, 13.0% reported that they experienced childhood maltreatment nearly daily and 44.1% reported a history of childhood maltreatment less frequently than daily while 42.9% reported no history of childhood maltreatment.

A history of sexual abuse was reported by 7.4% (males: 3.9%, females: 10.7%) of Jamaicans fifteen years and older. Among those who reported a history of sexual abuse, the perpetrators were most commonly reported to be a neighbour (46.8%), a stranger (16.1%), a stepfather or father (10.6%), other relative (10.0%), or an intimate partner (7.9%).

Skin Bleaching

Any application of skin bleaching products aimed at lightening skin colour within the two weeks preceding the survey interview was classified as current skin bleaching. Past skin bleaching was the report of this practice prior to the two-week period preceding the interview. Among Jamaicans fifteen years and older, 10.7% (males: 8.9%, females: 12.9%) had a history of skin bleaching. Current skin bleaching was practised by similar proportions of men (3.3%) and women (3.4%). Current skin bleaching was also more common in persons under 45 years of age among whom prevalence estimates ranged from 3.5% to 5.5% for the 15–24, 25–34, and 35–44 age bands. Prevalence of current skin bleaching differed with socioeconomic status. Among the males, (compared with other categories of the respective indices) prevalence of this practice was highest among the unemployed (5.8%) and among those whose weekly household income was less than J$12,000 (5.9%). Among the females, (compared with other categories of the respective indices) prevalence of this practice was highest among the employed (4.4%) and among those whose weekly household income exceeded J$60,000 (5.4%). For both the males and females, prevalence of current skin bleaching was highest, at 5%, among those who attained only up to secondary education. Parish-specific estimates revealed prevalence of current skin bleaching ranging from 0.0% in the parishes of St. Thomas and Clarendon to 8.4% in the parish of Westmoreland among females and, among males, from 0.0% in the parishes of Portland and St. Elizabeth, to 16.2% in the parish of Westmoreland. Prevalence of lifetime skin bleaching ranged from 5.3% in St. Elizabeth to 19.8% in the parish of Westmoreland.

Neighbourhood

In the Jamaica Health and Lifestyle Survey 2017, individual perception of neighbourhood characteristics were assessed in the domain of crime and safety problems, physical disorder, social disorder, and collective efficacy.

Perception of the Level of Crime and Safety Problems: Perception of the level of crime and safety problems in the neighbourhood differed with sex and the socio-economic indices, highest level of education and number of household possessions. More females (35.2%) than males (28.9%) perceived their communities to have high levels of crime and safety problems, while more males (44.6%) than females (38.4%) perceived their communities as having low levels of crime and safety problems. The prevalence of the perception that their neighbourhoods had high levels of crime and safety problems was highest among persons who attained post-secondary education (post-secondary: 44.3%, secondary: 31.6%, primary and lower: 25.8%). The prevalence of the perception that their neighbourhoods had low levels of crime and safety problems was highest among persons who were in the lowest tertile of (0–5) household possessions (0–5 items: 47.4%; 6–9 items: 39.2%; 10–20 items: 37.1%).

Prevalence of obesity was higher at 31.9% among those who perceived high levels of neighbourhood crime and safety problems compared with 28.7% among those who perceived low levels and 24.8% among those who perceived moderate levels. Additionally, prevalence of depression was higher at 21.0% among those who perceived their neighbourhoods as having high levels of crime and safety problems compared with approximately 11% prevalence in the other perception groups.

Physical Disorder: Prevalence of persons who perceived their neighbourhoods as having high, moderate, and low levels of physical disorder was 29.2%, 32.4%, and 38.3%, respectively. These estimates did not differ with sex, urban versus rural residence or education level but differed with age and socio-economic status measured as number of household possessions. Prevalence of the perception of high levels of physical disorder was lowest among those with 10–20 household possessions at 24.3% and was lowest in the 75 and older age group at 20.4%. Of those in the highest tertile of household possessions (10–20 items), 44.9% perceived their neighbourhoods as having low levels of physical disorder versus less than 35% for the other possessions categories. Prevalence of low or no physical activity was lowest at 29.0%, among persons who perceived that their neighbourhood had high physical disorder compared with 36.0% and 41.6%, respectively, for those who perceived their neighbourhoods as having moderate and low physical disorder.

Social Disorder: Perception of neighbourhood social disorder differed with age, level of education and number of household possessions. Among Jamaicans 15 years and older, 17.9% of persons with post-secondary education perceived their communities as having high levels of social disorder in comparison to more than 20% of the other education groups who perceived their neighbourhoods as having high levels of social disorder. Conversely, while 48.7% of those with post-secondary education perceived their neighbourhoods as having low levels of social disorder only 36% of persons in the other education groups perceived their communities as having low levels of social disorder. Similar distributions were observed for the categories of number of household possessions. Prevalence estimates for depression and for low or no physical activity were associated with perception of neighbourhood social disorder. A lower percentage of physical inactivity, 25.3%, was seen in those with perception that their neighbourhood social disorder was high compared with versus 39–40% among those who felt social disorder was moderate or low. Prevalence of depression at 21.4% was also higher in those that perceived their neighbourhood social disorder as being high compared to 15.8% and 9.9% in those who perceived the social disorder as being moderate and low, respectively.

Collective Efficacy: Perception that neighbourhood collective efficacy was low, moderate and high had a prevalence of 38.0%, 33.3% and 28.4%, respectively, among Jamaicans 15 years and older. The distribution of these categories differed with level of education and age group. More persons with post-secondary education perceived their neighbourhoods as having low collective efficacy when compared with persons with secondary and primary or lower education level. Prevalence estimates were 43.6%, 40.0%, and 30.7%, respectively. Prevalence of the perception that neighbourhood collective efficacy was high exceeded 30% in age groups 45–54 years and older, while prevalence estimates for this level of perception were 27.5% and lower in the younger age groups.

Depression and hypertension were the CVD risk indices whose prevalence was associated with perception of levels of neighbourhood collective efficacy. Higher percentages of those who perceived high and moderate levels of neighbourhood collective efficacy, 36.6% and 35.9%, respectively, versus 25.6% among those who perceived low levels, had hypertension. Also, a higher percentage, 18.1%, of those who perceived their neighbourhoods had low levels of collective efficacy had depression, versus 12.5% and lower in those with other perceived higher levels of neighbourhood collective efficacy.

Sexual Practices and Reproductive Health

Sexual Practices

Only 6.2% of Jamaicans 15 years and older reported no history of a sexual encounter (males 4.8%, females 7.6%, $p<0.05$). Among persons sexually active, more women (87.5%) than men (57.3%, $p<0.001$) reported one sexual partner in the year preceding their survey interview. More men (34.0%) than women 13.0%, $p<0.001$) reported two to five sexual partners, and more men (9.9%) than women (0.1%) reported six or more partners in the last year ($p<0.001$). The proportion of persons reporting six or more sexual partners in the last year decreased from 8.5% in 15–24-year-olds to 0.0% in those 75 years and older.

Median age at first sexual encounter was 16 years in females and 15 years in males ($p<0.001$). Median age at first sexual encounter was 16 years in females 44 years and under and 55-64 years and was 17 years in the remaining age groups. Among males, the median age at first sexual encounter was 14 years among those 15–24 and 35–54 years of age and 15–16 years among those in other age groups. A history of sexually transmitted infections was reported by 19% of males and 9% of females ($p<0.0001$).

Among Jamaicans 15 years and older who were sexually active during the year preceding their survey interview, more males (54.3%) than females (39.2%, $p<0.001$) reported using a condom at their most recent sexual encounter. In this population of Jamaicans, 27.8% reported the absence of contraceptive use at their last sexual encounter. A majority of men (59.5%) and 39.8% of women reported that they would usually use a condom during sexual intercourse. Age-specific estimates revealed that the proportion of Jamaicans reporting use of a condom at last sexual encounter was highest among those 15–24 years of age at 61.7% and lowest among those 75 years older at 21.6%. Usual contraception use was also highest in the 15–24-year-olds (65.4%) and lowest in those 75 years and older (22.8%).

Women's Health

Among Jamaican females aged 15 years and older, 28% reported that they had never done a pap smear, 40% reported that they had done a pap smear less than three years before their survey interview, and 30% reported having a pap smear done three or more years prior to their interview.

Age-specific estimates showed that the proportion of women who had never done a pap smear was highest among those 75 years and older, at 29.0%, and lowest in those 35–44 years, at 9.8%.

Among women 40 years and older, 63.7% had never done a mammogram, and this proportion ranged from a high of 85.2% in those 40–44 years old to a low of 43.5% in those 65–74 years old. The proportion who never had a mammogram differed significantly with education level attained, ranging from 80.9% in females who had attained primary education level or lower to 37.6% in those with post-secondary education. The proportion who never had a clinical breast examination also differed with education level. Of the females who had achieved only primary educational or lower, 31.2% had no history of a clinical breast examination versus 24.5% of those who attained post-secondary education.

The number of times a woman had been pregnant differed with area of residence with 9.4% of urban and 15.0% of rural women reporting being pregnant six or more times while higher percentages of urban compared with rural females reported being pregnant once (20.1% versus 16.4%) or 3–5 times (33.8% versus 30.4%). Of those who had been pregnant 5.3% reported they had no live births and 9.7% reported that they had six or more live births. More rural than urban women reported multiple live births.

Among women of reproductive age (15–49 years) the proportion that breastfed their last child for less than a month ranged from 19% among those 15–19 years to under 2.0% among those 35–39 or 45–49 years of age. Duration of breastfeeding the last child differed significantly with education level and with number of household possessions. The proportion of women who breastfed their last child for the recommended two to six months ranged from 22.5% among those with primary education or lower level to 48.7% among those with post-secondary education while the proportion who provided supplemental breastfeeding was 62.1% and 38.5% in the respective education categories. The proportion who breastfed their last child for the recommended two to six months ranged from 26.1% among those with 0–5 household possessions to 41.2% among those in 10–20 household possessions while the proportion who provided supplemental breastfeeding was 62.7% and 42.4% in the respective household possessions categories.

Men's Health

The severity of low urinary tract symptoms (LUTS) in Jamaican males was quantified using the International Prostate Symptoms Score (IPSS). Males were classified as having mild (IPSS <8), moderate (IPSS = 8–19) or severe (IPSS ≥20) LUTS. Among Jamaican males 25 years and older 88% were classified as having mild LUTS, 10.8% as having moderate LUTS, and 1.2% as having severe LUTS. The proportion with severe LUTS ranged from less than 1% in those 54 years and under to 5.0% in those 60 years and older. Prevalence of moderate LUTS ranged from 4.0% in those 25–39 years of age to 25.5% in those 60 years and older. The proportion of Jamaican males 25 years and older who had been diagnosed with enlarged prostate ranged from 0.0% in those 45–49 years of age and 0.1% in those 25–39 years old to 14% in those 60 years and older.

The Qualitative Research Study

The qualitative research study was one of the new components introduced in JHLS III, as compared to JHLS I and JHLS II. The aim of the focus group discussions was to identify the barriers and facilitators encountered by participants in managing and preventing NCDs. The main themes that emerged from the focus group discussions were NCD awareness and beliefs, physical activity, dietary practices, and medication adherence.

The discussions revealed that group members were aware of lifestyle practices that could support the appropriate management and prevention of NCDs. However, financial challenges prevented the uptake of these practices. There were a number of barriers to NCD prevention, such as fatalistic attitudes and unwillingness to change behaviours. Additionally, the use of herbal medicines due to the lack of funds for purchasing prescribed medicine, as well as perceived side effects of prescribed medicines, indicated a possible gap in health literacy.

To address this gap, it is recommended that patients be provided with user-friendly and reader-friendly explanations of the purposes of prescribed medications. Stakeholder collaborations could also support educational campaigns and interventions aimed at improving the public's awareness and understanding of of the contraindications imposed by the concomitant use of herbal and prescription medicines. It would be helpful to gather data from patients regarding this practice.

Conclusions

Findings from the JHLS III revealed sex and socio-economic status disparities in health and lifestyle outcomes. Females bore the greater burden of cardiovascular disease risk indices, particularly, diabetes, depression, and obesity. Persons in the lower SES groups and, particularly persons with lower education level, had higher prevalence of risk behaviours, such as low fruit and vegetable intake and (among males) current use of marijuana. Interventions to mitigate adverse health outcomes will need to target males and females differently. In addition, efforts are needed to lessen the disparity in poor health and lifestyle outcomes associated with differences in education level.

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List of Abbreviations

ACC	American College of Cardiology
ACS	American Cancer Society
ADA	American Diabetes Association
AHA	American Heart Association
ATP-III	Adult Treatment Panel III
AUDIT	The Alcohol Use Disorders Identification Test
BG	Blood glucose
BG	Blood Glucose
BMI	Body mass index
BP	Blood pressure
CAIHR	Caribbean Institute for Health Research
CAIHR	Caribbean Institute for Health Research
CAIHR-ERU	Caribbean Institute for Health Research-Epidemiology Research Unit
CAPE	Caribbean Advanced Proficiency Examination
CHIK V	Chikungunya virus
CI	Confidence interval
CKD	Chronic kidney disease
CKD-EPI	Chronic Kidney Disease Epidemiology Collaboration
CNCD	Chronic non-communicable disease
CSEC	Caribbean. Secondary Education Certificate
CVD	Cardiovascular disease
CXC	Caribbean Examinations Council
DBP	Diastolic blood pressure
DENV	Dengue virus
DM	Diabetes mellitus
DRE	Digital rectal examination
DSM–IV/V	Diagnostic and Statistical Manual of Mental Disorders versions 4/5
ECRHS	European Community Respiratory Health Survey

ED	Enumeration district
eGFR	Estimated glomerular filtration rate
F	Female
FGD	Focus group discussion
GFR	Glomerular filtration rate
GIS	Geographic information systems
GOJ	Government of Jamaica
GPS	Global Positioning System
GSAT	Grade Six Achievement Test
Hb	Haemoglobin
HbA1C	Glycosylated haemoglobin
HbC	Haemoglobin C
HDL	High Density lipoprotein
HE	Heavy Episodic
HI	Health insurance
HIV	Human immunodeficiency virus
HPV	Human Papilloma virus
hs-CRP	High-sensitivity C-reactive protein
IgG	Immunoglobulin G
IgM	Immunoglobulin M
IPSS	International Prostate Symptom Score
JADEP	Jamaica Drugs for the Elderly Programme
JHLS	Jamaica Health and Lifestyle Survey
JHLS I	Jamaica Health and Lifestyle Survey 2000-2001
JHLS II	Jamaica Health and Lifestyle Survey 2007-08
JHLS III	Jamaica Health and Lifestyle Survey 2016-17
JNC-7	Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure
JSOC	Jamaica Standard Occupational Classification
LDL	Low density lipoprotein
LUTS	Lower urinary tract symptoms
M	Males
MOHW	Ministry of Health and Wellness
MOHW-JA	Ministry of Health and Wellness, Jamaica
MS	Medication subsidies

NCD	Noncommunicable disease
NCD	Non-communicable disease
NGSP	National Glycohemoglobin Standardization Program
NHF	National Health Fund
PA	Physical activity
PAHO	Pan American Health Organisation
PAL	Physical activity level
PCOS	Polycystic ovarian syndrome
PSU	Primary sampling units
R	Rural
RTA	Road traffic accidents
Rx	Medication
SBP	Systolic blood pressure
SCD	Sickle Cell Disease
SCT	Sickle Cell Trait
SE	Socioeconomic
SES	Socio-economic status
SR	Sampling region
SSB	Sugar-sweetened beverage
STATIN	Statistical Institute of Jamaica
STI	Sexually transmitted infection
TC	Total Cholesterol
U	Urban
US	United States
UWI	The University of the West Indies
VIA	Visual inspection with acetic acid
WC	Waist circumference
WHO	World Health Organisation
WHO	World Health Organisation
WHR	Waist-to-hip ratio
ZOSO	Zones of Special Operations
ZV	Zika virus

PART 1

Introduction and Methods

1. Background

Andriene Grant • Nicolas Elias • Trevor Ferguson
Marshall Tulloch-Reid • Rainford Wilks

Introduction

During the past three decades, Jamaica has been faced with a high burden of non-communicable diseases, violence and injuries, chronic infectious diseases, especially HIV/AIDS and its associated opportunistic infections, and tuberculosis.[1] In light of the epidemiological and demographic transition underway in Jamaica,[2] these conditions will constitute a major challenge to health systems throughout the twenty-first century.[3] Jamaica is also faced with threats from re-emerging and emerging infectious diseases not previously endemic to the Caribbean (e.g., the chikungunya virus).[4]

Reliable and up-to-date estimates of disease burden and secular trends are important for health system development, and there are several options for acquiring such data. Probably the most cost effective is efficient surveillance and monitoring, but these are underdeveloped in our setting.

Sequential national surveys provide an important alternative for data gathering and allow for the 1) monitoring of trends in the occurrence of diseases, 2) provision of critical data on their burden and risk factors, and 3) measurement of the impact of these diseases on health.[5] Thus, the data gathered in these surveys can guide the establishment of the pillars of health systems,[6] which includes healthcare information and management, allocation of human and financial resources, and evaluation of the effectiveness of policies implemented for their management and control.[5,7,8,9] Prior to this, the last Jamaica Health and Lifestyle Survey (JHLS II) was conducted in 2008, and since then several developments have taken place in the country, including interventions suggested by that survey. Current data are urgently required to inform the manner in which health systems meet international obligations, evaluate the impact of policies implemented over the past ten years, and guide future policies and programmes.

Data from the previous surveys in Jamaica have provided a situational analysis of a large proportion of the country's health status, including but not limited to estimates of non-responses to survey questions, the burden of cardiovascular risk factors, including diabetes mellitus, cardiovascular disease and stroke, the ten-year predicted cardiovascular risk, the impact of sleep on diabetes mellitus, the effectiveness of antenatal screening for sickle cell disease, the prevalence of asthma and allergies in minors, household and school-based illicit drug use, and dementia among older persons.[10,11,12,13,14,15,16,17,18,20] These data have been and may be used as the basis for health policy changes nationally, regionally,[21] and internationally.[22]

Timely review of the impact of these policy changes can be assessed through continued use of serial national surveys that will inform the need for adjustments in the health system, including adherence to prevailing guidelines and/or the development of new ones. This approach will complement other data-gathering exercises, such as surveillance and monitoring and evaluation (learning by doing). While surveys can be a 'one-off' exercise, surveillance involves commitment to data collection on an ongoing basis, as well as use of the data for informing public health policies and programmes.[23,24] In this way, interventions can be assessed by monitoring and evaluation. The National Development Plan Vision 2030 outcome for the health sector is to achieve 'A Healthy and Stable Population.' The implementation of the Jamaica Health and Lifestyle Survey is a key component in achieving strategy 1.2 'Strengthen Disease Surveillance, Mitigation, Risk Reduction and the Responsiveness of the Health System.'[25]

This third round of the Jamaica Health and Lifestyle Survey gathered data related to health outcomes that, if left unchecked at the population level, could have severe adverse effects on the social and economic development of Jamaica. Thus, data gathered in the survey will provide evidence of the prevalence of non-communicable diseases, violence and injuries, practices in relation to prevention of sexually related conditions, and emerging infectious diseases.

Non-communicable Diseases

In 2013, the World Health Organization (WHO) made non-communicable diseases (NCDs), such as diabetes mellitus, hypertension, cardiovascular diseases (e.g., heart attack, stroke, peripheral vascular disease), chronic lung diseases, cancers, and mental health conditions (such as depression), a priority area.[26] Since then, NCDs have been included in Jamaica's 2030 Agenda for Sustainable Development with the associated target to reduce premature mortality from non-communicable diseases by one-third by 2030.[27] These diseases share risk factors and collectively account for the highest burden of morbidity and mortality worldwide. Globally, NCDs have reached epidemic proportions, with poor outcomes disproportionately affecting low- and middle-income countries like Jamaica.[28,29] The high prevalence of NCDs has serious implications for health and the social and economic development of the country.[30,31,32,33] NCDs account for more than 70% of adult mortality[34,35,36] and are driven by environmental conditions and lifestyle behaviours. Jamaica, along with the rest of the world, has committed to reducing NCDs by 25% by the year 2025 and to meeting the nine voluntary global targets laid out by the WHO.[37,38] These targets include reducing harmful use of alcohol by 10%, physical inactivity by 10%, tobacco use by 30%, elevated blood pressure by 20–25%, as well as ensuring no increase in diabetes prevalence.[26] Additionally, drug therapy counselling and coverage should reach 50%, and essential NCD medications and technologies should have 80% coverage.[37]

To achieve this goal of reducing the burden of NCDs, Jamaica has instituted a series of policy and advocacy decisions over the past three decades, including, but not limited to, establishing the Jamaica Drug for the Elderly Programme (JADEP), the National Health Fund (NHF), the Programme for Advancement Through Health and Education (PATH), and the Healthy Lifestyle Policy and Strategic Plan. The Jamaican government has also abolished user fees at government health facilities and has instituted a national health policy.[3] Multiple initiatives and programmes have also been put into place to improve the determinants of health in the following areas: unhealthy diet, tobacco use, physical inactivity, violence prevention programmes, harmful use of alcohol, and others.[3] Recent national initiatives include the 'Jamaica Moves' campaign, which was launched in April 2017 by the Ministry of Health, to 'engage more persons in physical activity,'[39] as well as the launch of a Wellness Agenda in 2019 to include a National School Nutrition Policy, a Workplace Wellness Programme, and an emphasis on home gardening and healthy eating options.[40]

It is specifically stated in the National Strategic and Action Plan for Prevention and Control of Non-Communicable Diseases (NCDS) in Jamaica 2013–18 that 'further studies are required to explore the social determinants of NCDs in Jamaica in order to inform public policy.'[3] The results of the JHLS III, therefore, will be used to evaluate the existing plan and to inform the development of future iterations of the Strategic and Action Plan for the Prevention and Control of Non-Communicable Diseases.

Violence and Injuries

Injuries are a major public health concern in Jamaica. As a result, the Jamaica Injury Surveillance System (JISS) – a hospital-based injury surveillance system – was established to determine the incidence of injuries in Jamaica. The system utilizes hospital data in conjunction with injury data from health centres and the sentinel surveillance system.[41] Under the umbrella of injuries, violence and intentional injuries has accounted for for 10% of the world's deaths[42] and 11.5% of the deaths in the Caribbean.[43] It has been the largest preventable cause of the use of health services in Jamaica,[44] and globally it was projected to become the third leading cause of disability-adjusted life years (DALYs) by the year 2020.[45] It was estimated in 2009 that interpersonal violence resulted in a direct medical cost of J$2.1 billion, and violence-related injuries led to productivity losses to the country of J$27.5 billion or 4% of GDP.[46] Data gathered from seven major hospitals in Jamaica in 2014 estimated the total cost of violence-related injuries (direct and indirect) at J$8.6 billion.[47] The homicide rate at the time of the 2009 costing is similar to 2017, where Jamaica recorded 1,616 murders,[48] a homicide rate of approximately 59.2 per 100,000 residents – one of the highest in the world. Homicides and violence/intentional injuries in Jamaica predominantly affect males in the 18–45 age range, thereby, affecting community and national productivity disproportionately, and incurring further losses of revenue and increased expenses at the individual, family, and macroeconomic levels.[49]

Violent crime and intentional injuries in Jamaica have been receiving additional attention and scrutiny with the passing of The Law Reform (Zones of Special Operations) (Special Security and Community Development Measures) Act of 2017, also referred to as the ZOSO Act. The act gives the Prime Minister the power to declare 'any geographically defined area within a single continuous boundary in Jamaica, as a zone of special operations for a period not exceeding 60 days,' if crime in that area is deemed too critical to control through normal means.[50] Subsequent to the passing of the act in 2017, a ZOSO was declared in two high-crime communities. This was followed by the declaration of limited states of emergency in 2018, which attracted global media attention.[51] The JHLS III will provide some insight into the secular trends in violence, its risk factors and impact, especially when these data are correlated with data from other sources in the country.

Unintentional injuries also constitute a major public health concern, constituting approximately 8% of accident and emergency hospital visits in 2017.[52] One of the main contributors to morbidity and mortality from unintentional injuries are road traffic crashes. Over the past ten years, road traffic crashes have remained a major source of deaths and injuries, particularly among adolescent and young adult males – the aforementioned productive age groups.[53,54,55] Over the period of this survey, the number of fatalities from road traffic crashes were 379 persons in 2016[55,56] and 320 for 2017.[56] According to the Hon. Minister of Health and Wellness, in late 2017, road traffic crashes (RTCs) were the eleventh highest cause of premature deaths in Jamaica, and over 10,000 persons were injured annually in road traffic crashes.[57] The cost of treatment of RTCs in 22 hospitals in 2014 was estimated at J$3.2 billion.[47]

In response to the challenge of road traffic crashes, the Road Safety Unit of the Ministry of Transport and Mining has partnered with the Jamaica Constabulary Force, research institutions, and the private sector to initiate the Arrive Alive road safety campaign.[58] As part of the campaign, crash hotspots have been identified and signposted to alert drivers to areas where extra caution is required.[58] Another means of reducing the burden of road traffic crashes was the passing of the new Road Traffic Act (2018). Under the new act, fines for breaches of the road code have been increased, and new ones have been added to reflect technological changes since the original act was passed.[59] To potentially reduce the burden of unintentional injuries in the workplace, the government passed the Occupational Safety and Health Act (OSHA) 2017 to help secure the safety and health of employees. Trends identified in the national JHLS surveys will provide data that will help to refine these interventions and monitor their effectiveness.

Chronic Infectious Diseases

Chronic infectious diseases, with special emphasis on HIV/AIDS and sexually related conditions, are major causes of health services utilization and mortality.[60,61] The Ministry of Health states in the 2015 HIV

Epidemiological Profile that the estimated prevalence of HIV in the adult population was 1.6% or 29,000 persons. Some of the major risk factors for the epidemic were cited as multiple partners, a history of STIs, crack/cocaine use. It has also been noted that HIV prevalence is higher among at-risk groups, such as commercial sex workers, men who have sex with men, prison inmates, and homeless drug users. In 2015, the majority (63%) of reported HIV cases came from urbanized parishes, namely, Kingston and St Andrew, St Catherine, and St James.[62] The survey captures data on sexual practices, including number of partners and use of barrier methods. This will allow for some insight into risk behaviours that have an impact on HIV and other STIs.

Emerging Infectious Diseases – Chikungunya Fever

Chikungunya fever, a vector-borne disease, transmitted by the *Aedes aegypti* and *Aedes albopictus* species of mosquito[63] was first introduced to the Caribbean in 2013[63,64] and to Jamaica in 2014.[65,66] Following the confirmation of local transmission of chikungunya in early August 2014, the epidemic spread across the island rapidly.[4] The largest number of cases was reported between epidemiology weeks 37 and 40,[4] and the National Response Mechanism was activated in early October, with the epidemic being declared ended in December 2014.[67] From the start of the outbreak up to the end of 2015, a total of 5,180 chikungunya notifications were received by the National Surveillance Unit of the Ministry of Health and Wellness, of which approximately 1,900 fit the case definition and were classified as suspected.[67] Ninety-four of these cases were confirmed, with the majority remaining as suspected.[66] Four confirmed chikungunya cases were reported for 2016, and no confirmed cases were reported in 2017.[68] These figures are likely to be an underestimate of the proportion of persons having the disease, bearing in mind estimates from previous outbreaks in other countries.[69] Chikungunya virus seropositivity as high as 75% has been reported in Lamu, Kenya;[69] however, there is a dearth of data from the Caribbean.

Estimation of chikungunya prevalence in Jamaica is necessary to guide public health management, as well as to prepare for future outbreaks. The parasite, vector, human population, and environment are identified as determinants of vector-borne disease spread, with local practices and attitudes among human-related determinants.[70] Knowledge of chikungunya spread and prevention have varied geographically,[71,72,70,73,74] with knowledge of chikungunya transmission ranging from 18 to 61%[72,73,71] in some studies. Kolbe et al., in a study[74,75] using qualitative methods in Haiti, reported the belief that most persons were at risk of acquiring chikungunya, that mosquitoes were invulnerable to insecticides being used, and that the cost of insecticides and medication had increased subsequent to the outbreak. In the local context, approximately half (49%) of Jamaicans polled in December 2014 did not believe that the chikungunya virus was spread by mosquitoes,[76] suggesting a need for public education. In addition, a better understanding of practices that increase risk of this and other vector-borne diseases is helpful in planning prevention and education strategies.

Chikungunya fever is likely to become endemic due to the presence of the *Aedes aegypti* mosquito in the island.[77] The estimation of knowledge, attitudes, and practices with respect to chikungunya and other vector-borne viruses in a nationally representative sample of Jamaicans is a critical step in tailoring public health interventions to halt the spread of this and similar diseases. The findings of the study will form a national baseline that will be useful in following trends in infection. Estimation of anti-chikungunya antibody prevalence, as estimated for the Jamaican population using these data, will provide another estimate of the impact of this new disease in our population and will be important in assessing the susceptibility of the population to future outbreaks.[78]

Project Goal

The goal of this project is to estimate the current burden of and risk factors for the major health conditions in the Jamaican population. These risk factors and health conditions include NCDs, intentional and unintentional injuries, sexual and reproductive health, and sexually related practices and conditions; new and re-emerging infections like chikungunya; lifestyle practices including diet, physical activity, and exposure to harmful substances; and injuries and violence. We seek to obtain an insight into reasons for behaviours using qualitative methods, as well as overall health-seeking behaviours. We will assess the secular trends in risk factor and disease burden, and the impact of national strategies on these conditions while identifying evidence for other novel and feasible interventions.

Methodological Features

Rigorous survey research is increasingly complemented by qualitative data (e.g., from in-depth interviews and focus groups) to ensure the usefulness and legitimacy of findings for researchers, interventionists, policymakers, and funders.[79,80,81,82] This present survey will use standard quantitative survey methods and will incorporate a qualitative component that will be conducted concurrently. The qualitative component of the study will identify some of the behavioural issues that may act as facilitators or barriers to improved health habits, disease risk and management, as well as health care utilization.

Scope

The scope of the 2016–17 Jamaica Health and Lifestyle Survey (JHLS III) is to estimate the impact of health policies instituted in recent years in response to the NCD epidemic. It will strengthen the intersection between research and surveillance to ensure that recommended policies and interventions such as the lifestyle intervention are cost effective, and weaknesses can be reduced. In this sense, better quality data will lead to improved decision-making. The Ministry of Health and Wellness does not currently have a surveillance system in keeping with the WHO and international standards. This project will provide the data necessary to support a monitoring and surveillance system in line with the national strategic plan and Vision 2030 goals. *This is also in keeping with the Caribbean Institute for Health Research (CAIHR) and the University of the West Indies (UWI) Strategic Plan to be relevant to the needs of the region and the CAIHR's mission statement to provide research that informs policy*. The scope of this third round of the Jamaica Health and Lifestyle Survey was more extensive than previous ones in the following ways: (i) the inclusion of an over 75-year-old age group – a growing population with the highest burden of chronic disease, who has not been sampled in the previous rounds; (ii) the collection of blood from participants for evaluation of additional biomarkers; (iii) use of geographic information systems (GIS) to complement our assessment of the role of the built environment on risk factor and disease burden; (iv) the use of electronic data-collection systems in estimating physical activity, which will allow for more efficient data management; (v) special emphasis on men's health issues; and vi) the collection of qualitative data from interviews and focus groups.

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2. Methodology

Shelly McFarlane • Novie Younger-Coleman

2.1. The JHLS III Sample – Overview

The Caribbean Institute for Health Research-Epidemiology Research Unit (CAIHR-ERU) in collaboration with the Ministry of Health and Wellness, Jamaica (MOHW-JA) carried out the Jamaica Health and Lifestyle Survey 2016–17 (JHLS III, 2016–17). Data gathered from respondents between September 2016 and March 2017 enabled determination of prevalence estimates for cardiovascular disease risk indices, vector-borne conditions, and patterns of lifestyle risk behaviours and socio-demographic and environmental correlates of these outcomes in resident, non-institutionalized Jamaicans aged 15 years and older. The data gathered using this survey also enabled examination of features of sexual practices, male and female reproductive health, sources of health information and health-seeking behaviours in Jamaicans within this age range. Technical support for the development and execution of the study's sampling design was provided by experts affiliated with the Statistical Institute of Jamaica (STATIN), and funding for the study was provided by MOHW-JA and the National Health Fund (NHF). Respondents were recruited from all five-year age by sex categories with age groups ranging from 15 to 19 years up to age 75 years and older, and all parishes with a combination of urban and rural residents. After adjustment for deviation from the population sampling frame through application of sampling weights, parameter estimates were deemed representative of the 15 years and older Jamaican population at the parish and national levels. A total of 3,420 dwellings were targeted during the survey, with the aim of recruiting one respondent from a single household selected from each dwelling.

2.2. Study Design and Data Collection

Data were gathered using a cross-sectional, interviewer-administered survey of free-living resident Jamaicans, by face-to-face interviews.

The Survey Instrument

The questionnaire consisted of items from the forms administered in previous Jamaica Health and Lifestyle Surveys and included modules new to this third execution of the surveys. The following were module headings for the questionnaire:

- Demographic Information
- Family's Health History
- Medical History
- Risk Factors for chikungunya and Other Vector-Borne Illnesses
- Women's Health
- Men's Health
- Health-seeking Behaviour

- Injuries and Violence
- Neighbourhood Characteristics
- Lifestyle
- Emotions and Mental Health
- Physical Activity Levels
- Dietary Habits
- Sexual Practices
- Sources of Information on Health
- Biomedical and Body Measurements

Newly added sections of the questionnaire included items that were developed using tools from various sources. These newly added sections gathered data on:

1. Perceptions of neighbourhood disorder (via adaptation of scales used by Elo et al.[1] and collective efficacy.[2]
2. Food insecurity (via a six-item short form and the associated Six-Item Food Security Scale from the US Department of Agriculture.[3]
3. Risk factors for the chikungunya virus and other vector-borne illnesses – some items obtained from the Survey of Living Conditions 2014.[4]
4. Men's health – items obtained from the Sexual Health Inventory for Men[5] and from the International Prostate Symptom Score questionnaire.[6,7]
5. Interpersonal violence – items obtained from the WHO STEPwise Approach to Chronic Disease Risk Factor Surveillance (WHO STEPS) questionnaire.[8]

See Appendix 1 for full questionnaire.

Paper and pencil interviewing was used to gather data from respondents.

Other Data Collection Tools

Venous and finger prick blood samples were collected from consenting participants. Finger prick blood samples provided estimates of fasting capillary blood levels of glucose, total cholesterol, HDL cholesterol, and triglyceride levels in mmol/L and percentage glycosylated haemoglobin (HbA1c). The SD Lipidocare Lipid Test System (*SD LipidoCare, Suwon, South Korea*)[9] was used to obtain the lipid measurements and glucose levels, and the SD A1cCare™ Analyzer (*Suwon, South Korea*)[10] was used to obtain the glycosylated haemoglobin values.

Fasting venous blood samples were assayed, and the list of analytes for which assays were done and the tools used to carry out the assays are as follows:

- Complete blood count using the Cell Dyn Ruby Analyser from Abbott™
- Sickle Cell genotyping: Determined via Haemoglobin Electrophoresis using the Iso-electric Focus (IEF) method
- Blood Urea Nitrogen, Blood glucose, Serum Creatinine, Total Cholesterol, HDL Cholesterol, Triglycerides, hs-CRP and HbA1c Levels were analysed using Roche ™ Cobas C111 analyser (software version 4.2), which uses absorption photometry

- Chikungunya virus (IgG and IgM) determined using Immunofluorescence Assay
- Testosterone level (in males only) analysed using the Roche™ Cobas E411 analyser via electrochemiluminescence immunoassay[11]
- Ferritin determined using the indirect enzyme immuno assay (Elisa) technique

Urine samples were assayed to determine sodium, potassium, and creatinine levels using Roche™ ISE 9180 urine analyser, and a qualitative assay of microalbumin was conducted using Micral-Test® strips by Roche™.

See Appendix 2 for details related to the laboratory analysis methods.

Blood pressure measurements in units of millimetres of mercury were obtained using the OMRON® digital sphygmomanometer. Height was determined using portable stadiometers, and weight was determined using digital scales (Tanita HD™ and Seca™). Waist circumference was measured using Mabe non-stretchable tape.

Axivity™ monitors were used to obtain levels of physical activity from a subsample of study participants.

Tablets and mobile phones with GIS data capture applications were used to capture the location of dwellings of respondents. Handheld monitors were used in a subsample to ascertain the quality of the data obtained from the mobile devices. This form of GIS data capture was aimed at meeting the objective of examining the relationship between health outcomes and geographic locations.

2.3. Sample Size Justification

A sample size of 3,107 participants recruited from targeting at least 3,418 participants was deemed adequate to estimate at the 5% significance level, the national prevalence for hypertension (margin of error ±3%, 90% power), diabetes (margin of error ±2%, 81.5% power) and obesity (margin of error ±3%, 92.7% power). This sample size was also deemed adequate for estimating the parish level prevalence estimates with per parish margins of error ranging from 5.1% to 9.4% for the chikungunya virus (CHIK V); equalling 4% for diabetes; ranging from 0.4% to 13.8% for overweight; and ranging from 1.4% to 11.6% for hypertension. The sample size of 3,107 persons anticipated item or unit non-response as well as the increased variance of parameter estimates that is a consequence of accounting for the cluster design in data analysis.

2.4. Sampling Methodology

To ensure comparability of data, the sampling methods used were like those used in the previous rounds of the JHLS.[12,13] Resident Jamaicans aged 15 years and older were recruited to participate via a multi-stage sampling design. The sample design adopted for labour force and other social and demographic household surveys commissioned by the STATIN is one of the appropriate designs for large-scale surveys. It is also referred to as the ‘paired selection design,’ as two first-stage primary sampling units (PSUs) are selected from each stratum or sampling region.

The sampling design was developed with technical support provided by STATIN. Parishes were deemed the strata from which enumeration districts (EDs) – the primary sampling units – were selected such that their urban-rural distribution (in the sample) reflected the urban-rural distribution of the enumeration of districts (EDs) in the parish. To determine the number of EDs required for each parish, the parish-specific sample sizes required for obtaining parish-level prevalence estimates for the outcomes were divided by 20, the maximum number of households to be selected for recruitment of participants from each ED. Thus, 171 EDs were selected from across the island, yielding a national sample of individuals through recruitment of participants from a random selection of the enumeration of districts or clusters. The probability of selection varied with parish size, which was quantified as the total number of EDs in the parish. Table 2.4.1 shows the number of enumeration districts selected from each parish and from which respondents were recruited. Of note, Kingston had no rural EDs.

2.4.1 Stages of Selection

The survey sample had a stratified multi-stage design. Parish was regarded as the first level of stratification, and the number of enumeration districts were selected to yield the desired sample size and urban-rural distribution specific to each parish. In each ED, a random starting point for the selection of dwellings was identified. Subsequently, the interviewer would move in an easterly direction and select dwellings according to the sampling interval. The sampling interval was calculated as the total number of dwellings in an ED divided by 20, the number of dwellings from which respondents would be selected.

First Stage – Selection of Primary Sampling Units (PSUs)

The layout of the primary sampling units in Jamaica: All dwelling units in Jamaica are assigned to EDs, and it is these EDs that are used to form the PSU for the Labour Force Survey sample. Contiguous or adjoining EDs comprise sampling regions (SRs) or strata of similar size. The EDs are joined in such a way that each SR:

a. Is wholly contained within one of Jamaica's 14 parishes
b. Contains approximately the same number of dwellings and
c. Is expected to be composed of similar dwelling units regarding residential property.

Every attempt is made to construct purely urban or rural SRs. The number of SRs will vary from parish to parish because of the unequal distribution of dwellings per parish. The SRs are updated approximately at every three-to-four-year interval to account for movements in the population.

The primary sampling units used in the survey were selected from the sampling regions initially formed and utilized as the sampling frame for the 2006 Labour Force Survey. In the Labour Force Survey conducted in 2006, the island was divided into 254 SRs (an amalgamation of EDs within parishes). Within SRs, PSUs were created from one or more than one contiguous EDs to yield areas and populations of sufficient size to act as primary sampling units or clusters for sampling (minimum 80 dwellings). Two PSUs are randomly selected from each SR, yielding a nationally representative sample of 508 PSUs (~10% of EDs nationally). For the JHLS III, PSUs were selected from within SRs such that the national urban-rural distribution of the EDs was reflected in the final sample of primary sampling units. The selection of PSUs from each one of the many SRs ensured a more even distribution of the sample across all geographic and administrative areas.

Second Stage – Selection of Dwellings

For each of the PSUs selected, the field staff received a list of 20 dwellings comprising the systematic random sample of dwellings from which households were selected. Selection of the dwellings in the field had a random starting point. Using maps prepared by STATIN, dwellings were systematically selected beginning at a random starting point and based on predetermined sampling intervals to recruit 3,420 participants (because of selection of 20 participants in each of 171 enumeration districts) in fourteen age-sex categories, i.e., males and females aged 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, and 75+ years old. Within each cluster (PSU), the sampling interval, *k*, was equal to the total number of dwellings in the PSU divided by the number required for each PSU (agreed to be 20) so that in a PSU with 300 dwellings the sampling interval would be 15. Thus, every 15th dwelling in that PSU, beginning with the STATIN-assigned random starting point, would be targeted for participant selection.

A single household was selected from each dwelling. Within each household, a single individual was chosen to participate. The participant from each household was selected using the Kish methodology.[14, 15] Interviewers were required to revisit households where adults are not at home at the time of first contact with the household. A minimum of three visits were made before the household/participant is deemed a refusal. The interview took place in English. If a participant did not understand a concept on the questionnaire, the interviewer tried to simplify the concept. If the respondent still did not understand, the interviewer would select the 'don't know' response. Efforts were made to differentiate 'don't know' from a 'refusal to respond.'

Table 2.4.1: Parish-Specific Distribution (Counts) of Primary Sampling Units Selected in the Recruitment Process, JHLS III 2017

Parish	Urban	Rural	Total PSU
Kingston	15	0	15
St Andrew	18	4	22
St Thomas	3	6	9
Portland	8	9	17
St Mary	4	6	10
St Ann	2	5	7
Trelawny	4	8	12
St James	7	4	11
Hanover	2	6	8
Westmoreland	3	5	8
St Elizabeth	4	10	14
Manchester	4	10	14
Clarendon	3	8	11
St Catherine	9	4	13
Total	**86**	**85**	**171**

2.5. Ethical Considerations

The protocol was reviewed and approved by the Ministry of Health and Wellness Advisory Panel on Ethics and Medico-Legal Affairs and the University of the West Indies Mona Campus Research Ethics Committee. All field staff were required to sign a confidentiality agreement. All data collected were anonymized before data entry to ensure patient confidentiality. Only pooled data were utilized in the quantitative analysis.

2.6. Study Coordination

The study was coordinated by a team from the Caribbean Institute for Health Research (CAIHR).

2.7. The Field Team

2.7.1 Recruitment and Training

Potential field staff were recruited from a listing of persons who had worked on previous surveys, STATIN contract workers, and market research interviewers. Prior experience in questionnaire administration was a pre-requisite for recruitment as an interviewer, as the training period was set to last for only one week.

To best cover the area and ensure timely collection of the data, the organization of the island into regional health authorities was utilized in the assignment of supervisors to groups of interviewers. Each health region was assigned a single regional supervisor, except in the southeast region where two supervisors were assigned. Team leaders were then assigned at the parish level to cover at least two parishes in keeping with the sample distribution. Parishes with higher recruitment numbers were assigned individual team leaders.

2.7.2 Project Team (See Appendix 3)

The Project Team comprised:

- Investigators
- Project Coordinator
- Biostatistician
- Research Assistant
- Data Manager
- 17 Phlebotomists
- 6 Regional Supervisors
- 10 Team Leaders
- 66 Interviewers
- 7 Data Entry Clerks

2.8. Data Management

Data management procedures that were followed in handling JHLS III data were the following:

- **Visual Data Screening:** Following submission of the completed questionnaires by field supervisors, the survey instruments were rechecked at the coordinating centre by the national coordinator. Verification of the completion of the questionnaire and validity of item responses were carried out before questionnaires were passed on to data entry clerks.
- **Digital Data Capture:** Data on the questionnaires were doubly entered by in-house data entry clerks using Epi Info™ software. Geographic information systems (GIS) mapping data were uploaded to a Microsoft Excel file, and data captured by Axivity(™) monitors were downloaded to project computers via the monitor's software.
- **Electronic Data Screening:** To carry out data cleaning and subsequent data analysis required for the production of this technical report, questionnaire data were transferred from Epi Info™ to Stata statistical data analysis software.[16] The duplicate data sets produced by the data entry clerks, after conversion to Stata format, were compared via software programmes to identify and flag discrepancies between the duplicated data sets that represented data entry errors or omissions. The data entry clerks were then tasked with correcting these data set irregularities. After the completion of correction of the errors and omissions, a final single data set was created, comprising all the data entered for the survey. This dataset was subjected to further data screening and cleaning by the data manager to validate the accuracy of the data input. The cleaned dataset was then sent to the biostatistician for statistical data analysis.

- **Variable Creation:** Prior to statistical data analysis, several variables were created using the data collected. Appendix 4 gives the listing of socio-demographic variables created, their definitions, and the questionnaire items used in their creation.

2.9. Statistical Methods

Statistical data analysis yielded weighted population estimates for means of quantitative variables and proportions for categorical variables with variance estimates accounting for survey design. The Pearson's chi-squared test corrected for survey design was used to determine the association between categorical variable pairs. Analysis of variance (ANOVA) and logistic regression models were used to estimate the effect of single explanatory variables on, respectively, quantitative and qualitative outcome variables. These models were mostly components of bivariate data analyses. Thus, estimates were not adjusted for additional explanatory variables. All analyses incorporated sampling weights adjusted for unit non-response and with variance estimates accounting for survey design. The weighted estimates could thus be regarded as being nationally representative estimates.

***Calculation of Sampling Weights*:** The base weight for each respondent was the inverse of the product of the probability of selection of dwellings from an enumeration district and the probability of selection of an enumeration district from a parish. These base weights were multiplied by a non-response adjustment factor to produce a weight corrected for unit non-response. This factor was equal to the total number of persons in the parish-specific five-year age by sex category in the targeted sample divided by the number of persons in the given parish-specific five-year age by sex category that participated in the survey. These base weights that were adjusted for unit non-response were further changed or calibrated using 2013 population totals for each category of sex at the parish level by five-year age bands. In other words, post-stratification weights were applied to the sampling weights so that the survey estimates of distribution of key demographic characteristics would be consistent with the distribution obtained from population data. The application of these weights, calibrated and adjusted for unit nonresponse, to parameter estimation yielded estimates that were generalisable to the Jamaican population aged 15 years and older.

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3. Data Quality

Shelly McFarlane • Novie Younger-Coleman

Data quality is a vital aspect of any study. Therefore, steps were taken to ensure that the quality of data was safeguarded at different phases of the execution of the project. The phases included:

- Questionnaire Design
- Training of Interviewers
- Data Collection
- Data Management

This chapter documents steps taken during the JHLS III to safeguard data quality and the results of these steps. Thus, the distribution of recruited respondents and the distribution of data quality checks are documented. In addition, there is demonstration of the similarity of weighted sample distributions of demographic characteristics to the population distributions, as obtained from STATIN data.

3.1. Questionnaire Design

The design of the questionnaire was carried out by JHLS investigators. Research topic leaders reviewed questionnaire items to ensure that they elicited information that would answer the research questions linked to the respective questionnaire sections. Repeated reviewing and editing of questionnaire items and skip patterns were carried out until the research topic leaders deemed the layout and content of the questionnaire items adequate. The questionnaire was piloted in urban and rural enumeration districts (EDs), and adjustments were made based on the feedback from the interviewers and the response items on the document.

3.2. Training of Interviewers

Field staff were trained over a five-day period at The University of the West Indies, Mona. For the first four days, the training of the field team exposed the interviewers to the different components of the questionnaire, map reading, and the different tools used for the biomedical and anthropometric measurements. On day six, the field supervisors were trained on the use of tools for Geographic Information Systems (GIS) data capture. Team leaders and supervisors were selected based on their aptitude for the varying exercises conducted during the training and prior experience in the field.

Training activities were based on the following items:

- Use of biomedical data collection mechanisms: The training in blood pressure and anthropometric measurement was conducted by research nurses of the Caribbean Institute for Health Research (CAIHR). Training and certification of field staff was conducted by staff from the CAIHR and acceptable levels of reliability were established between observers. Training on the point-of-care measures was conducted by the distributors of the Point-of-Care instruments, Recharged Distributors Limited.

- Questionnaire administration: The training sessions exposed the trainee interviewers to the role of the interviewer in the project and in interviewing techniques. In addition, there was familiarization with the questionnaire as the trainees read and completed the entire questionnaire individually and received clarification regarding questionnaire items. In role-playing sessions, the trainees practised persuasion and interviewing techniques and received feedback from their trainers and their peers to strengthen their capabilities as interviewers in the field.
- The Kish methodology: The interviewers were guided through the use of the Kish table that preceded the questionnaire items in the questionnaire to identify one eligible participant from a household. As part of the process, they were required to list in the schedule for persons living in the household, all household members eligible for recruitment to the survey sample. The list was to begin with the name, sex, and age of the oldest eligible male and end with the name, sex, and age of the youngest eligible female. Males in order of decreasing age were to be listed first, followed by females in order of decreasing age.
- Map reading: In a session on map-reading, a representative from the Statistical Institute of Jamaica (STATIN) exposed the interviewers to steps required for correct identification of the dwellings and households that they would use in selecting the respondents.
- Use of Geographic Information Systems (GIS) data capture applications: Staff from the Mona GeoInformatics Institute trained senior field staff in using the Global Positioning System (GPS) unit (Garmin) along with mobile devices (such as tablets and mobile telephones with Android, iOS, or Windows operating systems) to gather GIS data. The data captured would include coordinates for communities from which respondents were recruited for the JHLS III project.

3.3. Data Collection

Supervision and Quality Control Measures

Supervisors calibrated the instruments twice per month. Calibrated weights were obtained, which were used to ensure the accuracy of the scales used for data collection. Field staff checked the stadiometers weekly, and team leaders checked them twice per month. Observers were re-certified midway through the data collection process in January 2017 by the national coordinator and the data manager.

Recalibration of the point-of-care instrument was done with the start of use of each new kit. Validity checks were also done to enable comparison of data gathered from a respondent by the interviewer, with that which was collected by the supervisor. Reliability analyses of these data will be reported on in a subsequent section of this chapter.

The field supervisor, with the assistance of the team leader for the parish, monitored the daily activities of his/her field staff. The supervisor and team leaders conducted fortnightly checks, including the field equipment checks, with each team member. All problems were reported to the project coordinator at weekly intervals via WhatsApp groups created specifically for the survey. Monthly meetings were held with the field supervisors and the in-house staff to discuss the problems arising during fieldwork. Each week, the completed questionnaires were collected by the field supervisors, checked/edited for errors and omissions, and were submitted to the project coordinator via courier service. An average of 8% of the respondents were partially re-interviewed, and biomedical measures were repeated for quality control. Participants to be subjected to quality control checks were randomly selected at the coordinating centre to reduce bias. The field supervisors in three of the four health regions conducted the quality control checks. Verification of data from the Northeast region was done during random field visits by the national coordinator. The results of the second interviews were compared with the original data. We used per cent agreement between responses obtained by supervisors and responses obtained by interviewers to assess data quality for the interviews.

Report on Data Collection and Data Quality Checks

The highest proportion of the interviews was completed in the Western region (96.7%) and eight of the fourteen parishes achieved response rates higher than 90%. The lowest response rates were in Portland (76%) and the highest in Westmoreland (100%). The Northeast region overall had the lowest completion rate (74.3%). (See Table 3.5.1.)

As per protocol, 10% of the targeted quality checks on the interviews were randomly assigned to the field supervisors using the listing of dwelling numbers. In some areas, the dwellings assigned at the outset were closed or individual refusal. In those instances, the supervisors were reassigned to another randomly selected dwelling. In estimating the overall reliability of the data, quality checks were assessed on 8.0% of the completed interviews (Table 3.3.1).

Table 3.3.1: Data Collection and Data Quality Targets and Recruitment Numbers, JHLS III 2017

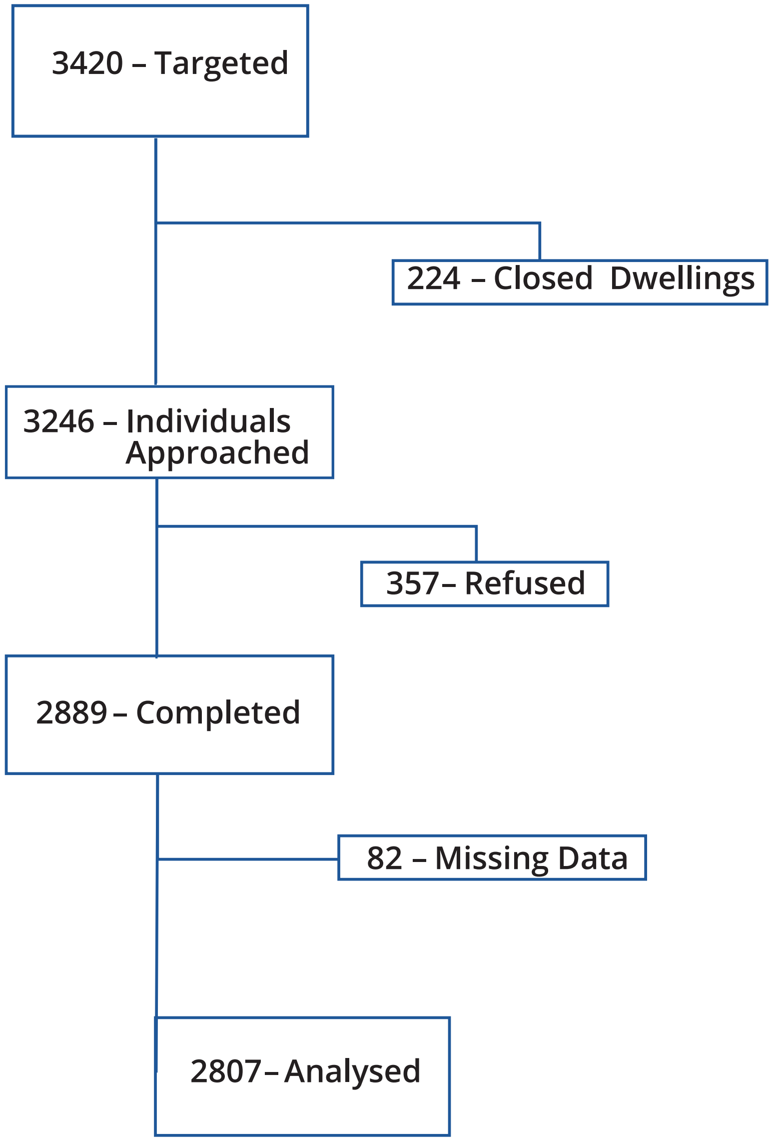
Parish	Targeted	Closed Dwellings	Approached	Completed	Response Rate (%)	Refusals	Total Non-response Rate (%)	Data Quality Checks *n* (%)
Southeast								
Kingston	300	6	275	272	98.9	3	1.1	17 (6.3%)
St Andrew	440	46	437	379	86.7	58	13.3	34 (9.0%)
St Thomas	180	5	180	165	91.7	15	8.3	16 (9. 7%)
St Catherine	260	15	236	214	90.7	22	9.3	3 (1.4%)
Region Total	***1180***	***72***	***1128***	***1030***	***91.3***	***98***	***8.7***	***70 (6.8%)***
Northeast								
Portland	340	69	316	208	65.8	108	34.2	8 (3.8%)
St Mary	200	16	196	153	78.1	43	21.9	9 (5.9%)
St Ann	140	10	135	120	88.9	15	11.1	8 (6.7%)
Region Total	***680***	***95***	***647***	***481***	***74.3***	***166***	***25.7***	***25 (5.2%)***
Western								
Trelawny	240	7	215	212	98.6	5	1.4	20 (9.4%)
St James	220	7	210	205	97.6	5	2.4	16 (7.8%)
Hanover	160	2	154	138	89.6	16	10.4	12 (8.7%)
Westmoreland	160	0	153	153	100.0	0	0.0	13 (8.3%)
Region Total	***780***	***16***	***732***	***708***	***96.7***	***24***	***3.3***	***61 (8.5%)***
Southern								
St Elizabeth	280	21	270	245	90.7	25	9.3	27 (11.0%)
Manchester	280	7	264	222	84.1	42	15.9	24 (10.8%)
Clarendon	220	13	205	203	99.0	2	1.0	14 (6.9%)
Region Total	***780***	***41***	***739***	***670***	***90.7***	***69***	***9.3***	***65 (9.7%)***
National Total	**3420**	**224**	**3246**	**2889**	**89.0%**	**357**	**11.0**	**231 (8.0%)**

3.4. The Recruited Sample

In total, 3,420 dwellings were targeted for the interview. Out of this, 224 were empty and 3,426 dwellings were contacted. Out of the contacted dwellings, 357 refused to participate. Out of the contacted dwellings, 2,889 questionnaires could be completed. Age data from 82 respondents could not be retrieved from damaged questionnaire forms. Thus, data from only 2,807 questionnaires were included in the survey-weighted data analysis used to produce findings documented in this report. (See Figure 3.4.1.)

The sample of 2,889 respondents represent a response rate of 89%, yielding a slightly higher refusal rate than the expected non-response rate of 10%. This sample size, however, was deemed adequate for estimating the national level and parish-level prevalence estimates for hypertension and diabetes with a 10% margin of error and a minimum 80% power.

Figure 3.4.1: Flowchart Showing the Stages Yielding the Sample Size Used for the Study



3.5. Data Management

Data Entry

The data gathered on questionnaires were reviewed by field supervisors and the project and data managers to enable identification and correction of any inaccuracies in the data that may have been reported before being entered into the database. This procedure lessened inconsistencies entering the database. Epi Info 7™ was the software used for data entry. Double entry of data was carried out, and the entries from multiple data entry persons were compared again to eliminate any discrepancy between the multiple sources.

Data Cleaning and Screening

The data cleaning and screening was completed using a step-by-step process; initially, the likely variable values and the values of combinations of variables were verified. Then the recorded values were corrected. Missing values that were available from original records, if any, were inserted. Extensive data validation was carried out to ensure that the data that identified the geographic location of the respondent regarding parish, enumeration district, and dwelling number were correct. Judicial decisions on the missing data were carefully taken. On the recommendation of internal medicine specialists and the endocrinologist on the team of investigators, extreme values for some biomedical measures were excluded from analyses. See Appendix 5. The survey design and all the data were vigorously verified, leading to the exclusion of implausible responses to questionnaire items.

Sample Data – Distribution of Demographic Categories

Age and Sex: Figure 3.5.1 shows that just under 40% of the sample were males. Figure 3.5.2 further shows that the percentage of persons in each ten-year age band in the 15-to-74-year age range was between 15 and 19%, while only 11% and 8% of the sample were in the 65–74 and 75+ age categories, respectively. More males, compared to females were recruited from the 25–34 and 35–44 age group (p=0.043).

Figure 3.5.1: Proportion (%) of Jamaicans of Each Sex Recruited to the Sample, JHLS III, 2017

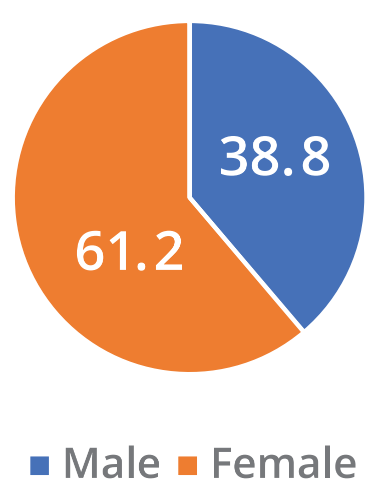
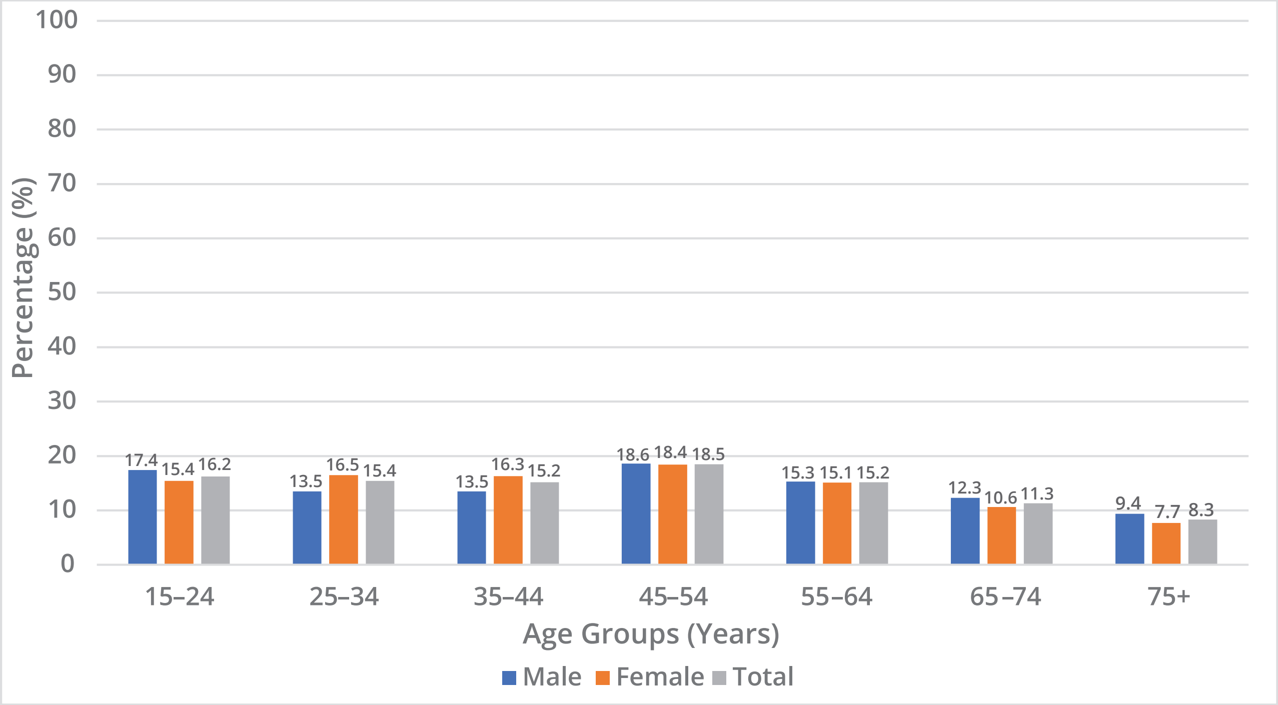


Figure 3.5.2: Sex-specific and Total Population Proportions (%) of Jamaicans in Each Age Group Recruited to the Sample, JHLS III 2017



Parish: In keeping with its population size and the numbers that should have been targeted in this parish, sex-specific and total sample percentages revealed that the parish of St Andrew had the largest number and percentage of recruited participants. Although St Catherine is the parish with the second largest population size,[1] it did not have the second largest proportion of respondents. Also noteworthy is that, although Hanover has the lowest population size, the sample recruited from this parish was the second smallest at 4.8%, with the smallest number of respondents being recruited from St Ann (4.1%) (See Table 3.5.1.). This study aimed to obtain for the relevant indices prevalence estimates that truly represent population sizes within age, sex, parish, and the combinations of these categories. Thus, each study respondent was ascribed, during data analysis, a sampling weight representing the number of persons in the population of Jamaicans aged 15 years and older represented by the respondent. These weights were a function of the inverse of the probability of selection of the respondent and were calibrated using the parish by sex by age distribution for the Jamaican population aged 15 years and older. Consequently, the weighted percentage distributions by age, sex, and parish categories reflected the population distributions as obtained using census or demographic data provided by the Statistical Institute of Jamaica (STATIN).

Table 3.5.1: Sex-specific and Total Sample Percentage Distribution of Jamaicans Aged 15 Years and Older in the Survey Sample, JHLS III 2017

Parish	Males	Females	Total
Kingston	74(6.8)	189(11.0)	263(9.4)
St Andrew	125(11.5)	246(14.3)	371(13.2)
St Thomas	66(6.1)	98(5.7)	164(5.8)
Portland	82(7.5)	122(7.1)	204(7.3)
St Mary	70(6.4)	82(4.8)	152(5.4)
St Ann	57(5.2)	59(3.4)	116(4.1)
Trelawny	76(7.0)	135(7.9)	211(7.5)
St James	73(6.7)	126(7.3)	199(7.1)
Hanover	60(5.5)	75(4.4)	135(4.8)
Westmoreland	52(4.8)	98(5.7)	150(5.3)
St Elizabeth	109(10.0)	132(7.7)	241(8.6)
Manchester	94(8.6)	118(6.9)	212(7.6)
Clarendon	70(6.4)	110(6.4)	180(6.4)
St Catherine	81(7.4)	128(7.5)	209(7.5)
Total	**1089**	**1718**	**2807**

Weighted Distribution of Demographic Categories

The sampling weights, calculated as the inverse of the probability of selecting a dwelling from which a single respondent was selected, were corrected using the probability of refusal within the parish by sex by five-year age bands within the sample. These sampling weights were further calibrated using post-stratification weights, which were the 2013 population sizes within parish by sex by five-year age bands among Jamaicans aged 15 years and older.

When these weights were applied to the estimation of age, sex, and parish percentage distributions, the resulting distribution using the JHLS III study data were similar to the general Jamaican population. Table 3.5.2 shows the distribution of the ten-year age bands as provided by the Statistical Institute of Jamaica for the 2016 population of Jamaicans aged 15 years and older.[2] Table 3.5.2 shows the weighted distribution of the ten-year age bands as estimated using the JHLS III study data. The pattern of the sex-specific and total distributions over the age groups is similar for both sets of data. The approximate 50:50 male to female ratio for the Jamaican population in the 15+ age group in Table 3.5.4 (Males: 49.2%, Females: 50.8%) is also reflected in the weighted population percentages shown in Table 3.5.3 (Males: 48.7%, Females: 51.3%).

Table 3.5.2: Distribution of Jamaican Population Based on the 2016 End of Year Population (Aged 15 Years and Older), STATIN

Age (Years)	Total Counts	Total %	Male Counts	Male %	Female Counts	Female %
15–20	521,149	24.5%	265,168	25.4%	255,981	23.7%
25–34	458,322	21.5%	226,074	21.6%	232,248	21.5%
35–44	353,425	16.6%	167,119	16.0%	186,306	17.2%
45–54	323,211	15.2%	159,476	15.2%	163,734	15.1%
55–64	228,136	10.7%	113,351	10.8%	114,786	10.6%
65–74	138,885	6.5%	69,321	6.6%	69,562	6.4%
75+	104,000	4.9%	45,372	4.3%	58,628	5.4%
Total	**2,127,128**	**100%**	**1,045,881**	**49.2%**	**1,081,245**	**50.8%**

Table 3.5.3: Weighted Percentage Distribution of the Sample of Jamaicans Aged 15 Years and Older by Age Group, JHLS III 2017

Age (Years)	Males	Females	Total
15–24	26.0	24.9	25.5
25–34	21.0	21.0	21.0
35–44	16.9	17.7	17.3
45–54	15.5	14.8	15.2
55–64	10.4	9.7	10.0
65–74	6.3	6.1	6.2
75+	3.9	5.8	4.9
Total	**48.7**	**51.3**	**100.0**

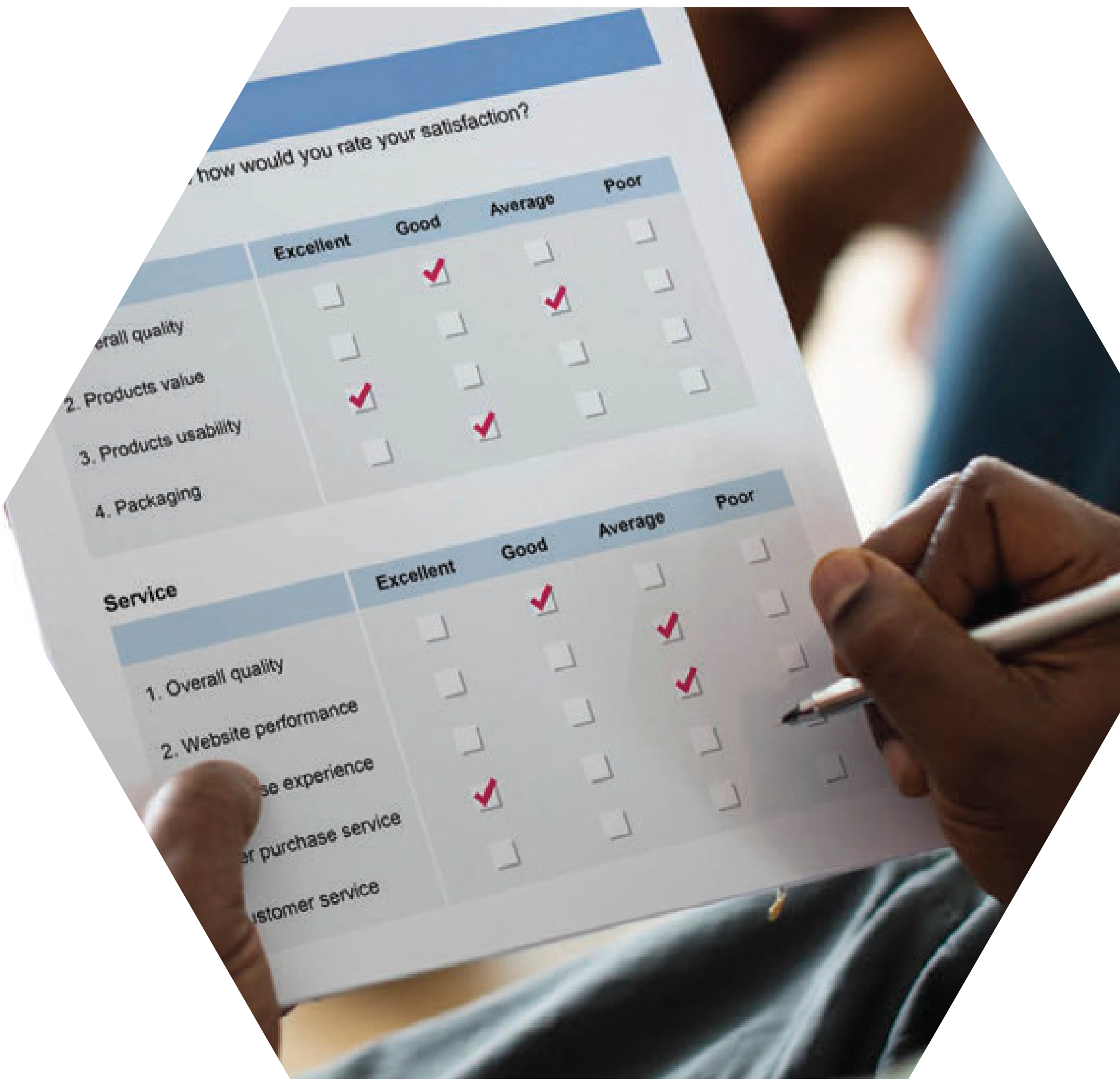
3.6. Conclusion

Efforts at safeguarding the quality of the data yielded weighted age by sex distributions that reflected the actual population distributions. All parameter estimates presented in subsequent chapters of this report will be weighted. The sample is deemed adequate to provide nationally representative estimates of the frequency of health and risk factor outcomes within socio-demographic subgroups.

List of References

1. Statistical Institute of Jamaica. Population and Housing Census 2011 Jamaica: General Report Volume 1. Kingston 10, Jamaica: The Statistical Institute of Jamaica; 2012.
2. Statistical Institute of Jamaica. Demographic Statistics 2017. Kingston, Jamaica: Statistical Institute of Jamaica; 2018. p. 6.

PART 2
Results



4. Socio-demographic Factors

Nadia Bennett • Jovan Wiggan

The literature does give evidence that socio-demographic characteristics of a population will influence the occurrence of disease and risk factors for disease, as well as the distribution of markers of health, such as those described in this report. An understanding of such socio-demographic characteristics will help health care providers and governments improve provision of treatment and public health services. In this chapter, we report on the distribution of age, sex, race, geographic location, and markers of socioeconomic status (occupation, employment status, education, wealth) for Jamaicans aged 15 years and older based on the Jamaica Health and Lifestyle Survey 2016–2017 (JHLS III) data.

4.1. Population Distribution by Age, Sex, and Area of Residence Categories

The weighted age group and sex-specific distributions of the parish populations represent the population distributions as found in Jamaica's national demographic data.[1, 2] Tables 4.1.1 to 4.1.3 show that the parishes Kingston, St Andrew, and St Catherine account for close to 45% of the Jamaican population.

Table 4.1.1: The Weighted Parish Distribution (%) by Ten-year Age Groups among Jamaican Males, JHLS III 2017

		Age (Years)							
Subgroup	**Parish**	**15–24**	**25–34**	**35–44**	**45–54**	**55–64**	**65–74**	**75+**	**15 & older**
MALES	Kingston	3.4	3.7	3.5	3.0	2.8	2.5	2.5	3.3
	St Andrew	22.1	22.6	21.9	21.0	21.0	19.3	21.2	21.7
	St Thomas	3.7	3.3	3.2	3.4	3.8	3.6	5.0	3.5
	Portland	3.2	2.8	3.3	3.2	3.3	3.6	4.4	3.2
	St Mary	4.4	3.7	3.9	4.5	4.3	4.8	6.4	4.3
	St Ann	3.2	6.3	6.0	6.6	6.8	7.0	8.5	5.7
	Trelawny	2.9	2.6	2.7	3.0	2.9	3.4	3.8	2.9
	St James	7.1	6.9	7.0	6.5	6.1	6.2	6.6	6.8
	Hanover	2.6	2.5	2.8	2.6	2.4	2.6	3.3	2.6
	Westmoreland	5.4	5.3	5.3	5.6	5.3	5.3	7.4	5.5
	St Elizabeth	5.6	5.3	5.4	6.0	6.5	6.9	8.2	5.8
	Manchester	7.2	6.9	7.7	6.8	7.3	8.0	10.0	7.3
	Clarendon	9.8	8.5	8.4	8.7	9.3	9.9	12.6	9.2
	St Catherine	19.5	19.6	19.0	18.5	19.5	19.6	19.0	18.5
	Age group Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 4.1.2: The Weighted Parish Distribution (%) by Ten-year Age Groups among Jamaican Females, JHLS III 2017

		Age (Years)							
Subgroup	**Parish**	**15-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65-74**	**75+**	**15 & older**
FEMALES	Kingston	3.2	3.2	3.8	2.8	2.5	2.5	2.5	3.1
	St Andrew	22.4	23.3	22.5	27.8	22.0	20.0	21.0	23.1
	St Thomas	3.5	3.3	3.2	3.1	3.8	3.8	3.9	3.4
	Portland	3.0	2.6	3.0	2.9	3.2	3.2	3.5	3.0
	St Mary	4.2	3.8	3.8	3.8	4.5	4.8	4.8	4.1
	St Ann	6.3	6.3	5.8	5.5	6.5	6.5	6.6	6.1
	Trelawny	2.7	2.6	2.4	2.4	2.8	3.1	3.0	2.6
	St James	7.2	7.1	7.3	6.3	6.1	6.2	5.6	6.8
	Hanover	2.5	2.2	2.6	2.5	1.2	2.4	2.4	2.3
	Westmoreland	5.1	5.0	4.5	4.5	4.8	5.3	5.9	4.9
	St Elizabeth	5.0	5.1	4.8	4.8	6.3	6.7	7.2	5.3
	Manchester	6.7	6.5	7.0	6.8	7.1	8.5	8.6	7.0
	Clarendon	9.0	8.3	8.3	8.2	8.3	8.5	9.3	8.6
	St Catherine	19	20.8	20.74	18.6	19.0	20.8	20.7	18.6
	Age group Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 4.1.3: The Weighted Parish Distribution (%) by Ten-year Age Groups among Jamaican Males and Females, JHLS III 2017

		Age (Years)							
Subgroup	**Parish**	**15-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65-74**	**75+**	**15 & older**
MALES AND FEMALES	Kingston	3.3	3.4	3.7	2.9	2.6	2.5	2.5	3.2
	St Andrew	22.2	22.9	22.0	24.4	21.5	19.8	21.2	22.4
	St Thomas	3.6	3.3	3.2	3.3	3.8	3.7	4.3	3.5
	Portland	3.1	2.7	3.2	3.1	3.3	3.4	3.9	3.1
	St Mary	4.3	3.8	3.9	4.2	4.4	4.8	5.5	4.2
	St Ann	4.8	6.3	5.9	6.0	6.6	6.7	7.3	5.9
	Trelawny	2.8	2.6	2.5	2.7	2.8	3.2	3.3	2.8
	St James	7.2	7.0	7.2	6.4	6.1	6.2	6.0	6.8
	Hanover	2.6	2.3	2.7	2.6	1.8	2.5	2.8	2.5
	Westmoreland	5.2	5.2	4.9	5.2	5.1	5.3	6.5	5.2
	St Elizabeth	5.3	5.2	5.1	5.4	6.4	6.8	7.6	5.6
	Manchester	6.9	6.7	7.3	6.8	7.2	8.2	9.2	7.2
	Clarendon	9.4	8.4	8.4	8.5	8.8	9.2	10.6	8.9
	St Catherine	19.3	19.4	19.9	18.6	19.3	19.4	19.9	18.6
	Age group Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 4.1.4: Weighted Percentage Distribution (%) of Age by Sex and Area of Residence, JHLS III 2017

Age	Male (%)		Female (%)		Males and Females (%)	
	Urban***	Rural	Urban	Rural	Urban***	Rural
15–24	29.3	22.6	24.8	25.1	26.9	23.8
25–34	23.7	18.3	21.6	20.3	22.5	19.3
35–44	16.0	17.7	19.4	15.8	17.8	16.8
45–54	15.2	15.8	15.2	14.6	15.2	15.1
55–64	7.8	13.0	9.0	10.5	8.5	11.8
65–74	4.9	7.7	5.2	7.1	5.1	7.4
75+	3.1	4.8	4.9	6.8	4.0	5.8

*p<0.05, **p<0.01, ***p<0.001

4.2. Demographic Characteristics

Table 4.2.1 shows the proportion of males, females, and both sexes combined regarding race, geographic location, religious affiliation, attendance at a religious service, and union status. There was a statistically significant sex difference in the distributions for the religious affiliation ($p<0.001$) and religious service attendance ($p<0.001$) categories, but there was no evidence of an association between sex and the other demographic variables. The Jamaican population of persons aged 15 years and older is 95.2% Black, with half of this population being urban dwellers (53.1%) or single (50.9%) and almost a third reporting a married or common-law union status (31.1%). Most Jamaicans in this age group had a religious affiliation. The majority self-reported as Christians (80.8%) or attending a religious service at least once in the preceding month (72.2%). More than a quarter of males (26.7%) compared with less than 10% of females professed having no religion, while 41.4% of women and over 20.6% of males reported attending a religious service three or more times within the past 30 days.

Table 4.2.1: Weighted Percentage (%) of Demographic Indices by Sex, JHLS III 2017

Demographic Index	Male	Female	Total
Race			
Black	95.1	95.4	95.2
Other	4.9	4.6	4.8
Geographic Location			
Urban	51.0	55.1	53.1
Rural	49.0	44.9	46.9
Religious Affiliation* **			
Christian	70.2	90.8	80.8
Other religion	3.2	0.11	1.6
No religion	26.7	9.1	17.6

Table 4.2.1: *(contd)* **Weighted Percentage (%) of Demographic Indices by Sex, JHLS III 2017**

Demographic Index	Male	Female	Total
Church Attendance in Past Month* **			
Never	36.1	22.0	28.8
1–2 Times	43.3	36.7	39.9
3–4 Times	14.4	32.4	23.7
>4 Times	6.2	9.0	7.6
Union Status			
Single	52.0	49.9	50.9
Married/common law	29.9	32.2	31.1
Divorced/separated	2.5	3.3	2.9
Visiting	15.6	14.6	15.1

*p<0.05, **p<0.01, ***p<0.001

4.3. Socioeconomic Indices

Educational Attainment

More women than men achieved higher levels of education. The median number of school years was 13 for women and 12 for men (p<0.001) while 21.4% of women attained tertiary-level education compared with 11.7% of men (p<0.001) and 20.5% of women attained professional certification compared with 10.9% of men (p<0.001%) (Table 4.3.1).

Table 4.3.1: Educational Attainment of Jamaicans 15 years and Older by, JHLS III 2017

Demographic Index	Males (%)	Females (%)	Total (%)
Highest Educational Level* **			
None/basic	1.1	0.6	0.8
Primary/junior high	23.7	19.4	21.5
Secondary	62.2	55.9	59.0
Tertiary	11.7	21.4	16.7
Other	1.2	2.8	2.0
Highest Examination Passed†* **			
No examination/primary level	42.6	34.5	38.5
Secondary education††	15.8	15.1	15.4
Tertiary education	20.6	20.1	20.3
Vocational activities	6.7	6.1	6.4
Professional certification	10.9	20.5	15.8
Other	3.4	3.6	3.5
Median Number of School Years* **	**12**	**13**	**13**

†Highest Examination Passed giving entry to the levels of education or statuses shown

††Secondary education: GSAT/common entrance/grade 9 achievement; Tertiary education: O'level/CXC gen/CSEC/A-level/CAPE.

*p<0.05, **p<0.01, ***p<0.001

Employment

Table 4.3.2 shows the distributions of employment status in the population of Jamaicans aged 15 years and older. Overall, 56.3% of Jamaicans aged 15 years and older were classified as employed, with significantly more men (67.3%) than women (45.9%) falling in this category ($p<0.001$). More women (33.1%) than men (17.2%) were classified as unemployed). Some 42.6% of these Jamaicans were in full-time employment. The distributions of the employment status categories were also not the same for the males and the females ($p<0.001$). Higher percentages of the males were in each of the categories of the employed, while higher percentages of the females were in each of the categories of the unemployed. One quarter (25.4%) of Jamaicans reported being unemployed, and, of that percentage, 11% were unemployed and not seeking employment. Approximately one in ten Jamaicans in this age group were students, and approximately 8% were retired.

One in five persons were self-employed in their primary occupation. More men than women reported being self-employed in their primary and/or secondary occupation.

Significantly more rural residents were classified as unemployed (Rural: 28.0% vs Urban: 23.0%) or retired (Rural: 8.3% vs Urban: 7.4%), with the converse being true for the employed and student categories. There were disparities in the rural -urban distribution of employment status categories. The larger percentages of residents who were in part time (Rural: 13.9% vs Urban: 9.2%), seasonal employment (Rural: 2.7% vs Urban: 2.0%), or in the category of persons unemployed and not seeking employment (Rural: 13.7% vs Urban: 8.5%) were rural residents, with the converse being true for the full- time employment (Rural: 39.0% vs Urban: 45.7%). Also noteworthy is that larger percentages of rural residents reported self-employment in their primary occupation (Rural: 24.4% vs Urban: 16.6%) or in both their primary and secondary occupations (Rural: 5.4% vs Urban: 3.1%). (See Table 4.3.2.)

Table 4.3.2: Employment Status of Jamaicans 15 Years and Older by Sex and Area of Residence, JHLSIII 2017

	Sex		Area of Residence		
Employment Status	**M (%)**	**F (%)**	**R (%)**	**U (%)**	**Total (%)**
Main Groups					
Total Employed	***67.4	45.9	*55.6	57.0	56.4
Total Unemployed	17.2	33.1	28.0	23.0	25.4
Student	9.1	11.8	8.1	12.6	10.5
Retired	6.4	9.2	8.3	7.4	7.8
Employment Status					
Full-time employment	***49.3	36.2	***39.0	45.7	42.6
Part-time employment	14.3	8.7	13.9	9.2	11.4
Seasonal employment	3.8	1.0	2.7	2.0	2.4
Unemployed – seeking	10.1	18.5	14.3	14.6	14.4
Unemployed – not seeking	7.1	14.6	13.7	8.5	10.9
Self-employment (S-E) categories					
S-E in primary occupation	***24.4	16.2	***24.4	16.6	20.2
S-E in secondary occupation	6.3	1.4	3.4	4.1	3.8
S-E both occupations	6.4	2.1	5.4	3.1	4.2
Unemployed/Student	26.3	44.9	36.1	35.6	35.8
Retired/Not self-employed	36.6	35.4	30.7	40.7	36.0

*p<0.05, **p<0.01, ***p<0.001; M= Male, F=Female, R= Rural, U=Urban

Respondents to the survey were also classified based on the primary occupation as reported at the time of the interview. The primary occupations reported were further classified using codes obtained from the Jamaica Standard Occupational Classification (JSOC) 2015.[3] Table 4.3.3 shows the classification used in this report for primary occupations relative to the classification obtained from JSOC 2015.

Table 4.3.3: Classification of Primary Occupations Utilized in This Report Based on Jamaica Standard Occupational Classification 2015 (JSOC 2015) Categories

JHLS III Technical Report Categories	JSOC 2015 classification
Professionals and Managers	Managers
	Professionals
Highly Skilled	Armed Forces Occupations
	Technicians and Associate Professionals
Skilled	Clerical Support Workers
	Service and Sales Workers
	Skilled Agricultural, Forestry and Fish
	Craft, and Related Trade Workers
	Plant and Machine Operators and Assemblers
Unskilled	Elementary Occupations

Table 4.3.4 shows that some 64% of Jamaicans with a primary occupation carry out skilled labour. The percentage distributions of the primary occupation categories for Jamaicans aged 15 years and older differed significantly with age ($p<0.001$) and sex ($p<0.01$). More women than men were classified as professionals and managers, while a slightly larger percentage of males were classified as highly skilled or unskilled. The 55–64-year-old age group had the highest percentage of persons who were professionals and managers and the lowest percentage of persons carrying out skilled labour, compared with other age groups. Just under 25% of persons aged 75 years and older were engaged in unskilled labour.

Table 4.3.4: Sex and Age-specific % Distribution of Primary Occupation Categories among Jamaicans Aged 15 Years and Older, JHLS III 2017

Population Subgroups	Professionals and Managers	Highly Skilled	Skilled	Unskilled
Sex**				
Females	12.9	10.4	64.0	12.7
Males	8.0	12.9	64.3	14.8
Age***				
15–24	4.0	17.5	68.9	9.5
25–34	9.3	16.1	61.9	12.7
35–44	14.9	13.7	60.3	11.2
45–54	12.2	3.6	67.6	16.5
55–64	18.1	4.4	59.1	18.4
65–74	8.5	6.7	67.7	17.2
75+	3.8	7.5	63.8	24.9
Total	**10.4**	**11.7**	**64.2**	**13.8**

*p<0.05, **p<0.01, ***p<0.001

Social Amenities, Household Possessions, and Income

Proportion of participants with various social amenities, household possessions, and income are shown in Table 4.3.5. Fifty-three per cent of the population have piped water inside the house as the main source of drinking water. Unshared indoor toilet facilities (water closets) were the most common method of human waste disposal (67.3%). There was a statistically significant sex difference in the percentages within the toilet facility categories (p<0.01). The statistical significance was driven by more men reporting using an unshared pit latrine as a means of disposal of human waste (males, 13.5%; females, 7.9%) and more women reporting use of the unshared water closet (males, 64.0%; females, 70.5%).

Table 4.3.5: Per cent (%) Distribution of People Aged 15 Years and Older with (Access to) Selected Social Amenities by Sex, JHLS III 2017

Social Amenity	Males (%)	Females (%)	Total (%)
Drinking Water Source			
River/spring	3.8	2.9	3.3
Tank/drum	11.6	10.1	10.8
Standpipe	8.1	6.7	7.4
Pipe outside house	15.4	15.1	15.3
Pipe inside house	51.0	55.4	53.2
Bottled water	8.9	8.6	8.8
Purchased/Trucked water	1.1	1.2	1.2
Toilet Facility**			
None	0.6	0.3	0.5
Hole in the earth	0.3	0.2	0.2
Shared-pit latrine	5.4	4.6	5.0
Unshared-pit latrine	13.5	7.9	10.6
Shared water closet	16.3	16.6	16.4
Unshared water closet	64.0	70.5	67.3
Number of Household Possessions[1]**			
Tertile 1 (0–5)	32.9	26.4	29.5
Tertile 2 (6–9)	35.9	36.1	36.0
Tertile 3 (10–20)	31.2	37.5	34.5
Weekly Household Income (JA $)			
<6200	15	16.3	15.7
6200–23,000	36.4	38.9	37.7
23,001–60,000	9.1	9.3	9.2
≥60,001	3.7	3.0	3.3
Do not know	21.0	20.2	20.6
No response	14.9	12.3	13.6
Crowding Index (Mean, 95 CI)***	1.15 (1.09–1.21)	1.44 (1.37–1.51)	1.29 (1.24–1.35)
Crowded Dwelling[2]***	31.2	51.8	41.8

[1]Number excludes items owned by more than 90% of the sample (gas stove [owned by 91.3%], telephone [owned by 91.1%]).

[2]Crowded Dwelling – More than one person per habitable room in dwelling (or section of dwelling) used by the household.

*p<0.05, **p<0.01, ***p<0.001

Number of household possessions available to the respondent was used as a proxy for socioeconomic status (SES). Persons were asked of the number of household items of discriminatory value, and then these items were placed in tertiles based on the number of items in the household. Approximately 70% (70.5%) of Jamaicans aged 15 years and older reported having six or more of these items in their household, with more females (37.5% vs 32.9%) reporting access to 10–20 items and more males (32.9% vs 26.4%) reporting access to less than six items ($p<0.01$).

There was a high non-response (34.2%) to the question on income, and little difference in the distribution of the income categories between sexes. Just under 16% of Jamaicans aged 15 years and older (15.7%) were classified as earning less than the minimum wage of J$6,200/week and 37.7% reporting income between J$6,200–J$23,000/week.

In keeping with the definition provided in the WHO Housing and Health Guidelines,[4] this report regards individuals as belonging to a crowded household if their household's crowding index is greater than one (i.e., more than one person per habitable room) and severe crowding if the index is 1.5 or more persons per habitable room. Households to which Jamaicans aged 15 years and older belong, on average, contained 1.3 persons per habitable room, suggesting that many Jamaicans live in crowded households. Significantly more females than males reported living in crowded households (males, 31.2%; females, 51.8%; Total, 41.8%; $p < 0.001$).

Table 4.3.6 shows the distribution of social amenities, household possessions, and income categories in rural-urban residence. The distribution of all indices shown in Table 4.3.A, except for the measures of crowding, differed significantly ($p<0.01$) with area of residence. Some 64.8% of urban households had water piped inside the house as compared to 40.1% of rural households whose rural residents obtained water from open sources outside the home, such as a river or spring, tank or drum, or a standpipe. However, more rural households reported having shared (Rural: 7.2%; Urban: 3.1%) or unshared (Rural: 18.7%; Urban: 3.4%) pit latrines, while more urban residents reported having shared (Rural: 7.3%; Urban: 24.5%) or unshared (Rural: 66.2%; Urban: 68.3%) water closets.

Table 4.3.6: Per cent (%) Distribution of People 15 Years and Older with (Access to) Selected Social Amenities by Geographical Location, JHLS III 2017

Social Amenity	Rural	Urban	Total
Drinking Water Source* **			
River/spring	6.1	0.9	3.3
Tank/drum	19.6	3.0	10.8
Standpipe	9.9	5.2	7.3
Pipe outside house	13.8	16.6	15.3
Pipe inside house	40.1	64.8	53.2
Bottled water	8.2	9.3	8.8
Purchased/Trucked water	2.3	0.2	1.2
Toilet Facility* **			
None	0.4	0.5	0.5
Hole in the earth	0.2	0.2	0.2
Shared-pit latrine	7.2	3.1	5
Unshared-pit latrine	18.7	3.4	10.6
Shared Water closet	7.3	24.5	16.4
Unshared Water closet	66.2	68.3	67.3

Table 4.3.6 *(contd)*: **Per cent (%) Distribution of People 15 Years and older with (Access to) Selected Social Amenities, by Geographical Location, JHLS III 2017**

Social Amenity	Rural	Urban	Total
Number of Household Possessions[1]* **			
Tertile 1 (0–5)	36.4	23.4	29.5
Tertile 2 (6–9)	36.0	36.0	36.0
Tertile 3 (10–20)	27.6	40.7	34.5
Weekly Household Income (J$)**			
<6,200	18.6	13.1	15.7
6,200–23,000	36.2	38.9	37.7
23,001–60,000	8.4	9.8	9.2
≥60,001	1.2	5.2	3.3
Do not know	22.7	18.7	20.6
No response	12.8	14.2	13.6
Crowding Index (Mean, 95 CI)	1.28 (1.2–1.3)	1.32 (1.2–1.4)	1.30 (1.2–1.4)
Crowded Household[1]	42.4	41.2	41.8

[1]Number excludes items owned by more than 90% of the sample [gas stove (owned by 91.3%), telephone (owned by 91.1%)].

*p<0.05, **p<0.01, ***p<0.001

The data also gave evidence of higher socioeconomic status among urban residents, with 40.7% of urban residents versus 27.6% of rural residents having access to 10–20 household possessions. A greater percentage of rural residents had access to zero to five items only (Rural: 36.4%; Urban: 23.4%). There was also a larger percentage of rural residents in households with weekly income less than J$6,200 (Rural: 18.6%; Urban: 13.1%), while larger percentages of urban residents were in the remaining income categories.

Table 4.3.7 gives evidence that sex-specific and total population distributions of socioeconomic indices differed significantly with the highest education level categories (p<0.001). More than 60% of Jamaicans aged 15 years and older with greater than secondary-level education were persons with indoor toilet facilities (Males: 98.9%; Females: 95.9%; Total: 97.0%); access to 10–20 household possessions (Males: 60.7%; Females: 74.0%; Total: 69.4%); and piped or bottled water inside the house (Males: 86.9%; Females: 88.6%; Total: 88.0%).

There were also lower percentages of persons living in crowded households among those with secondary or higher level of education (Males: 22.9%; Females: 35.4%; Total: 30.6%) compared to persons with secondary-level education only. These data suggest that the highest levels of education attained may be a useful marker of socioeconomic status among Jamaicans aged 15 years and older.

Table 4.3.7: Percentages (%) with Indices of Socioeconomic Status within Sex-specific and Total Population Education-Level Categories, JHLS III 2017

Social Amenities	Sex and Education-Level[3] Categories											
	Males				Females				Males and Females			
	Prim.	Sec.	>Sec	Other	Prim.	Sec.	>Sec	Other	Prim.	Sec.	>Sec	Other
Crowding Index ***				<0.001				<0.001				<0.001
>1	19.3	37.4	22.9	16.0	47.5	60.9	35.4	40.0	31.8	48.5	30.6	32.5
Indoor Toilet Facilities ***				<0.001				<0.001				<0.001
No water closet	33.3	17.7	1.1	21.4	22.0	13.1	4.1	12.9	28.1	15.5	3.1	15.1
Water closet	66.7	82.3	98.9	78.6	78.0	86.9	95.9	87.5	71.9	84.5	97.0	84.9
Number of Household Possessions[1]***				<0.001				<0.001				<0.001
0–5	57.1	28.0	7.9	22.6	53.5	24.6	5.4	35.5	55.4	26.3	6.2	31.7
6–9	31.3	38.9	31.5	19.5	32.2	43.0	20.7	44.0	31.7	41.0	24.4	36.8
10–20	11.6	33.1	60.7	57.9	14.3	32.4	74.0	20.5	12.9	32.7	69.4	31.5
Sources of Water[2]***				<0.001				<0.001				<0.001
Open sources	27.6	14.8	4.3	61.9	21.8	13.7	6.1	27.9	24.9	14.3	5.5	37.6
Piped outside House	29.8	24.1	8.8	16.9	32.8	24.1	5.3	28.1	31.2	24.1	6.5	24.9
Piped inside House/Bottled	42.6	61.1	86.9	21.1	45.4	62.1	88.6	44.0	43.9	61.6	88.0	37.5

[1]Number excludes item owned by more than 90% of the sample (gas stove [owned by 91.3%], telephone [owned by 91.1%]).

[2]Open sources: River/Spring, Tank/Drum, Purchased/Trucked water; Piped outside House: Standpipe, Pipe outside house; Piped inside House/Bottled: Pipe inside house, Bottled water.

[3]Prim. = Primary, Sec.=Secondary; >Sec= Post-secondary education; Other= Education level not classified.

4.4. Summary

The weighted parish by age by sex percentage distributions of Jamaicans aged 15 years and older reflected the population distributions of the respective parishes. The largest percentage of persons of the Jamaican population were residents in St Andrew and St Catherine, and the lowest percentages were in the parishes of Kingston and Hanover, which are the two parishes that occupy the smallest geographic areas. With nearly 60% of Jamaicans attaining secondary or higher level of education, education campaign messages aimed at improving health and environment in Jamaica will need to be pitched to capture the attention of the 40% or more of Jamaicans aged 15 years and older who have not attained secondary level education. These data also gave evidence that highest level of education attained may be a useful marker of socioeconomic status among Jamaicans aged 15 years and older as there was a statistically significant positive association between higher education levels and higher SES as measured by other indices such as crowding index and quality of toilet facilities. There was evidence of the need to increase the availability of access to indoor water supplies and indoor toilet facilities in rural households.

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5. Non-communicable Diseases

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In this chapter, we present descriptive statistics for anthropometric measurements and biomarkers used in defining the NCDs. The chapter also provides prevalence estimates for obesity, cardiovascular diseases and their risk factors, sickle cell disease, asthma, anaemia, and selected mental health indices.

5.1. Biomedical and Anthropometric Measures

Table 5.1.1 shows the mean values and 95% confidence intervals (CI) for selected non-communicable disease biomarkers. Mean values for body mass index (BMI), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were generally above the normal range, suggesting that a large proportion of the population would be classified as high-risk. On average, women had a higher mean serum cholesterol, plasma glucose, waist circumference (WC) and BMI but lower SBP than men. There was no significant sex difference for mean DBP and waist-to-hip ratio (WHR).

Table 5.1.1: Survey Weighted Mean Values and 95% Confidence Intervals of Non-communicable Disease Biomarkers for Jamaica Jamaicans 15 Years and Older Stratified by Sex, JHLS III 2017

Biomarker	N	Male Mean [95% CI] *n* = 1089	Female Mean [95% CI] *n* =1719	Total Mean [95% CI] *n* =2808
Fasting Total Cholesterol (*mmol/l*) ***	1937	4.25 [4.17, 4.33]	4.45 [4.3, 4.5]	4.31 [4.25, 4.36]
Fasting Glucose (*mmol/l*) **	2023	5.53 [5.43, 5.63]	5.78 [5.63, 5.92]	5.65 [5.56, 5.75]
Glycosylated Haemoglobin (%) **	1920	5.86 [5.77, 5.96]	6.04 [5.97, 6.12]	5.96 [5.90, 6.01]
Systolic Blood Pressure (mmHg) ***	2593	128.8 [127.8, 129.8]	124.4 [123.3, 125.4]	126.5 [125.7, 127.2]
Diastolic Blood Pressure (mmHg)	2593	81.1 [80.4, 81.8]	81.1 [80.4, 81.9]	81.1 [80.6, 81.6]
Waist Circumference (cm)***	2515	81.4 [80.3, 82.5]	88.2 [87.3, 89.2]	84.9 [84.3, 85.6]
Waist-to-Hip Ratio	2501	0.853 [0.847, 0.859]	0.847 [0.841, 0.854]	0.850 [0.846, 0.854]
Body Mass Index (kg/m²) ***	2454	24.8 [24.3, 25.4]	29.3 [28.8, 29.8]	27.2 [26.8, 27.5]

*p < 0.05; **p < 0.01; ***p < 0.0001.

The mean value of all biomarkers increased with age and were highest in those 75 years and older. These results are shown in Table 5.1.2. The age-related increase was seen for both males and females. For glucose and cholesterol, the means increased from young adulthood to middle age, but there were smaller differences from ages 45 to 75 years and older. The SBP showed a monotonic increase across the age groups for both sexes from 115.3 mmHg in the youngest age group to 144.4 in the oldest. By comparison, DBP, WC, and BMI show a curvilinear relationship with age, with the peak value occurring in one or more of the age-groups within the 35–64 years age range.

Table 5.1.2: Means of Specified Biomedical Measures by Sex and Ten-Year Age Bands, JHLS III 2017

Biomedical Marker	Age Bands (years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Cholesterol (mmol/l)							
Male	3.7	4.1	4.4	4.7	4.6	4.4	4.5
Female	4.0	4.2	4.5	4.6	5.0	4.9	4.9
Total	**3.8**	**4.2**	**4.5**	**4.7**	**4.8**	**4.6**	**4.8**
Fasting Glucose (mmol/l)							
Male	5.2	5.4	5.7	5.8	5.6	5.9	5.9
Female	5.2	5.3	5.8	6.2	6.2	7.1	6.8
Total	**5.2**	**5.4**	**5.7**	**6.0**	**5.9**	**6.5**	**6.4**
Glycosylated Haemoglobin (%)							
Male	5.8	5.7	5.8	5.8	6.2	6.4	6.0
Female	5.7	5.8	5.9	6.2	6.8	6.9	6.7
Total	**5.7**	**5.7**	**5.8**	**6.0**	**6.5**	**6.6**	**6.4**
Systolic Blood Pressure (mmHg)							
Male	119.6	124.4	128.7	133.4	141.0	141.2	141.5
Female	110.9	116.5	123.0	131.4	141.4	145.5	146.2
Total	**115.3**	**120.2**	**125.7**	**132.4**	**141.2**	**143.4**	**144.4**
Diastolic Blood Pressure (mmHg)							
Male	73.2	79.2	83.0	87.1	89.0	86.3	81.6
Female	72.8	78.8	83.4	87.5	89.7	86.4	82.1
Total	**73.0**	**79.0**	**83.2**	**87.3**	**89.3**	**86.4**	**81.9**
Waist Circumference							
Male	74.8	81.3	84.9	86.5	82.6	83.2	83.7
Female	75.6	88.4	94.2	95.3	94.5	91.4	91.3
Total	**75.2**	**85.1**	**89.8**	**90.9**	**88.5**	**87.4**	**88.3**
Waist Hip Ratio							
Male	0.82	0.84	0.86	0.87	0.88	0.89	0.90
Female	0.79	0.84	0.86	0.88	0.89	0.90	0.91
Total	**0.80**	**0.84**	**0.86**	**0.88**	**0.88**	**0.90**	**0.91**
Body Mass Index (kg/m^2)							
Male	23.2	24.8	25.8	26.9	24.9	23.9	24.5
Female	24.9	29.7	31.7	31.4	32.6	31.6	26.6
Total	**24.0**	**27.4**	**28.9**	**29.1**	**28.8**	**27.8**	**25.7**

Age group was associated with all variables; $p < 0.001$ for all except BMI among males, where p was <0.01.

Table 5.1.3 shows mean values for the biomarkers by urban-rural residence. Mean cholesterol was significantly higher among rural residents compared to their urban counterparts (4.4 vs. 4.3 mmol/L), overall, and among rural versus urba women (4.5 vs. 4.3 mmol/L). Mean fasting glucose was not different between urban and rural residents, but mean glycosylated haemoglobin (HbA1c) was higher among urban males (6.0% vs. 5.8%). There were no significant differences in SBP or DBP by urban/rural residence, either overall or by sex. Urban-rural differences in waist circumference (U: 83.0 vs. R: 79.8 cm) and waist-to hip ratio (0.86 vs. 0.84) were significant ($p<0.01$) in men, and BMI difference significant ($p<0.05$) in women (29.8 vs. 28.7 kg/m^2).

Table 5.1.3: Sex-specific Rural-urban Mean Values for Biomarkers in Jamaicans, JHLS III 2017

	Male		Female		Total	
Biomedical Results	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**
Cholesterol (mmol/l)	4.20	4.30	4.32**	4.51	4.26*	4.40
Fasting Glucose (mmol/l)	5.53	5.54	5.71	5.86	5.62	5.69
Glycosylated Hb (%)	5.96*	5.78	6.02	6.06	5.99	5.92
Systolic blood pressure (mmHg)	127.9	129.6	123.8	125.0	125.7	127.3
Diastolic blood pressure (mmHg)	81.1	81.1	81.1	81.1	81.1	81.2
Waist Circumference (cm)	83.0**	79.8	88.0	88.5	85.7*	84.0
Waist-to-Hip Ratio	0.86**	0.84	0.85	0.85	0.85	0.85
Body Mass Index (kg/m^2)	25.2	24.4	29.8*	28.7	27.7**	26.6

*p < 0.05; **p < 0.01; ***p < 0.0001.

Tables 5.1.4 and 5.1.5 show the distribution of mean values for biomedical variables across socioeconomic status (SES) categories. The SES variables analysed were number of household possessions (in tertiles) and educational attainment. When number of household possessions was used as the SES variable, statistically significant differences were seen for cholesterol, SBP, DBP, WC, and BMI. For cholesterol, SBP, and DBP, there was an inverse relationship with higher SES being associated with lower values; however, for BMI and WC, higher SES was associated with higher values. When educational attainment was used as the measure of SES, there were statistically significant associations between education and all biomedical variables studied. Higher education (secondary or post-secondary) was associated with lower mean values for all the biomarkers, except for BMI.

Table 5.1.4: Mean Values for Biomarkers among Jamaicans Aged 15 Years and Older by Socioeconomic Status Measured by Household (HH) Possessions, JHLS III 2017

Biomedical Marker	Socioeconomic Status (HH Possessions)		
	Low (0–5 Items)	**Middle (6–9 Items)**	**High (10–20 Items)**
Cholesterol (mmol/l) #	4.43	4.25*	4.33
Fasting Blood Glucose	5.76	5.57	5.66
Glycosylated Haemoglobin	6.03	5.91	5.95
Systolic Blood Pressure (mmHg)###	131.2	125.1***	124.0***
Diastolic Blood Pressure (mmHg)#	82.6	80.4**	80.6*
Waist Circumference (cm)#	83.5	84.9	86.1*
Waist-to-Hip Ratio	0.86	0.85	0.85
Body mass index (kg/m^2)###	26.1	27.8***	27.3**

P value for difference from reference category (Low): *p < 0.05; **p < 0.01; ***p < 0.001.
P value for overall association between variable and possessions categories): #p < 0.05; ##p < 0.01; ###p < 0.001.

Table 5.1.5: Mean Biomedical Values of Jamaican Aged 15 Years and Older by Socioeconomic Status Measured as Educational Attainment, JHLS III 2017

Biomedical Marker	Socioeconomic Status (Highest Education Level)		
	Primary or Lower	Secondary	Post-secondary
Cholesterol (mmol/l) ###	4.62	4.21***	4.30***
Fasting Blood Glucose ###	6.20	5.48***	5.40***
Glycosylated Haemoglobin ###	6.16	5.89***	5.84***
Systolic Blood Pressure (mmHg) ###	137.1	123.3***	122.7***
Diastolic Blood Pressure (mmHg) ###	84.9	79.9***	80.1***
Waist Circumference (cm) ##	86.8	84.0**	86.2
Waist Hip Ratio ###	0.88	0.84***	0.84***
Body mass index (kg/m^2) #	27.2	26.7	28.5

P value for difference from reference category (Primary or Lower): *p < 0.05; **p < 0.01; ***p < 0.001.

P value for overall association between variable and educational attainment categories): #p < 0.05; ##p < 0.01; ###p < 0.001.

We also explored the relationship between the biomarkers and obesity measured by the World Health Organization (WHO) BMI categories. These results are shown in Table 5.1.6. In general, higher BMI was associated with higher mean values for all the biomarkers studied. For example, persons with normal BMI had mean SBP of 123.2 mmHg, while those in the obese category had mean SBP of 130.6 mm Hg. Persons with normal BMI had mean DBP of 78.0 mmHg, while mean DBP was 84.8 mmHg among those in the obese category.

Table 5.1.6: Means for Biomedical Markers for Jamaicans Aged 15 Years and Older by WHO BMI Categories, JHLS III 2017

Biomedical Marker	BMI Categories			
	Underweight (<18.5 kg/m^2)	Normal (18.5–24.99 kg/m^2)	Pre-obesity (25.0–29.9 kg/m^2)	Obese (≥ 30 kg/m^2)
Cholesterol (mmol/l) ###	4.04	4.15	4.40***	4.60***
Fasting Blood Glucose (mmol/l) ###	5.43	5.39	5.67**	6.07***
Glycosylated Haemoglobin ###	5.73	5.83	5.92	6.22***
Systolic Blood Pressure ###	119.0**	123.2	128.4***	130.6***
Diastolic Blood Pressure ###	77.1	78.0	82.5***	84.8***

P value for difference from reference category (Normal): *p < 0.05; **p < 0.01; ***p < 0.001.

P value for overall association between variable and BMI categories): #p < 0.05; ##p < 0.01; ###p < 0.001.

The relationship between mean biomedical characteristics and self-reported physical activity (PA) is shown in Table 5.1.7. At the 10% or lower level of statistical significance, glycosylated haemoglobin (P<0.1), waist circumference (p<0.001), waist to hip ratio (p<0.05), and BMI (p<0.001) were the biomedical markers associated with self-reported PA. Persons in the high PA category had significantly lower mean glycosylated haemoglobin (P<0.05), waist circumference (p<0.001), waist to hip ratio (p<0.01), and BMI (p<0.001) compared with persons classified at the low PA level. The other biomarkers shown in Table 5.1.7 were not associated with PA Level and, thus, their mean values for persons at the moderate and high PA levels were not significantly different from the mean values for person with low PA.

Table 5.1.7: Mean Biomedical Values for Jamaicans Aged 15 Years and Older within Given Physical Activity Categories, JHLS III 2017

Biomedical Marker	Low PAL	Moderate	High
Cholesterol (mmol/l)	4.27	4.38	4.35
Fasting Blood Glucose	5.71	5.70	5.58
Glycosylated Haemoglobin@	5.99	5.99	5.89*
Systolic Blood Pressure (mmHg)	126.7	125.2	127.1
Diastolic Blood Pressure (mmHg)	81.5	79.8	81.5
Waist Circumference (cm)###	86.7	85.0	83.0***
Waist-to-Hip Ratio#	0.86	0.85	0.84**
Body mass index (kg/m²) ###	28.0	27.3	26.2***

P value for difference from reference category (Normal):@p<0.1; *p < 0.05; **p < 0.01; ***p < 0.001.
P value for overall association between variable and possession): #p < 0.05; ##p < 0.01; ###p < 0.001.

Table 5.1.8 compares mean biomedical characteristics for persons with and without hypertension, diabetes, and hypercholesterolemia. Mean values were higher among those with the given conditions compared to those without for all the characteristics studied.

Table 5.1.8: Mean Biomedical Values for Jamaicans Aged 15 Years and Older with and without Given Chronic Diseases, JHLS III 2017

Mean Biomedical Values	Diabetes	No Diabetes
Cholesterol (mmol/l) ***	4.73	4.29
Fasting Blood Glucose***	8.91	5.26
Glycosylated Haemoglobin***	7.52	5.75
Systolic Blood Pressure (mmHg)***	138.7	125.0
Diastolic Blood Pressure (mmHg)***	84.4	80.9
Waist-to-Hip Ratio***	0.90	0.84
Waist Circumference***	94.0	83.8
Body Mass Index***	31.0	26.6
Mean Biomedical Values	**Hypertension**	**No Hypertension**
Cholesterol (µmol/l) ***	4.66	4.18
Fasting Blood Glucose***	6.13	5.40
Glycosylated Haemoglobin***	6.30	5.77
Systolic Blood Pressure (mmHg)***	145.4	117.1
Diastolic Blood Pressure (mmHg)***	92.8	75.2
Waist Hip Ratio***	0.88	0.83
Waist Circumference ***	90.9	81.9
Body Mass Index ***	29.4	26.0
Mean Biomedical Values	**High Cholesterol**	**Normal Cholesterol**
Cholesterol (µmol/l) ***	5.90	3.99
Fasting Blood Glucose***	6.21	5.52
Glycosylated Haemoglobin***	6.33	5.84
Systolic Blood Pressure (mmHg)***	133.7	125.1
Diastolic Blood Pressure (mmHg)***	85.3	80.4
Waist Hip Ratio***	0.87	0.84
Waist Circumference***	88.7	83.9
Body Mass Index***	28.9	26.8

P value for difference from reference category (those without disease): *p < 0.05; **p < 0.01; ***p < 0.001.

5.2. Obesity

The prevalence of underweight individuals was 6.4%; significantly lower in females, compared to males 4.6% vs. 8.3% (Table 5.2.1). At the other end of the spectrum, 67.6% of females were overweight or obese compared to 38.8% of males (P < 0.001). These sex disparities were more pronounced for obesity – 41.2% in females vs. 14.9% in males. The prevalence of increased waist circumference (WC) among females was almost fourfold that among males, and high waist-to-hip ratio (WHR) in females is double that in males; both differences were statistically significant._

Table 5.2.1: Prevalence (%) and 95% Confidence Intervals [CI] for Markers of Nutritional Status of Jamaicans by Sex, JHLS III 2017

Nutritional Status	Males	Females	Total
BMI (kg/m^2) ***			
Underweight (<18.5)	8.3[6.8,10.2]	4.6 [3.4, 6.2]	6.4 [5.4, 7.5]
Normal (18.5–24.9)	52.9[49.1,56.6]	27.8 [25.1, 30.7]	39.8 [37.5, 42.2]
Pre-Obesity (25.0–29.9)	24.0[20.9, 7.4]	26.4 [24.0, 28.8]	25.2 [23.2, 27.3]
Obesity Class I (30.0–34.9)	9.6 [7.6, 12.1]	22.3 [20.0, 24.8]	16.2 [14.7, 17.8]
Obesity Class II (35.0–39.9)	2.7 [1.6, 4.5]	11.6 [9.7, 13.8]	7.3 [3.2, 8.6]
Obesity Class III (≥ 40)	2.5 [1.4, 4.5]	7.3 [6.2, 8.7]	5.0 [4.1, 6.1]
Overweight (≥25 kg/m^2) ***	38.8 [35.1, 42.7]	67.6 [64.6, 70.4]	53.8 [51.5, 56.1]
Obese (≥30 kg/m^2) ***	14.9 [12.2, 21.2]	41.2 [38.7, 43.8]	28.6 [26.8, 30.5]
Increased WC[2] ***	17.5 [15.0, 20.4]	67.9 [65.3, 70.5]	43.7 [42.2, 45.2]
Increased WHR[3] ***	23.9 [21.0, 27.0]	48.3 [45.5, 51.0]	36.5 [34.7, 38.4]

[2]Waist circumference (M > 94 cm F >80 cm) [3]Waist-to-hip ratio M ≥ 0.90 F ≥ 0.85

*p < 0.05; **p < 0.01; ***p < 0.0001.

Table 5.2.2 shows the distribution of nutritional status by area of residence and sex. The results showed that the statistically significant sex disparity in prevalence of the indices of obesity, as well as the distribution of nutritional status, was retained among the urban and rural residents. Even within the areas of residence, females demonstrated the greater burden of obesity, whether defined using BMI, WC, or WHR, as shown in Table 5.2.1 for the overall sex-specific estimates.

Notably, while the distribution of the BMI categories differed significantly with area of residence (p<0.001) and the prevalence of overweight/obesity (BMI≥25 kg/m^2) was higher among urban residents (56.9% vs. 50.9%, p<0.05), none of the other markers of obesity differed with area of residence.

Table 5.2.2: Sex-specific and Total Prevalence Estimates for Markers of Nutritional Status among Urban and Rural Jamaicans Aged 15 Years and Older, JHLS III 2017

Nutritional status	Urban		Rural		Total	
	Males	Females	Males	Females	Urban	Rural
BMI Categories						
Underweight (<18.5 kg/m^2)	8.3*** [a]	4.4	8.5*** [a]	4.6	6.3***	6.6
Normal weight (18.5–24.9 kg/m^2)	46.9	28.4	58.0	26.8	36.9	42.5
Pre-obesity (25.0–29.9 kg/m^2)	29.2	25.4	19.3	27.4	27.2	23.3
Obesity class I (30.0–34.9 kg/m^2)	9.0	19.2	10.1	25.8	14.5	17.9
Obesity class II (35.0–39.9 kg/m^2)	4.0	14.1	1.4	9.2	9.4	5.3
Obesity class III (≥ 40 kg/m^2)	2.6	8.5	2.7	6.2	5.8	4.4
Overweight (≥25 kg/m^2)	44.7***[a]	67.2	33.5*** [a]	68.7	56.9*	50.9
Obese (≥30 kg/m^2)	15.6***[a]	41.7	14.3*** [a]	41.2	29.7	27.5
Increased WC[2]	20.2*** [a]	65.5	15.2*** [a]	70.8	44.7	42.6
Increased WHR[3]	27.1*** [a]	45.6	20.7*** [a]	51.6	37.2	35.8

[2]Waist circumference - increased (M > 94 cm F > 80 cm) [3]Waist-to-hip ratio - increased M ≥ 0.90 F ≥ 0.85; *** p<0.001, **p<0.01, *p<0.05

p<0.001 for overall urban compared to rural residents

*** [a] p < 0.001 for male: female differences in distribution of BMI categories and for male: female differences for obesity indices specific to urban and rural residents

*p <0.05 for overall urban rural difference in overweight

Tables 5.2.3A and 5.2.3B show the prevalence (%) of markers of nutritional status by age and sex categories. There was no distinct pattern to the prevalence of underweight persons by age category. However, the highest prevalence of underweight persons, 11.8%, was in the youngest age group (15–24 years old); this group also had, by far, the largest percentage of normal weight persons at 69.0% (Table 5.2.3A).

Table 5.2.3B further shows that sex-specific and total population prevalence estimates for all indices of obesity shown, differed with age. While being overweight (with BMI of 25 kg/m^2 or greater) was consistently higher among females at all age groups, the pattern across the age groups from young to old shows some similarities between the sexes. There was a sharp rise, in excess of 20%, in 25–34-year-olds compared to 15–24-year-olds in both the sexes. Among females, a similarly significant difference was seen between 25 and 34 years old and 35 and 44 years old, with this latter group having the highest prevalence of overweight among females, 84.5%. The data then shows for these females a modest fall in prevalence of overweight, to 78.4% among 65–74-year-olds, followed by a sharper fall to 56.6% in females aged 75 years and older. (See Table 5.2.3B).

Males, on the other hand, showed a more modest increase in overweight prevalence after 25–34 years, and peak prevalence was observed among the 45–54-year-olds at 56.5%. Like the females, overweight prevalence falls, somewhat more sharply to 32.0% in the 65–74-year-olds; but unlike among females, the decline is interrupted, and the prevalence is 42.1% among those 75 years and older. Obesity (BMI ≥30 kg/m^2) prevalence was higher among females, and the high prevalence among females persists from 25–34-year-olds to 65–74-year-olds. Among men, the highest percentages are seen in 35–44, 45–54, and 75 and older. (See Table 5.3.2B).

Table 5.2.3: A:7

Table 5.2.3A: Prevalence (%) of Markers of Nutritional Status of Jamaicans Aged 15 Years and Older by Age and Sex, JHLS III 2017

Nutritional Status	Age Bands (years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Male***							
Underweight (<18.5 kg/m²)	11.8	8.8	4.9	4.9	9.5	8.3	7.8
Normal (18.5-24.99 kg/m²)	69.0	47.5	47.9	38.6	48.2	59.8	50.1
Pre-obesity (25.0–29.9 kg/m²)	8.4	31.5	26.6	34.5	28.5	24.3	26.3
Obesity class I (30.0–34.9 kg/m²)	5.4	6.9	13.5	16.2	11.6	4.7	11.1
Obesity class II (35.0–39.9 kg/m²)	2.1	3.1	5.4	1.3	1.2	1.7	4.5
Obesity class III (≥ 40 kg/m²)	3.4	2.2	1.7	4.6	1.0	1.4	0.2
Females***							
Underweight (<18.5 kg/m²)	10.6	3.6	0.8	1.80	0.5	2.3	11.3
Normal (18.5-24.99 kg/m²)	47.7	30.1	14.8	15.4	17.1	19.3	32.1
Pre-obesity (25.0–29.9 kg/m²)	22.5	22.6	29.4	30.9	28.2	30.5	28.4
Obesity class I (30.0–34.9 kg/m²)	11.7	22.4	30.3	28.9	24.4	28.7	16.2
Obesity class II (35.0–39.9 kg/m²)	5.3	13.7	16.4	15.0	14.2	5.8	9.0
Obesity class III (≥ 40 kg/m²)	2.2	7.6	8.5	8.1	15.5	13.4	3.0
Total***							
Underweight (<18.0 kg/m²)	11.2	6.0	2.7	3.3	4.9	5.2	9.9
Normal (18.5–24.99 kg/m²)	58.3	38.1	30.5	26.9	32.4	39.1	39.2
Pre-obesity (25.0–29.9 kg/m²)	15.5	26.7	28.1	32.7	28.4	27.4	27.6
Obesity class I (30.0–34.9 kg/m²)	8.5	15.3	22.3	22.6	18.1	16.9	14.2
Obesity class II (35.0–39.9 kg/m²)	3.7	8.8	11.2	8.1	7.8	3.8	7.2
Obesity class III (≥ 40 kg/m²)	2.8	5.1	5.2	6.4	8.4	7.5	1.9

[1]Increased Waist circumference (M> 94 cm F>80 cm) [2]Increased Waist-to-hip ratio M ≥ 0.90 F ≥ 0.85

*p < 0.05; **p < 0.01; ***p < 0.0001.

Table 5.2.3B also shows for each of the age groups, a higher prevalence of central adiposity, as indicated by increased waist circumference or increased waist-to-hip ratio, among the women compared to the men. The cardiovascular disease risk associated with increased waist circumference occurs at lower waist circumferences in women, thus, the sex disparity in risk associated with increased WC is greater than that expected from the difference in mean WC. Almost one-third of the youngest women and between two-thirds and 90% of the other age groups were at increased risk cardiovascular disease.

Table 5.2.3B: Prevalence (%) of Markers of Nutritional Status of Jamaicans Aged 15 Years and Older by Age and Sex, JHLS III 2017

Nutritional Status	Age Bands (years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Overweight (≥25 kg/m²)							
Male***	19.2	43.7	47.2	56.5	42.4	32.0	42.1
Female***	41.7	66.3	84.5	82.9	82.3	78.4	56.6
Total***	30.5	55.9	66.8	69.7	62.7	55.6	50.9
Obese (≥30 kg/m²)							
Male*	10.8	12.2	20.6	22.0	13.9	7.7	15.8
Female***	19.2	43.7	55.1	52.0	54.1	48.0	28.2
Total***	15.0	29.2	38.7	37.1	34.3	28.2	23.3
Increased WC[1]							
Male***	5.9	15.1	27.1	26.5	20.6	18.5	19.8
Female***	31.6	68.4	86.2	89.0	84.8	80.1	71.1
Total***	18.8	43.9	58.2	57.9	52.4	49.9	50.9
Increased WHR[2]							
Male***	5.6	14.6	27.7	35.2	38.2	50.4	50.5
Female***	20.9	42.7	55.1	61.0	65.8	72.6	77.4
Total***	13.2	29.9	41.6	48.2	51.9	62.0	66.8

[1]Increased Waist circumference (M> 94 cm F>80 cm) [2]Increased Waist-to-hip ratio M ≥ 0.90 F ≥ 0.85

*p < 0.05; **p < 0.01; ***p < 0.001.

Parish-specific prevalence estimates for obesity within and across sex categories are shown in Table 5.2.4. Within the sexes, the prevalence estimates did not differ significantly with parish of residence. However, the estimates differed significantly (p<0.05) in the combined population of males and females. The prevalence of obesity among individuals aged 15 years and older was highest in Trelawny (35%) and second highest in Hanover, with a prevalence of 33.8%. The lowest total prevalence was 21.6% in Portland, while the second lowest total prevalence was in Westmoreland, with a prevalence of 22.0%. Higher prevalence among females was consistent across the parishes, with the largest differences of 45.2% and 41.1%, respectively, seen in Trelawny and Westmoreland. The smallest sex differences were seen in St Ann, Manchester, and St Andrew, with 17.1%, 18.2%, and 19.5%, respectively. The men in Hanover had the highest prevalence, 22.9%, and Westmoreland had the lowest prevalence among men, 2.0. Among women, Trelawny had the highest prevalence of 58.0%, and Manchester had the lowest prevalence of obesity, 32.2%.

Table 5.2.4: Prevalence (%) of Obesity in Jamaicans Aged 15 Years and Older by Sex and Parish, JHLS III 2017

Parish	Obesity (BMI ≥ 30 kg/m²)		
	Male	Female	Total*
Kingston	12.8	46.1	29.4
St Andrew	18.1	37.6	28.4
St Catherine	20.2	44.0	33.5
Clarendon	16.1	45.8	30.8
Manchester	14.0	32.2	23.1
St Elizabeth	9.4	42.0	25.4
Westmoreland	2.0	43.1	22.0
Hanover	22.9	45.0	33.8
St James	12.4	47.0	30.2
Trelawny	12.8	58.0	35.0
St Ann	19.5	36.6	28.9
St Mary	11.2	34.5	23.1
Portland	4.2	37.8	21.6
St Thomas	7.6	41.1	24.4

*P = 0.011 for differences overall prevalence of obesity by parish

Table 5.2.5 shows the prevalence of different forms of obesity among Jamaicans aged 15 years and older classified at given socioeconomic (SE) levels measured using highest education level and number of household possessions. All three indices of obesity varied significantly ($p<0.05$) with highest education level attained, but only the distribution of the BMI categories ($p<0.05$) and prevalence of increased waist circumference ($p<0.001$) differed significantly with number of household possessions. For both measures of socioeconomic status, the prevalence of obesity, whether measured by BMI or central adiposity, was either highest or second highest among persons at the highest SE level, namely, post-secondary education and 10–20 household possessions compared with prevalence in the other categories of the respective SE indices.

Table 5.2.5: Prevalence (%) of Obesity among Jamaicans Aged 15 Years and Older by Given Socioeconomic Status (SES) Levels, JHLS III 2017

Chronic Disease	Educational Levels			Household Possession Category		
	Primary or Lower	Secondary	Post-secondary	Low (0–5 Items)	Middle (6–9 items)	High (10–20 items)
BMI						
Underweight (<18.5kg/m²)	6.1*	6.5	5.2	7.5*	5.4	6.7
Normal (18.5–24.99 kg/m²)	40.9	42.8	31.1	45.9	38.6	36.5
Pre-obesity (25.0–29.9 kg/m²)	24.3	23.0	33.7	24.0	25.3	26.4
Obese (≥ 30 kg/m²)	28.7	27.7	30.1	22.6	30.7	30.4
[1] Increased WC	46.2**	40.5	51.0	39.5***	41.4	50.5
[2] Increased WHR	48.7***	31.0	38.7	38.9	35.3	36.5

[1]Waist circumference M> 94 cm F>80 cm; [2]Waist hip ratio M ≥ 0.90 F ≥ 0.85

P value for association: *p < 0.05; **p < 0.01; ***p < 0.001.

The prevalence of underweight persons was under 10% for the three educational levels and the three levels defined by household possessions. Prevalence estimates for pre-obesity (overweight [BMI 25.0-29.9 kg/m^2]) and obesity [BMI ≥30.0 kg/m^2] were highest at 33.7% and 30.1%, respectively, among those with post-secondary education. Prevalence estimates for increased WC and increased WHR were 51.0% and 38.7%, respectively, among those who attained post-secondary education.

For levels of household possessions prevalence of increased WC was highest among persons with high household possessions and lowest among those with low household possessions.

Categorized by physical activity level (PAL), the proportions of participants in various anthropometric categories (BMI category, increased waist circumference and increased waist-hip-ratio) are shown in Table 5.2.6. Among the males and in the total population, but not among the females, the prevalence estimates for the obesity [BMI ≥30.0 kg/m^2], increase waist and increased WHR followed a decreasing trend as categorization of PAL changed from low to moderate to high. Among the women, this trend was observed for obesity and increased WHR, only. In the total population ($p<0.001$) and driven by the distributions in the males ($p<0.01$), there was a statistically significant association of the distribution of the BMI categories with PAL. In the total population and among the males but not among the females, the prevalence of normal weight was highest while the prevalence of obesity was lowest among those classified at high PAL.

Prevalence of increased WC was lowest among those at high PAL among the males but not among the females. Sex-specific estimates for increased WHR was lowest among those at high PAL among the males but not among the females. The association of the prevalence of WC and WHR with PAL was statistically significant for total population estimates but not for the sex-specific estimates.

Table 5.2.6: Proportion (%) of Jamaicans Aged 15 Years and Older in Various Anthropometric Categories by Physical Activity Levels (PAL), JHLS III 2017

	(PAL) Total			(PAL) Male			(PAL) Female		
Anthropometric Index	**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**
BMI (kg/m^2)									
Underweight <18.5	7.1***	7.4	4.9	9.2**	11.0	6.3	5.8	4.8	2.3
Normal (18.5–24.99)	36.1	36.6	46.6	47.0	49.7	56.0	29.4	27.1	28.5
Pre-obesity (25.0–29.9)	21.5	26.7	27.2	20.9	22.8	27.2	21.9	29.7	27.3
Obese (≥ 30)	35.4	29.2	21.3	22.9	16.7	10.5	42.9	38.4	41.9
Increased WC[1]	50.0***	47.0	32.5	24.4	19.0	14.6	65.2	67.4	68.6
Increased WHR[2]	43.2***	35.5	28.8	29.9	22.7	21.9	51.2	44.8	42.6

[1]Waist circumference (M> 94 cm F>80 cm) [2]Waist-to-hip ratio M ≥ 0.90 F ≥ 0.85

Physical Activity Levels: L- Low, M-Moderate, H – High. ***$p<0.001$; **$p<0.01$; *$p<0.05$

5.3. Diabetes and Impaired Fasting Glucose

In these analyses, we define diabetes as having a fasting glucose level of ≥7.0 mmol/l or being on medication for diabetes. The cut-off of 7.0 mmol/l is based on the recommendations from the American Diabetes Association (ADA)[1] and the World Health Organization (WHO).[2] The method used for measuring HbA1c in this study did not meet the National Glycohemoglobin Standardization Program (NGSP) criteria for the diagnosis of diabetes (http://www.ngsp.org/bground.asp), and we did not have post-challenge glucose available.[3,4] Therefore, neither HbA1c nor post-challenge glucose measurements were used in determining the classification. Persons with fasting glucose of 5.60–6.09 mmol/l were classified as having impaired fasting glucose as recommended by the ADA.[5]

Prevalence estimates for diabetes and impaired fasting glucose are shown in Table 5.3.1. The overall prevalence of diabetes was 11.9% and was significantly higher in women compared to men (14.4% vs. 9.4%, p=0.002). Over one-quarter of Jamaicans 15 years and older (27.5%) had impaired fasting glucose with no difference in prevalence by sex. Table 5.3.2 shows that the overall prevalence of diabetes (12.7% vs. 11.9%) and impaired fasting glucose (29.6% vs. 24.2%) was was not significantly different for these urban versus rural Jamaicans. Sex disparities in diabetes prevalence existed in each setting. Diabetes prevalence increased with age (see Table 5.3.3) and ranged from 1.5% among persons 15–24 years to 42.4% among persons aged 75 years and older.

Table 5.3.1: Sex-specific and Total Prevalence Estimates (%) for Dysglycaemia (Diabetes and Impaired Fasting Glucose) among Jamaicans Aged 15 Years and Older, JHLS III 2017

Disease Condition	Male	Female	Total
Diabetes Mellitus***	9.4 (7.3, 12.0)	14.4 (12.7, 16.3)	11.9 (10.5, 13.5)
Impaired Fasting Glucose	28.0 (24.9, 31.3)	27.0 24.2, 30.0)	27.5 (25.3, 29.7)

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 5.3.2: Sex-specific and Total Prevalence Estimates (%) for Dysglycaemia (Diabetes and Impaired Fasting Glucose) among Urban and Rural Jamaicans Aged 15 Years and Older, JHLS III 2017

	Urban		Rural		Total	
	Males	Females	Males	Females	Urban	Rural
Disease Condition						
Diabetes Mellitus	9.5**	15.8	9.5**	14.5	12.7	11.9
Impaired Fasting Glucose	32.7**	26.5	23.1	25.3	29.6	24.2

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 5.3.3: Prevalence (%) of Dysglycaemia (Diabetes and Impaired Fasting Glucose) by Sex and Ten-year Age Bands, JHLS III 2017

	Age Bands (years)						
Disease Condition	**15–24**	**25–34**	**35–44**	**45–54**	**55–64**	**65–74**	**75+**
Diabetes Mellitus							
Male***	1.5	5.2	8.0	13.7	14.6	13.7	39.5
Female***	1.5	5.8	10.4	23.8	27.7	41.2	45.7
Total***	1.5	5.5	9.1	18.7	21.3	27.3	42.4
Impaired Fasting Glucose							
Male**	18.2	31.3	30.8	39.1	22.7	36.4	20.4
Female	24.8	25.1	30.8	30.5	23.8	34.8	19.1
Total**	21.4	28.0	30.8	34.9	23.3	35.6	19.8

*p < 0.05; **p < 0.01; ***p < 0.001.

Parish specific estimates are shown in Table 5.3.4. There was appreciable variation with the unadjusted sex-specific prevalence being highest in Hanover (18.7%) and lowest in St Thomas (2.5%) for males, while among females, prevalence was highest in Westmoreland (21.2%) and lowest in St Ann (8.8%). The between-parish differences did not meet the criteria for statistical significance (p<0.05). Further research is needed to examine parish differences based on age-adjusted prevalence estimates.

Table 5.3.4: Crude and Sex-specific Prevalence (%) of Diabetes in Jamaicans Aged 15 Years and Older by Parish, JHLS III 2017

Parish	Diabetes		
	Male*	**Female**	**Total**
Kingston	17.1	14.8	15.9
St Andrew	8.2	13.1	10.5
St Catherine	6.5	13.1	10.0
Clarendon	18.6	15.3	16.9
Manchester	10.8	20.4	15.6
St Elizabeth	5.3	13.0	9.2
Westmoreland	10.9	21.2	16.2
Hanover	18.7	16.0	17.3
St James	11.9	14.2	13.0
Trelawny	3.8	18.6	11.3
St Ann	10.0	8.8	9.4
St Mary	4.0	8.9	6.5
Portland	6.6	11.9	9.4
St Thomas	2.5	18.4	10.8

*p < 0.05

Estimates for the prevalence of awareness, treatment and control of diabetes are shown in Table 5.3.5. Overall, 58% of persons with diabetes were aware of their condition with the proportion of persons aware higher ($p<0.05$) among females compared to males (65% vs. 45%). Approximately 54% of cases reported being on treatment and this was also higher ($p<0.05$) among females compared males (60% vs. 41%). Over 90% of persons aware of their diabetes status were on treatment, and only a little over one-quarter of patients on treatment had fasting glucose measurement less than 7.0 mmol/l and were thus regarded as having controlled diabetes. Neither the prevalence of treatment among the aware diabetes cases nor the prevalence of the controlled status among the treated cases differed significantly with the sex of Jamaicans aged 15 years and older.

Table 5.3.5: Treatment, Control, and Awareness of Proportions among Persons with Diabetes (%) among Jamaicans Aged 15 Years and Older, JHLS III 2017

Disease	Male	Female	Total
Diabetes			
Aware (out of all diabetes cases)*	45.4[33.3, 58.1]	64.3[57.6, 70.5]	57.9[51.7, 64.0]
On Treatment (of all Cases)*	41.4[30.0, 53.9]	59.8[52.5, 66.6]	53.6[47.1, 60.0]
Control (of all DM cases)	12.0[6.7, 20.6]	16.1[11.9, 21.4]	14.7[11.1, 19.3]
On Treatment (of all aware DM Cases)	91.3[73.1, 97.6]	92.9[85.7, 96.6]	92.5[86.1,96.1]
Controlled (among Treated cases)	29.0[17.3, 44.4]	27.0[20.6, 34.5]	27.5[21.5, 34.4]

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Tables 5.3.6–5.3.8 present data for association between dysglycaemia and, respectively, markers of socioeconomic status (educational achievement, household possessions), physical activity, and body mass index categories.

Table 5.3.6 shows that the distribution of the glycaemic states differed significantly with education level ($P<0.001$) and household possessions category ($p<0.01$). Prevalence of diabetes was highest in the low SES categories – 21.5% and 16.0%, respectively, in those who attained primary education or lower only and in those with access to 0–5 household possessions only – and 10% or lower in the higher SES levels.

Table 5.3.6: Proportion (%) of Jamaicans Aged 15 Years and Older with or without Dysglycaemia (Diabetes or Impaired Fasting Glucose) by Socioeconomic Status Categories, JHLS III 2017

	Educational Levels			Household Possession Categories		
Chronic Disease	Primary or Lower	Secondary	Post-Secondary	Low (0–5 items)	Middle (6–9 items)	High (10–20 items)
Diabetes	21.5***	9.4	7.4	16.0**	9.9	10.4
Impaired Fasting Glucose	30.4	24.7	32.6	23.0	27.5	31.3
No Dysglycemia	48.1	66.0	60.6	61.0	62.6	58.3

P-value for association: Glycaemic states by education category – $p<0.0001$; glycaemic states by Household Possession Category – $p=0.005$. (*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.)

Table 5.3.7 shows that the sex-specific and total population distributions of the glycaemic states differed significantly with physical activity levels (PAL). Among the females (p<0.01) and in the total population (p<0.05) prevalence of diabetes decreased while the prevalence of normal fasting glucose increased as PAL change from low to moderate and high. Among the males, however, diabetes decreased as PAL change from low to moderate and high while prevalence of normal fasting glucose was lowest, 54.1%, at moderate PAL and exceeded 60% among persons with low and high PAL.

Table 5.3.7: Sex-specific and Total Population Percentage Distribution (%) of the Glycaemic States of Jamaicans Aged 15 Years and Older by Self-reported Physical Activity Category, JHLS III 2017

	Physical Activity Levels (PAL)		
Risk Categories	**Low**	**Moderate**	**High**
Males and Females			
Normal fasting glucose*	57.9	58.9	64.5
Impaired fasting glucose	26.6	28.3	27.6
Diabetes	15.5	12.8	7.9
Males			
Normal fasting glucose*	68.8	54.1	63.7
Impaired Fasting Glucose	18.3	35.2	29.3
Diabetes	12.9	10.7	7.0
Females			
Normal fasting glucose**	51.4	62.3	66.1
Impaired Fasting Glucose	31.5	23.4	24.3
Diabetes	17.1	14.3	9.6

*p<0.05, **p<0.01, ***p<0.001

Table 5.3.8 shows that the distribution of the glycaemic states differed significantly with BMI categories (p<0.001). The prevalence of diabetes was higher at 11.7% and 19.5% in the overweight and obese categories, respectively, compared with the underweight and normal weight categories.

Table 5.3.8: Proportion (%) of Jamaicans Aged 15 Years and Older with Dysglyceamia (Diabetes or Impaired Fasting Glucose) by WHO Body Mass Index Categories, JHLS III 2017

	BMI Categories			
Risk Category* **	**Underweight**	**Normal Weight**	**Overweight**	**Obese**
Diabetes	4.5	6.3	11.7	19.5
Impaired Fasting Glucose	37.2	24.5	28.1	30.4
Normal Fasting glucose	58.4	69.2	60.1	50.1

*p<0.05, **p<0.01, ***p<0.001 (P-value for association with BMI category - p < 0.0001.)

5.4. Hypertension

In this section we describe the burden and distribution of hypertension, prehypertension, and elevated blood pressure using definitions from *The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (JNC-7) and the 2017 American College of Cardiology (ACC)/ American Heart Association (AHA) guidelines.[6,7] JNC-7 defines hypertension as systolic blood pressure (SBP) ≥140 mmHg or diastolic blood pressure (DBP) ≥ 90 mmHg, while the ACC/AHA Guidelines define hypertension as SBP ≥130 mmHg or DBP ≥80 mmHg. For this report, persons on treatment for hypertension are also classified as hypertensive. In the JNC-7 definition, persons with SBP of 120–39 mmHg or DBP of 80–89 mmHg are classified as having prehypertension. The ACC/AHA Guidelines classifies persons with SBP of 120–29 mmHg as having elevated blood pressure. For both classifications, normal blood pressure is defined as SBP <120 and DBP <80 mmHg.

Table 5.4.1 shows the prevalence of hypertension and other blood pressure categories for males and females and for both sexes combined. Using the JNC-7 criteria, overall prevalence of hypertension was 34%, whilst another 34% had prehypertension. Prevalence of hypertension was higher in women compared to men, 36% vs. 32% ($p<0.05$), while prevalence of prehypertension was higher in the males, 43.0% vs. 26% ($p<0.001$). When the ACC/AHA criteria were used, prevalence of hypertension was estimated at 58% with no significant sex difference.

Table 5.4.1: Sex-specific and Total Prevalence Estimates (%) for Hypertension, Prehypertension, Elevated Blood Pressure, and Normal Blood Pressure among Jamaicans 15 Years and Older, JHLS III 2017

Blood Pressure Category	Male	Female	Total
Hypertension (JNC-7) *	31.7 (28.7, 34.8)	35.8 (33.5, 38.0)	33.8 (32.0, 35.7)
Prehypertension (JNC-7) ***	43.0 (38.7, 47.3)	25.7 (23.3, 28.3)	34.0 (31.6, 36.4)
Hypertension (ACC/AHA)	58.3 (55.2, 61.3)	57.0 (54.6, 59.4)	57.6 (55.6, 59.6)
Elevated Blood Pressure ACC/AHA) ***	16.4 (13.4, 19.9)	4.5 (3.4, 5.8)	10.2 (8.7, 11.9)
Normal Blood Pressure (JNC-7 & ACC/AHA) ***	25.4 (22.1, 28.9)	38.6 (36.1, 41.1)	32.2 (30.1, 34.4)

*p < 0.05; **p < 0.01; ***p < 0.001.

As shown in Table 5.4.2, there were no significant rural-urban differences or sex differences specific to area of residence in the prevalence of hypertension.

Table 5.4.2: Sex-specific and Total Prevalence Estimates (%) for Hypertension among Jamaicans Aged 15 Years and Older, JHLS III 2017

	Urban		Rural		Total	
	Males	Females	Males	Females	Urban	Rural
Blood Pressure Category						
Hypertension (JNC-7)	29.5 (24.6–34.9)	36.0 (32.3–40.0)	34.3 (30.9–37.8)	36.1 (32.6–39.8)	33.0 (30.1–36.1)	35.2 (32.4–38.1)
Hypertension (ACC/ AHA)	58.1 (53.6, 62.6)	55.3 (51.3, 59.3)	58.8 (54.6, 62.8)	59.5 (55.7, 63.2)	56.6 (53.6, 59.6)	58.9 (55.7, 51.7)

There were no statistically significant sex or rural-urban differences. (*p < 0.05; **p < 0.01; ***p < 0.001.)

Prevalence of hypertension and prehypertension by age category is shown in Table 5.4.3. Overall prevalence of hypertension increased with each age category, from 8% among persons 15–24 years to 77% among persons 75 years and older. This pattern of higher prevalence with age was seen for both males and females. On the other hand, prehypertension prevalence varied but did not demonstrate an increasing trend with age. The highest prehypertension prevalence among males and females was in the 25–34 years category at 52% and 36%, respectively. Prehypertension prevalence fell among both males and females after the respective peaks, so that prevalence among those 75 years and older was 24% for males and 6% among females.

Table 5.4.3: Prevalence (%) of Hypertension by Sex and Ten-year Age Bands, JHLS III 2017

	Age Bands (years)						
Disease Condition	**15–24**	**25–34**	**35–44**	**45–54**	**55–64**	**65–74**	**75+**
Hypertension (JNC 7)							
Male***	7.8	20.3	27.7	45.1	64.4	68.6	67.1
Female***	8.3	16.1	31.5	53.7	75.7	75.5	83.9
Total***	8.1	18.0	29.7	49.4	70.0	72.1	77.3
Pre-hypertension (JNC7)							
Male***	47.2	52.1	51.8	42.0	24.4	17.7	23.7
Female***	20.2	36.3	31.3	29.3	16.8	18.4	6.3
Total***	33.7	43.6	41.1	35.6	20.6	18.0	13.1

*p < 0.05; **p < 0.01; ***p < 0.001.

Parish specific prevalence estimates are shown in Table 5.4.4. There were significant differences in the parish specific estimates for both males (p<0.001), females (p<0.001) and the combined population (p<0.001). Among males the highest prevalence was in St Thomas (51%) and the lowest prevalence in Westmoreland (20%). Among females, highest prevalence was also in St Thomas (46%) and the lowest prevalence in St Catherine (27%). Further research is needed to examine parish differences based on age-adjusted prevalence estimates.

Table 5.4.4: Prevalence (%) of Hypertension using JNC-7 Classification among Jamaicans Aged 15 Years and Older by Sex and Parish of Residence, JHLS III 2017

Parish	Male***	Female***	Total***
Kingston	35.9	30.8	33.4
St Andrew	27.6	41.2	34.8
St Catherine	26.3	26.5	26.0
Clarendon	40.9	41.4	41.1
Manchester	33.3	38.0	35.6
St Elizabeth	27.7	35.1	31.3
Westmoreland	19.9	40.6	30.0
Hanover	42.6	44.7	43.6
St James	29.6	35.2	32.5
Trelawny	37.3	39.4	38.3
St Ann	37.0	29.2	32.9
St Mary	39.9	28.9	32.3
Portland	29.6	37.9	33.7
St Thomas	51.3	46.0	48.7

*p < 0.05; **p < 0.01; ***p < 0.001.

Data on awareness, treatment, and control are shown in Table 5.4.5. Overall, only 59% of persons with hypertension were aware of their condition. Awareness level was much lower among males compared to females (40% vs. 74%, p<0.001). Among persons who were aware of having hypertension 70% were on treatment; again, the proportion on treatment was lower among males compared to females (63% vs. 73%, p<0.05). Proportions with controlled hypertension (BP <140/90) among those on treatment were also low, 31% overall, 26% among males and 33% among females and were not significantly different when the males and females were compared.

Table 5.4.5: Treatment, Control, and Awareness Proportions (%) among Persons with Hypertension in Jamaicans Aged 15 Years and Older, JHLS III 2017

Disease	Male	Female	Total
Hypertension			
Aware (out of hypertension cases) ***	40.3[35.9, 44.8]	73.9 [69.3, 78.1]	59.0 [55.7, 62.3]
On Treatment (of all hypertension cases) ***	25.5[22.3, 29.0]	54.1 [49.4, 58.7]	41.4 [38.3, 44.5]
Control (of all hypertension cases) ***	6.6 [4.5, 9.4]	17.9 [14.4, 22.1]	12.8 [10.6, 15.5]
On Treatment (of all aware hypertension cases) *	63.3[56.5, 69.7]	73.2 [68.0,77.9]	70.2 [65.8,74.3]
Controlled (among treated cases)	25.6[17.8, 35.3]	33.1 [27.0, 39.8]	31.0 [26.2, 36.3]

*p < 0.05; **p < 0.01; ***p < 0.001.

The association between blood pressure categories and socioeconomic status, assessed using highest education level and number of household possessions is shown in Table 5.4.6. There was a statistically significant association between blood pressure categories and education levels (p < 0.0001), with 58% of persons with primary-level education having hypertension compared to 26% hypertension prevalence for both the secondary and post-secondary education categories. Persons with fewer household possessions had higher prevalence of hypertension, 42% for persons with 0–5 items, compared to 28% among those with 10–20 household items. Prehypertension was more common among persons with higher education levels, which was fairly similar in the household possession categories.

Table 5.4.6: Proportion (%) of Jamaicans Aged 15 Years in Given Blood Pressure Categories by Socioeconomic Status Levels, JHLS III 2017

Blood Pressure Category	Educational Levels			Household Possession Categories		
	Primary or Lower	Secondary	Post-Secondary	Low (0–5 Items)	Middle (6–9 Items)	High (10–20 Items)
Hypertension	58.4***	26.0	25.6	41.9***	31.7	28.1
Pre-hypertension	25.7	36.9	39.5	32.0	36.2	34.9
No Hypertension	15.9	37.1	34.9	26.1	32.1	37.0

P-value for association between blood pressure category and education level: p<0.001

P-value for association between blood pressure category and household possession category: p<0.001

Tables 5.4.7 and 5.4.8 show the prevalence of hypertension states within physical activity level and body mass index categories, respectively. Among the males (p<0.05) and the total population (p<0.001) but not among the females, there was a statistically significant association of the prevalence of the hypertension states with PAL. Among the males, prevalence of hypertension decreased from 38.5% to 30.8% and 29.4% as PAL classification changed low to moderate and high while the prevalence of prehypertension was highest in the high PAL group. Similar distributions for hypertension and prehypertension prevalence were observed for the total population samples.

Hypertension prevalence was higher among those with obesity (56%) compared to persons with normal weight (23%). Prevalence of prehypertension was highest in the overweight category (See Table 5.4.8.).

Table 5.4.7: Sex-specific and Total Population Proportions (%) of Jamaicans Aged 15 Years and Older Who Had Hypertension or Prehypertension by Physical Activity Levels, JHLS III 2017

	Physical Activity Levels (PAL)		
Risk Categories	**Low**	**Moderate**	**High**
Males and Females			
No Hypertension***	33.7	37.0	27.1
Prehypertension	29.5	29.7	41.8
Hypertension	36.8	33.3	31.1
Males			
No Hypertension*	24.7	32.9	21.8
Prehypertension	36.8	36.3	48.8
Hypertension	38.5	30.8	29.4
Females			
No Hypertension	38.8	40.2	37.6
Prehypertension	25.3	24.6	28.0
Hypertension	35.9	35.2	34.4

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 5.4.8: Proportion (%) of Jamaicans Aged 15 Years and Older Who Had Hypertension or Prehypertension by Body Mass Index Categories, JHLS III 2017

	BMI Categories			
Risk Category	**Underweight**	**Normal Weight**	**Overweight**	**Obese**
Hypertension	26.9	23.1	39.4	55.6
Prehypertension	23.7	43.1	51.1	32.7

P-value for association: BMI category - p < 0.001.

5.5. Dyslipidaemia

For this report we present fasting lipid measurements from a capillary (finger stick) sample analysed with a point-of-care device. The point-of-care device measures total cholesterol, HDL-cholesterol, and triglycerides. LDL-cholesterol was calculated from the Frieldwald Equation (LDL = Total Chol - (Triglyceride / 2.2) – HDL).[8,9]

A total of 1302 (M = 473, F = 829) participants had valid lipid measurements and were included in the estimates. The National Cholesterol Education Programme Adult Treatment Panel III (ATP-III) criteria were used to determine the cut points for abnormal cholesterol values – (i.e., total cholesterol ≥5.2 mmol/L; HDL-cholesterol <1.0 mmol/L in men or <1.3 mmol/L in women; LDL- cholesterol ≥4.1 mmol/L; and triglycerides ≥1.7mmol/L.[10] High cholesterol was defined as having elevated total cholesterol or being on medications for hypercholesterolemia.

Table 5.5.1 shows prevalence estimates for the various categories of abnormal lipids for males, females and both sexes combined. Overall prevalence of high total cholesterol was 24.6%, while 39.3% had low HDL. High LDL and high triglycerides had lower prevalence 8.3% and 20.4%, respectively. Compared to males, females were at increased risk of having abnormal cholesterol levels, being almost twice as likely to have high total cholesterol (F: 31.0% vs. M: 18.4%, p<0.001) and almost four times as likely (F: 62.1% vs. M: 16.7%, p<0.001) to have low HDL cholesterol. Females were also three times more likely to have high LDL cholesterol (F: 12.6% vs. M: 4.1%, p<0.001), but males were more likely (F: 17.3% vs. M: 23.5%, p<0.05) to have high triglycerides.

Table 5.5.1: Prevalence (%) of Abnormal Cholesterol in Jamaicans Aged 15 Years and Older by Sex, Using the National Cholesterol Education Programme Adult Treatment Panel III (ATPIII) Criteria, JHLS III 2017

Nutritional status	Males (*n* = 473)	Females (*n* = 829)	Total (*n* = 1302)
High Cholesterol (≥5.2 mmol/L / on meds) ***	18.4 (111)	31.0 (321)	24.6 (432)
Low HDL (M<1.0 mmol/L; F <1.3 mmol/L)***	16.7 (63)	62.1 (485)	39.3 (458)
High LDL (≥4.1 mmol/L)***	4.1 (27)	12.6 (113)	8.3 (140)
High Triglycerides (≥1.7mmol/L) *	23.5 (92)	17.3 (150)	20.4 (242)

High cholesterol = high measured cholesterol or on medications for high cholesterol

HDL: high-density lipoprotein; LDL: Low-density lipoprotein.

* p-value < 0.05; ** p-value < 0.01; *** p-value < 0.001.

Table 5.5.2 presents the prevalence of abnormal cholesterol values in Jamaicans by age and sex categories. As age increased, the total population prevalence of total cholesterol and high LDL increased (p<0.001), while the total population prevalence of low HDL tended to fall with age, but these changes were not statistically significant. The total population prevalence estimates for high triglycerides did not differ significantly with age.

For high total cholesterol (total cholesterol ≥5.2 mmol/L or on cholesterol lowering medication), as age increased the prevalence also increased with statistically significant differences among both males and females (p = 0.001). The lowest prevalence was among persons in the 15–24 age group, where prevalence of 2.2% and 9.3% were observed among males and females, respectively. The highest prevalence was among males 75 years and older and females in the 64–74 age group where prevalence estimates of 44.1% and 59.8% were reported, respectively.

Prevalence of low HDL decreased with increasing age among males, females, and males and females combined. However, the between age group differences were more prominent among males compared to females, resulting in a statistically significant difference (p = 0.001) among males. Of note, younger age groups had higher prevalence of low HDL compared to older age groups. Among males, the highest prevalence of low HDL (31.9%) was seen among males 15–24 years, while the lowest prevalence (6%) was observed among males 75 and older.

Prevalence of high LDL cholesterol differed with age. The highest prevalence was observed among females in the 65–74 age group (19.6%) and among the males in the 45–54 age group (15.2%). Prevalence of high LDL cholesterol was lowest in the 15–24 age group among females (3.7%), while males in 35–44 and 15–24 age groups reported the lowest prevalence of 0.3% and 0.4%, respectively. Statistically significant differences were observed among males, females, and the sexes combined.

Among females, as age increased prevalence of high triglycerides increased; while as age increased among males, the prevalence decreased but these changes were not statistically significant. Among males, prevalence was highest (33.5%) in the 45–54 age group. Highest prevalence (32.8%) among females was among those 75 years and older.

Table 5.5.2: Prevalence (%) of Abnormal Cholesterol Values in Jamaicans by the Age and Sex Group Categories, Using the National Cholesterol Education Programme Adult Treatment Panel III (ATPIII) Criteria, JHLS III 2017

Disease Condition	Age Band (years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
High Cholesterol (total cholesterol ≥5.2 mmol/L or on medication)							
Male***	2.2	14.7	23.5	22.3	26.4	20.7	44.1
Female***	9.3	15.2	36.1	35.9	45.2	59.8	41.0
Total* **	**5.5**	**15.0**	**29.6**	**28.7**	**37.6**	**40.9**	**42.5**
Low HDL (M<1.0 mmol/L; F <1.3 µmol/L)							
Male**	31.9	17.8	4.5	19.2	12.9	12.3	6.0
Female	62.8	65.4	65.4	67.2	53.3	53.6	55.8
Total	**46.3**	**41.2**	**34.1**	**41.9**	**37.3**	**33.6**	**31.5**
LDL ≥4.1 mmol/L							
Male***	0.4	1.7	0.3	15.2	3.6	4.2	4.0
Female*	3.7	8.6	16.0	12.4	17.5	19.6	19.2
Total* **	**2.0**	**5.1**	**7.9**	**13.9**	**11.9**	**12.1**	**11.8**
Triglycerides ≥1.7 mmol/L							
Male	24.9	24.2	22.9	33.5	18.9	15.4	14.7
Female	13.2	12.5	17.5	20.7	20.2	14.4	32.8
Total	**17.8**	**18.5**	**20.2**	**27.4**	**19.7**	**14.9**	**24.0**

HDL: high-density lipoprotein; LDL: Low-density lipoprotein.

* p-value < 0.05; **p-value < 0.01; ***<p-value < 0.001.

Table 5.5.3 shows the prevalence of dyslipidaemia by urban-rural residence among males and females in Jamaica. There were no statistically significant urban-rural differences in the prevalence of the dyslipidaemia outcomes in the (combined) population of (male and female) Jamaicans 15 years and older. For all the outcomes, except for elevated triglycerides, the prevalence of dyslipidemia was significantly greater ($p<0.05$) among females within the urban and rural settings. The sex differences in prevalence of elevated triglycerides were not statistically significant.

Table 5.5.3: Prevalence (%) of Dyslipidemia of Jamaicans by Geographic Location, Using the National Cholesterol Education Program Adult Treatment Panel III (ATPIII) Criteria, JHLS III 2017

	Urban		Rural		Total	
	Males	Females	Males	Females	Urban	Rural
Dyslipidemia States						
High Cholesterol (total cholesterol ≥5.2 mmol/L or on medication	18.1*	29.1	18.7***	32.8	23.4	26.0
Low HDL (M: <1.0 mmol/L; F: <1.3 mmol/L)	18.2***	60.7	15.1***	63.4	38.6	40.0
LDL ≥4.1 mmol/L	4.4*	11.3	3.7***	14.0	7.6	9.0
Triglycerides ≥1.7 mmol/L	24.9	18.4	21.8	16.2	21.8	18.9

HDL: high-density lipoprotein; LDL: Low-density lipoprotein.

*p < 0.05; **p < 0.01; ***p < 0.0001.

Table 5.5.4: Prevalence (%) of Dyslipidaemia among Jamaicans by Parish of Residence Using the National Cholesterol Education Program Adult Treatment Panel III (ATPIII) Criteria, JHLS III 2017

Parish of Residence	High Total cholesterol (≥5.2 mmol/L / on medications)	Low HDL (M: <1.0 mmol/L; F: <1.3 mmol/L)	High LDL ≥4.1 mmol/L	High Triglycerides (>=1.7 mmol/l)
Kingston	18.5	18.9	0.5	21.8
St Andrew	20.7	45.0	6.4	23.1
St Thomas	25.8	34.7	6.2	14.7
Portland	35.4	36.0	10.6	10.6
St Mary	28.3	55.1	16.6	19.2
St Ann	15.1	48.4	5.5	39.4
Trelawny	26.0	33.6	9.5	11.4
St James	50.4	37.1	14.2	22.0
Hanover	18.4	49.7	4.0	13.5
Westmoreland	22.7	49.8	12.4	11.8
St Elizabeth	36.7	47.8	11.1	19.4
Manchester	20.6	29.5	5.5	11.8
Clarendon	23.7	40.1	6.4	20.0
St Catherine	18.2	28.7	8.4	26.6
P-value for difference by parish	**<0.001**	**0.014**	**0.102**	**0.231**

HDL: High density lipoprotein; LDL: Low density lipoprotein.

Table 5.5.4 shows the prevalence of dyslipidemia among Jamaicans by parish. Among individuals with elevated total cholesterol the highest prevalence (50.4%) was observed in St James while the lowest prevalence (15.1%) was reported in St Ann. Prevalence of elevated total cholesterol differed significantly (p <0.001) by parish.

St Mary reported the highest prevalence of low HDL (55.1%) and high LDL (16.6%). Meanwhile, Kingston recorded the lowest prevalence of low HDL (18.9%) and high LDL (0.5%). The highest prevalence of elevated triglycerides (39.4%) was seen in St Ann, and the lowest prevalence (10.6%) reported in Portland. Parish differences were statistically significant for the prevalence of low HDL (p = 0.014) but not for elevated triglycerides and high LDL. Further research is needed to examine parish differences based on age-adjusted prevalence estimates.

Table 5.5.5 shows prevalence of awareness, treatment, and control for high cholesterol among Jamaicans 15 years and older. For none of these outcomes was there a statistically significant difference. Overall, awareness was 28.6% being approximately 32.7% among the females and 21.7% among males. Only 16.8% of all persons with high cholesterol were on treatment, but this increased to 58.8% among those aware of their high cholesterol status. Prevalence of controlled high cholesterol among patients on treatment was 35.1% being 47.9% among males and 31.9% among females. Consequently, only 5.9% of all high cholesterol cases had controlled total cholesterol levels.

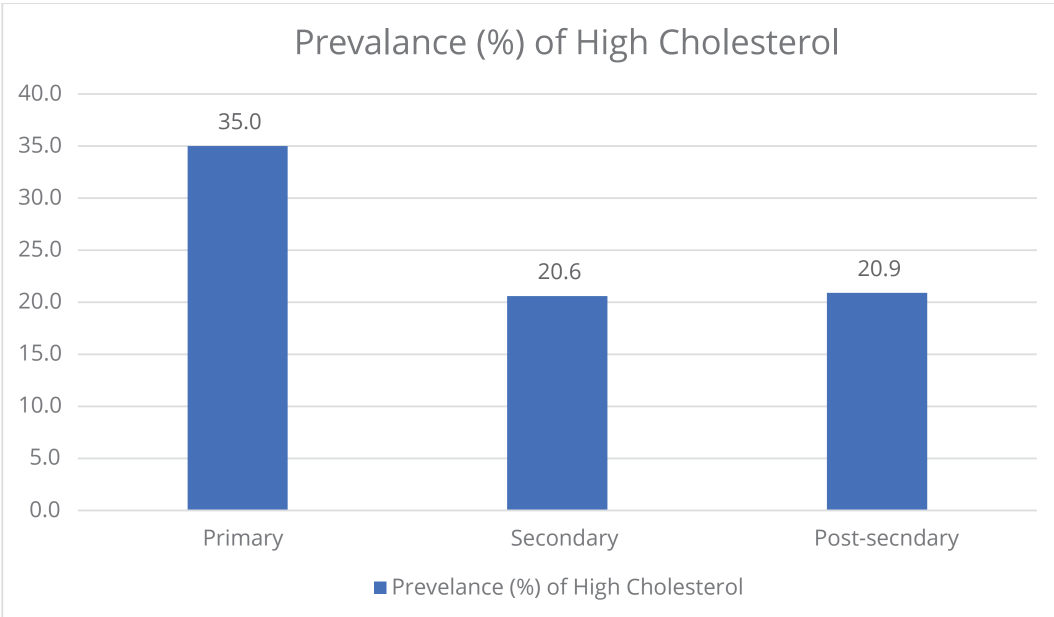
Table 5.5.5: Prevalence (%) of High Cholesterol Awareness, Treatment and Control of Participants 15 Years and Older, JHLS III 2017

High Cholesterol Category	Male	Female	Total
Aware (out of all high-cholesterol cases)	21.7 [12.0, 35.9]	32.7 [26.9, 39.1]	28.6 [23.5, 34.3]
On treatment (of all high-cholesterol cases)	10.2 [5.7, 17.4]	20.7 [16.3, 26.0]	16.8 [13.5, 20.8]
On treatment (of all aware high-cholesterol cases)	47.2 [18.8, 77.6]	63.4 [51.1, 74.2]	58.8 [45.0, 71.3]
Controlled (of all the treated patients)	47.9 [26.4, 70,2]	31.9 [24.6, 40.2]	35.1 [28.0, 42.9]

HDL: High-density lipoprotein; LDL: Low-density lipoprotein.
*p < 0.05; **p < 0.01; ***p < 0.0001.

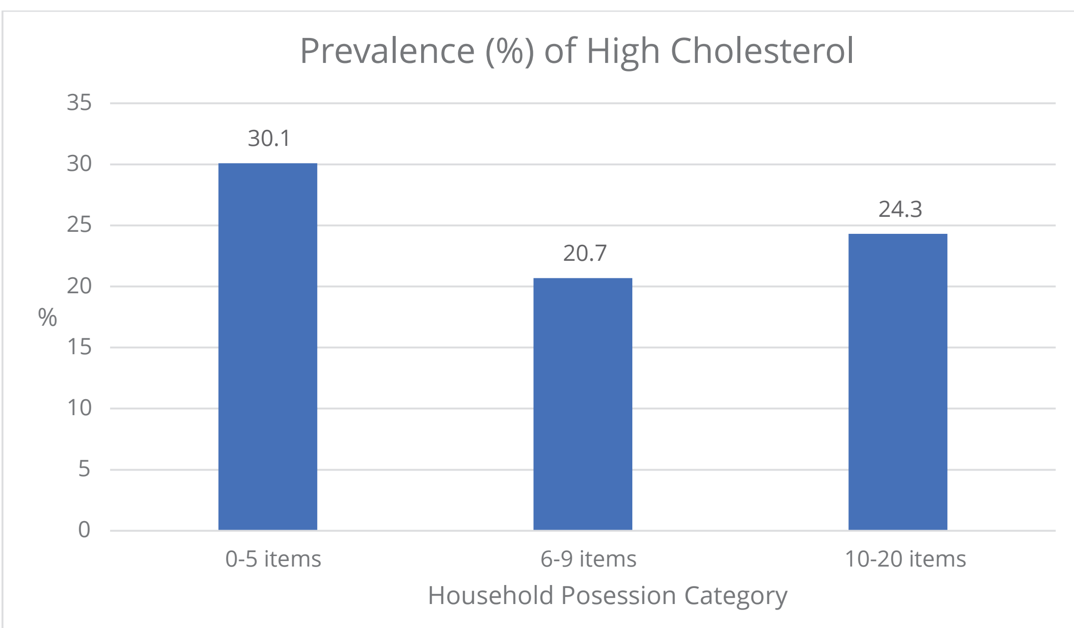
Figures 5.5.1 to 5.5.4 show the prevalence of high cholesterol by levels of socioeconomic status, body mass index (BMI) category and physical activity levels. Prevalence of the outcome was significantly associated with BMI (p<0.001) and education level (p=0.001) only. Of the three education level categories, prevalence was highest among those with primary-level education and (35.0%), and prevalence estimates for those with secondary and post-secondary education levels were similar (20.6% and 20.9%, respectively). When assessed by levels of household possession, prevalence was highest (30.1%) among those with 0–5 possession items and lowest (20.7%) among those in the middle category (6–9 possession items). The statistically significant association of high cholesterol prevalence with BMI category resulted from 35.0% prevalence among those with obesity compared to only 12.3% among the underweight.

Figure 5.5.1: Prevalence (%) of High Total Cholesterol by Highest Education Level for Jamaicans Aged 15 Years and Older, JHLS III 2017



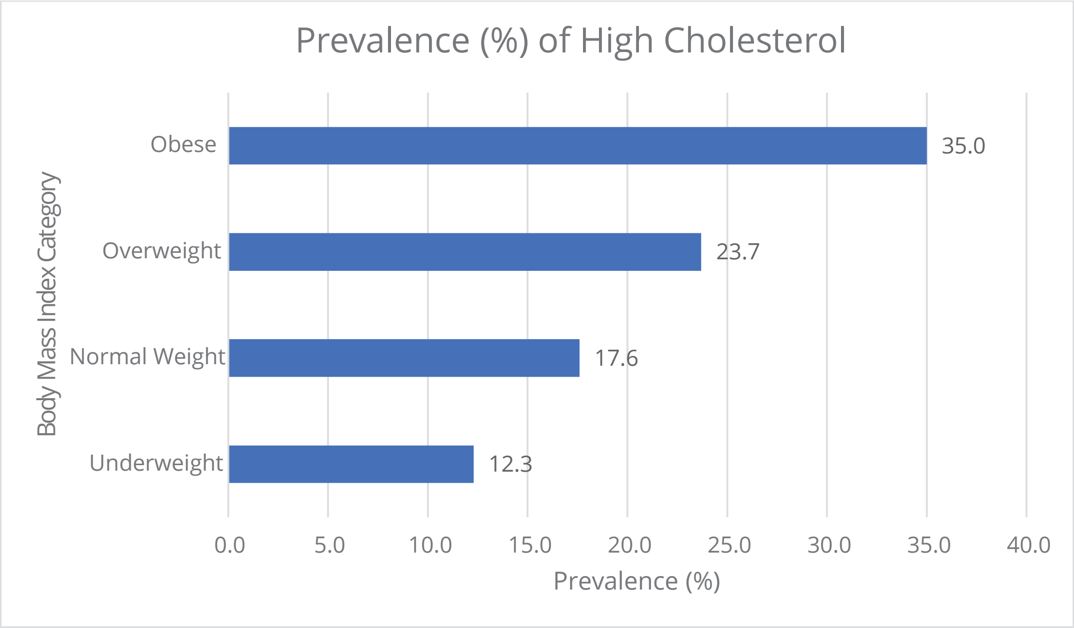
p=0.001

Figure 5.5.2: Prevalence (%) of High Cholesterol by Household Possessions Categories for Jamaicans Aged 15 Years and Older, JHLS III 2017



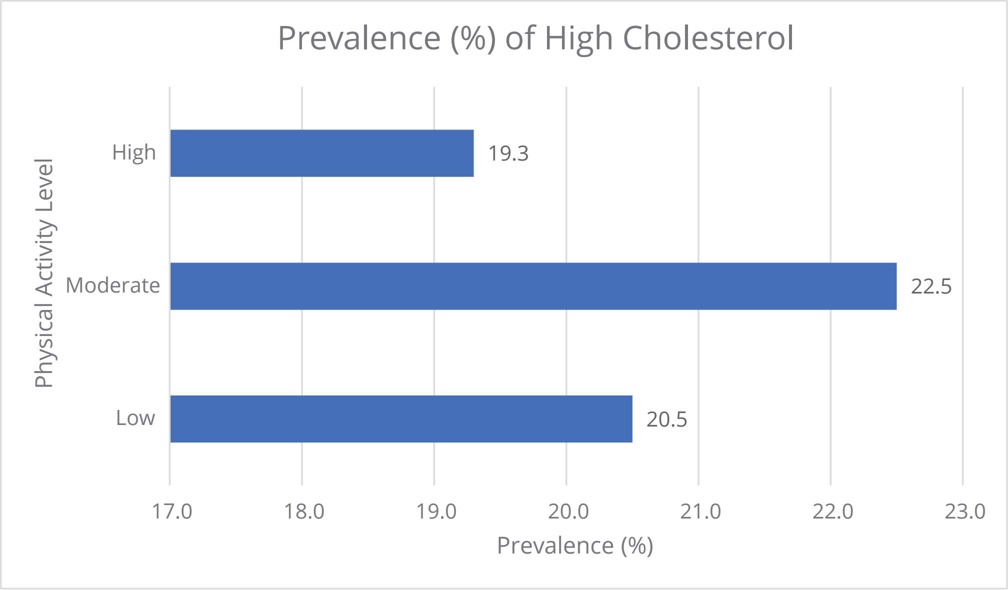
p=0.050

Figure 5.5.3: Prevalence of High Total Cholesterol by the BMI Categories among Jamaicans Aged 15 Years and Older, JHLS III 2017



p<0.001

Figure 5.5.4: Prevalence of High Total Cholesterol by Levels of Physical Activity among Jamaicans Aged 15 Years and Older, JHLS III 2017



p=0.413

5.6. Chronic Kidney Disease

Chronic kidney disease has become a major public health problem and is frequently a complication of hypertension and diabetes mellitus.[10,11] Other common aetiologies include primary glomerular disease, autoimmune conditions, and sickle cell disease, all of which are common in Jamaica. The Caribbean Renal Registry has documented an increasing number of persons on renal replacement therapy but to date there are no national prevalence estimates for chronic kidney disease.[12]

For this report, we used measurements of serum creatinine to obtain estimated glomerular filtration rates using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.[13]

Equations in µmol per litre were obtained from the National Kidney Disease Education Program website and shown in Display 1 below. Analyses were limited to participants 18 years and older, given that this was the age range for the CKD-EPI equation.

Display 1: Equations for Calculation of Estimated Glomerular Filtration Rate (GFR) Using Serum Creatinine in SI Units (µmol/L) based on the Chronic Kidney Disease Epidemiology Collaboration Equation

Black Female with serum creatinine ≤ 61.9 µmol/L
- **$GFR = 166 \times (Scr/61.9)^{-0.329} \times (0.993)^{Age}$**

Black Female with serum creatinine >61.9 µmol/L
- **$GFR = 166 \times (Scr/61.9)^{-1.209} \times (0.993)^{Age}$**

Black Male with serum creatinine ≤ 79.6 µmol/L
- **$GFR = 163 \times (Scr/79.6)^{-0.411} \times (0.993)^{Age}$**

Black Male with serum creatinine >79.6 µmol/L
- **$GFR = 163 \times (Scr/79.6)^{-1.209} \times (0.993)^{Age}$**

NB: Scr = Serum creatinine.

Source: National Institute of Diabetes and Digestive and Kidney Disease website: (https://www.niddk.nih.gov/health-information/professionals/clinical-tools-patient-management/kidney-disease/laboratory-evaluation/glomerular-filtration-rate/estimating). Last accessed September 18, 2021

Table 5.6.1 shows mean values and associated confidence intervals for serum creatinine and estimated glomerular filtration rate (eGFR) among males and females in urban and rural areas. Statistically significant sex differences were observed in the mean serum creatinine and mean eGFR values except for the mean eGFR value in rural areas. In all categories, mean serum creatinine levels were greater among males, while mean eGFR are greater among females.

Mean creatinine and eGFR values by age category are shown in Table 5.6.2. There was a decrease in mean eGFR values from the 18–24 age group through to the 75 years and older age group. Age-related decreases were observed for both males and females, and the net decrease was statistically significant. Mean serum creatinine values among females generally increased with age, though there were some fluctuations between age groups. Fluctuations were also observed in the mean serum creatinine among males, with creatinine increasing from 93.2 µmol/l in the 18–24 age group to 103.6 µmol/l in the 25–34 age group. This is followed by a decline in the 35–44 age to 55–64 age groups. Thereafter, mean serum creatinine increased in the 65–74 and 75 and older age categories. Net increases of serum creatinine among males and females were statistically significant.

Table 5.6.1: Mean Values (with 95% confidence intervals (CI) in brackets) of Serum Creatinine and Estimated Glomerular Filtration Rate by Sex and Area of Residence, JHLS III 2017

Renal Outcome	Males [$\bar{x}$ (95%*CI*)]	Females [$\bar{x}$ (95%*CI*)]	Both Sexes [$\bar{x}$ (95%*CI*)]
Both Regions			
Serum Creatinine (µmol/l) ***	97.4 [94.8, 100.0]	77.4 [73.7, 81.2]	87.1 [84.9, 89.4]
eGFR [ml/min/1.73 m^2] ***	99.4 [97.7, 101.1]	104.5 [102.3, 106.6]	102.0 [100.6, 103.5]
Rural			
Serum Creatinine (µmol/l) ***	99.1	80.6	89.5
eGFR (ml/min/1.73 m^2)	98.1 [95.8, 100.3]	100.1 [97.2, 103.1]	99.1 [97.1, 101.2]
Urban			
Serum Creatinine (µmol/l) ***	96.0	74.7	85.1
eGFR (ml/min/1.73 m^2) ***	100.6 [98.0, 103.1]	108.2 [105.1, 111.2]	104.5 [102.3, 106.7]

eGFR = estimated Glomerular Filtration Rate. eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation as described in Display 1.

*p < 0.05; **p < 0.01; ***p < 0.001 for male: female difference.

Table 5.6.2: Mean Values of Serum Creatinine and Estimated Glomerular Filtration Rate by Sex and Age Category, JHLS III 2017

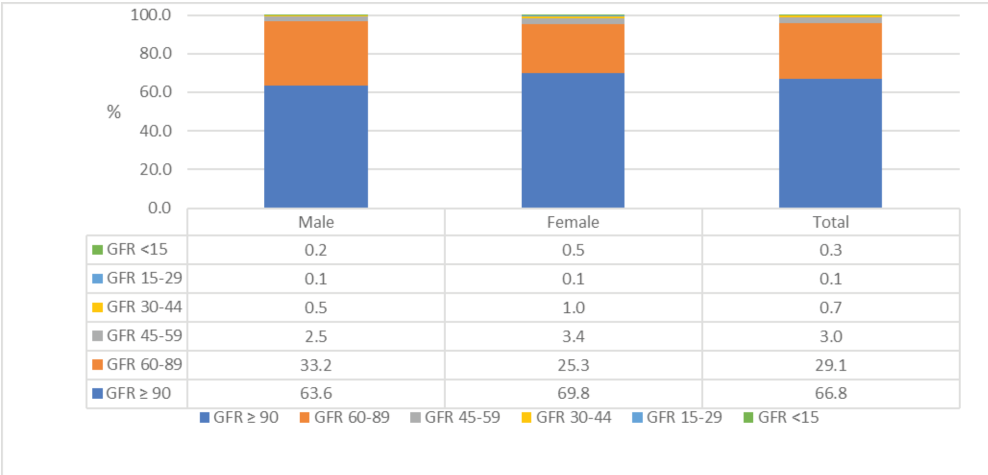
CVD Outcome	18–24 Years	25–34 Years	35–44 Years	45–54 Years	55–64 Years	65–74 Years	≥75 Years
Both Sexes							
Serum Creatinine*** (mmol/l)	80.8	89.5	85.8	83.5	92.6	94.5	93.2
eGFR*** (ml/min/1.73 m^2)	123.6	111.9	101.2	98.0	88.0	78.4	71.5
Males Only							
Serum Creatinine** (mmol/l)	93.2	103.6	98.2	95.7	91.7	97.6	101.3
eGFR*** (ml/min/1.73 m^2)	121.6	104.8	98.2	94.8	92.8	80.3	74.4
Females only							
Serum Creatinine*** (mmol/l)	70.0	77.1	73.8	71.8	93.5	91.1	84.1
eGFR*** (ml/min/1.73 m^2)	125.3	118.0	104.2	101.2	83.7	76.3	68.2

eGFR = estimated Glomerular Filtration Rate. eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation as described in the text and Box.

*p < 0.05; **p < 0.01; ***p < 0.001 for difference across age categories.

Figure 5.6.1 shows the distribution of eGFR categories overall and among males and females. Overall, 64% of participants had normal eGFR (≥ 90 ml/min/1.73 m^2), with a higher proportion of females having normal eGFR (70%) compared to males (67%). GFR between 60-89 ml/min/1.73 m^2 was observed among 25.3% of females and 33.2% of males. The differences in sex were statistically significant. Prevalence of reduced eGFR (<60 ml/min/1.73 m^2) is described below.

Figure 5.6.1: Distribution of eGFR Categories by Sex, JHLS III 2017

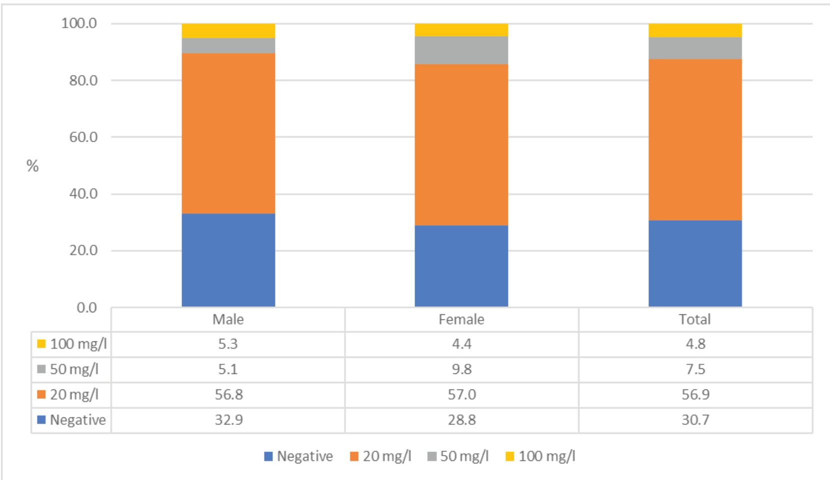


	Male	Female	Total
GFR <15	0.2	0.5	0.3
GFR 15-29	0.1	0.1	0.1
GFR 30-44	0.5	1.0	0.7
GFR 45-59	2.5	3.4	3.0
GFR 60-89	33.2	25.3	29.1
GFR ≥ 90	63.6	69.8	66.8

P < 0.01 for sex difference.

Figure 5.6.2 shows the distribution of albuminuria categories overall and among males and females. Twenty-nine percent (28.8%) of females vs. 32.9% of males tested negative for albuminuria; overall 30.7% tested negative for albuminuria. Similar proportions of males and females had albuminuria levels of 20 mg/l while 5.1% and 9.8% of males and females respectively had albuminuria levels of 50 mg/l. Albuminuria levels of 100mg/l were observed among 5.3% of males and 4.4% of females. Differences among sex were statistically significant.

Figure 5.6.2: Distribution of Albuminuria Categories by Sex, JHLS III 2017



	Male	Female	Total
100 mg/l	5.3	4.4	4.8
50 mg/l	5.1	9.8	7.5
20 mg/l	56.8	57.0	56.9
Negative	32.9	28.8	30.7

P < 0.05 for sex difference.

Table 5.6.3 shows the prevalence of chronic kidney disease among the subsample of participants who had data on both creatinine and urine albumin. Prevalence of chronic kidney disease (defined as reduced eGFR or albuminuria ≥ 50 mg/l) was 15.2% and was higher in females (17.6%) compared to males (12.4%). Prevalence of albuminuria > 50 mg/l was 12.4% while 0.3% hand kidney failure (eGFR <15 ml/min/1.73 m^2).

Table 5.6.3: Prevalence (%) of Selected Renal Indices by Sex, JHLS III 2017

CVD Outcome	Males (%)	Females (%)	Both Sexes (%)
Albuminuria* *(urine albumin ≥50 mg/l)*	10.3	14.2	12.4
Reduced GFR* *(eGFR < 60 ml/min/1.73 m^2)*	3.2	4.9	4.1
Chronic Kidney Disease** *(reduced GFR or albuminuria)*	12.4	17.6	15.2
Kidney failure *(eGFR < 15 ml/min/1.73 m^2)*	0.2	0.5	0.3

eGFR = estimated Glomerular Filtration Rate. eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.

Estimates for CKD based on 672 persons with data on both albuminuria and eGFR.

*p < 0.05; **p < 0.01; ***p < 0.001 for male: female difference.

Table 5.6.4 shows the prevalence of selected renal indices in urban and rural areas. For all indices in the reported table, a greater proportion of participants in rural areas showed reduced renal function compared to participants in urban areas. Twice as many participants in rural areas experienced albuminuria compared to individuals from urban areas, while prevalence of CKD was estimated at 18.5% in rural areas compared to 12.4% in urban areas.

Table 5.6.4: Prevalence (%) of Selected Renal Indices by Area of Residence, JHLS III 2017

CVD Outcome	Rural (%)	Urban (%)
Albuminuria*** *(urine albumin ≥50 mg/l)*	16.6	8.7
Reduced GFR* *(eGFR < 60 ml/min/1.73 m^2)*	5.2	3.2
Chronic Kidney Disease** *(reduced GFR or albuminuria)*	18.5	12.4
Kidney failure *(eGFR < 15 ml/min/1.73 m^2)*	0.5	0.2

eGFR = estimated Glomerular Filtration Rate.

eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.

Estimates for CKD based on 672 persons with data on both albuminuria and eGFR.

*p < 0.05; **p < 0.01; ***p < 0.001 for rural: urban differences.

Age-specific prevalence estimates for renal indices for males, females and both sexes together are shown Table 5.6.5. For both sexes, prevalence of albuminuria generally increased with age group with the highest prevalence in the 65–74 age group and lowest prevalence in 18–24 age-group. Prevalence of reduced GFR was generally low in the younger age groups, i.e., individuals below 55 years. Thereafter, prevalence increased with age, from 6.3% among those 55–64 years to 28.9% among persons ≥75 years. The prevalence of chronic kidney disease generally increased with age, from 8% among those 18–24 years to 43.5% for 75 years and older. The numbers for kidney failure were quite small, so no clear pattern can be reported.

Table 5.6.5: Prevalence (%) of Selected Renal Indices by Age Category, JHLS III 2017

CVD Outcome	18–24 Years (%)	25–34 Years (%)	35–44 Years (%)	45–54 Years (%)	55–64 Years (%)	65–74 Years (%)	≥75 Years (%)
Both Sexes							
Albuminuria*** *(urine albumin ≥50 mg/l)*	6.6	12.0	11.2	10.7	19.2	21.3	16.8
Reduced GFR*** *(eGFR < 60 ml/min/1.73 m^2)*	3.0	1.0	0.2	1.5	6.3	9.6	28.9
Chronic Kidney Disease*** *(reduced GFR or albuminuria)*	8.0	11.5	10.2	11.7	25.2	28.1	43.5
Kidney failure**- *(eGFR < 15 ml/min/1.73 m^2)*	-	1.0	-	-	0.8	0.4	-
Males Only							
Albuminuria*** *(urine albumin ≥50 mg/l)*	10.6	7.3	1.2	8.9	21.5	16.8	24.8
Reduced GFR*** *(eGFR < 60 ml/min/1.73 m^2)*	3.9	0.9	-	1.5	4.0	5.2	20.6
Chronic Kidney Disease*** *(reduced GFR or albuminuria)*	10.6	9.3	1.2	9.3	25.6	20.3	36.0
Kidney failure *(eGFR < 15 ml/min/1.73 m^2)*	-	0.9	-	-	-	-	-
Females Only							
Albuminuria*** *(urine albumin ≥50 mg/l)*	3.1	15.7	19.9	12.6	17.0	25.5	7.4
Reduced GFR*** *(eGFR < 60 ml/min/1.73 m^2)*	2.2	1.1	0.3	1.5	8.4	14.7	38.2
Chronic Kidney Disease*** *(reduced GFR or albuminuria)*	5.8	13.5	17.8	13.7	24.8	36.0	52.4
Kidney failure* *(eGFR < 15 ml/min/1.73 m^2)*	-	1.1	-	-	1.6	0.9	-

eGFR = estimated Glomerular Filtration Rate.

eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.

Estimates for CKD based on 672 persons with data on both albuminuria and eGFR.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$ for difference across age categories.

Results for males shows similar patterns for albuminuria – higher prevalence occurred among older age groups. For females, the highest prevalence of albuminuria was in the 65–74 age group and lowest prevalence in the 18–24 age group. Reduced GFR increased with age for both males and females and again predominantly among those in the older age groups beginning with the 55–64 age group. Among both males and females, the prevalence of chronic kidney disease again increased with age, although some fluctuations were noted, particularly among males.

Table 5.6.6 shows the prevalence of selected renal indices by education category. The prevalence of abnormal renal indices decreased as the level of educational attainment increases, across all renal indices, except for kidney failure where data was not available for post-secondary education. Another exception was also noted among persons with reduced GFR where the prevalence was 8.7% among persons with a primary-level education, and prevalence slightly increased from secondary (2.2%) to post-secondary (2.5%) education. These differences were statistically significant.

Table 5.6.6: Prevalence (%) of Selected Renal Indices by Highest Education Level, JHLS III 2017

CVD Outcome	Primary %	Secondary %	Post-Secondary %
Albuminuria** *(urine albumin ≥50 mg/l)*	16.9	11.6	7.2
Reduced GFR*** *(eGFR < 60 ml/min/1.73 m^2)*	8.7	2.2	2.5
Chronic Kidney Disease*** *(reduced GFR or albuminuria)*	23.5	13.1	10.8
Kidney failure *(eGFR < 15 ml/min/1.73 m^2)*	0.4	0.2	-

eGFR = estimated Glomerular Filtration Rate.
eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.
Estimates for CKD based on 672 persons with data on both albuminuria and eGFR.
*p < 0.05; **p < 0.01; ***p < 0.001 for difference across education categories.

Table 5.6.7 shows prevalence of selected renal indices by household possession category. For all renal indices, prevalence of reduced renal function decreased from the lower tertile to the upper tertile, except for kidney failure where data was not available for the upper tertile. As the number of household possessions increased, there was a stepwise reduction in the prevalence of reduced renal function, except for albuminuria which showed a slightly higher prevalence from the lower to middle tertile (13.6% to 14.7%), while prevalence decreased from the middle to lower tertile (14.7% to 9.0%).

Table 5.6.7: Prevalence (%) of Selected Renal Indices by Household Possession Category,[1] JHLS III 2017

CVD Outcome	Lower Tertile %	Middle Tertile %	Upper Tertile %
Albuminuria* *(urine albumin ≥50 mg/l)*	13.6	14.7	9.0
Reduced GFR*** *(eGFR < 60 ml/min/1.73 m^2)*	7.7	3.7	1.6
Chronic Kidney Disease*** *(reduced GFR or albuminuria)*	21.1	15.8	9.4
Kidney failure *(eGFR < 15 ml/min/1.73 m^2)*	0.4	0.6	-

[1]Lower tertile = 0–5 items; middle tertile = 6–9 items; upper tertile = 10–20 items
eGFR = estimated Glomerular Filtration Rate.
eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.
Estimates for CKD based on 672 persons with data on both albuminuria and eGFR.
*p < 0.05; **p < 0.01; ***p < 0.001 for difference across household possession categories.

Table 5.6.8 shows the prevalence of selected renal indices based on BMI category. The prevalence of albuminuria was greatest among persons who were underweight (16.8%) and pre-obese (16.4%). This was followed by persons who were obese (13.8%). Individuals in the normal weight category had the lowest prevalence (7.8%) for albuminuria. These differences were statistically significant. Similar trends were noted for chronic kidney disease where persons in the normal weight category had the lowest prevalence (13.1%) followed by persons in the obese (14.2%) and pre-obese (17.2%) categories. Individuals in the underweight category (25.0%) had the highest prevalence for chronic kidney disease. In contrast, persons with normal weight (5.5%) had the highest prevalence for reduced GFR. This was followed by persons in the obese, underweight, and pre-obese categories reporting prevalence of 3.7%, 3.6%, and 3.4%, respectively. Differences observed for reduced GFR, chronic kidney disease, and kidney failure were not statistically significant.

Table 5.6.8: Prevalence (%) of Selected Renal Indices by BMI Category, JHLS III 2017

CVD Outcome	Underweight %	Normal Weight %	Pre-Obese %	Obese %
Albuminuria** *(urine albumin ≥50 mg/l)*	16.8	7.8	16.4	13.8
Reduced GFR *(eGFR < 60 ml/min/1.73 m^2)*	3.6	5.5	3.4	3.7
Chronic Kidney Disease *(reduced GFR or albuminuria)*	25.0	13.1	17.2	14.2
Kidney failure *(eGFR < 15 ml/min/1.73 m^2)*	-	0.3	0.1	0.7

Underweight = BMI < 18.5 kg/m^2; Normal Weight = BMI 18.5 – 24.99 kg/m^2; Pre-Obese = BMI 25.0 -29.99 kg/m^2; Obese = BMI ≥30 kg/m2.
eGFR = estimated Glomerular Filtration Rate.
eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.
Estimates for CKD based on 672 persons with data on both albuminuria and eGFR.
*p < 0.05; **p < 0.01; ***p < 0.001 for difference across BMI categories.

Table 5.6.9 shows the prevalence of selected renal indices among persons with and without hypertension and diabetes mellitus. The prevalence of reduced renal function was twice as high among hypertensives compared to non-hypertensives across all indices, except for kidney failure. Similarly, among persons with albuminuria and chronic kidney disease, the prevalence of reduced renal function was almost twice as high among persons with diabetes compared to persons without diabetes. The prevalence of reduced GFR was three times greater among diabetics compared to non-diabetics. These differences were statistically significant, except for kidney failure.

Table 5.6.9: Prevalence (%) of Selected Renal Indices among Persons with and without Hypertension and Diabetes Mellitus, JHLS III 2017

CVD Outcome	Hypertensive %	Not Hypertensive %	Diabetic %	Not Diabetic %
Albuminuria *(urine albumin ≥50 mg/l)*	19.3***	8.3	19.8***	11.4
Reduced GFR *(eGFR < 60 ml/min/1.73 m^2)*	6.34***	2.4	9.2***	3.1
Chronic Kidney Disease *(reduced GFR or albuminuria)*	23.5***	10.2	26.0***	13.3
Kidney failure *(eGFR < 15 ml/min/1.73 m^2)*	0.3	0.3	1.0	0.2

Hypertensive = BP ≥140/90 mmHg or on medications; Diabetic = fasting glucose ≥ 7.0 µmol/l or on medications
eGFR = estimated Glomerular Filtration Rate.
eGFR was calculated using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.
Estimates for CKD based on 672 persons with data on both albuminuria and eGFR.
*p < 0.05; **p < 0.01; ***p < 0.001 comparing hypertensive to not hypertensive and diabetic to not diabetic

5.7. Cardiovascular Disease Outcomes (Heart Attack and Stroke)

Cardiovascular diseases (CVD) remain the leading cause of death in Jamaica.[14] Data from the Statistical Institute of Jamaica show that there were almost 6,000 CVD deaths in Jamaica in 2017.[15] CVD was responsible for 35% of deaths among men and 27% of deaths among women.[15] Data on incident CVD in Jamaica are limited, but previous reports from the Jamaica Health and Lifestyle Survey 2007–8 showed that while the prevalence of self-reported heart attack and stroke was fairly low, this translated in a fairly large number of affected persons, thus putting a significant burden on the health system.[16] In this report, we build on this data, again estimating the prevalence of self-reported heart attack and stroke.

Table 5.7.1 shows the prevalence of heart attack and stroke for males, females, and both sexes for persons aged 15 years and older and for person 15–74 years, to facilitate comparison with the 2008 data. Overall, prevalence of heart attack for persons aged 15 years and older was 0.42% and for stroke 1.15%. In both age categories, males have a higher prevalence of heart disease and stroke compared to females. In the 15 years and older group, the prevalence of heart attack was 0.52% and 0.31% among males and females respectively, while the prevalence of stroke was 1.30% among males and 1.01% among females. Similar findings were noted in the 15–74 age group. These sex differences were not statistically significant.

Table 5.7.1: Prevalence (%) of Heart Attack and Stroke by Sex, JHLS III 2017

CVD Outcome	Males % [% (95% CI)]	Females % [% (95% CI)]	Both Sexes% [% (95% CI)]
Persons 15 years and Older			
Heart Attack	0.52 [0.19, 1.41]	0.31 [0.08, 1.11]	0.42 [0.19, 0.92]
Stroke	1.30 [0.72, 2.35]	1.01 [0.72, 1.42]	1.15 [0.80, 1.66]
Persons 15–74 years			
Heart Attack	0.44 [0.11, 1.70]	0.34 [0.10, 1.12]	0.39 [0.15, 1.00]
Stroke	0.89 [0.39, 2.05]	0.85 [0.59, 1.22]	0.87 [0.54, 1.40]

Table 5.7.2 displays the prevalence of heart attack and stroke by age group. Findings demonstrate that the prevalence of heart attack and stroke increases with age. Statistically significant differences were noted across all groups. Among both sexes, there were stepwise increases in the prevalence of stroke as age increased. In this category, the lowest prevalence (0.12%) occurred in the 25–34 age group and the highest prevalence (6.77%) in the 75 and older age group. A similar pattern was noted in the prevalence of stroke among females, although in this case, the highest prevalence (6.04%) was seen in the 65–74 age group. Males in the 75 and older age group had the highest prevalence of stroke (11.35%). Although the prevalence for heart attack generally increased with age, fluctuations occurred across age groups. The highest prevalence for heart attack was seen among males in the 75 and older age group (3.42%), while the lowest prevalence (0.37%) was seen among both sexes in the 35–44 age group.

Table 5.7.2: Prevalence (%) of Heart Attack and Stroke by Age Group, JHLS III 2017

CVD Outcome	25-34 Years [% (95% CI)]	35-44 Years [% (95% CI)]	45-54 Years [% (95% CI)]	55-64 Years [% (95% CI)]	65-74 Years [% (95% CI)]	≥75 Years [% (95% CI)]
Both Sexes						
Heart Attack***	-	0.37 [0.06, 2.28]	-	2.05 [0.62, 6.56]	1.33 [0.50, 3.45]	1.41 [0.53, 3.35]
Stroke***	0.12 [0.03, 0.44]	0.28 [0.06, 1.15]	0.36 [0.13, 1.00]	4.25 [1.88, 9.33]	4.32 [2.80, 6.59]	6.77 [3.75, 11.94]
Males Only						
Heart Attack*	-	0.77 [0.12, 4.74]	-	1.65 0.29, 8.77]	1.40 [0.32, 5.91]	3.42 [1.34, 8.42]
Stroke***	-	-	-	6.67 [2.44, 16.94]	2.57 [0.88,7.26]	11.35 [5.17, 23.10]
Females only						
Heart Attack***	-	-	-	2.46 [0.0.48, 11.64]	1.25 [0.37, 4.18]	-
Stroke***	0.24 [0.07, 0.85]	0.53 [0.13, 2.17]	0.72 [0.26, 1.99]	1.79 [0.79, 3.99]	6.04 [3.70, 9.70]	3.81 [1.55, 9.07]

*p < 0.05; **p < 0.01; ***p < 0.001 for difference across sex categories.

Table 5.7.3 shows the prevalence of heart attack and stroke by education category. Findings reveal that the prevalence of heart attack and stroke generally decreased as the level of education increased. Differences noted in each group were statistically significant. The prevalence of heart attack and stroke was lower among persons who attained secondary and post-secondary education, except among males with heart attack. In this group, though a reduction in prevalence was noted among persons with secondary education (0.13%) compared to those with primary education (0.82%), a greater prevalence was observed in the post-secondary education group (2.64%). Females in the post-secondary group reported the lowest prevalence for stroke (0.27%), and males who attained a primary-level education had the highest prevalence for stroke (4.35%).

Table 5.7.3: Prevalence (%) of Heart Attack and Stroke by Education Category, JHLS III 2017

CVD Outcome	Primary (%)	Secondary (%)	Post-secondary (%)
Both Sexes			
Heart Attack*	1.17	0.07	1.03
Stroke***	4.06	0.34	0.45
Males Only			
Heart Attack**	0.82	0.13	2.64
Stroke***	4.35	0.27	0.85
Females only			
Heart Attack*	1.60	-	-
Stroke***	3.67	0.43	0.22

*p < 0.05; **p < 0.01; ***p < 0.001 for difference across education categories.

Table 5.7.4 shows the prevalence of heart attack and stroke by household possession category. In all groups, prevalence of stroke decreased as the number of household possessions increased. These differences were statistically significant among both sexes and males but was not among females. There was no clear pattern of association between the prevalence of heart attacks and household possession categories.

Table 5.7.4: Prevalence (%) of Heart Attack and Stroke by Household Possession Category,[1] JHLS III 2017

CVD Outcome	Lower Tertile (%)	Middle Tertile (%)	Upper Tertile (%)
Both Sexes			
Heart Attack	0.55	0.31	0.55
Stroke*	2.22	0.89	0.70
Males Only			
Heart Attack	-	0.61	1.17
Stroke**	2.90	0.78	0.72
Females only			
Heart Attack	1.20	-	-
Stroke	1.41	1.0	0.68

[1]Lower tertile = 0–5 items; middle tertile = 6–9 items; upper tertile = 10–20 items.

*p < 0.05; **p < 0.01; ***p < 0.001 for difference across household possession categories.

Table 5.7.5 shows the prevalence of heart attack and stroke by body mass index (BMI) category. Findings suggest that the prevalence of heart attack tended to increase as BMI category increased, but the pattern was less consistent for stroke. None of these associations were statistically significant.

Table 5.7.5: Prevalence (%) of Heart Attack and Stroke by BMI Category, JHLS III 2017

CVD Outcome	Underweight (%)	Normal Weight (%)	Pre-obese (%)	Obese (%)
Both Sexes				
Heart Attack	-	0.21	0.64	0.92
Stroke	0.28	1.27	1.44	1.22
Males Only				
Heart Attack	-	0.32	1.11	1.57
Stroke	0.44	1.73	1.07	1.81
Females only				
Heart Attack	-	-	0.19	0.69
Stroke	-	0.42	1.78	1.01

Underweight = BMI < 18.5 kg/m^2; Normal Weight = BMI 18.5 – 24.99 kg/m^2; Pre-Obese = BMI 25.0 -29.99 kg/m^2; Obese = BMI ≥30 kg/m^2.

Table 5.7.6 shows the prevalence of heart attack and stroke by physical activity level. Prevalence estimates for heart attack and stroke were lower than 0.5% among Jamaican 15 years and older. The prevalence of stroke differed significantly (p<0.001) with PAL in the total population with estimates being lowest at 0.27% in those with high PAL and highest at 2.2% in Jamaicans with low PAL. The sex-specific prevalence estimates for stroke also demonstrated lower estimates (p<0.05) among those with high and moderate PAL compared to those with low PAL.

Neither sex-specific nor total population estimates gave evidence of a statistically significant association prevalence of self-reported heart attack with physical activity level. Among the females only, the association approached statistical significance (p=0.05) although prevalence estimates for the three activity levels were less than 1%.

Table 5.7.6: Prevalence (%) of Heart Attack and Stroke by Physical Activity Level among Jamaicans Aged 15 Years and Older, JHLS III 2017

CVD Outcome	Low PAL (%)	Moderate PAL (%)	High PAL (%)
Both Sexes			
Heart Attack	0.53	0.56	0.33
Stroke***	2.2	1.3	0.27
Males Only			
Heart Attack	1.2	0.26	0.42
Stroke**	3.3	1.6	0.27
Females only			
Heart Attack&	0.10	0.81	0.16
Stroke*	1.4	1.0	0.29

*p < 0.05; **p < 0.01; ***p < 0.001 for difference across physical activity categories. &p=0.05

5.8. Sickle Cell Disease

The United Nation and the World Health Organization have designated sickle cell disease (SCD) an important global health issue. The prevalence of the sickle gene in the Caribbean is second only to that in West Africa. One in 150 Jamaicans are born with SCD, and 1:10 have the sickle cell trait (SCT). Approximately, 5% have other genes, which when co-inherited with an S gene, result in a child with SCD, most of those having a C trait.

Sickle cell disease is a group of disorders characterized by the predominance of sickle haemoglobin in an affected individual's erythrocytes. It is caused by the inheritance of mutations that adversely affect the structure or quantity of the beta haemoglobin chain; at least one must be the sickle mutation, which results in the production of haemoglobin (Hb) S. Affected individuals inherit a second S mutation or another clinically relevant mutation from the other parent. In Jamaica, homozygous sickle cell disease (Hb SS) is the most common, followed by coinheritance of Hb S and Hb C (HbSC disease). The aberrant haemoglobin causes perturbation within the erythrocyte, which can then cause a cascade of haemolysis, oxidant injury, and inflammation leading to acute and chronic complications, which can affect all organ systems. The disease is variable in severity. Inheritance of one gene (trait) is usually asymptomatic and diagnosed only by specific testing.

Knowledge of having SCD is important in primary and secondary prevention of complications. Knowledge of having a trait is important in making informed decisions when choosing a partner and planning a family.

In the study, data regarding sickle cell disease (SCD) and significant traits, Sickle Cell Trait (SCT), and Haemoglobin (Hb) C trait were acquired from testing of samples (*n* = 1232) and questionnaire responses (2807). Results are presented based on data from the 1,230 respondents who had test results, complete questionnaire data, and complete sampling design data. The 1,230 respondents represented 873,599 Jamaicans 15 years of age and older. This SCD study sub-sample had a weighted sex distribution, approximately 50% male and 50% females, which was similar to the sex distribution in the Jamaican population 15 years and older. The weighted percentages in the 15–24 and 45+ age groups in the SCD study subsample, differed by 2% or less from the percentages in these age groups in the population (see Appendix 7.). Thus, the SCD study subsample was expected to provide weighted prevalence estimates that were valid for Jamaicans 15 years and older.

5.8.1 Prevalence of Sickle Cell Disease and Sickle Cell Trait

Weighted population estimates revealed that prevalence of SCD based on a positive test result was 0.67%. The three respondents, two males and one female, in the sample who tested positive represented 5,877 Jamaicans (See Table 5.8.1.). This estimated prevalence of 0.67% is in keeping with the known prevalence (1:150). Although the study was powered to estimate prevalent NCDs such as hypertension, which are much more common, it is noteworthy that the sample can provide evidence that suggest no change in the occurrence of SCD among Jamaicans. The small numbers of cases of SCD, however, precluded further analysis of associated demographic characteristics.

The prevalence of the SCT (10.9%) shown in Table 5.8.1 was similar to the 10% reported in previous local studies.[17,18] The was no significant difference between the sexes with respect to the prevalence of the SCT (*p* = 0.30), in particular, or with respect to the distribution of the genotypes (p=0.067) as shown in Table 5.8.1.

Table 5.8.1: Population Estimates for Prevalence (%) and Counts of Laboratory Confirmed Sickle-related Genotypes [with Sample Counts[n] in Brackets] by Sex among Jamaicans Aged 15 Years and Older, JHLS III 2017

Test Results	Males	Females	Total
No Disease/No trait Population Estimate	86.9% [400] 358,452	85.4% [654] 393,455	86.1% [1,054] 751,907
Traits • AS (% [n]) Population counts	9.3% [47] 40,489	12.4% [90] 54,364	10.9% [137] 94, 852
• AC (% [n]) Population counts	2.5% [17] 10,981	2.2% [19] 9,704	2.4% [36] 20,684
• Sickle Cell Disease SS (% [n]) Population counts	1.3% [2] 5,682	0.04% [1] 195	0.67% [3] 5,877

The distribution of SCT and HbC traits by parish are shown in Table 5.8.2. The parishes where traits were the most and the least common are in Clarendon and St Ann, respectively.

Table 5.8.2: Distribution of Sample Counts for the Haemoglobin C (HbC) and Sickle Trait by Parish with Weighted and Unweighted Percentage Distribution for Sickle Cell Trait (AS), JHLS III 2017

Parish	Laboratory Result Negative for Sickle Cell Disease	Laboratory Result Positive for Haemoglobin C Trait	Laboratory Result Positive Sickle Cell Trait	Sample Tested per Parish	% Sickle Trait Positive (AS only) per Parish[3]
	(AA)	(HbC)	(AS)		
Kingston	148	8	17	174[1]	[9.7]9.8
St Andrew	162	3	26	191[1]	[11.9]13.6
St Catherine	107	3	12	123[1]	[9.9]9.8
Clarendon	67	1	14	83[1]	[18.0]16.9
Manchester	71	7	8	86	[7.2] 9.3
St Elizabeth	68	3	11	82	[12.5]13.4
Westmoreland	37	2	5	44	[11.4]11.4
Hanover	31	0	5	36	[12.0]13.9
St James	56	2	9	67	[11.0]13.4
Trelawny	84	1	9	94	[10.8]9.6
St Ann	36	0	1	37	[4.1]2.7
St Mary	70	2	10	82	[10.9]12.2
Portland	41	2	6	49	[10.6]12.2
St Thomas	76	2	4	82	[4.3]4.9
Total	**1,054**	**36**	**137**	**1,230[2]**	**[10.9]11.1**

[1]Includes 1 SS case. [2]Includes 3 SS cases. [3]Weighted estimates in brackets []

5.8.2 Sickle Cell Disease Knowledge

Knowledge of disease status is important for personal health care; knowledge of trait status is required for primary prevention of new cases of sickle cell disease (SCD). In the JHLS II, self-report of the possession of the sickle cell trait (SCT) significantly underestimated the true trait status. There was no laboratory confirmation of sickle status in that survey. In the JHLS III, both questionnaire and laboratory data were available.

The kappa statistic for agreement between self-report of SCD status and laboratory confirmation of SCD status based on weighted percentages was 0.36, indicating lower than moderate agreement[19] between laboratory results and self-reported status. The kappa statistic represents agreement that is not due to chance and reflects the less than 50% of true SCD cases than can be expected to know their true status. Nearly 100% of persons without SCD according to laboratory results can be expected to be aware of their true status (See Table 5.8.3.).

Table 5.8.3: Unweighted Counts and Percentages [with Weighted Percentages in Brackets] of Jamaicans Aged 15 Years and Older Who Know Their True (Based on Lab Results) Sickle Cell Disease Status by Test Result Categories, JHLS III 2017

	Tested Positive Sickle Cell Disease	Tested Negative for Sickle Cell Disease
Self-reported Sickle Cell Disease	2 66.7% **[46.2%]**	8 0.7% [0.7%]
Self-reported No Sickle Cell Disease	1 33.3% [53.7%]	1216 99.3% **[99.3%]**
Total [% of total]	**3 [0.67%]**	**1224 [99.3%]**

Based on unweighted percentages: Kappa = 0.31, percentage agreement 99.27%.
Based on unweighted percentages: Kappa = 0.36, percentage agreement 98.91%.
[1]based on unweighted sample.

The kappa statistic for agreement between self-report of SCT status and laboratory confirmation of SCT status was 0.22, indicating poor agreement[19] between laboratory results and self-reported status. This low value of the kappa statistic reflects the low weighted percentage, 15.0%, of the population that can be expected to know that they have the sickle cell trait. In addition, most of the persons, 85%, who tested positive for a sickle cell trait were unaware that they had the trait. Weighted estimates also show that almost 100% of person without SCT based on laboratory testing will assume they are without the trait (See Table 5.8.4.).

Table 5.8.4: Unweighted Counts and Percentages [with Weighted Percentages in Brackets] of Self-report of Sickle Cell Trait Status by Test Result Categories in Jamaicans Aged 15 Years and Older, JHLS III 2017

	Tested Positive Sickle Cell Trait	Tested Negative for Sickle Cell Trait
Self-reported Sickle Cell Trait	23 13.4% [15.0%]	3 0.3% [0.1%]
Self-reported No Sickle Cell Trait	149 86.6% [85.0%]	1053 99.7% [99.9%]
Total [% of total]	**172 100.0%**	**1056 100.0%**

Based on unweighted percentages: Kappa = 0.20, percentage agreement 87.8%.
Based on unweighted percentages: Kappa = 0.22, percentage agreement 88.7%.

Primary prevention of SCD depends on knowledge of one's status. An adult with SCD or a sickle or other significant trait must be aware that they are at risk of having an affected child.

Table 5.8.5 demonstrates that most adults with the SCT and HbC traits were unaware of their risk. They are, therefore, unable to make informed reproductive choices. The inability to make appropriate reproductive choices may also stem from the high prevalence (85%) of lack of knowledge of true SCT status, as shown in Table 5.8.4.

Once there is self-knowledge of personal risk, potential parents of children with SCD must know that in order for a child in Jamaica to have SCD, they must inherit a relevant gene from both parents. Actual risk depends not only on their own status but also that of their partner.

Table 5.8.5: Sample Counts and Weighted Percentages [in Brackets] of Persons with S and C Trait+ Who Report That They Can Have a Child with the Disease by Sex, JHLS III 2017

		Sickle Cell (S) Trait	Other (C) Trait	No SCT or C Trait
Female	Reports risk of affected child	16.0 [23.5%]	0 [0.0%]	19 [2.5%]
	Reports no risk of affected child	67 [66.3%]	18 [99.2%]	602 [91.9%]
	Don't know/no response	5 [10.2%]	1 [0.8%]	25 [5.6%]
	Total	**88 [100%]**	**19 [100%]**	**646 [100%]**
Male	Reports risk of affected child	2 [1.1%]	1 [19.5%]	6 [0.9%]
	Reports no risk of affected child	43 [82.9%]	13 [54.5%]	359 [91.7%]
	Don't know/no response	2 [16.0%]	3 [26.0%]	27 [7.5%]
	Total	**47 [100%]**	**17 [100%]**	**392 [100%]**

+The AS and AC genotypes, respectively.

The data in Table 5.8.6 suggest that the majority of persons in the groups with and without the trait indicate that their spouse does not have sickle cell disease or sickle cell trait. Another relatively small proportion indicate that they do not know the SCD/SCT status of their spouse. There is a need to ensure that the population of Jamaicans generally become aware of the SCD/SCT status of their spouses and of their risk of producing children with the disease if their spouse does, in fact, have the sickle cell trait or disease.

Table 5.8.6: Weighted Percentages [in Brackets] and Sample Counts of Persons with S and C Trait+ Who Report the Sickle Cell Status of Their Spouse or Partner, JHLS III 2017

		Sickle Cell (S) Trait	Other (C) Trait	No S or C Trait
Female	Spouse does not have SCD/SCT	60 [84.8%]	14 [100%]	435 [85.5%]
	Spouse has SCD/SCT	2 [10.0%]	0.0	8 [2.2%]
	Don't know	5 [5.1%]	0.0	28 [12.3%]
	Total	**67 [100%]**	**14 [100%]**	**471 [100%]**
Male	Spouse does not have SCD/SCT	29 [98.6%]	7 [68.7%]	255 [87.3%]
	Spouse has SCD/SCT	1 [0.6%]	0.0	7 [3.6%]
	Don't know	1 [0.8%]	4 [31.3%]	24 [9.1%]
	Total	**31 [100%]**	**11 [100%]**	**286 [100%]**

+The AS and AC genotypes, respectively.

Table 5.8.7 shows that approximately 11% of Jamaicans aged 15 years and older reported being tested for SCD/SCT. The proportion of females, 14.3%, who reported being tested for SCD/SCT was twice the proportion in males, 7.0%, and the difference between the percentages was statistically significant (p<0.01). Less than 20% of the women who had history of at least one live birth reported being tested. Whereas newborn screening for SCD became universal in Jamaica only in 2015, testing of pregnant women for SCD and SCT, but not other traits, has been entrenched in public antenatal care for decades. Table 5.8.7 shows a low prevalence, 14.5%, of self-report of testing for SCD among this sub-population of Jamaican females 15 years and older. There was no significant association between the prevalence of self-report of testing for SCD and history of live births. Thus, based on JHLS III data, it was determined that there was underreporting of a history of being tested in women who had previously been pregnant (Table 5.8.7).

Table 5.8.7: Percentage Distribution with 95% Confidence Intervals [in Brackets] and Sample Counts of Self-reported Previous Testing for SCD among Jamaicans Aged 15 Years and Older, JHLS III 2017

Population Subgroups	Tested	Not Tested	Don't Know If Tested
Gender**			
Females (% [95%CI]) (n)	14.3[11.0,18.5] 96	84.6[80.5,88.0] 652	1.1[0.5, 2.4] 10
Males (%[95%CI]) (n)	7.0[4.3, 11.0] 23	90.5[85.4,94.0] 431	2.5[1.0, 6.1] 6
Total (%[95%CI]) (n)	10.7[8.1,14.0] 119	87.5[83.8,90.5] 1083	1.8[1.0,3.3] 16
Females with			
No Live birth (%[95%CI]) (n)	6.7[2.2, 18.6] 7	93.3[81.4,97.8] 79	0.0
Had live birth (%[95%CI]) (n)	16.1[12.6,20.5] 88	82.5[78.2,86.1] 547	1.3[0.6, 3.0] 10
All Females (%[95%CI]) (n)	14.5[11.1,18.7] 95	84.4[80.2,87.8] 626	1.1[0.5, 2.4] 10

**p<0.01

Table 5.8.8 shows that data from the JHLS III still gave evidence of underreporting of SCT among Jamaicans 15 years and older. The prevalence of self-report of SCT based on their recollection of being tested, was just under 3% among Jamaicans and (based on absence of the overlap of the sex-specific confidence intervals) significantly lower in the males (1.0% [95% CI=0.37 to 2.8%]) compared with the females (4.4% [95% CI=2.9 to 6.7]). The distribution of the test results variable categories shown in Table 5.8.8 did not differ significantly with sex, however. The distribution of the test results variable categories shown in Table 5.8.8 did differ significantly with presence or absence of a history of at least one live birth among these Jamaican women (p<0.01). Compared with women who had no history of a live birth, more of the women who had a history of at least one live birth reported that their test result was either SCT or negative for SCT and SCD, while a smaller percentage of these women reported they were not previously tested.

Table 5.8.8: Percentage Distribution with 95% Confidence Intervals [in Brackets] and Sample Counts of Self-report of Test Results in Jamaicans 15 Years and Older, JHLS III 2017

Population Subgroups	Not tested	Self-reported Test Results			Don't Know Result/If Tested
		No Disease/ Trait	Sickle Cell Trait	Sickle Cell Disease	
Gender					
Females (%[95%CI]) (n)	84.6[80.5,88.0] 652	6.7[4.5,9.9] 41	**4.4[2.9,6.7]** 29	0.79[0.2,2.8] 4	3.6[2.4,5.4] 32
Males (%[95%CI]) (n)	90.5[85.4,94.0] 431	3.8[1.7,8.2] 10	**1.0[0.37,2.8]** 4	1.0[0.37,2.7] 4	3.7[1.6,8.0] 11
Total (%[95%CI]) (n)	87.5[83.8,90.5] 1083	5.3[3.5,7.9] 51	**2.7[1.8,4.0]** 33	0.89[0.40,2.0] 8	3.6[2.4,5.3] 43
Females with**					
No Live birth (%[95%CI]) (n)	**93.3[81.4,97.8]** 79	1.2[0.28,5.2] 2	1.3[0.32,4.7] 2	3.0[0.48,16.9] 1	1.2[0.40,3.7] 2
Had live birth (%[95%CI]) (n)	**82.5[78.2,86.1]** 547	**7.9[5.3,11.6]** 38	**5.1[3.3,7.8]** 27	0.32[0.10,1.0] 3	4.1[2.7,6.4] 30
All Females (%[95%CI]) (n)	84.4[80.2,87.8] 626	6.7[4.5,10.0] 40	4.4[2.9,6.7] 27	0.80[0.22,2.9] 4	3.6[2.4,5.4] 32

**p<0.01

5.8.3 Sickle Cell Disease – Summary of Findings

The JHLS II demonstrated that only 3% self-reported that they had SCT,[20] though the prevalence was then 10%.[21] Laboratory results shown in Tables 5.8.1 and 5.8.2 confirm known prevalence for SCT and SCD.

Table 5.8.7 shows that less than 10% of Jamaican males have been tested for SCD/SCT and less than 20% of the women who had history of at least one live birth reported being tested. The low prevalence of self-report of testing in these groups has contributed to the underestimate of the SCT among Jamaicans aged 15 years and older as shown in Table 5.8.7. The prevalence of SCT based on laboratory testing as shown in Table 5.8.1 is a more reliable estimate of this prevalence.

Although the testing of pregnant women for SCD and SCT has been entrenched in public antenatal care for decades, the results shown above in relation to self-report of test results suggest that Jamaican women with a history of pregnancy and/or live births may be unaware that they were tested for SCD/SCT and/or unaware of their test results or the meaning of their test results. Thus, work needs to be done to assist and promote the recollection of the occurrence of the test and the test results as a lack of awareness of the trait status, particularly because it is asymptomatic, can lead to increased burden of SCD in our population. In addition, more needs to be done to encourage testing for SCD/SCT among males.

5.9. Asthma

5.9.1 Understanding Asthma

Definition of Asthma

Asthma is a chronic obstructive airway disorder characterized by inflammation, variable expiratory airflow limitation and respiratory symptoms such as wheeze, cough, shortness of breath and chest tightness. Asthma is a clinical diagnosis, however, evidence of an obstructive pattern and airway hyperresponsiveness on pulmonary function testing strengthens the diagnosis.

Asthma is classified in many ways. It may be intermittent or persistent in symptomatology; mild, moderate, or severe and uncontrolled, partially controlled, or controlled. Current or clinical asthma has been defined using various methods in epidemiological surveys. The Centers for Disease Control and Prevention classify as having current asthma those who answer affirmatively to both: 'Have you EVER been told by a doctor or other health professional that you had asthma?' and 'Do you still have asthma?'[22] The European Community Respiratory Health Survey (ECRHS) queries symptoms in the past 12 months to distinguish clinical from sub-clinical asthma.[23]

Previous Estimates of Asthma Prevalence among Adults in Jamaica

Asthma is common in Jamaica. In the Jamaica Asthma and Allergies National Prevalence Study,[24] which used the ECRHS to define asthma,[23] 2,163 adults aged 18 years and older were selected by stratified multi-stage probability sampling design using enumeration districts (EDs) as primary sampling units. The weighted prevalence estimate of individual asthma symptoms among adults in Jamaica was 28.3%. The prevalence of current asthma was 10.6%, based on having the diagnosis of asthma and, within the past 12 months, having an asthma attack, taking asthma medications, or having been awakened by shortness of breath.[25] The prevalence of doctor-diagnosed asthma in adults was 7.8%.

Risk Factors for Asthma

In the Jamaica Asthma and Allergies National Prevalence Study, risk factors for asthma in adulthood included chest infections in the first year of life, hospitalization before two years of age, a history of asthma in the family, and a personal history of atopy. There is an interaction between age and gender. In children, asthma is more common in boys; in adults, asthma is more common in women. Urban dwelling is associated with a higher risk of asthma than rural living.[26] Other risk factors identified in adults include smoking, higher BMI, and low socioeconomic status.[27]

Working Definition of Asthma for This Report

Asthma

For this report, persons were categorized as presumed asthma cases, possible asthma cases, and as not being an asthma case.

- The presumed asthma case was a respondent who, in response to two separate questionnaire items, indicated they had been told by a health professional that they had asthma. One questionnaire item asked whether they had asthma/wheezing,' and the other asked whether they had been told they had 'asthma.'

- A possible case was the one who had indicated for one but not the other of the questionnaire items that they had been told by a health professional that they had asthma.
- Persons were considered NOT to be asthma cases if they responded 'no' to both the questionnaire items.
- Participants with status uncertain, because of a 'don't know' response on one variable and a yes or no response on the other were excluded from the analyses.

Current Asthma

A presumed/possible asthma case was classified as being on current treatment for asthma, and therefore a current asthma case, if s/he indicated that they still have asthma (questionnaire item 3.55) and have done either one or more of the following – visited hospital/casualty department/the emergency room in the past 12 months because of asthma (questionnaire item 3.59), are currently taking any herbal or traditional remedy because of asthma (questionnaire item 3.58) or are currently taking any medication because of asthma (questionnaire item 3.56).

Longitudinal Trends in Asthma Prevalence

One of the questionnaire items sought from respondents an indication of whether a health professional had told them they had asthma or wheeze. Prevalence of persons responding in the affirmative to the item was used as the estimate of prevalence of asthma based on the JHLS II data. For the purposes of comparison of asthma prevalence estimates from JHLS II and JHLS III, the report displays in chapter 7 prevalence estimates based on this aforementioned definition.

5.9.2 Socio-demographic Correlates of Asthma

Total population estimates for the prevalence of presumed or possible asthma and the combined states are shown in Tables 5.9.2.1 and 5.9.2.2. Overall, prevalence of presumed or possible asthma combined was 10.6% among males and 11.7% among females. There were no gender or urban/rural differences in the prevalence of asthma when the population was assessed as a whole. Presumed/possible asthma varied with age from a prevalence of 14.9% in 15–24-year-olds to less than 10% in 55–74-year-olds. Table 5.9.2.2 shows that the prevalence of presumed/possible asthma also varied with weekly household income; the prevalence was highest in those from households earning more than $60,000/week.

Table 5.9.2.1: Prevalence (%) Estimates for Possible Asthma, Presumed Asthma, and Possible/Presumed Asthma by Demographic Categories among Jamaicans Aged 15 Years and Older, JHLS III 2017

Demographic Category	Possible Asthma[1]	Presumed Asthma[1]	Possible/Presumed Asthma[2]
Sex			
Males	5.0[3.8,6.5]	5.6[5.8,8.3]	10.6[8.6,13.1]
Females	6.8[5.3,8.7]	4.9[3.8,6.5]	11.7[10.1,13.6]
Age (Years)			
15–24	8.0	6.9	**14.9***
25–34	3.7	6.6	**10.3***
35–44	6.9	3.5	**10.5***
45–54	5.7	5.1	**10.7***
55–64	4.5	5.2	**9.7***
65–74	4.0	1.4	**5.4***
≥75	6.7	3.5	**10.3***
Area of Residence			
Rural	5.6	4.2	9.8
Urban	6.2	6.3	12.4
Parish of Residence			
Kingston	4.4	7.6	12.0
St Andrew	4.6	6.6	11.3
St Thomas	7.3	6.6	13.9
Portland	3.7	2.1	5.8
St Mary	11.1	10.7	21.8
St Ann	6.9	3.1	10.1
Trelawny	5.1	4.6	9.7
St James	7.6	3.1	10.7
Hanover	5.2	3.5	8.7
Westmoreland	11.2	1.1	12.3
St Elizabeth	5.7	6.2	11.9
Manchester	3.6	3.6	7.2
Clarendon	3.1	5.6	8.7
St Catherine	6.8	5.5	12.3

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of possible and presumed asthma categories separated.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of possible and presumed asthma categories combined.

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 5.9.2.2: Prevalence (%) Estimates for Possible Asthma, Presumed Asthma, and Possible/Presumed Asthma by Socioeconomic Status among Jamaicans Aged 15 Years and Older, JHLS III 2017

Index of Socioeconomic Status	Possible Asthma[1]	Presumed Asthma[1]	Possible/Presumed Asthma[2]
Number Household (HH) Possessions			
0–5 items	6.0	4.9	10.9
6–9 items	6.9	5.4	12.4
10–20 items	5.0	5.6	10.6
Highest Education Level			
Primary	6.0	2.8	8.9
Secondary	6.1	6.0	12.1
Post-secondary	4.5	6.3	10.8
Other	7.2	1.5	8.7
Weekly Household (HH) Income (JMD)	***		***
<$12,000	**7.1**	4.9	**12.0**
$12,000–$60,000	**5.6**	6.0	**11.6**
>$60,000	**0.6**	27.6	**28.2**
Do not know (DNK)/No response (NR)	**4.1**	3.8	**7.9**
Total	**5.9[5.0,7.0]**	**5.3[4.0, 7.0]**	**11.2[9.8,12.7]**

[1]Asterisks in this column represent *p*-values for association of socioeconomic status variables with distribution of possible and presumed asthma categories separated.

[2]Asterisks in this column represent *p*-values for association of socioeconomic status variables with distribution of possible and presumed asthma categories combined.

*p < 0.05; **p < 0.01; ***p < 0.001.

Within the genders, differences between demographic and socioeconomic status groups were apparent. In males (Table 5.9.2.3), there was an association with age; the prevalence of possible/presumed asthma was highest at 18.9% in the 15–24-year-old group, with another peak of 12.1% in the 45–54-year-old group. It was less than 8% in all other age groups. There was an association with location; the prevalence was significantly higher in urban areas than rural locations. Among the males, there was noticeable though not statistically significant variation by parish; prevalence was highest at 16.3% in Westmoreland and 15.6% in St Elizabeth, both primarily rural parishes; followed by 13.4 to 14.4% in Trelawny, St Andrew and St Mary; and lowest at 3.3% in Clarendon. Table 5.9.2.4 shows that education was also associated with asthma prevalence; prevalence was higher among those with secondary and post-secondary education and lower among those with primary and other education. Income was associated with the prevalence of possible asthma only; lower income was associated with higher possible asthma prevalence.

Table 5.9.2.3: Prevalence (%) Estimates for Possible Asthma, Presumed Asthma, and Possible/Presumed Asthma by Demographic Categories among Jamaican MALES Aged 15 Years and Older, JHLS III 2017

Demographic Category	Possible Asthma[1]	Presumed Asthma[1]	Possible/Presumed Asthma[2]
Age (Years)	***		***
15–24	**7.8**	11.1	**18.9**
25–34	**2.4**	4.5	**6.9**
35–44	**4.5**	3.5	**7.9**
45–54	**7.8**	4.3	**12.1**
55–64	**1.5**	3.5	**5.0**
65–74	**2.5**	1.6	**4.0**
≥75	**4.4**	2.2	**6.6**
Area of Residence	**		***
Rural	**4.0**	3.1	**7.2**
Urban	**5.9**	8.0	**13.9**
Parish of Residence	**		
Kingston	**2.1**	9.7	11.8
St Andrew	**3.3**	11.1	14.4
St Thomas	**1.3**	6.7	8.0
Portland	**4.1**	1.7	5.8
St Mary	**4.9**	8.7	13.6
St Ann	**8.5**	0.0	8.5
Trelawny	**8.2**	5.2	13.4
St James	**5.8**	3.1	8.9
Hanover	**8.6**	3.5	12.1
Westmoreland	**15.8**	0.4	16.3
St Elizabeth	**6.5**	9.0	15.6
Manchester	**4.1**	1.6	5.7
Clarendon	**0.0**	3.3	3.3
St Catherine	**5.0**	4.6	9.6

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of possible and presumed asthma categories separated.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of possible and presumed asthma categories combined.

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 5.9.2.4: Prevalence (%) Estimates for Possible Asthma, Presumed Asthma, and Possible/Presumed Asthma by Socioeconomic Status among Jamaican MALES Aged 15 Years and Older, JHLS III 2017

Index of Socioeconomic Status	Possible Asthma[1]	Presumed Asthma[1]	Possible/Presumed Asthma[2]
Number of Household (HH) Possessions			
0–5 Items	4.3	6.6	11.0
6–9 Items	5.8	5.7	11.6
10–20 Items	5.0	5.0	9.9
Highest Education Level	***		**
Primary	**2.8**	1.7	**4.5**
Secondary	**5.4**	7.9	**13.3**
Post-secondary	**6.1**	2.1	**8.2**
Other	**1.9**	2.0	**3.9**
Weekly Household (HH) Income (JMD)	*		
<$12,000	**6.2**	4.9	11.1
$12,000 -$60,000	**5.4**	6.8	12.1
>$60,000	**1.0**	21.1	22.1
Do not know (DNK)/No response (NR)	**2.9**	4.5	7.5

[1]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of possible and presumed asthma categories separated.

[2]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of possible and presumed asthma categories combined.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

In women, there was no association of asthma prevalence with age (Table 5.9.2.5). The. The nature of the association of possible/presumed asthma with parish of residence was quite different from that seen in men. St Mary had the highest prevalence at 29.9%, followed by St Thomas, St Catherine and Clarendon at 19.8%, 14.6% and 14.2%, respectively. Hanover had the lowest prevalence. Table 5.9.2.6 shows that educational level was significantly associated with possible asthma only; the prevalence was higher in those who attained, at most, primary or 'other' education levels compared with those who attained secondary and post-secondary education. Higher income was associated with higher asthma prevalence.

Although there was no gender difference in asthma prevalence, the nature of the association with the given risk factors differed between the genders.

Table 5.9.2.5: Prevalence (%) Estimates for Possible Asthma, Presumed Asthma, and Possible/Presumed Asthma by Demographic Categories among Jamaican FEMALES Aged 15 Years and Older, JHLS III 2017

Demographic Category	Possible Asthma[1]	Presumed Asthma[1]	Possible/Presumed Asthma[2]
Age (Years)			
15–24	8.2	2.6	10.9
25–34	5.0	8.5	13.5
35–44	9.1	3.6	12.8
45–54	3.5	5.8	9.4
55–64	7.7	6.8	14.5
65–74	5.5	1.3	6.8
≥75	8.2	4.4	12.6
Area of Residence			
Rural	7.2	5.3	12.5
Urban	6.4	4.6	11.1
Parish of Residence	*		***
Kingston	**6.7**	5.5	**12.2**
St Andrew	**5.7**	2.7	**8.5**
St Thomas	**13.1**	6.6	**19.8**
Portland	**3.3**	2.6	**5.9**
St Mary	**17.4**	12.6	**29.9**
St Ann	**5.6**	5.9	**11.5**
Trelawny	**1.9**	3.9	**5.8**
St James	**9.2**	3.2	**12.4**
Hanover	**1.6**	3.6	**5.2**
Westmoreland	**6.3**	1.8	**8.2**
St Elizabeth	**4.8**	3.3	**8.1**
Manchester	**3.1**	5.5	**8.6**
Clarendon	**6.2**	7.9	**14.2**
St Catherine	**8.3**	6.3	**14.6**

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of possible and presumed asthma categories separated.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of possible and presumed asthma categories combined.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 5.9.2.6: Prevalence (%) Estimates for Possible Asthma, Presumed Asthma, and Possible/ Presumed Asthma by Socioeconomic Status among Jamaican FEMALES Aged 15 Years and Older, JHLS III 2017

Index of socioeconomic Status	Possible Asthma[1]	Presumed Asthma[1]	Possible/Presumed Asthma[2]
Number of Household (HH) Possessions			
0–5 Items	7.8	3.0	10.8
6–9 Items	7.9	5.2	13.1
10–20 Items	5.0	6.1	11.1
Highest Education Level	**		
Primary	**9.7**	4.2	13.9
Secondary	**6.8**	4.0	10.7
Post-secondary	**3.5**	8.6	12.2
Other	**9.1**	1.3	10.4
Weekly Household (HH) Income (JMD)	***		***
<$12,000	7.8	4.9	**12.7**
$12,000–$60000	5.9	5.2	**11.1**
>$60000	0.0	35.7	**35.7**
Do not know (DNK)/No response (NR)	5.4	3.0	**8.4**

[1]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of possible and presumed a sthma categories separated.

[2]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of possible and presumed asthma categories combined.

*p < 0.05; **p < 0.01; ***p < 0.001.

5.9.3 Current Treatment of Asthma

Table 5.9.3.1 demonstrates that women were more likely than men to have current asthma (6.3% vs. 2.5%, $p < 0.001$) and to have used conventional asthma medicine within the past year (5.8% vs. 2.3%, $p < 0.001$). Although current asthma was not associated with age, persons aged 15–24 and 55–64 years old were most likely to have been admitted to hospital, adults aged 35–54 were more likely to use herbal medicine, and persons aged 25–54 were most likely to use conventional medications. Domicile was associated with the use of herbal medicine; rural adults were more likely to use them than urban dwellers (0.4% versus 0.1%, $p < 0.05$). Adults from St Ann, St Elizabeth, and Kingston were most likely to use herbal medicines.

Table 5.9.3.2 shows that those with a moderate number of household possessions (6–9) had a higher prevalence of current asthma than did those adults with fewer or more possessions. Current asthma was associated with educational attainment. The prevalence was highest in those with post-secondary education and least in those in the ‘other’ education category. The variation in prevalence of conventional medication use across the education level categories was similar to that for current asthma prevalence. Household income was associated with current asthma and the type of medicine used. Those in the highest income bracket were most likely to have current asthma, to have visited hospital in the past 12 months and to have used conventional medication. They were least likely to use herbal medicine.

Table 5.9.3.1: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Current Asthma/ Current Treatment Modalities in Demographic Categories of Jamaicans 15 Years and Older, JHLS III 2017

Demographic Category	Current Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Sex	***			***
Males	**2.5**[**1.7,3.7**]	0.9[0.5,1.5]	0.2[0.1,0.5]	**2.3**[**1.6,3.4**]
Females	**6.3**[**4.9,8.0**]	2.8[1.8,4.3]	0.3[0.1,0.7]	**5.8**[**4.5,7.4**]
Age [Years]		*	*	*
15–24	4.7[3.1,7.2]	**2.4**[**1.2,4.8**]	**0.2**[**0,1.1**]	**3.6**[**2.3,5.7**]
25–34	4.9[3.1,7.6]	**1.0**[**0.5,2.2**]	0	**4.9**[**3.1,7.7**]
35–44	4.4[2.9,6.6]	**1.5**[**0.7,2.9**]	**0.6**[**0.2,1.4**]	**4.2**[**2.8,6.4**]
45–54	4.3[2.7,6.9]	**2.1**[**1.0,4.3**]	**0.4**[**0.1,1.4**]	**4.2**[**2.6,6.8**]
55–64	3.9[1.7,9.1]	**3.2**[**1.2,8.7**]	**0.2**[**0,1.1**]	**3.9**[**1.7,9.1**]
65–74	2.8[1.4,5.5]	**0.5**[**0.1,2.0**]	**0.3**[**0,2.3**]	**2.8**[**1.4,5.5**]
≥75	3.1[1.5,6.2]	**0.9**[**0.3,2.7**]	0	**3.1**[**1.5,6.2**]
Area of Residence			*	
Rural	4.0[3.0,5.3]	1.9[1.2,2.9]	**0.4**[**0.2,0.8**]	3.7[2.7,5.0]
Urban	4.7[3.6,6.1]	1.7[0.9,3.2]	**0.1**[**0,0.5**]	4.4[3.3,5.7]
Parish of Residence			*	
Kingston	5.7[3.0,10.5]	3.4[1.4,7.9]	**0.7[0.1,3.5]**	5.7[3.0,10.5]
St Andrew	5.1[3.4,7.7]	1.2[0.4,3.7]	**0.2**[**0.1,1.0**]	4.5[3.1,6.7]
St Thomas	7.0[5.2,9.3]	2.3 [0.9,6.1]	0	7.0[5.2,9.3]
Portland	1.2[0.5,3.2]	0.4[0.1,2.5]	**0.3**[**0,2.3**]	1.2[0.5,3.2]
St Mary	10[6.7,14.6]	2[0.7,5.9]	0	10[6.7,14.6]
St Ann	4.4[2.5,7.7]	0.4[0,4.0]	**1**[**0.2,3.7**]	4.4[2.5,7.7]
Trelawny	3.6[1.5,8.6]	2.9[1.0,8.5]	**0.4**[**0.1,3.1**]	1.9[0.8,4.8]
St James	2.6[1.2,5.4]	1.3[0.4,4.0]	**0.3**[**0.1,1.2**]	2.6[1.2,5.4]
Hanover	1.6[0.3,7.6]	1.4[0.2,8.2]	0	1.6[0.3,7.6]
Westmoreland	1.4[0.4,5.6]	0.9[0.1,6.4]	**0.5**[**0.1,2.4**]	0.9[0.1,6.4]
St Elizabeth	5.3[2.9,9.6]	3.9[2.0,7.6]	**0.8**[**0.1,5.1**]	3.4[1.5,7.7]
Manchester	3.1[1.6,6.1]	0.7[0.1,3.3]	0	3.1[1.6,6.1]
Clarendon	3.7[1.7,7.7]	1.4[0.4,4.3]	0	3.4[1.6,7.3]
St Catherine	4.5[2.2,8.8]	3.2[1.3,7.5]	0	4.5[2.2,8.8]

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of current asthma.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with conventional medicines.

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 5.9.3.2: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Current Asthma/ Current Treatment Modalities by Socioeconomic Status among Jamaicans 15 Years and Older, JHLS III 2017

Index of Socioeconomic Status	Current Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Number of Household [HH] Possessions	*			
0–5 Items	**2.5**[**1.7,3.8**]	1.3[0.7,2.2]	0.3[0.1,0.6]	2.3[1.5,3.5]
6–9 Items	**6.0**[**4.5,8.0**]	2.0[1.1,3.7]	0.3[0.1,0.9]	5.3[4.0,7.1]
10–20 Items	**4.4**[**2.9,6.6**]	2.1[1.0,4.0]	0.2[0,0.7]	4.4[2.9,6.6]
Highest Education Level	*			*
Primary	**3.2**[**2.1,4.9**]	1.0[0.5,2.0]	0.3[0.1,1.1]	**3.1**[**2.0,4.8**]
Secondary	**4.3**[**3.3,5.5**]	2.1[1.4,3.1]	0.2[0.1,0.5]	**3.8**[**2.9,4.9**]
Post-secondary	**6.4**[**3.8,10.4**]	2.1[0.8,5.4]	0	**6.4**[**3.8,10.4**]
Other	**0.5**[**0.1,3.5**]	0	0	**0.5**[**0.1,3.5**]
Weekly Household (HH) Income (JMD)	***	***	***	***
<$12,000	**5.5**[**4.1,7.4**]	**2.1**[**1.3,3.3**]	**0.4**[**0.2,0.9**]	**5.0**[**3.8,6.7**]
$12,000	**3.9**[**2.5,5.9**]	**1.5**[**0.8,2.7**]	**0.2**[**0.1,0.7**]	**3.3**[**2.0,5.3**]
>$60,000	**12.9**[**5.9,25.8**]	**9.1**[**3.8,20.3**]	0	**12.9**[**5.9,25.8**]
Do not know (DNK)/No response (NR)	**2.4**[**1.5,3.6**]	**0.8**[**0.4,1.6**]	**0.2**[**0.0,0.6**]	**2.4**[**1.5,3.6**]
Total	**4.4[3.6,5.3]**	**1.8[1.2,2.6]**	**0.2[0.1,0.5]**	**4.0[3.3,5.0]**

[1]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of current asthma.

[2]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with conventional medicines.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 5.9.3.3 gives the prevalence of treatment modalities among persons classified as possible/presumed asthma cases by demographic categories while Table 5.9.3.4 gives the prevalence by socioeconomic status groups. Among those with possible or presumed asthma, females (see Table 5.9.3.3) were more likely than males to be on current treatment for their asthma. Those with post-secondary education or more than five household possessions (see Table 5.9.3.4) were more likely to be on current treatment for their asthma compared with the other education level and household possessions categories, respectively. The aforementioned SES groups were also more likely ($p < 0.05$) to have used conventional medicine (Table 5.9.3.4).

Table 5.9.3.3: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Treatment of Asthma among Possible/Presumed Asthma Cases in Demographic Categories of Jamaicans Aged 15 Years and Older, JHLS III 2017

Demographic Category	Currently on Treatment for Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Sex	***	***		***
Males	**24.4[17.0,33.7]**	**88.2**[**4.6,14.3**]	1.7[0.6,4.6]	**22.3**[**15.3,31.4**]
Females	**54.1[44.8,63.2]**	**24.0**[**15.9,34.5**]	2.7[1.2,6.1]	**50.2**[**40.8,59.6**]
Age [Years]		*	*	*
15–24	32.1[21.4,45.1]	16.3[8.4,29.2]	1.2[0.2,7.5]	24.6[15.7,36.3]
25–34	47.8[32.7,63.4]	10.04[4.5,21.1]	0	47.8[32.7,63.4]
35–44	42.1[29.6,55.8]	14.2[7.0,26.8]	5.4[2.0,13.8]	40.6[28.3,54.2]
45–54	43.5[29.0,59.3]	21.2[10.7,37.8]	4.0[1.2,13.2]	42.2[27.8,58.0]
55–64	41.5[18.6,68.9]	34.1[12.7,64.7]	2.3[0.4,11.4]	41.5[18.6,68.9]
65–74	53.1[32.5,72.7]	8.7[2.0,30.7]	6.0[0.8,33.3]	53.1[32.5,72.7]
≥75	33.3[16.7,55.5]	9.3[2.8,26.9]	0	33.3[16.6,55.5]
Area of Residence				
Rural	42.0[33.5,51.1]	19.8[13.5,28.1]	3.8[1.7,7.9]	38.6[30.0,48.1]
Urban	42.0[33.5,51.1]	19.8[13.5,28.1]	3.8[1.7,7.9]	38.6[30.0,48.1]
Parish of Residence				
Kingston	46.8[26.4,68.4]	28.1[13.0,50.6]	5.7[0.9,27.4]	46.8[26.4,68.4]
St Andrew	46.5[27.6,66.5]	10.5[3.1,30.5]	2.2[0.5,9.6]	41.2[24.4,60.3]
St Thomas	50.3[36.6,64.0]	16.7[5.0,43.4]	0	50.3[36.6,64.0]
Portland	21.4[7.9,46.3]	6.5[1.0,32.5]	5.8[0.8,32.3]	21.4[7.9,46.3]
St Mary	47.0[33.4,61.1]	9.4[3.3,23.9]	0	47.0[33.4,61.1]
St Ann	47.8[28.3,67.9]	4.9[0.4,40.3]	10.5[1.9,41.6]	47.8[28.3,67.9]
Trelawny	37.9[13.3,70.9]	30.3[8.7,66.6]	4.5[0.7,24.4]	20.1[8.3,41.4]
St James	24.9[10.0,49.8]	12.4[3.4,35.9]	2.5[0.6,9.1]	24.9[10.0,49.8]
Hanover	19.1[3.5,60.7]	16.2[2.3,61.4]	0	19.1[3.5,60.7]
Westmoreland	11.8[3.3,34.3]	7.4[1.1,36.7]	4.4[1.0,17.1]	7.4[1.1,36.7]
St Elizabeth	45.8[27.4,65.4]	33.6[18.7,52.7]	6.7[0.9,36.9]	29.6[13.0,54.1]
Manchester	43.9[23.4,66.7]	9.8[1.8,39.6]	0	43.9[23.4,66.7]
Clarendon	42.6[23.0,64.8]	15.6[4.1,44.4]	0	39.9[20.7,62.8]
St Catherine	37.3[22.2,55.4]	26.2[11.3,49.7]	0	37.3[22.2,55.4]

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of persons currently on treatment for asthma.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with conventional medicine.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 5.9.3.4: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Treatment of Asthma among Possible/Presumed Asthma Cases by Socioeconomic Status among Jamaicans Aged 15 Years and Older, JHLS III 2017

Index of Socioeconomic Status	Currently on Treatment for Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Number of Household [HH] Possessions				
0–5 Items	**23.5**[**14.5,35.6**]	12.0[6.7,20.6]	2.6[1.1,5.9]	**21.3**[**12.9,33.2**]
6–9 Items	**50.0**[**39.3,60.6**]	16.6[9.3,27.7]	2.4[0.8,7.1]	**43.8**[**33.5,54.7**]
10–20 Items	**42.3**[**29.7,56.0**]	20.2[10.9,34.3]	1.6[0.4,6.3]	**42.3**[**29.7,56.0**]
Highest Education Level	*			*
Primary	**38.9**[**25.3,54.4**]	12.1[6.0,22.7]	3.9[1.2,12.0]	**37.7**[**24.5,53.1**]
Secondary	**35.9**[**28.1,44.5**]	17.3[11.6,25.1]	1.6[0.7,4.0]	**31.5**[**24.4,39.7**]
Post-secondary	**60.1**[**38.9,78.1**]	20.1[7.9,42.2]	0	**60.1**[**38.9,78.1**]
Other	**6.0**[**0.9,32.1**]	0	0	**6.0**[**0.9,32.1**]
Weekly Household (HH) Income (JMD)				
<$12,000	47.0[38.0,56.2]	17.2[10.5,26.8]	3.2[1.3,7.7]	42.5[33.7,51.7]
$12,000	34.9[23.5,48.4]	13.5[7.1,24.1]	1.9[0.6,5.7]	29.7[19.2,42.8]
>$60,000	41.7[20.6,66.3]	28.5[8.2,64.0]	0	41.7[20.6,66.3]
Do not know (DNK)/No response (NR)	30.8[19.2,45.4]	10.5[5.0,20.9]	2.2[0.5,8.6]	30.8[19.2,45.4]
Total	**39.9[33.5,46.7]**	**16.4[11.3,23.3]**	**2.2[1.2,4.2]**	**36.9[30.7,43.5]**

[1]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of persons currently on treatment for asthma.

[2]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with conventional medicine.

*p < 0.05; **p < 0.01; ***p < 0.001.

Among the males (Table 5.9.4.1), prevalence of current asthma as well as the use of different treatment modalities differed with age (p<0.001). Current asthma and the use of conventional medicine for asthma were most prevalent (4.4%) among men aged 45–54 and least prevalent (1.1%) among the 25-34 year-olds. Use of herbal medicine to treat asthma was most common among the 35–44-year-old males compared with the other age groups. Current asthma and use of conventional medication were more prevalent in urban men, while hospitalization and use of herbal medicines were more prevalent in rural men. Men living in St Elizabeth and Kingston were more likely to have visited the hospital because of their asthma, while men in St Ann and Kingston are more likely to have used herbal medicine. Also, among the males (see Table 5.9.4.2), highest level of education was the SES index associated with current asthma and the treatment modalities. Current asthma and the use of conventional medicine for asthma were most prevalent (3.1% and 2.7%, respectively) among men with post-secondary education and least prevalent (1.1% for both outcomes) among those with only primary level education (P<0.01).

Table 5.9.4.1: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Current Asthma/ Current Asthma Treatment Modes in Demographic Categories of Jamaican MALES Aged 15 Years and Older, JHLS III 2017

Demographic Category	Current Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Age (Years)	***	***	***	***
15–24	**2.3**[**1.0,5.5**]	**1.1**[**0.4,3.1**]	**0**	**1.4**[**0.4,4.7**]
25–34	**1.1**[**0.2,7.4**]	0	0	**1.1**[**0.2,7.4**]
35–44	**2.7**[**1.2,6.1**]	**1.1**[**0.4,3.0**]	**0.6**[**0.2,2.5**]	**2.7**[**1.2,6.1**]
45–54	**4.4**[**2.3,8.5**]	**0.5**[**0.1,2.7**]	**0.1 [0.0,0.9**]	**4.4**[**2.3,8.5**]
55–64	**3.4**[**1.1,9.5**]	**2.3**[**0.6,9.4**]	**0.4**[**0.1,2.3**]	**3.4**[**1.2,9.5**]
65–74	**2.2**[**0.7,6.5**]	0	0	**2.2**[**0.7,6.5**]
≥75	**2.2**[**0.8,5.8**]	**1.6**[**0.5,5.2**]	0	**2.2**[**0.8,5.8**]
Area of Residence	**	***	***	**
Rural	**1.9**[**1.1,3.2**]	**1.3**[**0.6,2.6**]	**0.3**[**0.1,0.9**]	**1.6**[**0.9,2.8**]
Urban	**3.1** [**1.9,5.1**]	**0.5**[**0.2,1.1**]	**0.1**[**0.0,0.4**]	**3.0**[**1.8,4.9**]
Parish of Residence		***	**	
Kingston	5.2[2.2,11.5]	**4.7**[**1.9,11.0**]	**1.4**[**0.3,7.0**]	5.2[2.2,11.5]
St Andrew	4.6[2.4,8.7]	0	0	4.6[2.4,8.7]
St Thomas	2.8[0.9,8.2]	**1.4**[**0.2,7.2**]	0	2.8[0.9,8.2]
Portland	1.3[0.3,5.1]	0	**0.7**[**0.1,4.5**]	1.3[0.3,5.1]
St Mary	1.6[0.4,6.1]	0	0	1.6[0.4,6.1]
St Ann	3.6[1.2,10.1]	0	**2.1**[**0.5,8.0**]	3.6[1.2,10.1]
Trelawny	3.5[0.6,17.7]	**3.5**[**0.6,17.7**]	0	0
St James	0	0	0	0
Hanover	0	0	0	0
Westmoreland	1.3[0.2,8.5]	**1.3**[**0.2,8.5**]	0	1.3[0.2,8.5]
St Elizabeth	5.7[2.4,13.2]	**5.7**[**2.4,13.2**]	0	3.5[1.3,8.7]
Manchester	0.7[0.1,4.6]	0	0	0.7[0.1,4.6]
Clarendon	0	0	0	0
St Catherine	1.9[0.5,6.5]	**1.0**[**0.2,5.4**]	0	1.9[0.5,6.5]

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of current asthma.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases being treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with conventional medicine.

*p<0.05; **p<0.01; ***p<0.001

Table 5.9.4.2: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Current Asthma/ Current Asthma Treatment Modes for Cases by Socioeconomic Status among Jamaican MALES Aged 15 Years and Older, JHLS III 2017

Index of Socioeconomic Status	Current Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Number of Household [HH] Possessions				
0–5 Items	1.6[0.8,2.9]	1.0[0.5,2.2]	0.2[0.1,0.7]	1.3[0.7,2.4]
6–9 Items	3.5[1.9,6.2]	0.7[0.2,1.9]	0	3.1[1.7,5.8]
10–20 Items	2.7[1.2,5.7]	1.0[0.3,3]	0.4[0.1,1.4]	2.7[1.2,5.7]
Highest Education Level	**	*	*	**
Primary	**1.1**[**0.5,2.5**]	**0.6**[**0.2,1.7**]	**0**	**1.1**[**0.5,2.5**]
Secondary	**3.1**[**2.0,4.7**]	**0.8**[**0.4,1.6**]	**0.1**[**0,0.4**]	**2.7**[**1.7,4.4**]
Post-secondary	**1.6**[**0.3,7.9**]	**1.6**[**0.3,7.9**]	0	**1.6**[**0.3,7.9**]
Other	**1.8**[**0.2,11.4**]	**0**	0	**1.8**[**0.3,11.4**]
Weekly Household (HH) Income (JMD)				
<$12,000	3.7[2.1,6.7]	0.8[0.3,2.0]	0.1[0,0.4]	3.7[2.1,6.7]
$12,000	2.9[1.2,6.8]	1.0[0.3,3.0]	0.2[0,0.9]	2.1[0.7,6.1]
>$60,000	0	0	0	0
Do not know (DNK)/No response (NR)	1.4[0.6,2.9]	0.7[0.2,2.5]	0.3[0.1,1.2]	1.4[0.6,2.9]
Total	**2.5[1.7,3.7]**	**0.9[0.5,1.5]**	**0.2[0.1,0.5]**	**2.3[1.6,3.4]**

[1]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of current asthma.

[2]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases being treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with conventional medicine.

*p<0.05; **p<0.01; ***p<0.001

In men with possible or presumed asthma, age was associated with two of the four indices of asthma therapy shown in Table 5.9.4.3. Men aged 55–64 years were most likely to have visited hospital because of their asthma within the previous year (45.4%) and to report use of conventional medicine (65.5%). Rural men were more likely than urban men to have been hospitalized and use herbal medicines. Men from St Elizabeth and Kingston were most likely to have been admitted, and men from St Ann to have used herbal medicines. Among the men with possible or presumed asthma, none of the SES indices shown in Table 5.9.4.4 was associated with any of the treatment modalities assessed.

Table 5.9.4.3: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Treatment of Asthma among Possible/Presumed Asthma Cases in Demographic Categories of Jamaican MALES Aged 15 Years and Older, JHLS III 2017

Demographic Category	Currently on Treatment for Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Age (Years)		**		*
15–24	12.5[5.0,28.0]	**5.8**[**1.9,16.3**]	0	**7.8**[**2.3,23.4**]
25–34	15.8[2.5,58.3]	**0**	0	**15.8**[**2.5,58.3**]
35–44	32.5[12.7,61.5]	**13.5**[**4.9,32.0**]	7.6[1.9,25.7]	**32.5**[**12.7,61.5**]
45–54	39.6[19.8,63.5]	**4.2**[**0.7,21.2**]	1.2[0.2,8.1]	**39.6**[**19.8,63.5**]
55–64	65.5[30.0,89.3]	**45.4**[**13.9,81.1**]	8.5[1.4,37.2]	**65.5**[**30.0,89.3**]
65–74	52.7[22.1,81.4]	**0**	0	**52.7**[**22.1,81.4**]
≥75	34.0[11.3,67.5]	**25.7**[**7.7,58.8**]	0	**34.0**[**11.3,67.5**]
Area of Residence		***	*	
Rural	26.4[16.1,40.1]	**18.3**[**9.5,32.4**]	**4.0**[**1.2,12.7**]	2.7[13.0,36.7]
Urban	23.8[14.7,36.2]	**3.5**[**1.5,8.1**]	**0.6**[**0.1,3.3**]	22.5[13.6,34.8]
Parish of Residence		*	*	
Kingston	42.9[17.7,72.5]	**39.4**[**15.7,69.4**]	**11.5**[**1.8,47.7**]	42.9[17.7,72.5]
St Andrew	34.6[17.9,56.3]	**0**	**0**	34.6[17.9,56.3]
St Thomas	35.7[9.6,74.4]	**17.2**[**2.1,66.5**]	**0**	35.7[9.6,74.4]
Portland	23.4[5.5,61.9]	**0**	**12.1**[**1.7,52.7**]	23.4[5.5,61.9]
St Mary	12.0[2.2,45.4]	**0**	**0**	12.0[2.2,45.4]
St Ann	48.1[14.5,83.5]	**0**	**27.9**[**8.2,62.5**]	48.1[14.5,83.5]
Trelawny	25.5[3.1,78.4]	**25.5**[**3.1,78.4**]	**0**	0
St James	0	**0**	**0**	0
Hanover	0	**0**	**0**	0
Westmoreland	7.8[1.1,37.9]	**7.8**[**1.1,37.9**]	**0**	7.8[1.1,37.9]
St Elizabeth	36.9[20.2,57.6]	**36.9**[**20.2,57.6**]	**0**	22.3[9.1,45.1]
Manchester	13.4[4.1,35.7]	**0**	**0**	13.4[4.1,35.7]
Clarendon	0	**0**	**0**	0
St Catherine	20.8[5.6,53.8]	**10.9**[**1.9,43.4**]	**0**	20.8[5.6,53.9]

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of males currently on treatment for asthma.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases being treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with conventional medicine.

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 5.9.4.4: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Treatment of Asthma among Possible/Presumed Asthma Cases by Socioeconomic Status of Jamaican MALES Aged 15 Years and Older, JHLS III 2017

Index of Socioeconomic Status	Currently on Treatment for Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Number of Household [HH] Possessions				
0–5 Items	14.8[7.1,28.4]	9.7[4.1,21.3]	1.9[0.5,7.2]	12.0[5.6,24.0]
6–9 Items	31.4[18.0,48.8]	6.0[2.1,16.0]	0	28.2[15.3,46.0]
10–20 Items	26.8[13.0,47.3]	9.7[3.0,27.1]	3.7[0.9,13.2]	26.8[13.0,47.3]
Highest Education Level				
Primary	25.5[11.2,48.3]	14.0[4.9,34.0]	0	25.5[11.2,48.3]
Secondary	23.8[15.4,34.8]	6.4[3.2,12.2]	0.8[0.2,2.9]	21.1[13.3,31.8]
Post-secondary	20.1[3.5,63.5]	20.1[3.5,63.5]	0	20.1[3.5,63.5]
Other	48.5[5.3,94.1]	0	0	48.5[5.3,94.1]
Weekly HH Income [JMD]				
<$12,000	33.9[20.9,49.9]	7.1[2.9,16.3]	0.6[0.1,3.8]	33.9[20.9,49.9]
$12,000	26.0[11.4,48.8]	9.1[2.9,25.2]	1.5[0.3,7.8]	18.4[6.5,42.2]
>$60000	0	0	0	0
Do not know (DNK)/No response (NR)	18.6[7.7,38.7]	10.2[2.7,31.6]	4.3[1.0,16.1]	18.6[7.7,38.7]
Total	**24.7[17.3,34.0]**	**8.3[4.6,14.4]**	**1.7[0.6,4.6]**	**22.6[15.5,31.7]**

[1]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of males currently on treatment for asthma.

[2]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases being treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with conventional medicine.

*p < 0.05; **p < 0.01; ***p < 0.001.

In women, parish of domicile was associated with prevalence estimates for current asthma (p<0.05), hospitalization (p<0.05), and use of herbal medicine (p<0.001) and conventional medications (p<0.05). (See Table 5.9.5.1). St Mary (18.4%) had the highest prevalence of current asthma and use of conventional medications. St Catherine and St Mary had the highest prevalence of use of a hospital for their asthma management. St Elizabeth and Westmoreland had the highest prevalence of use of herbal medicines. Table 5.9.5.2 shows that women with post-secondary education were most likely to have current asthma and use conventional medications to treat their asthma. Income was strongly associated with prevalence of current asthma. Women in the highest income bracket were more likely (p < 0.001) to have had current asthma, used a hospital for their asthma management in the previous year, and used conventional medications but were less likely to have used herbal medicines.

Table 5.9.5.1: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Current Asthma/ Current Asthma Treatment Modes in Demographic Categories of Jamaican FEMALES Aged 15 Years and Older, JHLS III 20177

Demographic Category	Current Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Age (Years)				
15–24	7.0[4.2,11.5]	3.7[1.6,8.4]	0.3[0.1,2.2]	5.7[3.4,9.3]
25–34	8.9[5.6,13.7]	2.1[1.0,4.4]	0	8.9[5.6,13.7]
35–44	6.2[4.0,9.7]	1.9[0.7,4.7]	0.5[0.2,1.6]	5.9[3.7,9.3]
45–54	4.3[2.2,8.3]	3.8[1.8,7.8]	0.7[0.2,2.8]	4.0[2.0,8.0]
55–64	4.5[1.5,13.0]	4.1[1.2,13.0]	0	4.5[1.5,13.0]
65–74	3.5[1.6,7.3]	0.9[0.2,4.0]	0.6[0.1,4.7]	3.5[1.6,7.3]
≥75	4.1[1.7,9.9]	0	0	4.1[1.7,9.9]
Area of Residence				
Rural	6.3[4.6,8.5]	2.5[1.6,4.0]	0.4[0.2,1.2]	5.9[4.2,8.1]
Urban	6.2[4.2,9.1]	3.0[1.5,6.0]	0.2[0.1,0.9]	5.8[3.9,8.4]
Parish of Residence	*	*	***	*
Kingston	**6.2**[**2.8,13.4**]	**2.1**[**0.6,7.1**]	**0**	**6.2**[**2.8,13.4**]
St Andrew	**5.7**[**3.0,10.6**]	**2.5**[**0.8,7.8**]	**0.5**[**0.1,2.2**]	**4.4**[**2.3,8.4**]
St Thomas	**11.2**[**6.8,17.8**]	**3.3**[**0.7,14.0**]	0	**11.2**[**6.8,17.8**]
Portland	**1.2**[**0.3,4.8**]	**0.8**[**0.1,4.8**]	0	**1.2**[**0.3,4.8**]
St Mary	**18.4**[**12.1,27.0**]	**4.0**[**1.3,11.4**]	0	**18.4**[**12.1,27.0**]
St Ann	**5.1**[**2.4,10.4**]	**0.8**[**0.1,7.3**]	0	**5.1**[**2.4,10.4**]
Trelawny	**3.8**[**1.5,9.4**]	**2.4**[**0.6,9.0**]	**0.9**[**0.1,5.9**]	**3.8**[**1.5,9.4**]
St James	**5.3**[**2.5,11.1**]	**2.7**[**0.8,8.0**]	**0.5**[**0.1,2.4**]	**5.3**[**2.5,11.1**]
Hanover	**3.3**[**0.7,14.8**]	**2.8**[**0.4,15.9**]	0	**3.3**[**0.7,14.8**]
Westmoreland	**1.6**[**0.4,5.6**]	**0.6**[**0.1,4.7**]	**1.0**[**0.2,4.6**]	**0.6**[**0.1,4.7**]
St Elizabeth	**4.9**[**1.8,12.7**]	**2.2**[**0.5,8.3**]	**1.5**[**0.2,9.8**]	**3.4**[**0.9,12.6**]
Manchester	**5.5**[**2.6,11.2**]	**1.4**[**0.3,6.5**]	0	**5.5**[**2.6,11.2**]
Clarendon	**7.3**[**3.4,15.1**]	**2.7**[**0.8,8.5**]	0	**6.8**[**3.1,14.2**]
St Catherine	**7.2**[**3.3,15.0**]	**5.4**[**2.1,13.1**]	0	**7.2**[**3.3,15.0**]

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of current asthma.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases being treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with conventional medicine.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 5.9.5.2: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Current Asthma/ Current Asthma Treatment Modes by Socioeconomic Status of Jamaican FEMALES Aged 15 Years and Older, JHLS III 2017

Index of socioeconomic Status	Current Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Number of Household (HH) Possessions				
0–5 Items	3.7[2.2,6.1]	1.6[0.8,3.4]	0.4[0.1,1.1]	3.5[2.1,5.9]
6–9 Items	8.5[6.9,12.1]	3.3[1.6,6.6]	0.6[0.2,1.7]	7.4[5.1,10.6]
10–20 Items	5.9[3.8,9.1]	3.1[1.5,6.1]	0	5.9[3.8,9.1]
Highest Education Level	*			*
Primary	**5.8[3.4,9.7]**	1.5[0.7,3.2]	0.7[0.2,2.4]	**5.6[3.3,9.5]**
Secondary	**5.6[4.0,7.8]**	3.4[2.1,5.6]	0.3[0.1,0.9]	**4.9[3.5,6.9]**
Post-secondary	**9.3[5.9,14.4]**	2.5[1.0,6.1]	0	**9.3[[5.9,14.4]**
Other	0	0	0	0
Weekly Household (HH) Income (JMD)	***	***	***	***
<$12,000	**7.0[4.8,10.1]**	**3.1[1.7,5.4]**	**0.7[0.3,1.6]**	**6.1[4.2,8.8]**
$12,000	**5.0[3.3,7.6]**	**2.0[0.9,4.4]**	**0.3[0.1,1.2]**	**4.7[3.0,7.3]**
>$60000	**31.0[14.5,54.4]**	**21.9[9.1,44.0]**	0	**31.0[14.5,54.4]**
Do not know (DNK)/No response (NR)	**3.5[2.2,5.4]**	**0.9[0.4,2.0]**	0	**3.5[2.2,5.4]**
Total	**6.3[4.9,8.0]**	**2.8[1.8,4.3]**	**0.3[0.1,0.7]**	**5.8[4.5,7.4]**

[1]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of current asthma.

[2]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases being treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with conventional medicine.

*p < 0.05; **p < 0.01; ***p < 0.001.

Tables 5.9.5.3 and 5.9.5.4 show for Jamaican females 15 years and older with possible or presumed asthma, the prevalence of use of different treatment modalities by demographic and socioeconomic status categories, respectively. None of the demographic variables shown in Table 5.9.5.3 was associated with prevalence of use of the named treatment modalities. However, Table 5.9.5.4 shows that in these women, those with a moderate number of household possessions (6–9) had a higher prevalence of being currently on treatment for asthma than did those females with fewer or more possessions (p<0.05). Highest education level was associated with currently being on treatment (p<0.001) as well as with use of hospital facilities for asthma treatment (p<0.05) within the previous year. Prevalence of current treatment for asthma was highest among the women with post-secondary education while women with secondary education had the highest prevalence of use of a hospital for their asthma treatment within the previous year.

Table 5.9.5.3: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Treatment of Asthma among Possible/Presumed Asthma Cases in Socio-demographic Categories of Jamaican FEMALES Aged 15 Years and Older, JHLS III 2017

Demographic Category	Currently on Treatment for Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Age (Years)				
15–24	64.5[49.2,77.3]	33.6[17.8,54.3]	3.0[0.4,18.3]	52.3[36.7,67.5]
25–34	64.8[43.6,81.4]	15.4[6.7,31.3]	0	64.8[43.6,81.4]
35–44	49.2[31.3,67.2]	14.7[5.5,33.9]	3.8[1.1,12.5]	46.5[29.5,64.4]
45–54	48.6[25.6,72.3]	43.1[21.2,68.0]	7.6[1.8,26.8]	45.5[23.3,69.5]
55–64	32.6[10.5,66.6]	29.8[8.7,65.3]	0	32.6[10.5,66.6]
65–74	53.3[28.5,76.6]	14.2[3.3,44.6]	9.8[1.3,46.9]	53.3[28.5,76.6]
≥75	32.9[13.2,61.3]	0	0	32.9[13.2,61.3]
Area of Residence				
Rural	51.4[40.1,62.6]	20.7[13.1,31.2]	3.6[1.3,9.3]	48.1[37.0,59.4]
Urban	56.7[41.9,70.5]	27.2[14.7,44.8]	1.8[0.4,7.7]	52.2[37.2,66.9]
Parish of Residence				
Kingston	50.5[27.0,73.9]	17.4[5.4,43.7]	0	50.5[27.0,73.9]
St Andrew	67.9[34.9,89.3]	29.5[10.0,61.3]	6.0[1.3,23.6]	53.1[22.9,81.2]
St Thomas	56.2[34.2,75.9]	16.5[2.4,61.5]	0	56.2[34.2,76.0]
Portland	19.5[6.0,47.6]	12.6[2.4,46.2]	0	19.5[6.0,47.6]
St Mary	63.0[48.2,75.8]	13.7[4.3,35.9]	0	63.0[48.2,75.8]
St Ann	47.6[32.7,62.9)	7.8[0.7,51.6]	0	47.6[32.7,62.9]
Trelawny	66.7[27.1,91.5]	41.5[11.7,79.2]	15.0[2.4,56.1]	66.7[27.1,91.5]
St James	44.4[19.5,72.5]	22.1[6.1,55.4]	4.4[1.0,17.1]	44.4[19.5,72.5]
Hanover	61.9[12.0,95.1]	52.5[8.0,93.4]	0	61.9[12.0,95.1]
Westmoreland	19.5[5.6,49.7]	6.8[0.9,37.5]	12.7[2.6,44.0]	6.8[0.9,37.5]
St Elizabeth	62.4[28.2,87.5]	27.4[6.2,68.4]	19.2[2.4,69.4]	43.2[11.2,82.1]
Manchester	62.9[35.0,84.2]	15.9[2.8,55.7]	0	62.9[35.0,84.2]
Clarendon	52.5[28.6,75.3]	19.3[5.5,49.3]	0	49.2[27.1,71.5]
St Catherine	49.7[25.1,74.4]	37.3[16.2,64.7]	0	49.7[25.1,74.4]

[1]Asterisks in this column represent p-values for association of demographic variables with distribution of females currently on treatment for asthma.

[2]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases being treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of demographic variables with distribution of asthma cases currently being treated with conventional medicine.

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 5.9.5.4: Prevalence Estimates with 95% Confidence Intervals [in Brackets] for Treatment of Asthma among Possible/Presumed Asthma Cases by Socioeconomic Status of Jamaican FEMALES Aged 15 Years and Older, JHLS III 2017

Index of Socioeconomic Status	Currently on Treatment for Asthma[1]	Visited Hospital in ≤12 Months[2]	Treats Asthma with Herbal Medicine[3]	Treats Asthma with Conventional Medicine[4]
Number of Household (HH) Possessions	*			
0–5 Items	**33.4**[**20.2,49.7**]	14.8[7.1,28.1]	3.4[1.1,9.9]	31.9[19.3,47.9]
6–9 Items	**66.9**[**53.7,77.9**]	25.9[14.3,42.3]	4.5[1.5,12.9]	58.1[43.8,71.2]
10–20 Items	**54.6[37.0,71.2]**	28.6[14.3,48.9]	0	54.6[37.0,71.2]
Highest Education Level	* *	*		
Primary	**44.6**[**26.4,64.4**]	**11.3**[**4.9,23.7**]	5.5[1.6,17.2]	43.0[25.3,62.6]
Secondary	**52.8**[**41.5,63.8**]	**32.3**[**21.7,45.1**]	2.8[0.9,8.5]	46.1[34.8,57.8]
Post-secondary	**75.6**[**55.8,88.3**]	**20.1**[**8.0,42.2**]	0	75.6[55.8,88.3]
Other	**0**	**0**	0	0
Weekly Household (HH) Income (JMD)				
<$12,000	56.7[41.9,70.4]	24.6[14.1,39.3]	5.1[2.0,12.6]	48.8[34.4,63.5]
$12,000	45.9[29.7,63.0]	18.9[8.2,37.7]	2.4[0.5,9.9]	43.5[27.5,61.0]
>$60000	85.4[39.1,98.2]	58.4[19.1,89.3]	0	85.4[39.1,98.2]
Do not know (DNK)/No response (NR)	43.4[29.4,58.5]	10.9[4.4,24.3]	0	43.4[29.4,58.5]
Total	**54.1[44.8,63.2]**	**24.0[15.9,34.5]**	**2.7[1.2,6.0]**	**50.2[40.8,59.6]**

[1]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of females currently on treatment for asthma.

[2]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases being treated in hospital within the last 12 months.

[3]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with herbal remedies.

[4]Asterisks in this column represent p-values for association of socioeconomic status variables with distribution of asthma cases currently being treated with conventional medicine.

*p < 0.05; **p < 0.01; ***p < 0.001.

5.10. Mental Health

Depression is a common mental disorder affecting almost 300 million people worldwide.[28] It is a leading cause of disability worldwide and a major contributor to the global burden of disease. More women than men are affected. At worst, depression can lead to suicide. In Jamaica, suicides peak within the 15–34 age group and is ten times more common in men.[29] In this report we focus on depression given that it is one of the most common mental health disorders[28] and can be assessed in epidemiological surveys. We also report on suicidal ideation. Depression was defined as reporting five or more symptoms of depression based on the Diagnostic and Statistical Manual of Mental Disorders versions 4/5 (DSM–IV/V),[30] including anhedonia or depressed mood.

Depression

The prevalence of depression in the Jamaican population aged 15 years and older is 14.3%. Significantly, more females than males suffered from depression (18.5% vs. 9.9%, $p<0.001$). This translates to one in every ten Jamaican men being depressed and approximately two in every ten women being depressed. Also, significantly, more females than males considered suicide (6.5% vs. 2.2%), planned to commit suicide (3.1% vs. 0.5%), and attempted suicide (2.1% vs. 0.5%).

Table 5.10.1: Sex-specific Prevalence of Mental Health indices among Jamaicans 15 Years and Older, JHLS III 2017

Disease Condition	Males (%)	Females (%)	Total (%)
Depression	9.9	18.5***	14.3
Suicidal Ideation			
Considered Suicide	2.2	6.5***	4.4
Planned Suicide	0.5	3.1***	1.9
Attempted Suicide	0.5	2.1***	1.3

***$p < 0.001$ for sex differences.

The prevalence of depression was least among rural males (7.3%) and highest among urban females (19.19%) (Table 5.10.2). There was no difference in the prevalence of depression between urban and rural females, however, rural males displayed a significantly lower proportion of depression than urban males ($p < 0.05$) (Table 5.10.2).

Table 5.10.2: The Prevalence (%) of Depression by Sex and Geographic Distribution (Urban-Rural) among Jamaicans 15 Years and Older, JHLS III 2017

Depression among Urban Dwellers			Depression among Rural Dwellers		
Male	Female	Total	Male	Female	Total
12.3 **	19.2	16.0	7.3***	17.7	12.4

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Parish specific estimates for depression for males and females are shown in Table 5.10.3. With the exceptions of Manchester and Trelawny, women had higher rates of depression than men. Kingston and St Mary recorded the highest rates of depression among women, with approximately 28% of women from these parishes classified as depressed. St Catherine, Manchester, and Portland had the highest rates of depression among males, with at least 15% depressed. St Elizabeth had the lowest frequency of depression (2.8%) among males and Trelawny the lowest among females (4.74%).

Table 5.10.3: The Prevalence (%) of Depression by Parish of Residence and Sex among Jamaicans 15 Years and Older, JHLS III 2017

Parish	Males (%)	Females (%)
Kingston	9.6	28.0
St Andrew	9.5	18.3
St Catherine	15.6	21.2
Clarendon	7.1	22.7
Manchester	16.7	11.8
St Elizabeth	2.8	12.4
Westmoreland	2.9	12.6
Hanover	4.3	18.4
St James	5.1	17.0
Trelawny	8.3	4.7
St Ann	8.4	15.6
St Mary	13.1	28.9
Portland	15.3	24.3
St Thomas	6.8	18.3

Prevalence of depression differs significantly with age among the males but not among the females (See Table 5.10.4). Females showed higher prevalence of depression in all age groups, except in the 55–64 year-olds where the prevalence of depression in males was more than twice that of females (15% males, 6.9% females) (Table 5.10.4).

Table 5.10.4: Prevalence (%) of Depression by Age in Ten-Year Bands and Sex among Jamaicans 15 Years and Older, JHLS III 2017

Depression	15–24	25–34	35–44	45–54	55–64	65–74	74+
Males	8.4	10.4	9.0	8.5	15.0	7.9	15.1
Females**	22.1	23.0	16.4	16.1	6.9	13.0	24.5
Total	15.3	16.9	12.9	12.3	11.0	10.5	20.8

*p < 0.05, **p < 0.01,***p < 0.001

Table 5.10.5 shows estimates for persons who reported considering suicide. Among persons who considered suicide, the tendency to make a plan to carry out the act was more common among women. Twenty-five per cent (24.5%) of males and 49.1% of females who considered suicide made a plan to carry it out (p<0.05).

Table 5.10.5: Among among Jamicans 15 Years and Older, Who Considered Suicide, Prevalence (%) of People Who Did or Did Not Make a Plan to Commit Suicide by Sex, JHLS III 2017

People Who Considered Suicide	Total	Males*	Females
Considered but did not make a plan	56.9	75.5	50.9
Considered AND made a plan	43.1	24.5	49.1

*-p<0.05 (for difference between the sexes)

Among those who reported that they had considered suicide, 69.9% did not attempt it and 30.1% did (See Table 5.10.6.). Of note is that among this group with suicidal ideation, at least two in every ten males and three in every ten females attempted to commit suicide, but these estimates did not differ significantly. Thus, we can conclude that if a Jamaican 15 years of age and older considered suicide, there was a 30% chance that they would survive their suicide attempt.

Table 5.10.6: Prevalence (%) of Attempted Suicide among People Who Considered Suicide by Sex, JHLS III 2017

People Who Considered Suicide	Total	Males	Females
Considered but did not Attempt	69.9	77.9	67.3
Considered and Attempted	30.1	22.1	32.7

5.11. Anaemia

Haemoglobin Levels

The World Health Organization (WHO) defines anaemia as having a haemoglobin level less than 13 g/dl in males and less than 12 g/dl in females. Anaemia may be further classified as 'mild,' 'moderate,' or 'severe.' Table 5.11.1 shows the sex-specific haemoglobin threshold levels for these classifications.

Table 5.11.1: Haemoglobin Threshold Levels for Anaemia Classifications by Sex, WHO[a]

Anaemia	Haemoglobin Level (g/dl)	
	Male	Female
Total	< 13	< 12
Mild	11–12.9	11–11.9
Moderate	8.0–10.9	8.0–10.9
Severe	< 8	< 8

[a]Source: Murphy JF. Haemoglobin Concentrations for the Diagnosis of Anaemia and Assessment of Severity. Vitamin and Mineral Nutrition Information System. Geneva: World Health Organization; 2011.

Mean haemoglobin levels by sex are shown in Table 5.11.2. The mean haemoglobin level for males was 14.8 g/dl (95% CI: 14.6, 14.9), while the mean level for females was 12.6 g/dl (95% CI: 12.5, 12.8). Mean levels were above haemoglobin thresholds for anaemia. Approximately one in five (18.4%) males had a haemoglobin level greater than 16 g/dl. One in 20 (5.3%) women aged 15 years and older had haemoglobin levels less than 10 g/dl. Figure 5.11.1 indicates the distribution of haemoglobin levels by sex.

Table 5.11.2: Means (g/dl) and Prevalence (%) Estimates for Haemoglobin Levels by Sex, JHLS III 2017

Characteristic	Males		Females		Total	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Mean Haemoglobin (g/dl)	14.8	(14.6,14.9)	12.6	(12.5, 12.8)	14.8	(14.6,14.9)
Haemoglobin Increment (g/dl)	%	95% CI	%	95% CI	%	95% CI
<10	1.5	(1.6, 3.4)	5.3	(3.5, 8.1)	3.5	(2.4, 5.1)
10–10.9	0.1	(0.1, 0.3)	4.9	(3.4, 7.0)	2.6	(1.8, 3.7)
11–11.9	1.8	(1.0, 3.1)	14.8	(11.1, 19.4)	8.5	(6.4, 11.3)
12–12.9	6.1	(3.7, 9.9)	31.8	(27.3, 36.6)	19.4	(16.5, 22.6)
13–13.9	18.0	(14.4, 22.3)	27.3	(23.0, 32.1)	22.8	(19.8, 26.2)
14–14.9	31.1	(26.5, 36.0)	12.7	(9.5, 16.8)	21.5	(18.5, 24.9)
15–15.9	23.1	(19.0, 27.7)	2.3	(1.1, 4.9)	12.3	(10.2, 14.8)
≥16	18.4	(14.4, 23.1)	0.9	(0.5, 1.8)	9.3	(7.3, 11.8)

Figure 5.11.1: Distribution of Haemoglobin Levels by Sex, JHLS III 2017

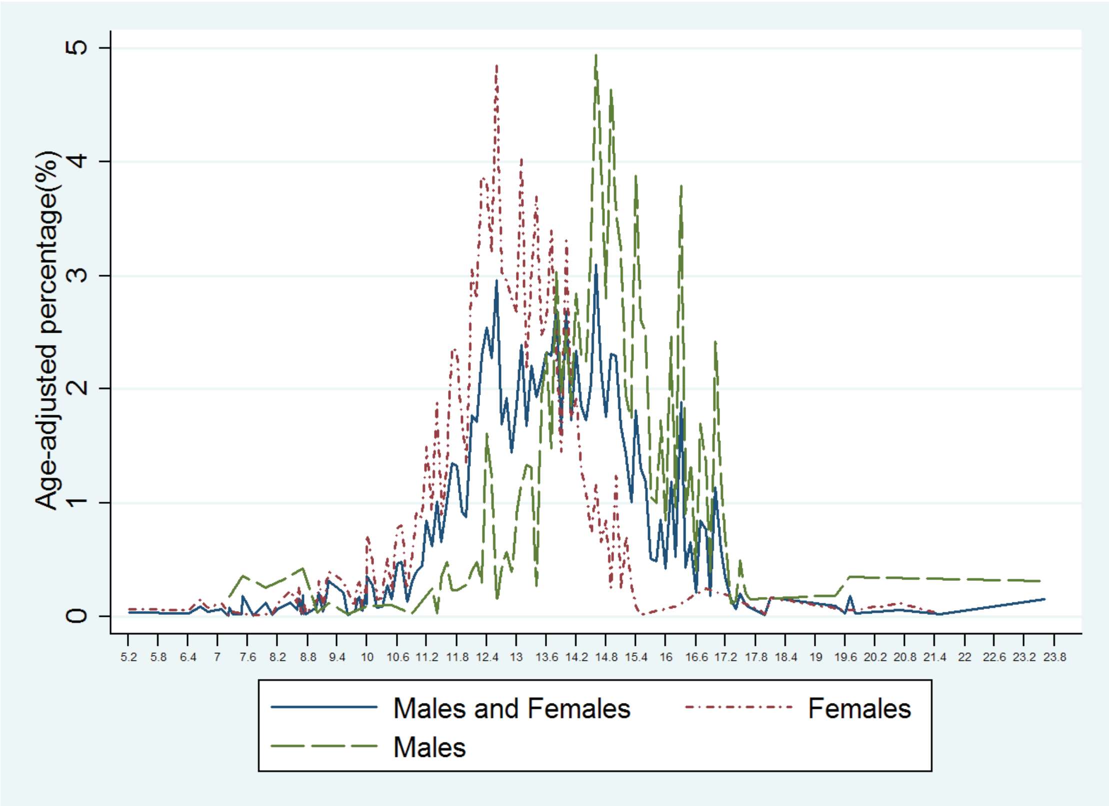


Table 5.11.3 gives mean haemoglobin level by sex and place of residence. Haemoglobin levels varied by parish of residence (p <0.05); residents of Manchester had the highest mean levels (14.1, 95% CI: 13.8, 14.5), while residents of Kingston had the lowest levels (13.3, 95% CI: 13.0, 13.5). Persons residing in rural locations had higher mean haemoglobin levels than their urban-dwelling counterparts (p<0.001).

Table 5.11.3: Mean Haemoglobin Levels (g/dl) by Sex and Geographical Location, JHLS III 2017

Geographical Location	Males		Females		Total Population	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Total Population	**14.8**	**(14.6, 14.9)**	**12.6**	**(12.5, 12.8)**	**13.6**	**(13.5, 13.7)**
Parish of Residence						
Kingston	14.1***	(13.7, 14.5)	12.4**	(12.0, 12.8)	13.3*	(13.0, 13.5)
St Andrew	15.1	(14.9, 15.4)	12.4	(12.1, 12.7)	13.7	(13.5, 13.9)
St Thomas	14.7	(14.5, 15.0)	12.8	(12.3, 13.3)	13.7	(13.4, 14.0)
Portland	14.8	(13.9, 15.7)	12.5	(12.4, 12.7)	13.6	(13.1, 14.1)
St Mary	15.1	(14.7, 15.4)	12.0	(11.7, 12.3)	13.4	(13.2, 13.6)
St Ann	14.4	(14.1, 14.8)	12.3	(12.1, 12.6)	13.4	(13.1, 13.7)
Trelawny	14.5	(14.3, 14.7)	12.8	(12.4, 13.2)	13.6	(13.3, 13.9)
St James	14.7	(14.5, 14.9)	12.3	(11.9, 12.8)	13.4	(13.1, 13.7)
Hanover	14.8	(14.4, 15.3)	12.3	(11.7, 12.9)	13.5	(13.1, 13.9)
Westmoreland	14.9	(14.4, 15.4)	12.8	(12.4, 13.1)	13.7	(13.3, 14.1)
St Elizabeth	14.8	(14.3, 15.3)	12.9	(12.6, 13.3)	13.7	(13.3, 14.1)
Manchester	14.9	(14.5, 15.2)	13.4	(12.7, 14.0)	14.1	(13.8, 14.5)
Clarendon	14.9	(14.6, 15.2)	12.8	(12.4, 13.2)	13.8	(13.5, 14.1)
St Catherine	14.3	(13.8, 14.7)	12.9	(12.5, 13.3)	13.5	(13.2, 13.8)
Urban/Rural Location						
Rural	14.9	(14.7, 15.0)	12.9***	(12.7, 13.1)	13.9***	(13.7, 14.0)
Urban	14.7	(14.5, 14,8)	12.4	(12.3, 12.6)	13.4	(13.3, 13.6)

*p<0.05; **p<0.01; ***p<0.001

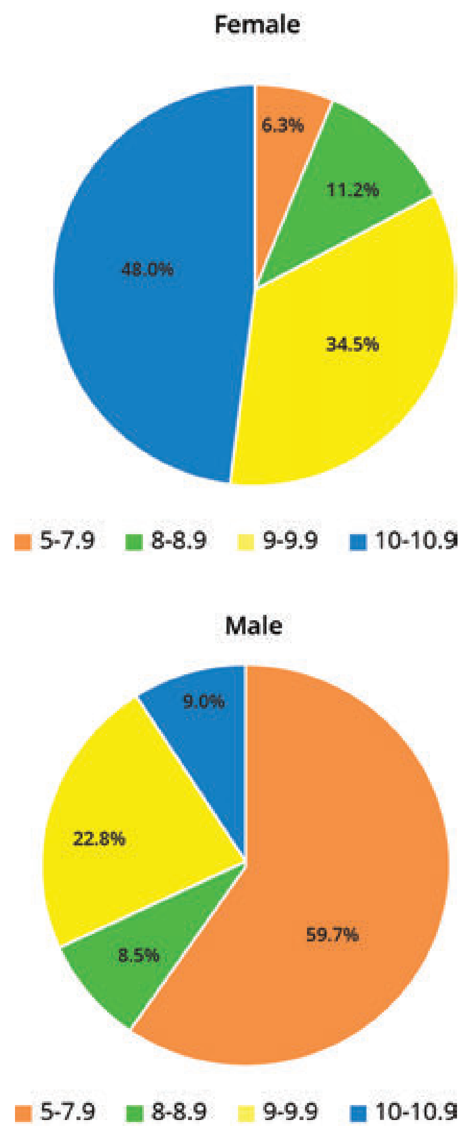
The prevalence of anaemia stratified by sex and severity is shown in Table 5.11.4. The overall prevalence was 9.5% in males and 25.0% in females. The majority of individuals with anaemia were classified as having mild anaemia, while less than 1% had severe anaemia. Approximately one in ten (10.2%) females had moderate to severe anaemia.

Table 5.11.4: Prevalence (%) and Confidence Intervals (CI) of Mild, Moderate, and Severe Anaemia by Sex, JHLS III 2017

Characteristic	Males		Females		Total	
Anaemia Classification	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**
Total	**9.5**	**(6.5,13.8)**	**25.0**	**(20.4,30.2)**	**17.6**	**14.0, 21.7**
Mild	7.9	(5.1,12.0)	14.8	(11.1,19.4)	11.5	(8.5, 15.3)
Moderate	0.7	(0.3,1.4)	9.6	(7.2,12.6)	5.3	(4.0, 6.9)
Severe	1.0	(0.3,3.1)	0.6	(0.3,1.4)	0.8	(0.4.1.7)

Figure 5.11.2 gives haemoglobin levels of individuals classified with moderate to severe anaemia. Approximately 40% (40.3%) of males and 94% (93.7%) of females had haemoglobin levels greater than 8 g/dl. Of males with moderate to severe anaemia, approximately 60% (59.7%) had haemoglobin levels of 5–7.9 g/dl.

Figure 5.11.2: Percentage Distribution of Haemoglobin Levels g/dl Among Individuals with Moderate to Severe Anaemia, JHLS III 2017



Prevalence estimates for anaemia by age category and rural and urban residence are shown in Table 5.11.5. In general, anaemia prevalence was highest among the lowest and highest age groups. Approximately one in ten (10.9%) males aged 15–24 years were anaemic. The prevalence of anaemia was higher in elderly men ($p<0.01$) but was greater in younger women of reproductive age ($p<0.01$). Persons residing in urban locations had a higher prevalence of anaemia than those living in rural settings, though this did not attain statistical significance.

Table 5.11.5: Prevalence (%) and Confidence Intervals (CI) of Anaemia by Age and Geographic Location, JHLS III 2017

Characteristic	Males		Non-pregnant Females		Total Population	
	%	95% CI	%	95% CI	%	95% CI
Total	**9.0**	**(6.7, 12.1)**	**25.4**	**(21.7, 29.5)**	**17.8**	**(15.2, 20.6)**
Age Groups (Years)						
15–24	10.9**	(4.2, 25.5)	29.0	(18.4, 42.4)	20.1	(13.0, 29.9)
25–34	0.8	(0.2,4.1)	29.4	(21.1, 39.3)	16.6	(11.8,22.8)
35–44	2.8	(0.8, 8.9)	27.4	(18.6, 38.3)	16.9	(11.6, 23.9)
45–54	12.6	(5.3, 27.1)	24.2	(17.2, 33.0)	17.5	(11.1, 26.5)
55–64	11.2	(6.0, 19.9)	11.4	(6.1, 20.3)	11.3	(7.3, 17.0)
65–74	16.5	(8.9, 28.8)	15.1	(9.9, 22.6)	15.9	(10.8, 22.8)
≥ 75	28.7	(15.9, 46.3)	29.9	(17.8, 45.6)	29.4	(21.0, 39.5)
Reproductive Age						
Yes (15–49 years)	8.0	(4.1, 14.7)	28.5**	(22.6, 35.4)	18.9	(14.2, 24.6)
No (≥ 50 years)	12.4	(8.7, 17.3)	17.4	(13.4, 22.3)	14.9	(12.1, 18.2)
Elderly						
No (< 60 years)	7.2**	(4.1, 12.5)	27.0*	(21.6, 33.1)	17.4	(13.4, 22.3)
Yes (≥ 60 years)	19.8	(13.3, 28.5)	16.6	(11.4, 23.5)	18.1	(13.8, 23.3)
Geographic Location						
Rural	6.4	(4.3, 9.5)	22.1	(15.7, 30.3)	14.0	(10.4, 18.4)
Urban	12.2	(7.1, 20.2)	26.9	(20.6, 34.2)	20.2	(15.0, 26.7)

*p<0.05; **p<0.01; ***p<0.001

The prevalence of anaemia by indices of socioeconomic status are given in Table 5.11.6. Individuals with primary or secondary education had higher levels of anaemia than those with post-secondary education, though this was only significant among females (p<0.05). Prevalence of anaemia was higher in persons with a low number of possessions (p<0.01). Although not statistically significant, anaemia prevalence was greater in unemployed persons and students when compared with their employed counterparts. Individuals earning a weekly income of $12,000 or less had a higher prevalence of anaemia than those earning higher weekly incomes.

Table 5.11.6: Prevalence (%) and Confidence Intervals (CI) of Anaemia by Indices of Socioeconomic Status, JHLS III 2018

Characteristic	Males		Non-pregnant Females		Total Population	
	%	95% CI	%	95% CI	%	95% CI
Total	**9.0**	**(6.7, 12.1)**	**25.4**	**(21.7, 29.5)**	**17.8**	**(15.2, 20.6)**
Education Level[123]						
Primary	17.4	(11.1, 26.3)	26.1*	(19.7, 33.7)	21.5	(16.5, 27.5)
Secondary	6.3	(3.1, 12.4)	28.1	(22.5, 34.5)	17.5	(13.5, 22.4)
Post-Secondary	7.8	(1.9, 27.0)	15.5	(8.5, 26.5)	12.3	(6.3, 22.5)
Socioeconomic Index						
Possessions						
Low (0–5)	18.5**	(12.5, 26.5)	27.4***	(20.4, 35.7)	23.0**	(17.5, 29.4)
Middle (6–9)	4.4	(1.7, 11.2)	32.9	(24.8, 42.1)	18.7	(13.7, 25.0)
High (10–20)	6.9	(3.1, 14.7)	15.3	(10.9, 21.1)	11.5	(8.1, 16.1)
Employment Status						
Employed	7.0	(4.1, 11.8)	25.0	(17.0, 35.0)	14.6	(9.7, 21.4)
Unemployed	11.7	(7.6, 17.7)	27.2	(21.5, 33.7)	22.1	(17.9, 27.0)
Student	21.2	(6.2, 52.0)	16.5	(6.4, 36.4)	18.7	(8.4, 36.5)
Weekly Household Income ($JMD)						
<12, 000	10.2	(5.7, 17.6)	28.3	(21.6, 36.1)	20.7	(15.4, 27.2)
12,000–60,000	4.9	(2.8, 8.4)	23.1	(15.4, 33.0)	13.8	(9.8, 18.9)
>60,000	0.0	-	0.0	-	0.0	-
Don't Know	12.1	(5.0, 26.4)	30.5	(21.1, 41.8)	21.2	(13.8, 31.1)
No Response	11.8	(4.2, 29.0)	19.5	(11.6, 31.0)	14.9	(7.6, 27.0)

[1]p-value$_{trend}$(total)= 0063, [2]p-value$_{trend}$(male)= 0.093, [3]p-value$_{trend}$(female)= 0.041
*p<0.05; **p<0.01; ***p<0.001

Prevalence and confidence intervals of anaemia status by body mass index (BMI) and sex are shown in Table 5.11.7. Anaemia prevalence varied by body mass index category in males (p<0.05). Males with a body mass index less than 18.5 kg/m^2 had a higher prevalence of anaemia than those with higher BMI classifications. This pattern was also observed for males with mild and moderate to severe anaemia.

Table 5.11.7: Prevalence (%) and Confidence Intervals (CI) of Anaemia by Body Mass Index and Sex, JHLS III 2017

Characteristic	Body Mass Index (kg/m²)							
	< 18.5		18.5-24.9		25-29.9		≥30	
Anaemia Classification	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Total Population								
Total	27.9	(13.9, 48.3)	15.1	(10.8, 20.8)	16.5	(12.0, 22.2)	19.9	(15.0, 25.8)
Mild	12.7	(3.3, 37.9)	11.1	(7.5, 16.0)	11.7	(7.3, 18.0)	11.9	(8.3, 16.7)
Moderate to Severe	15.3	(6.2, 32.8)	4.1	(2.2, 7.3)	4.8	(3.0, 7.7)	8.0	(5.2, 12.0)
Male								
Total*	26.1	(9.8, 53.6)	8.9	(5.1, 15.0)	9.8	(4.7, 19.5)	4.5	(1.7, 11.5)
Mild**	14.0	(2.7, 48.5)	8.8	(5.1,15.0)	7.4	(2.9, 17.9)	3.9	(1.3, 11.3)
Moderate to Severe**	12.1	(3.3, 35.7)	0.1	(0.02, 0.30)	2.4	(0.9, 5.9)	0.6	(0.1, 2.5)
Female								
Total	33.0	(16.5, 55.0)	24.5	(16.6, 34.8)	23.2	(17.1, 30.6)	25.7	(19.9, 32.5)
Mild	8.9	(3.5, 20.9)	14.4	(8.8, 22.6)	15.9	(10.5, 23.4)	14.9	(10.5, 20.6)
Moderate to Severe	24.1	(8.6, 51.6)	10.2	(5.6, 17.6)	7.3	(4.2, 12.3)	10.8	(7.3, 15.6)

*p<0.05; **p<0.01; ***p<0.001

Serum Ferritin Levels and Depleted Iron Store Prevalence

Ferritin is the blood protein that stores iron in the body. Depletion of iron stores is another indication of whether a person may have anaemia. We assessed the iron status of the population by evaluation of the ferritin levels. Normal ferritin levels are gender specific and range from 12–300 µg/l. Table 5.11.8 shows the levels of iron in the body based on age and gender according to the WHO classification.

Table 5.11.8: Iron Stores Based on Serum Ferritin Concentration, WHO

Classification	Serum Ferritin Concentration (µg/l)			
	5 years or Less		>= 5 years	
	Male	Female	Male	Female
Depleted iron stores	<12	<12	<15	<15
Depleted iron stores in the presence of infection	<30	<30	-	-
Severe risk of iron overload	-	-	>200	>150

Source: WHO, 'Serum Ferritin Concentrations for the Assessment of Iron Status and Iron Deficiency In Populations: Vitamin And Mineral Nutrition Information System,' World Health Organization, 2011, http://www.who.int/vmnis/indicators/serum_ferritin. pdf.

Mean ferritin levels (ug/l) in the population are shown in Table 5.11.9. Mean ferritin levels in adults aged 15 years and older was 83.2 ug/l (95% CI: 79.1, 87.3). Mean levels differed by sex (p<0.001), with males having higher levels than females. Ferritin levels also differed by age. In general, levels increased with increasing age.

Table 5.11.9: Mean Serum Ferritin Levels by Age Group and Sex, JHLS III 2017

Characteristic	Male		Female		Total	
	%	95% CI	%	95% CI	%	95% CI
Total Population	**107.2**	**(99.6, 114.9)**	**59.5**	**55.1, 63.8**	**83.2**	**79.1, 87.3**
Age Group (Years)						
15–24	72.1**	(53.7,90.4)	30.2***	(24.8,35.5)	50.8***	(40.6, 60.9)
25–34	107.9	(92.3,123.5)	43.0	(31.4,54.7)	73.1	(62.9, 83.2)
35–44	116.0	(93.7,138.3)	42.9	(35.0,50.9)	75.6	(63.2,88.0)
45–54	124.0	(97.3,150.7)	61.9	(52.2,71.7)	98.1	(81.2,114.9)
55–64	111.3	(85.2,137.4)	116.3	(91.1,141.4)	114.1	(95.6,132.5)
65–74	123.9	(105.6, 142.3)	100.7	(85.2,116.1)	113.1	(101.7,124.4)
>= 75	116.2	(86.4,145.9)	91.4	(77.2,105.5)	104.9	(87.4,122.5)

*p<0.05; **p<0.01; ***p<0.001

Table 5.11.10: Prevalence of Depleted Iron Stores (Serum Ferritin <15 ug/l) by Age Group and Sex, JHLS III 2017

Characteristic	Male		Female		Total	
	%	95% CI	%	95% CI	%	95% CI
Total Population	**1.9**	**(1.0, 3.5)**	**17.8**	**14.8,21.3**	**9.9**	**8.4,11.7**
Age Group (Years)						
15–24	5.9 **	(2.4,13.7)	25.0***	(16.0,36.8)	15.6***	(10.6,22.4)
25–34	1.1	(0.2,5.0)	24.1	(16.1,34.4)	13.4	(9.0,19.5)
35–44	0	-	19.5	(12.1,29.8)	10.8	(6.6,17.0)
45–54	0	-	25.2	(17.5,35.0)	10.5	(7.3,15.0)
55–64	1.7	(0.4,7.3)	1.3	(0.4,3.7)	1.5	(0.6,3.6)
65–74	2.3	(0.5,9.7)	3.0	(0.6,12.8)	2.6	(0.9,7.4)
>= 75	1.6	(0.4,7.1)	0	-	0.9	(0.2,4.0)
Reproductive Age						
Yes (15–49 years)	2.2	(1.0,4.8)	24.4 ***	(20.1,29.4)	13.7***	(11.3,16.4)
No (>= 50 years)	1.3	(0.5,3.2)	4.3	(2.3,7.9)	2.8	(1.7,4.6)
Elderly						
No (< 60 years)	2.0	(1.0,4.1)	21.5***	(17.8,25.7)	11.9***	(10.0,14.1)
Yes (>= 60 years)	1.5	(0.5,4.5)	1.6	(0.4,5.3)	1.5	(0.7,3.3)

*p<0.05; **p<0.01; ***p<0.001

Table 5.11.10 gives the prevalence and confidence intervals of depleted iron stores (defined as a ferritin level less than 15 ug/l). The overall prevalence of depleted iron stores was 9.9%. This differed by sex (p<0.001), with a prevalence of 1.9% in males and 17.8% in females. Depleted iron store prevalence varied by age group in the total population (p<0.001), males (p<0.01) and females (p<0.001); in general, prevalence declined with age in females, whereas the prevalence was highest in younger and older males. Participants of reproductive age had significantly higher depleted iron stores than individuals aged 50 years and older (p<0.001). Similarly, individuals aged 60 years and older had a lower prevalence of depleted iron stores than those less than 60 years (p < 0.001).

Table 5.11.11 shows the prevalence and confidence intervals of depleted iron stores by geographical location. Prevalence differed significantly by parish in the total population (p<0.03) and among males (p<0.001). The prevalence of depleted iron stores differed by urban/rural location in males (p<0.01), with males residing in rural locations having a higher prevalence than their urban dwelling counterparts.

Table 5.11.11: Prevalence of Depleted Iron Stores by Sex and Geographical Location, JHLS III 2017

Characteristic	Male		Female		Total	
	%	95% CI	%	95% CI	%	95% CI
Total Population	**1.9**	**(1.0,3.5)**	**17.8**	**(14.8,21.3)**	**9.9**	**(8.4,11.7)**
Parish of Residence						
Kingston	3.9***	(0.6,22.7)	19.6	(13.2,28.1)	12.0*	(7.6,18.3)
St Andrew	0	-	19.3	(12.2,29.2)	9.5	(6.1,14.6)
St Thomas	2.9	(0.6,13.0)	37.1	(21.1,56.5)	21.0	(12.1,33.8)
Portland	0	-	20.9	(6.1,51.6)	8.6	(2.5,26.0)
St Mary	2.1	(0.2,16.5)	27.1	(16.7,40.9)	15.1	(9.8,22.7)
St Ann	0	-	25.4	(12.4,45.0)	9.1	(4.2,18.9)
Trelawny	0.3	(0.04,2.7)	2.8	(0.7,10.3)	1.5	(0.4,4.7)
St James	3.1	(0.5,18.3)	20.3	(11.1,34.3)	13.0	(7.3,22.3)
Hanover	0	-	15.7	(7.7,29.3)	9.6	(4.4,19.7)
Westmoreland	12.5	(1.9,51.4)	16.3	(5.7,38.7)	14.9	(5.8,33.0)
St Elizabeth	0	-	21.8	(12.2,35.8)	11.8	(6.8,19.8)
Manchester	13.6	(5.9,28.4)	11.5	(4.6,25.8)	12.8	(7.2,21.6)
Clarendon	1.6	(0.3,9.5)	19.5	(10.0,34.8)	10.2	(6.0,16.8)
St Catherine	0	-	11.6	(7.3,17.9)	6.1	(3.9,9.2)
Urban/Rural Location						
Rural	3.5**	(1.8,6.9)	14.2	(10.6,18.8)	8.8	(6.7,11.4)
Urban	0.6	(0.2,2.3)	20.5	(16.1,25.7)	10.8	(8.6,13.6)

*p<0.05; **p<0.01; ***p<0.001

Table 5.11.12 shows the prevalence of depleted iron stores by socioeconomic status. Prevalence differed by education level in the total population (p<0.01) and among females (p<0.05). In these groups, the prevalence was lowest in individuals educated to the primary level. Depleted iron stores also varied by employment status, with unemployed persons and students having higher prevalence proportions than individuals who were employed. There was no difference in depleted iron store level by income.

Table 5.11.12: Prevalence of Depleted Iron Stores by Sex and Indices of Socioeconomic Status, JHLS III 2017

Characteristic	Male		Female		Total	
	%	CI	%	CI	%	CI
Total Population	**1.9**	**(1.0,3.5)**	**17.8**	**(14.8,21.3)**	**9.9**	**(8.4,11.7)**
Education Level						
Primary	1.5	(0.6,3.6)	11.0*	(7.1,16.5)	5.6**	(3.8,8.3)
Secondary	2.7	(1.2,5.7)	22.1	(17.6,27.5)	12.6	(10.0,15.8)
Post-Secondary	0	-	13.5	(8.5,20.7)	7.6	(4.8,11.7)
Other	0	-	14.0	(3.6,41.1)	10.2	(2.7,32.0)
Socioeconomic Index						
Possessions						
Low (0–5)	1.3	(0.4,3.9)	13.3	(7.9,21.7)	7.1	(4.3,11.5)
Medium (6–9)	3.2	(1.3,7.5)	22.8	(16.7,30.3)	12.7	(9.2,17.2)
High (10–20)	1.0	(0.3,4.3)	16.7	(12.6,21.8)	9.6	(7.2,12.6)
Employment Status						
Employed	1.2*	(0.5,3.2)	17.9 *	(13.7,22.9)	7.9***	(6.1,10.3)
Unemployed	1.5	(0.4,5.3)	21.0	(14.7,29.3)	14.9	(10.8,20.4)
Student	6.6	(1.8,20.9)	25.5	(13.3,43.4)	16.6	(9.4,27.6)
Retired	3.5	(1.0,11.0)	0.7	(0.1,5.1)	1.9	(0.7,4.9)
Weekly Household Income ($JMD)						
< 12,000	1.4	(0.5,4.3)	17.8	(12.9,24.0)	10.8	(8.1,14.3)
12,000–59,999	1.7	(0.4,6.9)	16.6	(11.0,24.3)	8.6	(5.8,12.4)
>=60,000	0	-	12.7	(2.8,42.5)	7.8	(1.8,27.5)
Don't Know	4.0	(1.7,9.3)	19.6	(13.2,28.1)	11.6	(8.1,16.3)
No Response	0.7	(0.1,6.0)	13.8	(5.9,28.9)	5.6	(2.6,11.6)

p<0.05; **p<0.01; ***p<0.001

Although the prevalence of depleted iron stores generally declined with increasing BMI level (Table 5.11.13), this did not attain statistical significance and was only marginally significant among males (p=0.07).

Table 5.11.13: Prevalence of Depleted Iron Stores by Sex and Body Mass Index, JHLS III 2017

Sex	Body Mass Index (kg/m^2)							
	< 18.5		18.5–24.9		25–29.9		>= 30	
	%	CI	%	CI	%	CI	%	CI
Total	13.0	(5.7,26.8)	8.9	(6.1,12.8)	8.9	(6.2,12.6)	10.7	(7.3,15.4)
Males	7.0	(1.9,22.8)	1.4	(0.5,3.8)	2.3	(0.7,6.7)	0	-
Females	37.7	(18.0,62.5)	20.9	(14.4,29.3)	16.0	(11.0,22.7)	14.9	(10.7,20.2)

p<0.05; **p<0.01; ***p<0.001

The prevalence and confidence intervals of depleted iron stores in persons with anaemia are shown in Table 5.11.14. Depleted iron store prevalence was higher in individuals with anaemia (37.2%) than in their non-anaemic counterparts (4.9%, $p<0.001$). This pattern was also observed in males ($p<0.01$) and females ($p<0.001$). The prevalence of depleted iron stores increased with anaemia severity ($p<0.001$).

Table 5.11.14: Prevalence of Depleted Iron Stores in Persons with and without Anaemia, JHLS III 2017

Characteristic	Male		Female		Total	
	%	CI	%	CI	%	CI
Anaemia						
No	1.2**	(0.4,3.2)	9.3***	(7.0,12.2)	4.9***	(3.7,6.3)
Yes	7.9	(3.1,19.0)	49.2	(40.0,58.6)	37.2	(29.8,45.3)
By Anaemia Classification						
Normal	1.1**	(0.4,3.2)	9.3***	(7.0,12.2)	4.9***	(3.7,6.3)
Mild	7.5	(2.6,19.8)	23.1	(13.1,37.6)	17.0	(9.9,27.5)
Moderate	25.2	(3.9,73.9)	80.5	(68.6,88.7)	77.6	(66.7,85.7)
Severe	0	-	97.1	(78.7,99.7)	51.9	(18.5,83.7)

p<0.05; **p<0.01; ***p<0.001

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6. Lifestyle

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In this chapter, we examine the relationship between socio-demographic factors and lifestyle practices such as dietary habits, physical activity, skin bleaching, substance use, and violence and injuries in Jamaicans aged 15 years and older. Many of the risk factors for chronic diseases have been linked to lifestyle choices. Thus, the chapter also reports on the nature of the relationship between selected lifestyle indices and chronic diseases.

6.1. Dietary Patterns

Dietary patterns can be described using the consumption patterns for whole foods or their combinations as well as the temporal distribution of intake and habitual patterns (e.g., snacking and food preparation methods). The chapter also documents findings from the analysis of data related to household food insecurity, dietary patterns and behaviours, use of nutrition labelling, and awareness of food-based dietary guidelines. The JHLS III measured dietary patterns and behaviours using a 27-item assessment tool, hereafter referred to as the diet module which included the items that measured food insecurity. Food insecurity was assessed using items from the Six-Item Short Form of the Household Food Security Scale from the US Department of Agriculture.[1] The diet module also assessed the frequency of consumption of 100% fruit juice, fruit, beans (legumes), dark green vegetables, orange vegetables, other vegetables, fish, fast-food, and sugar sweetened beverages over the past month. The data analysis results compiled in this dietary intake section used times or frequency of intake to represent servings as survey respondents were asked to indicate the numbers of times in a day, week, or month that they consumed the given types of foods within the 30 days preceding the survey interview. This 30-day period was assumed to capture usual intake and a single time of consumption of a particular food item was assumed equal to at least one serving of the food item.

Consumption of less than five servings of fruit and vegetables in a single day is regarded by the Pan-American Health Organization/World Health Organization (PAHO/WHO) as an index of noncommunicable disease risk.[2] Thus, study participants were classified as having optimal fruit and vegetable intake if they met the WHO criteria for optimal intake of five servings of fruit and vegetables per day. Structured items were used to assess special 'diets' (e.g., low salt or vegetarian), method of food preparation and use of salt/sodium, and diet-related behaviours regarding nutrition labelling and the food-based dietary guidelines.

6.1.1 Fruit and Vegetable Intake

Vegetable Intake

Table 6.1.1 shows the distribution of vegetable intake categories among Jamaicans aged 15 years and older by socio-demographic subgroups. Just over 50 % of Jamaicans aged 15 years and older consumed vegetables less than one time per day. One in four Jamaicans consumed one to less than two servings of vegetables per day, and 17.6% consumed two or more servings daily. There were no statistically significant differences in vegetable intake by sex or area of residence. Only 18.3% of males and 16.8% of females attained the optimal intake of two or more servings of vegetables per day, while 17.5% and 17.7% of urban and rural residents, respectively consumed two or more servings of vegetables per day.

The results further showed statistically significant differences in the distribution of vegetable intake categories when the age groups ($p<0.001$), education levels ($p<0.01$), and number of household possessions categories ($p<0.001$) were compared. Among the age, education, and household possessions categories, prevalence estimates for optimal vegetable intake were highest in, respectively, persons 65–74 years at 21.8%; persons with post-secondary education (24.5%); and those with access to 10–20 household items (26.7%) (See Table 6.1.1).

Table 6.1.1: Percentage Distribution (%) of Vegetable Intake Categories by Socio-demographic Subgroups in Jamaicans Aged 15 Years and Older, JHLS III 2017

	Frequency of Vegetable Intake			
Population Subgroup	**once/wk**	**<once/day+**	**1 to < 2 times/day**	**2times/day**
Sex				
Males	7.7	50.7	23.3	18.3
Females	5.3	50.7	27.3	16.8
Males and Females	6.5	50.7	25.3	17.6
Age Groups (Years)* **				
15–24	9.5	55.0	18.9	16.6
25–34	8.8	49.6	24.2	17.4
35–44	4.4	51.5	26.0	18.1
45–54	4.9	48.9	30.4	15.9
55–64	3.5	46.3	30.7	19.5
65–74	2.9	43.4	31.9	21.8
75+	4.4	53.7	24.8	17.1
Area of Residence				
Urban	7.6	51.7	23.3	17.5
Rural	5.3	49.5	27.5	17.7
Education Level**				
Primary	4.8	52.1	26.8	16.3
Secondary	7.8	51.4	24.6	16.1
Post-Secondary	4.5	46.3	24.8	24.5
Other	2.9	50.2	32.8	14.0
Number of Possessions***				
0–5 item	6.0	57.4	24.6	12.1
6–9 item	6.5	53.2	26.2	14.1
10–20 item	3.9	43.9	25.5	26.7

+< once per day but > once/week   *p<0.05; **p<0.01; ***p<0.001

Coloured vegetables, especially dark green and yellow-orange-coloured vegetables are an important source of vitamins, minerals, and antioxidants, which are important for optimal health. The literature indicates eating two to three servings of green leafy vegetables per week may lower the risk of some cancers[3] and that higher intake of green leafy vegetables can limit the occurrence of multiple adverse health outcomes including Type 2 diabetes, high blood pressure, and cardiovascular disease events.[4,5] We sought to assess the frequency of consumption of these vegetables in the Jamaican population.

Most Jamaicans (>60%) reported eating all vegetable types one to six times per week. More females than males reported this frequency of consumption for the 'other vegetables' ($p<0.05$), but the frequency of consumption of the dark green leafy and the yellow-orange vegetable types did not differ when the sexes were compared (See Table 6.1.2).

Table 6.1.2: Percentage Distribution (%) of Frequency of Vegetable Consumption among Jamaicans Aged 15 Years and Older, JHLS III 2017

Type of Vegetable	Males	Females	Total
Dark Green and Leafy Vegetables			
< Once per week	30.2	30.2	30.2
2–6 Times per week	62.1	63.2	62.7
1–2 Times per day	6.3	5.7	6.0
≥3 Times per day	1.3	0.9	1.1
Yellow-orange Vegetables			
< Once per week	22.3	18.4	20.3
2–6 Times per week	67.3	69.9	68.6
< 3 times per day++	10.1	10.9	10.5
≥3 Times per day	0.3	0.8	0.6
Other Vegetables*			
< Once per week	22.9	19.5	21.2
2–6 Times per week	68.5	73.0	70.8
< 3 times per day++	7.2	7.3	7.2
≥3 Times per day	1.3	0.3	0.8

*p < 0.05; **p < 0.01; ***p < 0.0001.

Dark green and leafy vegetables: For example, broccoli, callaloo, pakchoi, cabbage, okra.

Yellow–orange vegetables: For example, carrots, pumpkin.

Other vegetables: For example, tomato, peppers.

Table 6.1.3 shows the distribution of the vegetable consumption frequency according to chronic disease status. The distribution of intake differed significantly with diabetes status only. More of the persons with diabetes reported consumption of vegetables at higher frequencies (1 to < 2 times/day: 33.7% vs 24.5%; ≥2 times/day: 19.1% vs 16.4%).

Table 6.1.3: Distribution (%) of Frequency of Vegetable Consumption by Chronic Disease Status among Jamaicans Aged 15 Years and Older, JHLS III 2017

	Frequency of Vegetable Consumption			
Chronic Disease Status	**once/week**	**<once/day+**	**1 to < 2 times/day**	**2 times/day**
Obesity (BMI≥30kg/m²)				
Not obese	6.4	51.5	24.7	17.5
Obese	4.0	49.1	29.9	17.0
Diabetes (WHO criteria)				
No diabetes***	6.1	53.0	24.5	16.4
Diabetes present	1.8	45.3	33.7	19.1
Hypertension (JNC VII)				
No hypertension	6.3	51.8	25.6	16.3
Hypertension present	4.4	49.1	26.3	20.1
Hypercholesterolemia (TC¹≥5.2mmol/l)				
No high cholesterol	5.7	51.6	25.5	17.2
High cholesterol present	5.3	51.9	25.0	17.8

*p<0.05; **p<0.01; ***p<0.001. 1TC – Total cholesterol. +< once per day but > once/week

Fruit Intake

Table 6.1.4 shows the distribution of fruit intake categories among Jamaicans aged 15 years and older of varied socio-demographic subgroups. Only one in eight (12.0%) Jamaicans aged 15 years and older consumed the recommended fruit intake, while 13.8% ate fruits once per week or less. Nearly 50% of Jamaicans reported consuming fruit less than once per day but more than once per week. This pattern of fruit intake was also seen within the sexes, areas of residence, and age groups, with the highest percentages of the respective subgroups, 38% or more, indicating frequency of fruit intake less than once per day but more than once per week, and less than 17% of any one subgroup consuming fruit at least twice weekly or, at most, once weekly. There were no statistically significant differences in fruit intake by sex or area of residence or age, but significant differences were observed for SES variables. The occurrence of optimal levels of fruit intake increased with higher levels of education (Fruit intake ≥2 times per day (p <0.01): primary education, 9.9%; secondary education, 11.3%; post-secondary education, 18.0%, p-value <0.01) and greater number of possessions (Fruit intake ≥2 times per day (p <0.001): 0–5 items, 8.3%; 6–9 items, 11.6%; 10–20 items, 16.0%,). In contrast, the frequency of poorest intake levels decreased as level of education or number of household possessions increased (See Table 6.1.4.).

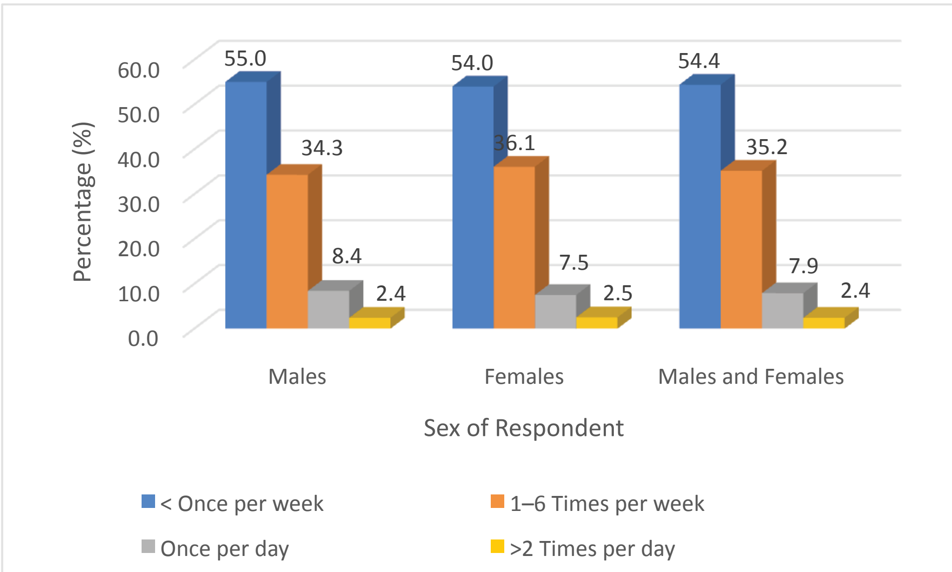
Table 6.1.4: Percentage Distribution (%) of Frequency of Fruit Intake Categories by Socio-demographic Subgroups in Jamaicans Aged 15 Years and Older, JHLS III 2018

	Frequency of Fruit Intake			
Population Subgroup	**once/week**	**<once/day[+]**	**1 to < 2 times/day**	**2 times/day**
Sex				
Males	14.9	47.1	26.7	11.4
Females	12.7	51.8	22.9	12.6
Males and Females	13.8	49.4	24.8	12.0
Age Groups (Years)				
15–24	14.0	53.0	21.8	11.2
25–34	15.4	46.0	26.1	12.5
35–44	13.7	52.1	23.9	10.4
45–54	12.4	51.5	26.1	10.1
55–64	10.3	50.1	25.5	14.1
65–74	15.6	41.2	26.8	16.5
75+	15.8	38.4	30.6	15.2
Area of Residence				
Urban	14.4	51.1	22.4	12.1
Rural	13.2	47.5	27.5	11.8
Education Level**				
Primary	14.5	52.9	22.7	9.9
Secondary	15.3	49.1	24.4	11.3
Post-Secondary	8.4	46.5	27.1	18.0
Other	6.5	50.7	35.0	7.9
Number of Possessions***				
0–5 items	16.1	52.1	23.6	8.3
6–9 items	14.7	51.9	21.8	11.6
10–20 items	8.1	45.9	30.0	16.0

+< once per day but > once/week *p<0.05; **p<0.01; ***p<0.001

One in every ten Jamaicans reported consuming 100% fruit juice once or more times daily (Figure 6.1.1). There were no statistically significant sex differences in the distribution of the consumption frequencies.

Figure 6.1.1: Percentage Distribution of Frequency of Fruit Juice+ Consumption among Jamaicans Aged 15 Years and Older, JHLS III 2017



+Fruit juices: 100% fruit juice, without added sugars. Fruit-flavoured drinks excluded.

Table 6.1.5 shows the distribution of the fruit consumption frequency according to chronic disease status. The frequency of fruit consumption did not differ significantly with chronic disease status for any of the conditions listed in Table 6.1.5.

Table 6.1.5: Distribution (%) of Frequency of Fruit Consumption by Chronic Disease Status among Jamaicans Aged 15 Years and Older, JHLS III 2017

	Frequency of Fruit Consumption Intake			
Chronic Disease Status	**once/week**	**<once/day+**	**1 to < 2 times/day**	**2 times/day**
Obesity (BMI≥30kg/m²)				
Not obese	12.8	49.7	25.8	11.7
Obese	14.2	54.0	21.0	10.9
Diabetes (WHO Criteria)				
No diabetes	12.8	50.9	22.7	13.5
Diabetes present	14.7	51.9	21.9	11.5
Hypertension (JNC VII)				
No hypertension	13.1	49.5	25.1	12.3
Hypertension present	12.9	52.6	23.1	11.5
Hypercholesterolemia (TC[1]≥5.2mmol/l)				
No high cholesterol	13.4	51.1	22.5	13.1
High cholesterol present	14.2	50.8	24.3	10.7

*p<0.05; **p<0.01; ***p<0.001. 1TC – Total cholesterol. +< once per day but > once/week

6.1.2 Legume Intake

Table 6.1.6 shows the distribution of legume intake categories among Jamaicans aged 15 years and older of varied socio-demographic subgroups. Approximately 33% of Jamaicans aged 15 years and older met the recommended legume intake frequency of greater than three times per week,[6] while 5% of Jamaicans did not consume legumes. There were no statistically significant differences in legume intake by sex, area of residence, or number of household possessions. Nearly 40% of males and 30% of females attained optimal legume intake (> 3 times per week), while 32.2% and 33.4% of urban and rural residents, respectively met the recommended intake. Statistically significant differences in the distribution of legume intake were noted when age groups ($p<0.001$) and levels of education ($p<0.01$) were compared.

Table 6.1.6: Distribution (%) of Legume Intake Categories by Socio-demographic Subgroups in Jamaicans Aged 15 Years and Older, JHLS III 2017

Population Subgroup		Frequency of Legume Intake			
		none	<2 times/ wk.	2–3 times/wk	>3 times per week
Sex					
	Males	3.4	34.0	26.7	35.9
	Females	6.4	33.3	30.5	29.7
	Males and Females	5.0	33.7	28.7	32.7
Age Groups (Years) ***					
	15–24	9.5	38.5	26.8	25.3
	25–34	3.9	32.2	25.2	38.7
	35–44	3.5	30.4	32.9	33.3
	45–54	3.1	35.5	25.2	36.2
	55–64	3.0	29.4	32.1	35.4
	65–74	2.9	30.3	33.5	33.2
	75+	3.3	33.3	35.8	27.5
Area of Residence					
Males	Urban	3.5	36.4	23.9	36.2
	Rural	3.3	31.4	29.6	35.6
Females	Urban	6.8	34.4	30.2	28.6
	Rural	6.0	32.0	31.0	31.0
Males and Females	Urban	5.2	35.4	27.2	32.2
	Rural	4.6	31.7	30.3	33.4
Education Level**					
	Primary	4.7	33.5	28.7	33.1
	Secondary	5.5	34.6	28.8	31.1
	Post-Secondary	4.0	30.4	27.0	38.6
	Other	1.2	34.9	38.3	25.7
Household Possession Categories					
	0–5 items	7.5	33.2	24.9	34.4
	6–9 items	5.8	34.5	20.7	39.0
	10–20 items	5.1	34.5	24.3	36.1

*p<0.05; **p<0.01; ***p<0.001

The recommended legume intake was highest among persons 25–34 years (38.7%) and lowest among 15–24 (25.3%) and 75+ (27.5%) age groups. Of the three education categories, prevalence of the recommended frequency of intake was highest among individuals with post-secondary education (38.6%) (See Table 6.1.6).

6.1.3 Fish Intake

Table 6.1.7 shows the distribution of fish intake categories among Jamaicans aged 15 years and older of varied socio-demographic subgroups. Frequency of fish intake differed significantly with age groups ($p<0.001$) and level of education ($p<0.01$) only. Nearly 60% of Jamaicans aged 15 years and older met the recommended fish intake of two or more times per week.[6] It is noteworthy that 7% of Jamaicans reported no fish intake. Approximately 55% of urban residents and more than 60% of rural residents reported optimal fish intake.

Prevalence of persons with high frequency (>3 times per week) of fish intake increased with greater number of possessions (Fish intake >3 times per week: 0–5 items, 29.2%; 6–9 items, 31.3%; 10–20 items, 35.5%) and the prevalence of persons reporting no fish intake decreased as number of household possessions increased (No fish intake: 0–5items, 5.5%; 6–9 items 5.4%, 10–20 items, 4.2%) but this variation was not statistically significant (See Table 6.1.7).

Noteworthy is that 10.5% of 25–34-year-olds had not consumed fish within the 30 days preceding the survey interview, while prevalence of persons with high frequency of fish intake ranged from 42.8% among 55–64-year-olds to 20.8% among person 65–74 years old ($p<0.001$). The prevalence of persons with high frequency of fish intake fell as level of education increased (primary, 38.7%; secondary, 36.4%; post-secondary, 33.8%, $p<0.01$) (See Table 6.1.7).

Table 6.1.7: Percentage Distribution (%) of Fish Intake Categories by Socio-demographic Subgroups in Jamaicans Aged 15 Years and Older, JHLS III 2017

Population Subgroup		Frequency of Fish Intake			
		None	<2 times per week	2–3 times per week	>3 times per week
Sex					
	Males	8.8	32.9	23.3	35.1
	Females	5.2	34.4	22.8	37.6
	Male and female	7.0	33.7	23.0	36.4
Age Groups (Years)* **					
	15–24	7.1	40.7	21.2	31.0
	25–34	10.5	27.4	23.6	38.5
	35–44	4.9	32.5	27.5	35.1
	45–54	5.4	37.0	20.5	37.1
	55–64	5.1	32.1	20.0	42.8
	65–74	6.7	29.1	23.9	20.4
	75+	7.5	26.4	26.9	39.2
Area of Residence					
Males and Females	Urban	7.7	37.4	21.7	33.2
	Rural	6.1	29.5	24.5	39.9

Table 6.1.7 *(contd)*: **Percentage Distribution (%) of Fish Intake Categories by Socio-demographic Subgroups in Jamaicans Aged 15 Years and Older, JHLS III 2017**

Population Subgroup		Frequency of Fish Intake			
		None	<2 times per week	2–3 times per week	>3 times per week
Area of Residence (contd)					
Males	Urban	11.7	38.6	19.9	29.8
	Rural	5.7	26.9	26.8	40.6
Females	Urban	4.2	36.3	23.3	36.3
	Rural	6.5	32.1	22.2	39.2
Education Level**					
Primary		7.2	31.0	23.1	38.7
Secondary		6.6	35.2	21.9	36.4
Post-Secondary		8.6	32.8	24.9	33.8
Other		4.3	28.5	34.7	32.5
Household Possession Categories					
0–5 items		5.5	37.3	28.0	29.2
6–9 items		5.4	32.6	30.6	31.3
10–20 items		4.2	32.4	27.9	35.5

*p<0.05; **p<0.01; ***p<0.001

6.1.4 Unhealthy Dietary Practices

Unhealthy dietary practices were assessed in the survey through questions posed on the consumption of fast foods and sugar-sweetened beverages (SSBs) and on the addition of salt/salty sauces to routine meals at the Table. Participants were asked if and how often they ate at facilities that provided ready-to-eat meals, such as pizzas, burgers (fast-food) and also how often they consumed sugar-sweetened beverages.

Fast-Food Consumption

Table 6.1.8 shows the percentage distributions of the frequency of consumption of fast foods by socio-demographic categories. Fast food consumption was assessed by frequency of eating at local fast-food restaurant during a usual week. There were no sex or area of residence differences in the frequency of consumption of this type of unhealthy foods. Approximately, 5% of males and 4% of females reported consuming fast food once per day, with similar percentages (4–5%) of urban and rural residents consuming fast foods with this frequency. There was a statistically significant association between age and the self-reported frequency of consumption of fast foods (p<0.001). The proportion of persons who reported never consuming fast foods during a usual week increased with age, from 43.6% among the 15–24-year-olds to 92.0% among those 75 years and older. Conversely, the proportion of persons that reported consuming fast foods once or more than once per day, during a usual week, was highest at just over 8% among the 15–24-year-olds and lowest at less than 1% among those 75 years and older.

Approximately 40% and 4% of persons with post-secondary education consumed fast foods one to six times per week and two or more times per day, respectively. These prevalence estimates were higher than those obtained for persons with lower levels of education (p<0.001). Just over 36% and in excess of 4% of persons with access to six or more household possessions consumed fast foods one to six times per week and two or more times per day, respectively. These prevalence estimates were higher than those obtained for persons with access to less than six household items (p<0.001).

Table 6.1.8: Distribution (%) of Frequency of Fast-Food Consumption by Socio-demographic Categories among Jamaicans Aged 15 Years and Older, JHLS III 2017

		Frequency of Fast-Food Intake			
Population Subgroup		Never	1–6 times per week	Once per day	≥2 times per day
Sex					
	Males	60.5	31.7	4.7	3.2
	Females	62.4	29.9	4.3	3.4
	Male and female	61.4	30.8	4.5	3.3
Age Groups (Years)***					
	15–24	43.6	40.0	8.4	8.1
	25–34	49.6	43.1	4.3	3.1
	35–44	61.2	31.9	4.4	2.5
	45–54	75.4	21.9	2.1	0.6
	55–64	83.3	15.0	1.3	0.4
	65–74	82.0	14.5	2.7	0.7
	75+	92.0	7.2	0.7	0.1
Area of Residence					
Males and Females	Urban	59.6	32.8	4.4	3.2
	Rural	63.5	28.5	4.5	3.5
Males	Urban	59.2	34.0	4.1	2.8
	Rural	61.8	29.4	5.2	3.6
Females	Urban	60.0	31.9	4.6	3.6
	Rural	65.3	27.6	3.8	3.2
Education Level***					
	Primary	81.1	13.9	3.0	2.0
	Secondary	56.4	34.7	5.3	3.6
	Post-Secondary	52.5	39.6	3.6	4.4
Household Possession Categories***					
	0–5 items	76.4	18.8	3.4	1.3
	6–9 items	55.5	36.4	4.1	3.9
	10–20 items	53.7	36.3	5.6	4.4

*p<0.05; **p<0.01; ***p<0.001

Table 6.1.9 shows the distribution of the fast-food consumption frequency according to chronic disease status. The distribution of the consumption frequency categories differed significantly with obesity (p<0.01), hypertension (p<0.001) and diabetes (p<0.001) status but not with hypercholesterolemia status. Noteworthy is that a larger percentage of the persons who were obese, had diabetes, or had hypertension reported never having fast food in a usual week, compared with persons without the respective conditions. Lower percentages of persons with the conditions listed in the Table reported consuming fast food with any given frequency, when compared with persons without the conditions.

Table 6.1.9: Distribution (%) of Frequency of Fast-food Consumption By Chronic Disease Status among Jamaicans Aged 15 Years and Older, JHLS III 2017

	Frequency of Fast-Food Intake			
Chronic Disease Status	**Never**	**1–6 times per week**	**Once per day**	**≥2 times per day**
Obesity (BMI≥30kg/m²)				
Not obese**	58.2	32.9	4.7	4.1
Obese	68.1	26.2	3.6	2.0
Diabetes (WHO Criteria)				
No diabetes***	59.8	31.5	4.0	4.8
Diabetes present	74.5	22.7	2.8	0.0
Hypertension (JNC VII)				
No hypertension***	53.6	37.7	4.6	4.1
Hypertension present	75.1	18.7	4.4	1.9
Hypercholesterolemia (TC[1]≥5.2mmol/l)				
No high cholesterol	58.7	33.5	3.8	4.1
High cholesterol present	65.4	25.6	2.8	6.2

*p<0.05; **p<0.01; ***p<0.001. 1TC – Total cholesterol

Sugar-sweetened Beverages

Table 6.1.10 shows the percentage distributions of the frequency of sugar-sweetened beverage (SSB) consumption by socio-demographic categories. SSB consumption was assessed by frequency of drinking carbonated beverages (soda) or sugar-sweetened fruit drinks (excluding drinks branded as 'diet beverages') during the month prior to their survey interview. There were no sex differences or, among the females only, area of residence differences in the frequency of consumption of this type of unhealthy foods. Just over 20% of males and females reported consuming SSB once per day and, while not significantly different, 25% of urban females and 19% of rural females reported consuming SSBs with this frequency. There was a statistically significant association between self-reported frequency of consumption of SSBs and age (p<0.001), area of residence among males and in the total population, education level (p<0.001), and number of household possessions (p<0.001).

The proportion of persons who reported never consuming SSBs during the month prior to their survey interview increased with age, from 10.3% among the 15–24-year-olds to 41.3% among those 75 years and older. Conversely, the proportion of persons that reported consuming SSBs once and more than once per day during a usual week was highest at 29.3% and 17.0%, respectively, among the 15–24-year-olds and lowest at 9.1% and 5.1%, respectively, among those 75 years and older.

In the total population of Jamaicans aged 15 years and older lower percentages of urban compared with rural residents reported consuming SSBs one to six times per week or more frequently, while higher percentages of urban residents reported consumption of this type of unhealthy food less than one time or never during a week (p<0.001). More of the urban compared with rural males reported consumption of SSBs less than one time or never during a week and one time per day, while lower percentages of urban males reported consuming SSBs one to six times per week and more than once per day (p<0.001).

Table 6.1.10: Distribution (%) of Frequency of Sugar-sweetened Beverage (SSB) Consumption by Socio-demographic Categories among Jamaicans Aged 15 Years and Older, JHLS III 2017

		Frequency of Sugar-Sweetened Beverage (SSB) Intake				
Population Subgroup		Never	< 1 time per week	1–6 times per week	1 time per day	> 1 time per day
Sex						
	Males	19.3	6.8	40.0	21.8	12.1
	Females	19.9	6.0	42.8	20.7	10.6
	Males and Females	19.6	6.4	41.4	21.2	11.4
Age groups (Years)*						
	15–24	10.3	3.3	40.0	29.3	17.0
	25–34	19.7	7.2	39.2	19.3	14.5
	35–44	15.1	5.4	44.5	22.7	12.4
	45–54	24.0	10.3	39.4	20.3	6.1
	55–64	25.5	6.6	48.7	15.0	4.2
	65–74	32.8	8.3	42.2	12.2	4.5
	75+	41.3	7.5	37.0	9.1	5.1
Area of Residence						
Males and Females	Rural ***	15.2	5.5	44.3	22.2	12.8
	Urban	23.5	7.2	38.8	20.4	10.1
Males	Rural***	13.7	5.6	48.2	19.6	12.9
	Urban	25.7	6.4	37.8	21.7	8.4
Females	Rural	16.7	5.4	40.3	24.9	12.7
	Urban	21.5	8.0	39.7	19.2	11.7
Education Level*						
	Primary	17.6	6.2	42.0	23.7	10.4
	Secondary	14.3	4.6	44.9	20.9	15.3
	Post-Secondary	24.9	8.7	38.4	20.1	8.0
Household Possession Categories*						
	0–5 items	21.4	5.8	43.5	19.9	9.4
	6–9 items	17.5	5.2	40.5	24.1	12.8
	10–20 items	26.0	11.6	41.5	12.4	8.6

*p<0.05; **p<0.01; ***p<0.001

Compared with persons attaining lower levels of education, persons with post-secondary education had the lowest percentage reporting consumption of SSBs one to six times per week or more frequently, and the highest percentage reporting consumption of SSBs less than one time or never in a week ($p<0.001$). Compared with persons with access to less than ten household possessions, persons with access to 10–20 household possessions had the lowest percentage reporting consumption of SSBs one time or more than one time per day and the highest percentage reporting consumption of SSBs less than one time or never in a week ($p<0.001$).

Table 6.1.11 shows the distribution of the SSB consumption frequency according to chronic disease status. The distribution of the consumption categories differed significantly with hypertension ($p<0.001$), diabetes ($p<0.001$), and hypercholesterolemia ($p<0.05$) status. Noteworthy is that a larger percentage of the persons who had diabetes, hypertension, or hypercholesterolemia reported never having SSBs in a week, compared with persons without the respective conditions. Lower percentages of persons with these three forementioned conditions reported consuming SSBs one to six times per week or more frequently, when compared with persons without the respective conditions.

Table 6.1.11: Distribution (%) of Frequency of Sugar-sweetened Beverage (SSB) Consumption by Chronic Disease Status among Jamaicans Aged 15 Years and Older, JHLS III 2017

	Frequency of Sugar-sweetened Beverage (SSB) Intake				
Chronic Disease Status	**Never**	**< 1 time per week**	**1–6 times per week**	**1 time per day**	**> 1 time per day**
Obesity (BMI≥30kg/m²)					
Not obese	18.2	6.5	41.4	22.8	11.0
Obese	19.8	5.7	43.7	19.7	11.1
Diabetes (WHO Criteria)					
No diabetes***	16.3	6.6	42.2	23.3	11.6
Diabetes present	32.3	8.6	36.9	15.4	6.7
Hypertension (JNC VII)					
No hypertension***	15.2	5.7	42.5	23.2	13.5
Hypertension present	24.2	8.0	41.5	18.7	7.6
Hypercholesterolemia (TC[1]≥5.2mmol/l)					
No high cholesterol*	17.3	7.1	42.7	22.6	10.4
High cholesterol present	23.7	5.4	36.6	21.8	12.5

*p<0.05; **p<0.01; ***p<0.001

Salt Consumption

Results of examination the practices of Jamaicans with regards to salt intake are shown in Table 6.1.12. Most Jamaicans reported that they did not add salt/salty sauce at the Table (90%). A little more than half of the population (53%) reported consuming high sodium processed foods sometimes or more frequently. Three quarters reported never receiving advice on salt intake. There were statistically significant sex differences in the percentage distribution of salt intake habits. More of the females (11.6%) compared with the males (8.1%) indicated that they added salt/salty sauce to their food at the table ($p<0.05$). In addition, the proportion of females who reported they always (14.6%) or often (7.9%) consumed high-sodium processed foods was higher ($p<0.001$) than the proportions among the males (always: 11.4%; often: 2.3%). Also, more of the females (32.0%) compared with the males (18.1%) reported receiving advice to reduce salt intake ($p<0.001$). (See Table 6.1.12.

Table 6.1.12: Percentage Distribution of Sodium Intake by Sex among Jamaicans Aged 15 Years and Older, JHLS III 2017

Food/Beverage	Males	Females	Total
Addition of Salt/Salty Sauce at the Table*			
Yes	8.1	11.6	9.9
No	91.9	88.4	90.1
+Consume High-sodium Processed Foods***			
Rarely/Never	51.1	43.1	47.0
Sometimes	35.2	34.4	34.8
Often	11.4	14.6	13.0
Always	2.3	7.9	5.2
Received Advice to Reduce Dietary Salt Intake***			
Yes	18.1	32.0	25.3
No	81.9	68.0	74.7

*p < 0.05; **p < 0.01; ***p < 0.0001.

+'Processed foods' include chips, canned mixed vegetables, processed meats (e.g., frankfurters).

6.1.5 Health-related Dietary Practices

Use of Special Diets

Only a small proportion of Jamaicans (approximately 1%) reported being on a special diet. Of this proportion, mainly women reported being on a special diet. Most persons (0.8%) reported being on a special low-salt diet. No males reported being on a special diet for weight management (Table 6.1.13).

Table 6.1.13: Proportion (%) of Jamaicans 15 Years and Older on on Special Diet by the Category of Sex, JHLS III 2017

Special Diet	Males	Females	Total
Vegetarian	0.5	0.6	0.6
Weight management	0	0.4	0.2
Diabetic	0.3	0.2	0.2
Low salt	0.6	1.0	0.8
Low fat/cholesterol	0.1	0.3	0.2
Other special diet	0.4	0.7	0.6

We explored the relationship between specific disease conditions by special diets. Very few Jamaicans with a chronic condition reported being on a special diet. Less than 1% of persons with obesity and high cholesterol were on a weight management and low-fat diet, respectively. Likewise, 2% of persons with diabetes and hypertension reported maintaining the requisite dietary restriction, as shown in Table 6.1.14.

Table 6.1.14: Proportion (%) of Jamaicans 15 Years and Older Who Use Special Diets by the Category of Chronic Diseases, JHLS III 2017

Special Diet	Obesity	Diabetes	Hypertension	High Cholesterol
Vegetarian				
Yes	0.4	1.2	0.9	0.9
No	99.6	98.8	99.1	99.1
Weight Management				
Yes	0.4	0.4	0.2	0.3
No	99.6	99.6	99.8	99.7
Diabetic				
Yes	0.2	2.3	0.3	0.5
No	99.8	97.7	99.7	99.5
Low Salt				
Yes	1.2	2.4	2.3	1.2
No	98.8	97.6	97.7	98.8
				Low Fat/Cholesterol
Yes	0.4	0.6	0.4	0.5
No	99.6	99.4	99.6	99.5

Preparation of Meat

Table 6.1.5 gives the sex-specific and total population distribution of methods used to prepare meats consumed in the home and outside the home. Regarding the preparation of meat, persons most frequently prepared meat at home by either stewing (48%) or frying (30%). Frying (58%) was the most popular way to prepare meat outside the home. Majority of the population (66%) reported that they did not attempt to reduce dietary fat intake. There were no sex differences when the sexes were compared with respect to these outcomes (See Table 6.1.15).

Table 6.1.15: Proportion (%) of Jamaicans Aged 15 Years and Older with Reported Method of Meat Preparation by Sex, JHLS III 2017

Factors Related to Meat Intake	Males	Females	Total
Preparation of Meat at Home			
Fry	31.7	27.9	29.8
Stew	47.7	48.1	47.9
Bake/Grill/Jerk/Roast	8.3	14.2	13.3
Steam/Broil	12.4	9.7	9.0
Preparation of Meat outside the Home			
Fry	59.7	57.0	58.3
Stew	19.3	16.3	17.7
Bake/Grill/Jerk/Roast	15.5	20.4	18.0
Steam/Broil	5.6	6.3	5.9
Attempted Reduction of Dietary Fat Intake			
Yes	28.7	38.7	33.8
No	71.3	61.3	66.2

Table 6.1.16 shows the percentage distribution of methods of meat preparation used at home by Jamaicans aged 15 years and older within different socio-demographic groups. The proportions of Jamaicans who fried meats at home decreased with age, while the proportions that opted to bake/grill/jerk/roast meats increased with age. There was a statistically significant difference in the distribution of meat preparation methods used when the age groups were compared (p<0.001).

There was no association of area of residence with method of preparation at home. However, it is noteworthy that sex-specific and total population proportions showed that more urban residents opted to bake/grill/jerk/roast meats.

The proportion of Jamaicans that steamed and broiled meats was higher, at 17.5%, among individuals with post-secondary education compared to persons at other education levels, among whom prevalence was less than 9% (p <0.01). Those persons with access to 10-20 household items also had the highest prevalence of use steaming or broiling to prepare meats, compared with persons with fewer possessions. This difference, however, was not statistically significant (See Table 6.1.16).

Table 6.1.16: Proportion (%) of Jamaicans Aged 15 Years and Older with Reported Method of Meat Preparation inside the Home by Given Demographic Indices, JHLS III 2017

		Method Meat Preparation at Home			
Socio-demographic Group		**Fry**	**Stew**	**Bake/Grill/Jerk/Roast**	**Steam/Broil**
Age Groups (Years)*					
	15–24	40.5	44.9	6.6	8.0
	25–34	31.9	52.7	9.7	5.7
	35–44	29.4	44.8	13.7	12.2
	45–54	21.8	50.5	17.7	9.9
	55–64	23.5	46.9	17.8	11.8
	65–74	13.9	51.6	20.8	13.7
	75+	13.9	52.6	28.0	5.5
Area of Residence					
Males	Urban	28.6	50.0	12.6	8.9
	Rural	34.2	45.1	4.0	16.7
Females	Urban	29.5	44.9	11.2	14.5
	Rural	25.0	54.1	8.1	12.9
Males and females	Urban	29.1	47.3	11.9	11.8
	Rural	29.6	49.6	6.0	14.8
Education Level**					
	Primary or lower	23.9	51.7	16.1	8.3
	Secondary	32.1	49.3	11.2	7.3
	Post-Secondary	24.5	40.5	17.5	17.5
	Other	37.4	47.8	8.6	6.2
Household Possession Categories					
	0–5 items	28.2	53.7	15.2	2.9
	6–9 items	34.0	49.2	12.1	4.7
	10–20 items	26.2	41.4	12.9	19.5

*p<0.05; **p<0.01; ***p<0.001

Table 6.1.17 shows that stewing was the preferred method of preparing meat within the home for approximately half of the persons with obesity (50%), diabetes mellitus (53%), hypertension (51%), and high cholesterol (52%). When consuming meat prepared outside the home, frying was the most commonly preferred method among persons with obesity (57%), diabetes mellitus (50%), hypertension (49%), and high cholesterol (50%).

Table 6.1.17: Method of Meat Preparation (%) among 15 Years and Older by the Category of Chronic Disease, JHLS III 2017

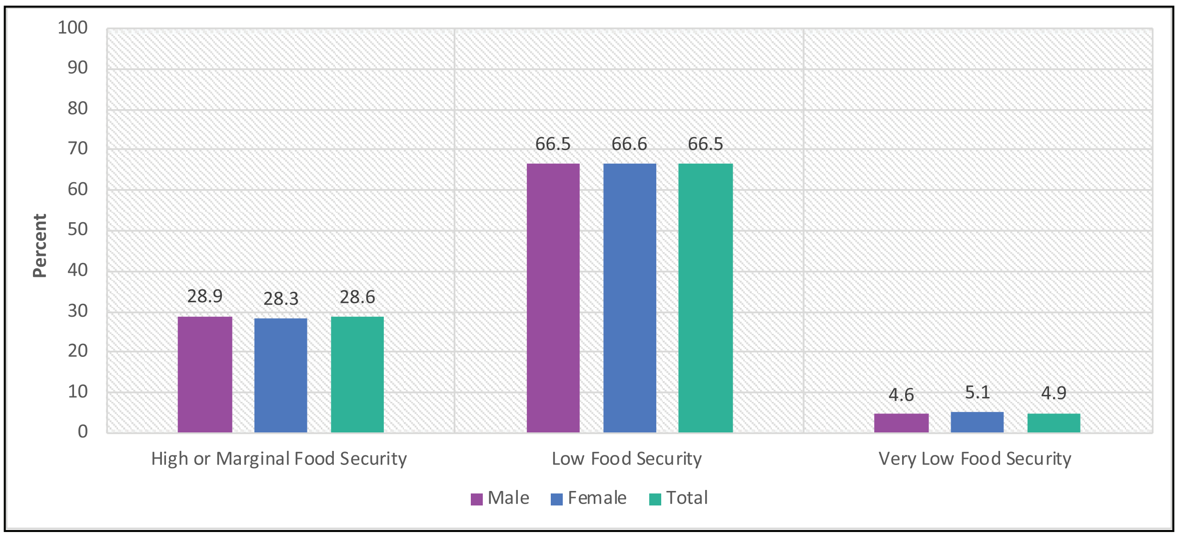
Protein Intake	Obesity	Diabetes	Hypertension	High Cholesterol
Preparation of Meat at Home				
Fry	24.3	19.3	22.3	20.6
Stew	50.0	53.1	51.3	51.6
Bake/Grill/Jerk/Roast	14.6	17.8	17.4	16.2
Steam/Broil	11.1	9.9	9.1	11.6
Preparation of Meat outside the Home				
Fry	57.4	45.9	49.4	50.3
Stew	15.6	27.5	22.0	20.3
Bake/Grill/Jerk/Roast	6.6	7.9	9.1	6.0
Steam/Broil	20.4	18.7	19.5	23.4

6.2. Food Security

Food Security exists 'when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'[7] and household food security refers to the ability of the household to secure either from its own production or through purchases, enough food to ensure adequate dietary intake of all its members.[8] Food insecurity was assessed in the survey using the six-item short form and the associated Six-Item Food Security Scale from the US Department of Agriculture.[1] Persons were classified as having high food security if they score between zero and one items on the scale, low food security if the item score was between two and four, and very low food security if they scored on between five and six items in the scale.

Figure 6.2.1 represents level of food security in the population. Two third of the Jamaican population is characterized as being at low food security and a further one in every 20 at very low food insecurity. This suggests a lack of adequate food consumption or lack money to buy food.

Figure 6.2.1: Household Food Security Status by Sex, JHLS III 2017



Note: This graph displays survey-weighted percentages.

Among persons living with a chronic disease, more than 70% were assessed as being at low or very low food security (Table 6.2.1) with no differentiation in disease condition.

Table 6.2.1: Household Food Security Status by the Category of Disease, JHLS III 2017

Category	Obesity	Diabetes	Hypertension	High Cholesterol
High Food Security (Raw Score 0–1)	29.1	27.4	25.6	29.2
Low Food Security (Raw Score 2–4)	66.1	67.6	69.3	66.5
Very Low Food Security (Raw Score 5–6)	5.8	5.0	5.1	4.3

6.3. Awareness and use of Nutrition Labels and the Food-based Dietary Guidelines of Jamaica

When buying groceries, before eating pre-packaged foods and when eating out at restaurants or fast-food places, majority of Jamaicans reported that they do not read the ingredients list (60%), nor do they pay attention to nutrition claims (63%) or read the nutrition facts panel (64%). In addition, most Jamaicans said that they are not aware of Jamaican food groups (68%) or the Food-based Dietary Guidelines of Jamaica (89%). There were significant gender differences in these reports with significantly more females reporting these practices, $p < 0.001$ (Table 6.3.1).

Table 6.3.1: Levels of Awareness of Food and Nutrition Labels and Guidelines by the Category of Sex, JHLS III 2017

Are you aware of or read the:	Male	Female	Total
Read Ingredient List* **			
Yes	33.3	47.0	40.3
No	66.4	53.0	59.5
Don't know	0.3	0	0.2
Pay Attention to Nutrition claims* **			
Yes	30.5	42.4	36.6
No	69.3	57.6	63.3
Don't know	0.2	0	0.1
Read Nutrition Facts panel * **			
Yes	30.3	42.1	36.3
No	69.6	57.9	63.6
Don't know	0.1	0	0.1
Aware of Jamaican Food Groups* **			
Yes	25.0	35.5	30.4
No	73.0	63.4	68.1
Don't know	2.0	1.1	1.5
Aware of Jamaican Food Based Dietary Guidelines			
Yes	8.6	11.5	10.1
No	90.8	87.9	89.3
Don't know	0.6	0.6	0.6

*p < 0.05; **p < 0.01; ***p < 0.001.

When the level of awareness of food and nutrition labels were assessed by age, there were variations in the reports. More persons in the 75+ age group (66%) reported reading the ingredient list for foods compared to the other groups. However, more persons in the 35–44 age group reported paying attention to the nutrition labels and reading the nutrition facts panel (45% and 44%, respectively) as compared to the other age groups ($p < 0.05$). Significantly younger Jamaicans aged 15–34 years were aware of the Jamaican food groups, as compared to the other age groups ($p < 0.05$).

Table 6.3.2: Levels of Awareness of Food and Nutrition Labels and Guidelines by the Category of Age Group, JHLS III 2017

Are you aware of or read the:	15–24	25–34	35–44	45–54	55–64	65–74	75+
Read Ingredient List							
Yes	40.0	41.3	46.8	40.1	41.4	32.6	65.8
No	60.1	58.7	53.2	59.8	58.6	66.9	33.1
Do not know	0.3	0	0	0.1	0.02	0.5	1.2
Pay Attention to Nutrition Claims* **							
Yes	32.48	38.0	45.2	37.0	39.1	30.1	33.6
No	67.5	62.0	54.8	62.9	60.9	69.4	65.2
Do not know	0	0	0	0.1	0.03	0.5	1.2
Read Nutrition Facts Panel*							
Yes	33.2	37.2	44.4	35.2	38.1	27.3	33.4
No	66.8	62.8	55.6	64.8	61.9	72.3	65.4
Do not know	0	0	0	0	0	0.5	0.1
Aware of Jamaican Food Group*							
Yes	40.3	37.0	25.8	25.9	22.5	18.3	13.6
No	57.6	61.2	72.7	73.0	76.2	80.4	85.2
Do not know	2.1	1.7	1.6	1.1	1.3	1.4	1.3
Aware of Jamaican Food-Based Dietary Guidelines							
Yes	10.6	11.8	7.7	10.6	10.9	9.5	13.0
No	88.1	87.5	92.2	89.2	88.2	90.3	86.3
Do not know	1.3	0.7	0.1	0.2	1.0	0.1	0.8

***p < 0.001.

Table 6.3.3 illustrates that a higher proportion of rural Jamaicans compared to urban Jamaicans reported that they read the ingredients list (61% vs. 57%), pay attention to nutrition claims (66% vs. 60%) and are aware of Jamaican food groups (70% vs. 32%). A higher proportion of rural Jamaicans do not read the nutrition facts panel (67% vs. 61%) when compared to urban Jamaicans. More urban Jamaicans than rural Jamaicans reported not being aware of Jamaican food-based dietary guidelines (90% vs. 88%).

Table 6.3.3: Levels of Awareness of Food and Nutrition Labels and Guidelines by the Category of Geographic Residence, JHLS III 2017

	Males		Females		Total	
Are you aware of or read the:	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**
Read Ingredient List						
Yes	62.2	69.6	53.0	52.6	57.3	61.2
No	37.6	29.8	47.0	47.4	42.6	38.5
Do not know	0.1	0.6	0.02	0.04	0.1	0.3
Pay Attention to Nutrition Claims						
Yes	65.0	72.1	56.1	59.0	60.3	65.6
No	35.0	27.7	43.9	40.9	39.7	34.2
Do not know	0.1	0.2	0.02	0.1	0.05	0.2
Read Nutrition Facts Panel						
Yes	64.6	73.4	56.8	39.6	39.5	33.0
No	35.3	26.4	43.1	60.3	60.5	66.9
Do Not Know	0.1	0.2	0.	0.04	0.05	0.1
Aware of Jamaican Food Group						
Yes	27.7	22.8	36.2	34.3	32.2	69.9
No	69.9	75.7	62.8	64.0	66.2	28.5
Do not know	2.4	1.5	0.9	1.6	1.6	1.6
Aware of Jamaican Food-based Dietary Guidelines						
Yes	8.3	10.0	9.2	14.6	8.8	12.3
No	90.9	89.6	89.5	85.3	90.2	87.5
Do not know	0.8	0.4	1.3	0.1	1.1	0.2

Persons were more likely to report paying attention to nutrition claims, reading nutrition facts panel and being aware of Jamaican food groups if they had a post-secondary education level.

Across all educational levels, approximately 80% or more individuals reported that they were not aware of Jamaican food-based dietary guidelines, while approximately 61% or more reported that they do not read ingredient list.

A higher proportion of individuals in the higher tertile for socio-economic status reported reading the ingredient list, paying attention to nutrition claims, were aware of the Jamaican food groups and dietary based guidelines, $p < 0.001$ (Table 6.3.4).

Table 6.3.4: Levels of Awareness of Food and Nutrition Labels and Guidelines by Education Level and Socioeconomic Status, JHLS III 2017

Are you aware of or read the:	Education Levels[1]			Socio-economic Status[2]		
	Primary or lower	Secondary	Post-Secondary	Low	Middle	High
Read Ingredient List* **						
Yes	31.9	38.5	39.3	33.1	37.3	51.9
No	67.9	61.4	60.5	66.5	62.6	48.1
Do not know	0.3	0.2	0.2	0.4	0.1	0.1
Pay Attention to Nutrition Claims* **						
Yes	29.0	34.5	57.1	28.1	34.6	48.2
No	70.8	65.5	42.7	71.7	65.3	51.7
Do not know	0.3	0.02	0.2	0.2	0.1	0.1
Read Nutrition Facts Panel* **						
Yes	28.1	33.5	58.0	27.0	33.5	48.4
No	71.7	66.5	41.8	72.8	66.4	51.5
Do not know	0.3	0	0.2	0.2	0.1	0.1
Aware of Jamaican Food Group* **						
Yes	11.1	31.2	52.1	16.5	29.7	41.3
No	87.5	67.2	45.8	81.4	69.9	56.2
Do not know	1.4	1.6	2.1	2.1	0.4	2.5
Aware of Jamaican Food Based Dietary Guidelines* **						
Yes	7.0	9.7	17.8	7.1	7.8	16.3
No	92.4	89.6	81.3	92.5	91.3	83.0
Do not know	0.6	0.7	0.9	0.4	0.9	0.8

*p < 0.05; **p < 0.01; ***p < 0.001.
[1]Significant differences in awareness of nutrition information by education levels.
[2]Significant differences in awareness of nutrition information by SES measured using number of household possessions (Low = 0–5 items; Middle = 6–9 items; High = 10–20 items).

We investigated whether the information on a food package or container influenced Jamaicans' decision to purchase the item(s). Of those who reported reading the food label, purchase was influenced by the food label ingredient list (65%), the nutrition claims (62%), and the nutrition facts panel (57%) (Table 6.3. 5). There were significant gender differences in these reporting behaviours, with significantly more females reporting being influenced by the food label information ($p < 0.0001$).

Table 6.3.5: Influence of Food and Nutrition Labels on Final Food Purchase by the Category of Sex, JHLS III 2017

Food Label Information+	Male	Female	Total
Food label Ingredient List**			
Yes	60.6	68.8	65.0
No	39.1	31.2	34.8
Don't know	0.3	0	0.2
Food Label Nutrition Claims***			
Yes	55.6	66.7	61.6
No	44.0	33.3	38.2
Don't know	0.4	0	0.2
Food Label Nutrition Facts Panel*			
Yes	53.1	60.5	57.1
No	46.5	39.3	42.7
Don't know	0.4	0.2	0.2

*p < 0.05; **p < 0.01; ***p < 0.0001.
+Participants were asked if the information on food labels or claims influenced their decision to purchase food.

According to Table 6.3.6, of those who read the food label information, the proportions who were influenced by the ingredient list or by the food label nutrition claims, were higher than the proportions who were not so influenced in making their final food purchase decisions. When compared to other age categories, the 55-64-year age group had the highest proportion of persons who reported being influenced by food label ingredient list (79%), food label nutrition claims (76%), and food label nutrition facts panel (72%).

Table 6.3.6: Influence of Food and Nutrition Labels on Final Food Purchase by the Category of Age Group, JHLS III 2017

Food Label Information	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	75+ years
Food Label Ingredient List							
Yes	56.2	62.7	66.9	73.1	79.3	62.9	68.5
No	43.8	37.3	33.1	26.9	20.5	36.4	29.2
Food Label Nutrition Claims							
Yes	53.6	56.7	67.1	67.6	75.8	60.5	70.9
No	46.4	43.3	32.9	32.4	24.0	38.8	26.8
Food Label Nutrition Facts Panel							
Yes	45.3	52.3	62.5	60.7	72.3	62.0	70.3
No	54.7	47.7	37.5	39.3	27.5	37.4	26.8

Table 6.3.7 illustrates that a higher proportion of rural compared to urban Jamaicans reported that they were influenced by the food label ingredients list (70% vs. 62%), food label nutrition claims (67% vs. 59%) and the food label nutrition facts panel (63% vs. 52%). A higher proportion of rural females reported that they were influenced by the food label ingredients list (75% vs. 64%), food label nutrition claims (71% vs. 64%), and the food label nutrition facts panel (66% vs. 55%), when compared to their urban counterparts. Similarly, more urban males reported that they were influenced by the food label ingredients list (64% vs. 60%), food label nutrition claims (61% vs. 54%), and the food label nutrition facts panel (60% vs. 49%), when compared to their rural counterparts. These differences, however, were not statistically significant.

Table 6.3.7: Influence of Food and Nutrition Labels on Final Food Purchase by the Category of Geographic Residence, JHLS III 2017

	Males		Females		Total	
	Urban	Rural	Urban	Rural	Urban	Rural
Food Label Ingredient List						
Yes	59.3	64.0	63.7	75.3	61.6	70.2
No	40.7	35.3	36.3	24.7	38.4	29.4
Do not know	0	0.8	0.1	0.1	0.02	0.4
Food Label Nutrition Claims						
Yes	53.7	60.8	63.5	71.4	58.8	66.6
No	46.3	38.5	36.5	28.6	41.1	33.0
Do not know	0	0.8	0.1	0.1	0.03	0.4
Food Label Nutrition Facts Panel						
Yes	48.7	60.1	55.2	66.1	52.1	63.4
No	51.3	39.1	44.6	33.9	47.8	36.2
Do not know	0	1.0	0.1	0.1	0.1	0.4

Across all educational levels, majority of persons who reported reading the food labels indicated that the food label ingredients list, food label nutrition claims, and the food label nutrition facts panel influenced their purchasing decision (Table 6.3.8).

A higher proportion of individuals with post-secondary education reported that they were influenced by the food label ingredients list (77% vs. 63% vs. 60%), food label nutrition claims (72% vs. 67% vs. 42%) and the food label nutrition facts panel (88% vs. 67% vs. 46%), when compared to primary or lower and secondary education level, respectively (Table 6.3.8).

A higher proportion of individuals with high socio-economic status reported that they were influenced by the food label ingredients list (73% vs. 61% vs. 62%); food label nutrition claims (71% vs. 58% vs. 55%); and the food label nutrition facts panel (63% vs. 56% vs. 51%), when compared to persons of lower and middle socio-economic status, respectively (Table 6.3.8).

Table 6.3.8: Influence of Food and Nutrition Labels on Final Food Purchase by the Category of Education, JHLS III 2017

	Education Levels[1]			Socio-economic Status[2]		
	Primary or lower	Secondary	Post-Secondary	Low (0–5)	Middle (6–7)	High (10–20)
Food Label Ingredient List* **						
Yes	59.8	63.1	77.4	62.4	60.6	72.9
No	39.6	36.9	22.3	37.1	39.4	27.0
Do not know	0.6	0.02	0.3	0.5	0	0.1
Food Label Nutrition Claims* **						
Yes	60.1	57.8	76.9	55.4	58.3	71.4
No	39.4	42.2	22.8	44.1	41.7	28.5
Do not know	0.6	0.02	0.3	0.5	0	0.1
Food Label Nutrition Facts Panel* **						
Yes	58.0	51.6	71.0	50.7	56.2	62.9
No	41.3	48.4	28.7	48.8	43.8	36.9
Do not know	0.7	0.02	0.3	0.5	0	0.2

*p < 0.05; **p < 0.01; ***p < 0.001.

[1]Significant differences in the influence of nutrition information by the category of education levels.

[2]Significant differences in the influence of nutrition information by the category of socio-economic status (SES) defined using number of household possessions.

6.4. Physical Activity (PA)

Table 6.4.1 shows sex-specific and total population prevalence of physical activity levels in Jamaicans aged 15 years and older as captured in the Jamaica Health and Lifestyle Survey III (2017). The criteria for classification of study participants at different PA levels are provided in Appendix 5. Based on their responses to items on the short from of the International Physical Activity Questionnaire (IPAQ), 35.6% of the Jamaicans aged 15 years and older were classified at the low physical activity level, 27.0% at the moderate physical activity level, and 37.4% at high physical activity level. These estimates indicated an approximate 2% difference between the respective prevalence estimates for the high and low physical activity levels. Statistical data analysis of gender-specific estimates showed that the distribution of the activity levels among the females was different (p<0.001) from the distribution among the males. Low physical activity among females was 43.8% and higher than the prevalence, 27.7%, of this outcome among males. Conversely, the prevalence of the high physical activity level was greater among the males.

Table 6.4.1: Sex-specific and Total Population Prevalence (%) of the Physical Activity Levels among Jamaicans Aged 15 Years and Older, JHLS III 2017

	Gender		
Physical Activity Level	**Male*** **	**Female**	**Total**
Low	27.7	43.8	35.6
Moderate	23.7	30.3	27.0
High	48.6	25.9	37.4

p<0.05; **p<0.01; ***p<0.001

Table 6.4.2 shows a sex difference in the nature of the association between physical activity and area of residence with a statistically significant association demonstrated among the males but not among the females. This sex difference contributed to the higher prevalence (P<0.001) of high PA among the combined population of rural males and females (43.5%) compared with urban males and females (31.8%). The prevalence of the high physical activity level was higher among the rural compared with urban males (R: 56.6% vs. U: 41.3%), while the prevalence of low physical activity was higher among the urban compared with rural males (R: 21.3% vs. U: 33.6%).

Table 6.4.2: Sex-specific Prevalence (%) of the Physical Activity Levels among Urban and Rural Jamaican Residents Aged 15 Years and Older, JHLS III 2017

	Classification by Sex and Area of Residence					
	Males***		Females		Males and Females***	
Physical Activity Level	Urban	Rural	Urban	Rural	Urban	Rural
Low	33.6	21.3	46.2	41.2	39.8	31.1
Moderate	25.2	22.2	31.7	28.8	28.4	25.4
High	41.3	56.6	22.1	30.0	31.8	43.5

*p<0.05; **p<0.01; ***p<0.001

Table 6.4.3 shows sex-specific and total population prevalence estimates of physical activity (PA) levels that differed significantly (p<0.05) with age. For the males, the prevalence of high PA was highest, 63.5%, among the 45–54-year-olds. This pattern of variation in PA levels was also reflected in data from the total population of Jamaicans (with prevalence of high PA being highest, at 45.7%, among the 45–54-year-olds). For the females, however, the prevalence of high PA was highest, 31.2%, among the 25–34-year-olds.

Table 6.4.3: Sex-specific and Total Population Prevalence (%) of the Physical Activity Levels by Ten-year Age Bands among Jamaicans Aged 15 Years and Older, JHLS III 2017

	Age Group						
Physical Activity Levels	15–24	25–34	35–44	45–54	55–64	65–74	75+
Males*							
High	45.7	48.1	48.3	63.5	48.7	44.7	25.8
Moderate	28.1	21.3	25.6	18.2	19.5	29.1	24.4
Low	26.2	30.6	26.1	18.2	31.8	26.2	49.8
Females*							
High	25	31.2	27.8	27.7	22.4	17.4	13.2
Moderate	28.2	31.5	29.4	30.8	39.3	26.5	24.8
Low	46.9	37.3	42.8	41.6	38.3	56.1	62
Total*							
High	35.0	39.9	38.6	45.7	35.6	31.2	19.9
Moderate	28.1	26.3	27.4	24.5	29.4	27.8	24.6
Low	36.9	33.9	34.0	29.9	35.0	41.1	55.5

*p<0.05; **p<0.01; ***p<0.001

Table 6.4.4 shows that the distribution of physical activity (PA) levels differed significantly with age among the rural (p<0.01) but not the urban residents. Among the rural residents, the prevalence of high PA was highest, 57.0%, among the 45–54-year-olds and lowest at 25.5% among those 75 years and older. It is noteworthy that in each age group, the prevalence of high PA mong rural residents was higher that the prevalence of high PA mong urban residents. For the urban residents, the prevalence of high PA was highest, 36.3% among the 25–34-year-olds, and the prevalence of low PA highest, at 70%, among persons 75 years and older, but this variation was not statistically significant.

Table 6.4.4: Prevalence (%) of the Physical Activity (PA) Levels by Ten-year Age Bands among Urban and Rural Jamaican Residents Aged 15 Years and Older, JHLS III 2017

	Age Group						
Physical Activity Levels	**15–24**	**25–34**	**35–44**	**45–54**	**55–64**	**65–74**	**75+**
Urban residents							
High	31.9	36.3	30.2	35.9	25.0	29.9	12.1
Moderate	26.9	25.2	33.2	30.3	36.5	23.5	18.2
Low	41.2	38.6	36.6	33.9	38.4	46.5	69.8
Rural residents**							
High	39.5	44.6	48.5	57.0	43.5	32.5	25.5
Moderate	29.5	27.6	20.7	18.0	24.4	31.1	29.9
Low	31.0	27.8	30.8	25.1	32.2	36.4	44.6

*p<0.05; **p<0.01; ***p<0.001

Table 6.4.5 shows that prevalence of physical activity levels among Jamaicans 15 years and older differed significantly with parish of residence among the males, the females, and the sexes combined. Males in the parish of Trelawny had the highest prevalence of low physical activity, at 44.8%, followed by St Ann at 36.6%, and then Manchester at 34.6%. For females, Trelawny again had the highest prevalence of low physical activity at 80.6%, followed by St Thomas, at 58%, followed by Kingston 54.2%. Overall, the parish of Trelawny had the highest prevalence of low physical activity level at 63%, followed by St Thomas at 46.4% and Kingston at 44.6% (p<0.001).

Table 6.4.5: Sex-specific Prevalence (%) of the Physical Activity Levels, Classified As Low, Moderate, and High among Jamaicans Aged 15 Years and Older, by Parish of Residence, JHLS III 2017

	Gender								
Parish	**Males*** **			**Females*** **			**Males And Females*** **		
	Low	**Moderate**	**High**	**Low**	**Moderate**	**High**	**Low**	**Moderate**	**High**
Kingston	34.9	41.8	23.3	54.2	39.4	6.4	44.6	40.6	14.8
St Andrew	31.6	27.8	40.6	47.6	36.4	16.1	39.1	31.8	29.0
St Thomas	34.9	20.1	45.0	58.0	25.8	16.3	46.4	22.9	30.7
Portland	24.5	21	54.5	50.0	28.5	21.5	37.4	24.8	37.8
St Mary	32.1	26.2	41.7	51.6	33.5	14.9	41.8	29.9	28.3
St Ann	36.6	11.3	52.1	37.5	30.5	32.1	37.1	21.6	41.3
Trelawny	44.8	14.9	40.3	80.6	12.3	7.1	63.0	13.6	23.4

Table 6.4.5 *(contd)*: **Sex-specific Prevalence (%) of the Physical Activity Levels, Classified As Low, Moderate, and High among Jamaicans Aged 15 Years and Older, by Parish of Residence, JHLS III 2017**

Parish	Gender								
	Males***			Females***			Males And Females***		
	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
St James	19.5	26.9	53.7	32.8	35.2	31.9	26.0	30.9	43.1
Hanover	18.9	24.9	56.2	41.9	38.9	19.2	30.3	31.8	37.8
Westmoreland	6.8	14.3	79	39.7	32.6	27.7	23.7	23.7	52.6
St Elizabeth	22.6	11.2	66.3	31.6	18.8	49.6	27.2	15.1	57.8
Manchester	34.6	25.6	39.8	49.3	26.9	23.8	41.9	26.3	31.8
Clarendon	8.4	19.3	72.3	10.9	22.8	66.3	9.6	21.1	69.3
St Catherine	32.1	27.2	40.8	51.8	29.9	18.3	41.7	28.5	29.7
Total (Jamaica)	27.7	23.7	48.6	43.8	30.3	25.9	35.6	27.0	37.4

*p<0.05; **p<0.01; ***p<0.001

Table 6.4.6 shows that more Jamaicans who identified as Black reported high physical activity levels (Males 48.8%, Females 26.1%, Total 37.5%) compared to other races (Males 38.1%, Females, 21.5%, Totals 30.5%). These differences were not statistically significant, however.

Sex-specific and/or total population prevalence estimates for physical activity levels were associated (p<0.05) with religious affiliation, marital status, education level, and primary occupation level (See Table 6.4.6).

Among the males and females combined (p<0.01), as driven by the association among the males (p<0.01), persons who were self-identified as Christians or were of no religion had higher prevalence of low PAL compared with those of other religions. Nearly 50% of males who self-identified as Christians or were of no religion were classified as having high PAL compared to less than 40% of males who were of other religions. While just over 40% of females who were of other religions were classified at high PAL, less than 30% of females who followed the Christian or no religion were classified at high PAL. The variation in the females was not statistically significant, however (See Table 6.4.6).

The distribution of the PALs differed with marital status (p<0.05) among the females but not among the males or in the total population. Sixty per cent and 5% of divorced or separated females were, respectively, at the moderate and high physical activity levels compared to the 27–32% and 26–28% of females in other marital status categories being at the respective moderate and high PALs (See Table 6.4.6).

The distribution of the PALs differed significantly with highest education level (p<0.05) among the males but not among the females or in the total population. Just over 50% of males with secondary education as their highest level were classified at high PAL, compared with 46.7% and 44.2% of males who attained post-secondary and primary or lower level of education, respectively. Conversely, the lowest PAL, at 24.7%, was recorded among males with secondary-level education as their highest level, while prevalence estimates for low PAL exceeded 30% among males in the other education level categories (See Table 6.4.6).

Sex-specific and total population prevalence of PALs differed significantly with primary occupation levels among Jamaicans aged 15 years and older. Among the males and females combined (p<0.001), and within the sexes (males (p<0.01), females (p<0.01)), persons engaged in skilled or unskilled labour had highest prevalence of high PAL compared with persons at the other occupation levels. Sixty per cent (60%) and 50% of males engaged in skilled and unskilled occupations, respectively, were classified at high PAL, compared with 46% or less of the males in the other occupation categories being classified at this activity level. Prevalence estimates for high PAL were 44.4% and 38.6% for females engaged in skilled and unskilled occupations, respectively, compared with less than 30% of females in the other occupation categories being classified at high PAL. In the total population, prevalence estimates for high PAL were 57.6% and 44.3% for persons engaged in skilled and unskilled occupation, respectively, compared with less than 37% of those in the other occupation categories being classified at high PAL (See Table 6.4.6).

Table 6.4.6: Sex-specific and Total Population Prevalence (%) of the Physical Activity Levels Classified as High (H), Moderate (M), and Low (L), among Jamaicans Aged 15 Years and Older, by Demographic Indices, JHLS III 2017

Demographic Index	Physical Activity Level								
	Males			Females			Total		
	L	M	H	L	M	H	L	M	H
Race									
Black	28.2	23.0	48.8	43.9	30.0	26.1	36.0	26.5	37.5
Other	19.3	42.6	38.1	42.1	36.4	21.5	29.8	39.8	30.5
Religious Affiliation	**						**		
Christian	26.5	23.6	49.9	43.7	30.0	26.3	36.1	27.2	36.7
Other Religion	11.6	52.2	36.2	28.3	31.1	40.6	12.1	51.5	36.4
No Religion	31.8	21.6	46.6	47.9	32.1	20.1	35.7	24.1	40.2
Marital Status				*					
Single	29.1	25.5	45.4	45.2	28.7	26.1	37.1	27.0	35.9
Married/Common-Law	26.8	20.7	52.5	41.6	31.7	26.7	34.3	26.2	39.5
Divorced/Separated	18.5	27.5	54	35.0	60.0	5.0	27.6	45.4	27.0
Visiting	25.1	23.9	51	45.3	27.3	27.5	34.6	25.5	39.9
Highest Education Level	*								
Primary or Lower	30.4	22.9	46.7	41.3	31.8	26.9	35.1	26.7	38.2
Secondary	24.7	24.7	50.6	44.7	31.1	24.2	34.4	27.8	37.9
Post-Secondary	33.0	22.8	44.2	43.3	25.4	31.3	39.3	24.4	36.4
Other	65.5	5.6	28.9	47.2	30.0	22.8	52.9	22.5	24.7
Primary Occupation Level	**			**			***		
Highly Skilled or Professional	26.2	27.5	46.3	39.5	32.6	27.8	33.4	30.3	36.3
Skilled	24.7	15.4	60.0	35.3	20.3	44.4	26.3	16.1	57.6
Unskilled	30.2	19.6	50.2	35.5	25.9	38.6	32.9	22.8	44.3
Unemployed	31.2	31.2	37.6	48.1	27.9	24.0	42.4	29.0	28.6
Student	27.5	31.0	41.6	47.6	34.9	17.6	39.3	33.3	27.5
Retired	47.6	24.1	28.3	54.1	32.0	13.9	51.1	28.5	20.4
Household Possessions									
0–5 Items	26.9	18.4	54.8	43.0	28.6	28.4	34.2	23.0	42.9
6–9 Items	21.6	33.0	45.4	45.4	28.8	25.8	33.5	30.9	35.6
10–20 Items	30.6	19.8	49.6	42.9	33.2	23.9	37.3	27.1	35.6

Survey respondents were asked how recently they attempted to increase physical activity in their daily lives. Approximately, one in five Jamaicans aged 15 years and older reported that they tried to increase their physical activity levels in the last month. Just over 50% reported never trying (See Table 6.4.7).

The distribution of the responses, as shown the Table 6.4.7, did not differ with gender but differed with area of residence among the males (p<0.05) and in the total population (p<0.01). More urban than rural males reported trying to increase their physical activity levels as recently as within the month preceding their survey interview or at some point in the past. However, more rural than urban males (Rural, 57.5% vs Urban, 44.2%) reported never attempting to increase their PAL. Total population estimates showed that while more rural than urban residents (Rural, 58.3% vs Urban, 47.8%) indicated that they had never attempted to increase their PA, more urban compared to rural residents attempted increasing PA within the last month preceding the survey (Urban, 22.0% vs Rural, 16.2%) or more than a month and up to six months prior to their survey interview (Urban, 19.3% vs Rural, 14.2%).

Table 6.4.7: Prevalence (%) of Those Who Attempted to Increase Their Physical Activity among Jamaicans Aged 15 Years and Older by the Categories of Gender and Area of Residence, JHLS III 2017

Demographic Variables	Tried to Increase Physical Activity (PA)			
	Never	>6 Months Ago	1–6 Months&	During the Past Month
Gender				
Males	50.5	10.4	18.4	20.7
Females	54.7	11.7	15.6	18.0
Males and Females	52.7	11.1	16.9	19.3
Area of Residence				
Total**				
Urban	47.8	10.9	19.3	22.0
Rural	58.3	11.2	14.2	16.2
Male*				
Urban	44.2	11.2	21.2	23.4
Rural	57.5	9.5	15.3	17.8
Female				
Urban	51.0	10.7	17.6	20.7
Rural	59.1	13.0	13.2	14.7

*p < 0.05; **p < 0.01; ***p < 0.001. &> 1 month

Table 6.4.8 shows that within the sexes (p<0.001) and in the total population (p<0.001) of Jamaicans aged 15 years and older, the distribution of responses concerning attempts to increase physical activity in the past, differed with age. Prevalence of persons who had never attempted to increase their PAL was higher at approximately 60% or more in males 45 years and older; females 15–24 and 65+ years; and, in the total population, persons 55 years and older. Prevalence of persons who had attempted to increase their PAL within the last month was higher, at between 18% and 31%, in males 15–34 and 45–54 years old; females 15–24 and 35–64 years; and, in the total population, persons 64 years and younger.

Table 6.4.8: Prevalence (%) of Those Who Attempted to Increase Their Physical Activity (PA) among Jamaicans Aged 15 Years and Older by the Categories of Gender and Age, JHLS III 2017

Tried to increase PA	Age Group						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Males* **							
Never	40.5	46.5	40.5	59.9	65.6	72.3	70.1
>6 months ago	9.6	11.7	15.0	10.2	5.6	7.2	7.0
1–6 months	29.0	11.3	27.4	10.2	14.6	7.3	7.6
During the last month	20.8	30.6	17.1	19.8	14.2	13.1	15.4
Females* **							
Never	59.8	48.3	50.2	50.4	53.9	60.9	76.5
>6 months ago	6.6	17.0	12.3	18.4	6.4	9.3	7.2
1–6 months	14.0	19.4	18.1	11.8	16.0	18.1	7.2
During the last month	19.6	15.3	19.5	19.5	23.7	11.6	9.1
Total* **							
Never	50.2	47.4	45.6	55.1	59.8	66.6	74.0
>6 months ago	8.1	14.4	13.6	14.3	6.0	8.3	7.1
1–6 months	21.5	15..4	22.5	11.0	15.3	12.8	7.3
During the last month	20.2	22.8	18.4	19.6	18.9	12.4	11.6

*p < 0.05; **p < 0.01; ***p < 0.001.

6.5. Substance Use

Section 6.5 provides results of analysis of data on the use of harmful substances by Jamaicans aged 15 years and older. The survey gathered data on the use of alcohol, tobacco, marijuana (cannabis), and other recreational drugs such as cocaine. Respondents were classified as current users of alcohol if they indicated use of alcohol within the past 30 days; past year (annual) users if they last used alcohol within the last year but not within the last month; and past users if they last used alcohol more than a year ago. Respondents were classified as current users of tobacco if they indicated use of tobacco within the past 30 days or stated that they were current users; and past users if they last used tobacco more than a month ago. Respondents were classified as current users of marijuana if they stated that they were current users; and past users if they indicated that they had used marijuana in the past.

Alcohol Use

The history of alcohol use was examined in Jamaicans aged 15 years and older in Table 6.5.1. The prevalence of lifetime drinking, current drinking, and past drinking was 60.7%, 41.7%, and 9.8%, respectively. More males were both lifetime drinkers (75.5% vs. 46.6%) and current drinkers (58.3% vs. 25%) as compared to females, while females reported more past drinking history as compared to males (10.6% vs. 9.0%). Most participants consumed alcohol on the weekends (62.1%).

Table 6.5.1: Prevalence (%) Estimates for Features of Alcohol Use among Jamaicans Aged 15 Years and Older, JHLS III 2017

Features of Alcohol Use	Male	Female	Total
Lifetime Drinking***	75.5	46.6	60.7
Alcohol Use Categories***			
Never used alcohol	24.4	53.6	38.9
Past Drinker	9.0	10.6	9.8
Annual Drinker	8.3	10.9	9.5
Current drinker	58.3	25.0	41.7
Drinking Frequency#***			
Daily	16.0[12.8, 19.9]	8.0[5.2,12.2]	13.7[11.0,16.8]
Less than 5 drinks per week	3.8[1.7, 18.2]	3.7[1.7, 8.0]	3.8[1.8, 7.7]
On weekends	64.5[59.2, 69.5]	56.4[48.3, 64.1]	62.1[57.4, 66.6]
Occasionally	15.7[12.3, 19.7]	31.9[25.4, 39.2]	20.5 [16.7, 24.8]
Stopped drinking##*			
In Past Year	13.9[5.7,30.0]	12.0[4.4,28.5]	12.9 [6.5,24.1]
1–3 years ago	35.8 [24.7,48.8]	19.6[12.3,29.7]	27.7 [20.8,35.8]
4–5 years ago	16.4 [9.2,27.5]	8.3 [3.5,18.3]	12.3[7.4,19.8]
More than 5 years ago	33.9[25.3, 43.7]	60.2[48.7, 70.7]	47.1[39.2, 55.2]
Reason stopped drinking###			
Health	45.6[35.9, 55.6]	41.5[30.7, 53.2]	43.4[35.6, 51.6]
Religious	11.0[5.7, 20.1]	7.1[3.4, 14.1]	8.9[5.8, 13.5]
Other	43.5[33.2, 54.3]	51.4[40.1, 62.7]	47.7[39.3, 56.1]

#out of past year or current alcohol users
##out of those who said they had stopped drinking
###out of past year or past drinkers

Males reported drinking on the weekends and daily more than females (64.5% vs. 56.4% and 16% vs. 8%), respectively. Of those who drank, 47% of the participants reported that they stopped drinking more than five years ago, with more females reporting (Males 33.9% vs. Females 60.3%, $p < 0.001$). Most Jamaicans did not specify their reasons for stopping drinking (47.7%). However, 43.4% cited health concerns as the reason for stopping alcohol consumption. More males than females (45.6% vs. 41.5%) stopped drinking because of health reasons; this was, however, not statistically significant.

Table 6.5.2 examines the sex-specific prevalence of current use of alcohol among persons aged 15 years and older using six demographic indices. Sex-specific and total population estimates were associated with marital status ($p<0.001$), education level ($p<0.001$) and age category ($p<0.001$). Among the males, prevalence current alcohol use was highest among those in visiting relationships (79.0%); those with post-secondary education (73.4%); and those who were in the 35–44-year age group (70.2%).

Table 6.5.2: Sex-specific and Total Prevalence (%) Estimates for Current Use of Alcohol among Jamaicans Aged 15 Years and Older within Demographic Groups, JHLS III 2017

Demographic Index	Males	Females	Total
Race			
Black	58.3(54.7, 61.8)	24.8(21.6, 28.2)	41.1 (38.6, 43.5)
Other	52.1 (36.7, 67.1)	28.2 (17.9, 41.5)	40.2 (31.7, 49.3)
Religious Affiliation			***
Christian	58 (53.8, 62.0)	24.9 (21.8, 28.2)	38.9 (36.3, 41.5)
Rastafarian	64.1 (41.7, 81.7)	71.3 (20.2, 96.1)	64.4 (42.7, 81.4)
Other/non-Christian	59.3 (52.0, 66.1)	25.9 (18.7, 34.7)	50.9 (44.4, 57.5)
Marital Status	***	***	***
Single	53.6 (49.2, 57.8)	21.0 (17.4, 25.2)	37.0 (33.9, 40.2)
Married/ Common-Law	55.2 (49.2, 61.1)	22.9 (18.5, 28)	38.1 (34.4, 42.0)
Divorced/ Separated	59.8 (47.8, 70.8)	16.1 (7.9, 29.8)	35.3 (27.7, 43.9)
Visiting	79.0 (70.1, 85.8)	45.3 (37.9, 52.8)	62.5 (55.9, 68.7)
Area of Residence			
Urban	58.6 (53.1, 63.9)	26.1 (21.2, 31.7)	41.5 (37.7, 45.3)
Rural	58.0 (52.9, 62.9)	23.7 (20.0, 27.8)	41.0 (37.7, 44.2)
Highest level of Education	***	***	***
Primary or Lower	52.5 (46.9, 58)	10 (6.8, 14.3)	32.8 (28.9, 37)
Secondary	57.5 (52.5, 62.3)	28.7 (24.3, 33.6)	43.4(40, 46.9)
Post-secondary	73.4 (50.1, 84.1)	29.2 (9.2, 19.4)	45(38.3, 54.3)
Ten-year Age Band (Years)	***	***	***
15–24	53.4 (45.7, 60.9)	27.5 (20.4, 36)	40.4 (34.9, 46.2)
25–34	61.9 (54.4, 68.9)	41.4 (34.1, 49.1)	51.4 (46.8, 56)
35–44	70.2 (62.2, 77.1)	26.5 (21, 32.8)	47.2 (42.9, 51.6)
45–54	68.2 (60.2, 75.2)	15.6 (11, 21.7)	41.8 (37.7, 46)
55–64	50.8 (43.3, 58.2)	15.8 (10.1, 23.9)	33.4 (28.7, 38.5)
65–74	44.4 (37.9, 51.2)	6.4 (2.9, 13.4)	25.3 (21.7, 29.3)
75+	23.7 (15, 35.3)	8.8 (3.5, 20.5)	14.6 (9.2, 22.4)
Total	**58.3 (54.7, 61.8)***1**	**25.0 (21.9, 28.3)**	**41.2 (38.8, 43.7)**

*p < 0.05; **p < 0.01; ***p < 0.001.

[1]Significant difference between the sexes

Table 6.5.3 examines current alcohol consumption among Jamaican men and women aged 15 years and older using five socio-economic indices. Among the males and in the total population estimates were associated (p<0.01) with all the indices except number of household possessions. Among the females, there was association with only employment status (p<0.001), occupation level (p<0.001) and education level. (p<0.001). Sex-specific estimates showed that prevalence of current alcohol use was highest among the employed (M:62.4%, F:30.0%); males who were professionals (73.6%) and females who were highly skilled (34.3%); and males with post-secondary education (73.4%). Females with primary or lower education level had lowest prevalence (10%)compared with other education categories.

Table 6.5.3: Sex-specific and Total Prevalence (%) Estimates for Current Use of Alcohol Use among Jamaicans Aged 15 Years and Older by the Category of Socioeconomic Indices, JHLS III 2017

Socioeconomic Index	Males	Females	Total
Employment Status	***	***	***
Employed	62.4 (58.2, 66.5)	30.0 (25.9, 34.5)	48.9 (45.8, 52.1)
Unemployed	59.1 (52.3, 65.6)	21.0 (17.1, 25.6)	34.1 (30.2, 38.3)
Student	29.0 (16.3, 46.3)	20.1 (12.3, 31.0)	23.8 (16.8, 32.6)
Occupation Category	***	***	***
Professional	73.6 (61.4, 83.0)	21.5 (14.4, 30.9)	45.0 (38.6, 51.6)
High Skilled	58.8 (50.4, 66.8)	34.3 (29.7, 39.3)	44.8 (40.4, 49.3)
Skilled	62.5 (58.2, 66.7)	16.7 (10.3, 25.9)	55.3 (51.3, 59.3)
Unskilled	59.6 (45.0, 72.6)	26.3 (17.7, 37.3)	42.3 (32.4, 52.8)
Unemployed	67.0 (58.4, 74.6)	25.3 (20.6, 30.6)	38.9 (34.0, 44.0)
Student	29.1 (16.3, 46.4)	20.1 (12.3, 30.9)	23.8 (16.8, 32.6)
Retired	30.2 (22.5, 39.2)	6.1 (2.5, 14.3)	15.4 (11.2, 20.8)
Educational Level (Respondent)	***	***	***
Primary/ lower	52.5 (46.9, 58.0)	10.0 (6.8, 14.3)	32.8 (28.9, 37.0)
Secondary	57.5 (52.5, 62.3)	28.7 (24.3, 33.6)	43.4 (40.0, 46.9)
Post-secondary/ Tertiary	73.4 (61.4, 82.8)	29.2 (22.6, 36.9)	45.0 (38.8, 51.3)
Other	69.8[50.1, 84.1]	30.1(15.5, 50.4	41.3[29.3, 54.3]
Weekly Household Income (Ja$)	**		**
<12,000	64.3 (59, 69.2)	25.5 (21.3, 30.2)	42.4 (38.9, 45.8)
12,000–60,000	55.6 (47.6,63.4)	25.0 (18.7, 32.5)	41.1 (35.8, 46.5)
>60,000	86.7 (69.2, 95.0)	31.9 (16.9, 52.1)	62.0 (48.4,73.9)
DK/NR	50.4(43.0, 57.8)	22.2 (17.5, 27.6)	36.6(31.6,41.9)
Number of Household Possessions			
0–5 items	59.6 (54.2, 64.9)	22.3 (17.6, 27.9)	41.8 (37.7, 46.1)
6–9 items	57.9 (52.0, 63.5)	24.7 (20.4, 29.6)	40.7 (36.6, 45.0)
10–20 items	60.9 (54.1, 67.3)	27.5 (21.7, 34.1)	42.4 (38.5, 44.1)

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.5.4 shows current and lifetime alcohol consumption among Jamaican men and women for the 14 parishes in the island. Among the male and female respondents, prevalence of lifetime use was highest in St Elizabeth (Males, 92.6%; Females, 70.1%; Total, 81.6%), whereas prevalence of current use was highest in St Ann (Males, 80.8%; Females, 39.3; Total, 58.7%). There were significant differences across all parishes in alcohol use, with the lowest reported current use and lifetime prevalence being in the parish of Westmoreland (22% and 31%, respectively).

Table 6.5.4: Sex-specific and Total Population Prevalence Estimates (%) for Alcohol Use among Jamaicans Aged 15 Years and Older, JHLS III 2017

Area of Residence	Alcohol Use % (CI)					
	Male		Female		Total	
	Current***	Lifetime***	Current ***	Lifetime***	Current***	Lifetime***
Kingston	65.0 [54.3, 74.4]	80.3 [72.5, 86.4]	32.5 [26.4, 39.4]	47.0 [38.3, 55.9]	48.9 [43.5, 54.3]	63.7 [58.3, 68.8]
St Andrew	69.8 [59.6, 78.4]	81.8 [72.6, 88.5]	32.8 [24.0, 42.9]	54.4 [47.7, 61]	50.2 [43.5, 57]	67.3 [61.9, 72.4]
St Thomas	62.6 [49.5, 74.1]	84.6 [76.4, 90.3]	31.4 [23, 41.1]	68.3 [60.7, 75.1]	46.9 [37.1, 57]	76.4 [70.3, 81.6]
Portland	54.1 [46.8, 61.2]	89.8 [76.5, 96]	21.2 [14.0, 30.9]	56.6 [46.2, 66.4]	37.8 [31.6, 44.5]	73.4 [65.2, 80.2]
St Mary	60.9 [54, 67.4]	88.9 [82.6, 93.2]	15.1 [9.2, 23.8]	39.1 [30.1, 48.9]	37.9 [31.8, 44.5]	64.0 [57.6, 69.9]
St Ann	80.8 [76.2, 84.8]	87.1 [75.4, 93.7]	39.3 [28.0, 51.8]	57.4 [46.2, 68.0]	58.7 [50.3, 66.6]	71.3 [62.7, 78.6]
Trelawny	70.1 [55.6, 81.4]	88.9 [79.9, 94.2]	22 [14.7, 31.4]	39.1 [29.9, 49.1]	46.5 [37.9, 55.3]	64.5 [58.0, 70.4]
St James	52.0 [40.2, 63.7]	74.8 [57.4, 86.7]	19.7 [11.6, 31.4]	35.9 [24.7, 48.9]	35.4 [28.5, 43.0]	54.8 [45.1, 64.2]
Hanover	52.3 [30.2, 73.5]	69.0 [49.2, 83.6]	24.0 [11.7, 42.9]	47.1 [30.4, 64.5]	38.6 [22.8, 57.2]	58.4 [42.2, 73.0]
Westmoreland	34.8 [19, 54.9]	41.4 [25.1, 59.7]	9.2 [3.0, 24.8]	19.2 [12.5, 28.2]	22.4 [11.7, 38.6]	30.6 [19.9, 43.8]
St Elizabeth	70.1 [61.1, 77.8]	92.6 [86.7, 96.1]	33.6 [26.6, 41.5]	70.1 [64.7, 75]	52.3 [45.7, 58.8]	81.6 [78.5, 84.4]
Manchester	48.1 [38.1, 58.1]	73.5 [64.3, 80.9]	15.9 [10.5, 23.4]	27.1 [16.8, 40.6]	32 [25.8, 38.8]	50.3 [41.6, 58.9]
Clarendon	57.6 [47.3, 67.3]	65.6 [56.2, 74]	8.2 [4.0, 16.3]	27.3 [18.5, 38.3]	33.2 [29.0, 37.6]	46.7 [41.6, 51.8]
St Catherine	44.7 [34.3, 55.6]	65.6 [57.3, 73]	26.2 [18.4, 35.9]	50.8 [37, 64.5]	34.9 [28.7, 41.7]	57.7 [47.7, 67.2]

$*p < 0.05$; $**p < 0.01$; $***p < 0.001$.

Table 6.5.5 examines the sex-specific prevalence of heavy episodic use of alcohol and binge drinking in Jamaicans aged 15 years and older. Heavy episodic (HE) alcohol use is consumption of six or more standard drinks containing alcohol in one sitting within the last 30 days,[9] whereas binge drinking is a form of excessive drinking and is defined as consuming five or more drinks on an occasion for men or four or more drinks on an occasion for women.[10] Respectively, males were three times more likely to participate (13% vs. 3.4 %) and (13.8% vs. 3.5%) in such activities versus their female counterparts. The 95% confidence intervals in Table 6.5.5 suggest that, overall, between 7% and 10% of Jamaicans practised heavy episodic alcohol use or binge drinking.

Table 6.5.5: Sex-specific Prevalence (%) Estimates for Heavy Episodic (HE) Alcohol Use and Binge Drinking in Jamaicans Aged 15 Years and Older, JHLS III 2017

Use of Alcohol	HE Alcohol Use***	Binge Drinking***
Male	13.0 [11.0, 15.2]	13.8 [11.8, 16.1]
Female	3.4 [2.5, 4.6]	3.5 [2.6, 4.8]
Total	8.1 [6.9, 9.4]	8.5 [7.4, 9.9]

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.5.6 shows the prevalence estimates of binge and heavy episodic use of alcohol by parish among Jamaicans aged 15 years and older. The highest prevalence of HE alcohol use and binge drinking (13.9% and 14.1%, respectively) occurred in Kingston. The parishes differed significantly with respect to HE alcohol use (p<0.001) and with respect to binge drinking(p<0.001). St Thomas reported the lowest estimates of both HE alcohol use and binge drinking (3.4%). In each parish, the proportions with binge drinking were similar to the proportions classified as practising HE alcohol use, with the exception of St Ann where prevalence of HE alcohol use was 8.8% while prevalence of binge drinking was 13.0.

Table 6.5.6: Prevalence (%) Estimates for Heavy Episodic (HE) Alcohol Use and Binge Drinking in Jamaicans Aged 15 Years and Older by Parish, JHLS III 2017

Use of Alcohol	HE Alcohol Use***	Binge Drinking***
Kingston	13.9 [8.2, 22.7]	14.1 [8.4, 22.8]
St Andrew	6.3 [4.1, 9.7]	6.3 [4.1, 9.7]
St Thomas	3.4 [1.0, 10.9]	3.4 [1.0, 10.9]
Portland	9.9 [6.6, 14.5]	10.8 [7.5, 15.4]
St Mary	6.8 [3.7, 12.2]	8.9 [4.9, 15.7]
St Ann	8.8 [5.5, 13.9]	13.0 [9.4, 17.7]
Trelawny	9.3 [5.5, 15.3]	9.3 [5.5, 15.3]
St James	12.8 [9.4, 17.2]	13.6 [9.9, 18.5]
Hanover	8.6 [4.6, 15.3]	8.6 [4.6, 15.3]
Westmoreland	6.0 [2.3, 14.7]	6.0 [2.3, 14.7]
St Elizabeth	10.0[5.4, 17.5]	10.0 [5.4, 17.5]
Manchester	5.4 [3.0, 9.7]	5.4 [3.0, 9.7]
Clarendon	11.5 [8.2, 15.9]	11.5 [8.2, 15.9]
St Catherine	7.2 [4.2, 12.0]	7.5 [4.3, 12.6]

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.5.7 shows the sex-specific risk level for alcohol abuse within the past year by gender. Participants were categorized by risk levels using the AUDIT (The Alcohol Use Disorders Identification Test) Scores Categories. The World Health Organization's Alcohol Use Disorders Identification Test (AUDIT) is a very reliable and simple screening tool that is sensitive to early detection of risky and high risk (or hazardous and harmful) drinking. A score of eight or more indicates harmful or abusive use of alcohol.[11] The risk level I represents persons who are at low risk for alcohol abuse, level II represents moderate risk of harm, and level III signifies a high risk of harm from alcohol abuse. The distributions of persons at the different risk levels were not the same for both sexes ($p<0.001$). Prevalence of persons at risk level I was higher among the females, while prevalence of persons at risk level II was lower among the females.

Table 6.5.7: Sex-specific and Total Population Percentage (%) Distribution of AUDIT Score Categories in Jamaicans Aged 15 Years and Older Who Used Alcohol in the Past Year, JHLS III 2017

Risk Level***	Male	Female	Total
I (0–7)	86.0[82.4, 89.0]	95.4[93.0, 97.0]	89.4[86.6, 91.7]
II (8–15)	13.1[10.1, 16.7]	3.9[2.6, 5.8]	9.8[7.7, 12.3]
III (16–19)	0.6[0.3, 1.2]	0.6[0.1, 3.2]	0.6[0.3, 1.3]
IV (20–40)	0.3[0.1, 1]	0.1[0,0.3]	0.2[0.1, 0.6]

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.5.8 shows the prevalence of persons at the different risk levels by categories of demographic indices. For none of the indices did the data give evidence of a statistically significant association with level of risk. For the respective indices, prevalence of persons with level II risk was highest among those not of the Black race (14.5%); with no religion (11.9%); married or in common-law unions (11.5%); and who live in urban areas (11.0%).

Table 6.5.8: Percentage (%) Distribution of AUDIT Score Categories in Jamaicans Aged 15 Years and Older Who Used Alcohol in the Past Year, According to Demographic Indices, JHLS III 2017

Demographic Index	I (0–7)	II (8–15)	III & IV (16–40)
Race			
Black	89.6[87.2, 91.6]	9.5[7.7, 11.7]	0.9[0.4, 1.6]
Other	85.3[65.2, 94.8]	14.5[5.1, 34.8]	0.2[0, 1.4]
Religious Affiliation			
Christian	90.5[86.7, 93.3]	9.0[6.5, 12.3]	0.5[0.2, 1.4]
No Religion	86.0[81.5, 89.6]	11.9[8.6, 16.3]	2.0[1.0, 4.1]
Other/Non-Christian	93.3[80.6, 97.9]	6.7[2.1, 19.4]	0.0
Marital Status			
Unmarried	90.3[87.1, 92.4]	9.1 [7.0, 11.7]	0.9[0.4, 1.9]
Married/Common-Law	87.8[83.4, 91.2]	11.5[8.2, 15.8]	0.7[0.3, 1.8]
Area of Residence			
Urban	88.2[83.3, 91.8]	11.0[7.8, 15.3]	0.8[0.3, 1.9]
Rural	90.8[88.4, 92.8]	8.3[6.5, 10.6]	0.9[0.4, 2]

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.5.9 shows the prevalence of persons at the different risk levels by categories of socio-economic indices. For none of the indices did the data give evidence of a statistically significant association with level of risk. For the respective indices, prevalence of persons with level II risk was highest among the employed (12.3%), those with skilled occupations (13.9%), those with primary or lower education level (12.9%), and those with weekly household income exceeding JA$60,000.00 (11.6%).

Table 6.5.9: Prevalence (%) Risk Levels for Alcohol Abuse in Jamaicans Aged 15 Years and Older, by Given Socio-economic Indices, JHLS III 2017

Socioeconomic Index	I (0–7)	II (8–15)	III & IV (16–40)
Employment Status			
Employed	89.6[86.6, 92]	9.3[7.2, 11.9]	1.1[0.6, 2.2]
Unemployed	87.7[82.4, 91.6]	12.3[8.5, 17.6]	0.0
Student	90.0 [76.6, 96.1]	10.0[3.9, 23.4]	0.0
Occupation Category			
Professional	95.4[90.1, 97.9]	4.6[2.1, 9.9]	0.0
Highly skilled	91.8[87.1, 94.9]	7.0[4.3, 11.3]	1.2[0.3, 3.9]
Skilled	84.9[79.0, 89.3]	13.9[9.5, 19.8]	1.2[0.5, 3]
Unskilled	89.8[80.8, 94.8]	7.1[3.1, 15.5]	3.1[1.1, 8.5]
Unemployed	87.9[82.5, 91.7]	12.2[8.3, 17.5]	0.0
Student	90.5[78.2, 96.2]	9.6[3.8, 21.8]	0.0
Retired	94.6[87.7, 97.7]	4.8[1.8, 11.8]	0.6[0.1, 3.3]
Educational Level			
Primary/ Lower	86.9[80.6, 91.4]	12.9[8.5, 19.2]	0.2[0.0, 0.6]
Secondary	88.9[85.0, 91.9]	9.8[7.3, 13.1]	1.3[0.7, 2.4]
Post-Secondary	92.5[85.4, 96.3]	7.5[3.7, 14.6]	0.0
Other	95.7[76.7, 99.3]	4.4[0.7, 23.3]	0.0
Weekly Household Income (Ja$)			
<12,000	89.2[84.9, 92.4]	9.8[6.8, 13.9]	1.0[0.3, 3.0]
12,000–60,000	90.7[86.4, 93.8]	8.8[5.8, 13.1]	0.5[0.2, 1.0]
>60,000	88.4[69.3, 96.2]	11.6[3.8, 30.7]	0.0
DK/NR	88.4[82.7, 92.4]	10.5[6.6, 16.4]	1.1[0.4, 2.7]

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.5.10 shows the prevalence of persons at the different risk levels in Jamaican parishes by gender. The distributions of risk levels differed with parish for the females only (p<0.05). Among the females, only, Kingston and St Andrew were the only parishes with prevalence greater than 0.0% for risk level III. Also, among females, the prevalence of persons at risk level I exceeded 90% in all parishes except for the parishes of Kingston (87.8%), Portland (80.0%), and Hanover (81.5%). Noteworthy is that prevalence of males at risk level I ranged from 78.1% in Portland to 96.3% in Westmoreland.

Table 6.5.10: Sex-specific and Total population Percentage (%) Distribution of AUDIT Score Categories by Parish in Jamaicans Aged 15 Years and Older Who Used Alcohol in the Past Year, JHLS III 2017

Parishes	Males			Females*			Total		
	I (0–7)	II (8–15)	III&IV (16–40)	I (0–7)	II (8–15)	III&IV (16–40)	I (0–7)	II (8–15)	III&IV (16–40)
Kingston	84.9	8.3	6.8	87.8	10.6	1.6	85.9	9.2	4.9
St Andrew	85.0	15	0.0	97.7	0.0	2.3	90.0	9.1	0.9
St Thomas	93.5	4.1	2.5	98.3	1.7	0.0	95.4	3.1	1.5
Portland	78.1	21.5	0.4	80.0	20	0.0	78.6	21.1	0.3
St Mary	84.5	15.5	0.0	93.7	6.3	0.0	87.5	12.5	0.0
St Ann	87.4	12.6	0.0	100.0	0.0	0.0	92.7	7.4	0.0
Trelawny	89.2	10.8	0.0	92.1	7.9	0.0	89.9	10.1	0.0
St James	87.3	12.7	0.0	94.9	5.7	0.0	89.1	10.9	0.0
Hanover	89.0	4.3	6.7	81.5	18.6	0.0	86.0	10.1	4.0
Westmoreland	96.3	3.7	0.0	93.1	6.9	0.0	95.3	4.7	0.0
St Elizabeth	78.7	19.7	1.6	93.5	6.5	0.0	84.1	14.9	1.0
Manchester	86.6	13.4	0	94.2	5.8	0.0	88.8	11.3	0.0
Clarendon	85.2	13.2	1.6	100.0	0.0	0.0	88.4	10.4	1.2
St Catherine	87.6	11.6	0.9	95.6	4.4	0.0	91.1	8.4	0.5

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.5.11 shows age-specific distributions of the prevalence of persons at the different risk levels among Jamaicans aged 15 years and older by gender and in the total population. Total population but not the sex-specific estimates differed with age (p<0.05).

Table 6.5.11: Sex-specific and Total Population Percentage (%) Distribution of AUDIT Score Categories by Age Group in Jamaicans Aged 15 Years and Older, JHLS III 2017

Risk Level	Age Groups						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Females							
I (0–7)	95.8	95.5	95.1	90.2	99.5	100	100
II (8–15)	4.2	2.2	4.9	9.8	0.5	0.0	0.0
III & IV (16–40)	0.0	2.3	0.0	0.0	0.0	0.0	0.0
Males							
I (0–7)	88.2	87.0	83.5	80.4	87.7	95	93.2
II (8–15)	11.4	12.3	14.2	19.4	12.3	1.6	5.7
III & IV (16–40)	0.4	0.7	2.3	0.2	0.0	3.4	1.1
Total*							
I (0–7)	91.3	90.6	87.7	82.8	91.0	95.9	95.6
II (8–15)	8.5	8.0	10.9	17.0	9.0	1.3	3.7
III & IV (16–40)	0.2	1.4	1.4	0.2	0.0	2.8	0.7

*p < 0.05; **p < 0.01; ***p < 0.001

Total population estimates revealed that prevalence of high risk of alcohol abuse (levels III and IV) was highest among the 65–74-year-olds at 2.8% and lowest at 0.0% among those 55–64 years of age. Prevalence of Level II risk among Jamaicans aged 15 years and older ranged from 1.3% among persons 65–74 years to 17.0% among persons 45–54 years. It is noteworthy that, among the females, high risk of alcohol abuse (Levels III and IV) was present among the 25–34-year-olds only (2.3%), while prevalence of this level of risk was present in all age groups, among the males, except among the 55–64-year-olds. The variation in these sex-specific estimates of prevalence were, however, not statistically significant. (See Table 6.5.11).

Cigarette Smoking

There was a statistically significant gender difference in the use of tobacco. Approximately, one in four Jamaicans aged 15 years and older reported a lifetime prevalence of cigarette smoking, with nearly 40% of males and 10% of females reporting this habit ($p<0.001$). The proportion of males who were current cigarette smokers was nearly five times as large as the proportion of females who were current smokers, while the prevalence of past smokers among males was nearly 2.5 times as large as the prevalence among females ($p<0.001$). While the prevalence of males who smoked 100 or more cigarettes in their lifetime exceeded the prevalence of this outcome in females by only three percentage points, prevalence of females who smoked less than 100 cigarettes more than doubled the prevalence of this outcome among the males ($p<0.01$). (See Table 6.5.12.).

Table 6.5.12: Prevalence (%) Estimates for Features of Tobacco Use among Jamaicans Aged 15 Years and Older, JHLS III 2017

Features of Tobacco Use	Males	Females	Total
Lifetime Cigarette Smoking***	39.8	10.1	24.2
Tobacco Use Categories***			
Never used tobacco products	60.2	89.9	75.8
Past Smoker	13.8	5.4	9.4
Current Smoker	26.0	4.7	14.8
Cigarette use#**			
Smoked < 100 cigarettes	14.1	32.0	18.2
Smoked ≥100 Cigarettes	27.6	24.6	26.9
Amount not known/stated	58.3	43.4	54.9

#Out of those who had smoked previously or were current 55 smokers

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 6.5.13 shows the age distribution of the history of smoking tobacco among Jamaicans 15 years and older. Prevalence of past, current, and lifetime smoking varied significantly with age ($p<0.001$) in the total population. Prevalence of current smoking was highest at 18.1% among those 35–54 years old and lowest at 10.0% among those 65–74 years old. Prevalence of past smoking was also highest in those 65–74 years of age at 24.9%. Sex-specific distributions also differed significantly with age. Among the males, the prevalence of current smoking ranged from 36.4% in those 35–44 years old and 31.1% in the 45–54-year-olds to 8.6% among those 75 and older ($p<0.001$). As in the total population, the prevalence of past smoking was also highest in the 65–74-year-olds at 43.5%. Among females, prevalence of current smoking was highest at 10% among the 25–34-year-olds and was lowest in those 65–74 and 75 years and older at 0.8% and 0.6%, respectively ($p<0.01$).

Among males and in the total population of Jamaicans 15 years and older who were lifetime smokers the distributions of quantities of cigarettes used differed significantly with age. A history of smoking 100 or more cigarettes had highest prevalence in those 75 years and older at 60% in the total population and 70.5% among the males. Prevalence of this outcome was lowest in those 25 to 34 years of age at just under 9.0%. Although the distribution of (quantities of cigarettes used) among the female lifetime smokers did not differ significantly with age, prevalence of females who smoked 100 or more cigarettes ranged from 59.8% among those 65–74 years to 9.6% among the females 25–34 years of age (See Table 6.5.13.).

It is notable that in each age group in the total population of lifetime smokers 15 years and older, in excess of 18% among the 75+ age group and up to 69% in those 25–44 years of age did not recall the quantity of cigarettes they smoked (See Table 6.5.13.).

Table 6.5.13: Age-specific Proportions (%) of Smoking (Habit) History of Jamaicans Aged 15 Years and Older, JHLSIII 2017

Smoking History	Age (Years)						
	15–24	25–34	35–44	45–54	55–64	65–74	≥75 yrs
Tobacco use* **							
Never used tobacco	79.1 [73.1,84.1]	79.3 [73.8,83.8]	76.1 [70.9,80.7]	71.7 [64.2,78.1]	71.3 [66.9,75.4]	65.1 [60.3,69.6]	79.3 [71.9,85.2]
Past Smoker	6.5 [3.1, 13]	6.0 [3.9, 9.1]	5.7 [3.8, 8.6]	10.2 [7.0, 14.8]	14.8 [11.9, 18.3]	24. [20.5,29.9]	9.4 [7.8, 11.2]
Current Smoker	14.4 [10.3,19.7]	14.8 [11.4,18.9]	18.1 [13.8,23.5]	18.1 [13.3,24.1]	13.9 [10.1,18.8]	10.0 [6.9, 14.4]	14.8 [12.8, 17.1]
Lifetime use	20.9 [16, 26.9]	20.8 [16.2,26.2]	23.9 [19.3, 29.2]	28.4 [21.9,35.9]	28.7 [24.7, 33.1]	34.9 [30.4,39.7]	24.2 [21.8, 26.7]
Cigarette use# * **							
Smoked <100	27.6 [13.1,48.9]	22.3 [13.9,33.8]	10.6 [4.9, 21.5]	14.0 [7.3,25.1]	8.5 [3.7,18.5]	17.1 [8.7,30.9]	21.7 [9.2,42.9]
Smoked ≥100 Cigarettes	19.6 [7.1,43.8]	8.9 [3.9,19.3]	20.4 [12.2,32.2]	23.3 [15.8,32.9]	44.4 [30.4,59.4]	55.0 [42.7,66.8]	60.2 [40.5,77.1]
Amount not known	52.9 [36.9,68.2]	68.8 [57.7,78.1]	69.0 [55.6,79.8]	62.7 [50.5,73.5]	47.1 [33.3,61.4]	27.9 [18.5,39.7]	18.1 [9.0,33.2]
MALES							
Tobacco use* **							
Past Smoker	11.1 [4.9,23.4]	5.7 [2.9,11.1]	5.7 [3.0,10.5]	14.1 [9.7,19.9]	23.4 [18.1,29.6]	43.5 [35.3,52.1]	25.4 [15.1,39.6]
(Current Smoker	26.3 [18.1,36.6]	20.4 [13.9,28.9]	36.4 [26.9,47.1]	31.1 [22.0,41.9]	24.7 [18.1,32.9]	19.3 [13.1,27.4]	8.6 [4.2,16.7]
Lifetime use**	37.4 [27.6,48.4]	26.1 [17.9,36.4]	42.1 [32.2,52.6]	45.1 [33.2,57.7]	48.1 [40.4,55.9]	62.8 [54.6,70.3]	34.0 [22.4,47.9]
Cigarette use# * **							
<100 Cigarettes	27.1 [11.1,52.5]	14.1 [6.5,27.9]	0.6 [0.1,5.2]	13.4 [56.0,27.4]	5.2 [1.7,14.8]	15.1 [6.5,31.2]	5.7 [1.7,17.7]
≥100 Cigarettes	18.3 [5.0,48.8]	8.5 [2.4,25.7]	18.3 [9.2,33.0]	22.0 [13.7,33.2]	45.3 [30.0,61.6]	54.5 [41.4,67.0]	70.5 [49.6,85.3]

Table 6.5.13 *(contd)*: **Age-specific Proportions (%) of Smoking (Habit) History of Jamaicans Aged 15 Years and Older, JHLSIII 2017**

Smoking History	Age (Years)						
	15–24	25–34	35–44	45–54	55–64	65–74	≥75 yrs
Amount not known	54.6 [36.5,71.5]	77.4 [62.3,87.7]	81.2 [66.5,90.3]	64.7 [51.2,76.2]	49.5 [34.3,64.8]	30.4 [20.2,42.9]	23.8 [10.8,44.6]
FEMALES							
Tobacco use**							
Past Smoker	2.1 [0.8,5.1]	6.1 [3.6,10.4]	5.8 [3.3,9.8]	6.4 [2.5,15.2]	5.9 [3.1,10.8]	6.4 [3.7,10.8]	11.4 [5.8,21.5]
Current Smoker	2.9 [1.5,5.5]	10.0 [6.7,14.7]	4.2 [2.0,8.8]	4.9 [2.1,10.8]	2.7 [0.9,7.7]	0.8 [0.1,5.2]	0.6 [0.1,3.1]
Lifetime use**	4.9 [2.9,8.2]	16.2 [11.8,21.9]	10.0 [6.9,14.4]	11.3 [6.1,19.7]	8.6 [5.1,14.3]	7.2 [4.4,11.6]	12.0 [6.3,21.9]
Cigarette use#							
<100 Cigarettes	30.3 [11.6,58.9]	35.0 [21.1,52.0]	33.6 [14.6,59.9]	16.6 [4.6,45.1]	26.3 [8.3,58.4]	35.0 [14.5,63.3]	54.7 [25.9,80.7]
≥100 Cigarettes	27.1 [8.1,61.0]	9.6 [3.1,25.9]	25.3 [12.1,45.3]	29.2 [15.9,47.5]	39.7 [16.8,68.3]	59.8 [31.9,82.5]	39.0 [15.9,68.3]
Amount not known	42.6 [19.1,70.1]	55.4 [39.4,70.4]	41.2 [19.1,67.5]	54.1 [26.9,79.1]	34.0 [11.9,66.4]	5.2 [0.9,25.2]	6.4 [1.0,30.9]

*p < 0.05; **p < 0.01; ***p < 0.001. #Out of those who had smoked previously or were current smokers.

We examined the demographics of persons who were classified as current smokers during the study period. Although these differences were not statistically significant, twice as many men who identified as black were current smokers (Black 26.8%, other races 13.4%); the converse was true for the females (Black 4.4%, other 9.9%). More persons who practised other religions (59%), and those in a visiting relationship (22%) were current smokers compared to the other groups ($p < 0.05$). There were no differences in smoking practices by the category of area of residence; there was a variation in current smoking by the category of age with 1 in 5 persons in the age range of 35–54-year-olds being current smokers.

Table 6.5.14: Sex-specific and Population Total Prevalence (%) Estimates for Current Use of Cigarettes among Jamaicans Aged 15 Years and Older within Demographic Groups, JHLS III 2017

Demographic Index	Males	Females	Total
Race			
Black	26.8[22.4, 31.7]	4.4[3.2, 6.1]	15.0[12.9, 17.3]
Other	13.4[7.4, 23.0]	9.9[4.0, 22.4]	11.8[7.5, 18.0]
Religious Affiliation	***		***
Christian	22.9[18.2, 28.4]	4.1[2.9, 5.8]	11.8[9.6, 14.4]
Other Religion	59.9[44.7, 73.4]	0.0	58.7[43.7, 72.3]
No Religion	30.4[23.1, 38.8]	10.7[5.9, 18.7]	25.2[19.5, 31.8]
Marital Status		***	**
Single	26.5[21, 32.8]	3.5[2.1, 5.7]	14.3[11.4, 17.7]
Married/Common-Law	23[17.6, 29.3]	3.5[2.2, 5.7]	12.5[10.2, 15.3]
Divorced/ Separated	11.2[5.7, 20.6]	0	4.9[2.5, 9.4]
Visiting	32.2[24.2, 41.3]	11.9[7.6, 18.1]	22.4[17.4, 28.3]
Area of Residence			
Urban	23[17.2, 30.1]	5.8[4, 8.2]	13.4[10.4, 17.2]
Rural	28.8[23.3, 35]	3.4[2.1, 5.5]	16.2[13.3, 19.7]
Ten-year Age Band (Years)	***	**	***
15–24	26.3[18.1, 36.6]	2.9[1.5, 5.5]	14.4[10.3, 19.7]
25–34	20.4[13.9, 28.9]	10[6.7, 14.7]	14.8[11.4, 18.9]
35–44	36.4[26.9, 28.9]	4.2[2, 8.8]	18.1[13.8, 23.5]
45–54	31.1[22, 41.9]	4.9[2.1, 10.8]	18.1[13.3, 24.1]
55–64	24.7[18.1, 32.9]	2.7[0.9, 7.7]	13.9[10.1, 18.8]
65–74	19.3[13.1, 27.4]	0.8[0.1, 5.2]	10[6.9, 14.4]
75+	8.6[4.2, 16.7]	0.6[0.1, 3.1]	3.7[1.9, 7.1]
Total	**25.7**	**4.6**	**14.0**

*p < 0.05; **p < 0.01; ***p < 0.0.

Current smokers were the highest among the employed (18%) primary or lower education (17%) and persons who earned an income of less that J$12,000 weekly (18%). The gender disparity in current smoking was evident across all groups with more men in all categories being current smokers, especially males who earned less than J$12,000 per week (33%).

Table 6.5.15: Sex-specific and Total Prevalence (%) Estimates for Current Use of Cigarettes among Jamaicans Aged 15 Years and Older by the Category of Socio-economic Indices, JHLS III 2017

Socioeconomic Index	Males	Females	Total
Employment Status			
Employed	28.1[23.9, 32.8]	5.3[3.1, 8.8]	18.4[15.6, 21.7]
Unemployed	22.5[16, 30.8]	5[3.3, 7.5]	11[8.4, 14.1]
Student	19.2[7.3, 41.8]	0.5[0.1, 3.8]	8[3.1, 19.1]
Occupation Category		***	***
Professional	23.6[13, 38.9]	2.1[0.4, 11.1]	11[6.1, 19.1]
High Skilled	23.2[16.5, 31.4]	5.8[3, 11]	13.3[10, 17.5]
Skilled	30.8[24.7, 37.7]	10.2[4.1, 23.1]	27.4[22.3, 33.1]
Unskilled	38.3[24, 55]	1.4[0.4, 4.7]	19.3[11.9, 29.6]
unemployed	25.3[16.7, 36.3]	6.3[4.2, 9.5]	12.1[9.2, 15.8]
Student	19.3[7.4, 42]	0.5[0.1, 3.8]	8[3.1, 19.1]
Retired	13.9[8.4, 22.1]	0.5[0.1, 2.8]	6.3[3.7, 10.6]
Educational Level	***	***	***
Primary/ lower	31.4[25.5, 37.9]	4[2.1, 7.7]	17.2[13.5, 21.5]
Secondary	27.8[22.6, 33.7]	6.1[4.5, 8.2]	17[14, 20.4]
Post-secondary/ Tertiary	5.8[2.8, 11.7]	1.4[0.4, 4.9]	3.2[1.7, 5.8]
Other	20.9[7.2, 47.5]	0.0	4.1[1.4, 11.3]
Weekly Household Income (Ja$)		*	
<12,000	33.0[27.6, 38.9]	7.4[5.3, 10.1]	18.3[15.6, 21.4]
12,000– 59999	20.7[15, 27.8]	2.7[1, 6.7]	12.4[8.8, 17.1]
>60,000	20.3[4.1, 60.4]	0.0	12.2[2.4, 44.1]
DK/NR	23.0[15.4, 32.8]	3.6[2.1, 6.1]	13.1[8.9, 18.8]

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.5.16 shows the prevalence of current smoking by parish. St James, Portland, Kingston, St Mary, and Westmoreland were the top five parishes with higher proportions of current smokers than other parishes, with one in five persons being current smokers (20.8%, 20.4%, 19.1%, 18.4%, and 18.3%, respectively).

Table 6.5.16: Sex-specific and Total Prevalence (%) Estimates for Current Use of Cigarette Smoking among Jamaicans Aged 15 Years and Older by the Category of Parish, JHLS III 2017

Area of Residence	Current Cigarette Use		
	Male	Female	Total
Kingston	33.9[25.9, 43.1]	4[1.4, 11.1]	19.1[14.9, 24.1]
St Andrew	27.4[16.3, 42.2]	6.6[4.3, 10]	16[10.5, 22.6]
St Thomas	19.2[9.7, 34.5]	3.8[1.8, 7.8]	11.1[5.8, 20.3]
Portland	34[29.2, 39.1]	6.5[2.3, 17.2]	20.4[16.5, 25]
St Mary	31.5[22, 42.9]	4.6[1.2, 16.7]	18.4[12.6, 26.1]
St Ann	27.7[12.9, 49.8]	4.1[1.4, 11]	15.2[12.6, 26.1]
Trelawny	24[14.3, 37.5]	5.7[1.5, 19.3]	15[8.7, 24.7]
St James	36.8[23.2, 52.9]	5.6[2.2, 13.7]	20.8[14.2, 29.4]
Hanover	9.6[7.5, 12.1]	0	4.8[4, 5.9]
Westmoreland	28.7[20.9, 38.1]	8.4[4.6, 14.7]	18.3[14.9, 22.3]
St Elizabeth	18.6[11.4, 29.1]	5.9[2.3, 14.4]	12.4[8.3, 18.2]
Manchester	31.7[18.7, 48.3]	2[0.5, 7.6]	16.8[10.4, 26.1]
Clarendon	19.4[11.6, 30.7]	1.4[0.4, 5.3]	10.1[6.6, 15.3]
St Catherine	21.8[11.8, 36.7]	3.8[1.1, 12.6]	11.7[6.8, 19.5]

*p < 0.05; **p < 0.01; ***p < 0.001.

Age of initiation of smoking is shown in Table 6.5.17. Most Jamaicans aged 15 years and older reported smoking initiation after the age of 16 years (69%), with one in ten initiating during mid-adolescence, 14–15 years old (Males, 15%; Females, 8.7%; Total, 9.9%; $p < 0.001$) and early adolescence, 10–11 years (Males, 10.1%; Females 8.5%; Total, 9.6%).

Table 6.5.17: Proportion (%) of Jamaicans Aged 15 Years and Older Who Reported Initiating Cigarettes Smoking at Given Ages by the Category of Sex, JHLS III 2017

Given Age Group When Initiated Cigarette Smoking	Male***	Female***	Total**
3–7	3.2 [2.5, 4.1]	1.6 [1.6,1.6]	2.3 [0.6, 8.5]
8–9	3.4 [2.0, 5.6]	0.5 [0.2, 1.6]	2.3 [1.04, 4.8]
10–11	10.1 [7.7, 13.2]	8.5 [5.4, 13.1]	9.6 [6.6, 14.4]
12–13	8.8 [6.8, 11.3]	3.7 [2.7, 4.9]	6.3 [3.5, 11.3]
14–15	15.0 [12.0, 18.5]	8.7 [6.7, 11.1]	9.9 [6.9, 14.2]
≥16	59.6 [55.3, 63.7]	77.0 [72.3, 81.2]	69.4 [61.5, 76.3]

*p < 0.05; **p < 0.01; ***p < 0.001.

Recreational Drug Use

Marijuana has traditionally been used in Jamaica for religious, medicinal, and recreational purposes. Smoking is the preferred mode of delivery for persons who use marijuana. We examined the prevalence and history of marijuana use and other types of recreational drugs in Jamaicans aged 15 years and older. One-third of Jamaicans aged 15 years and older reported a lifetime use of marijuana with significant gender differences (Males, 49%; Females, 16.8%; Total, 32.5%; $p < 0.001$). Almost one in five reported current use of marijuana (Males, 29.4%; Females, 4.8%; Total, 16.7%) (Table 6.5.18). Of those who currently use marijuana, majority (65%) report daily use. Almost 12% of Jamaicans utilised marijuana through other delivery mechanisms. Almost 1% of Jamaicans reported having used cocaine, again significant gender disparity prevailing in its use (Males, 1.3%; Females, 0.2%; $p < 0.0001$).

Table 6.5.18: Proportion (%) of Jamaicans Who Reported a History of Use of Recreational Drugs among Jamaicans Aged 15 Years and Older, JHLS III 2017

History of Use of Narcotics	Male	Female	Total
Marijuana Smoking	***	***	***
Never	51 [47.2, 54.8]	83.2 [80.8, 85.4]	67.5 [65.3, 69.7]
Past	19.6 [17.2, 22.4]	12.1 [10.1, 14.3]	15.8 [14.3, 17.4]
Current	29.4 [25.8, 33.2]	4.8 [3.6, 6.2]	16.7 [14.8, 18.9]
Lifetime	49.0 [45.2, 52.8]	16.8 [14.6, 19.2]	32.5 [30.3, 34.8]
Frequency of Use Among Current Marijuana Smokers#	***	***	***
Less than once per week	13 [7.9, 20.6]	42 [27.8, 57.5]	17.2 [11.8, 24.2]
1–3 per week	12.3 [8.7, 17.2]	19.9 [10.6, 34.1]	13.4 [10, 17.8]
4–6 per week	4.1 [2.4, 6.9]	6.9 [2.6, 17.1]	4.5 [2.8, 7.1]
Daily	70.6 [63.6, 76.7]	31.3 [21.1, 43.7]	64.9 [58.7, 70.7]
Marijuana Use (Non-smoking)	17.4	5.5	11.5
Ever used cocaine	1.3***	0.2	0.7
Ever used any other hard drug	0.5	0.0003	0.3

*p < 0.05; **p < 0.01; ***p < 0.001.

#Among current users.

Current marijuana smoking was examined across the socio-demographic indices, there were no differences in marijuana use by race or place of residence. Significantly, more persons who practised other religions (69.2%) were current users as compared to Christian (12.6%) or no religious affiliation (32.2%), $p < 0.001$. Looking at the marijuana use by union status, more persons in a visiting (26.6%) or single (18.9%) relationship were current users as compared to persons who were divorced (13%) or in a union (8.5%), $p < 0.001$. Younger persons were current marijuana users, especially younger males aged 15–24 years (Males, 38.3%; Females, 3.7%; Total, 20.9%) compared to the other age groups (Table 6.5.19).

Table 6.5.19: Sex-specific and Total Prevalence (%) of Current Marijuana Smoking among Jamaicans Aged 15 Years and Older within Demographic Groups, JHLS III 2017

Demographic Index	Males	Females	Total
Race			
Black	29.6 [25.9, 33.3]	4.8 [3.7, 6.3]	17 [15, 19.1]
Other	23.3 [13.2, 37.7]	3.3 [1, 10.3]	13.4 [7.5, 22.8]
Religious Affiliation	***		***
Christian	23.8 [20, 27.9]	4.4 [3.3, 6]	12.6 [10.7, 14.8]
Other Religion	71.6 [51.4, 85.8]	0	69.2 [49.4, 83.8]
No Religion	40.2 [34.2, 46.5]	8.7 [4.7, 15.4]	32.2 [27.2, 37.6]
Marital Status	***	***	***
Single	34.3 [28.8, 40.1]	3.9 [2.6, 5.7]	18.9 [16.1, 22.1]
Married/ Common-Law	15.1 [10.9, 20.6]	2.7 [1.5, 4.6]	8.5 [6.3, 11.4]
Divorced/ Separated	28.5 [19.5, 39.6]	1.6 [0.5, 5.4]	13 [9.1, 18.2]
Visiting	39.8 [31, 49.4]	12.8 [3.6, 6.1]	26.6 [21.5, 32.5]
Area of Residence			
Urban	28.6 [23.3, 34.4]	5.8 [4.1, 8.2]	16.5 [13.7, 19.8]
Rural	30.2 [26.2, 34.6]	3.5 [2.3, 5.3]	17 [14.8, 19.4]
Ten-year Age Band (Years)	**	***	***
15–24	38.3 [30, 47.3]	3.7 [1.9, 7.1]	20.9 [16.8, 25.8]
25–34	27.3 [20.5, 35.2]	11.2 [7.8, 15.8]	19 [15.1, 23.7]
35–44	32.8 [23.4, 43.7]	3 [1.6, 5.6]	17.1 [12.8, 22.6]
45–54	25.2 [18.5, 33.3]	4.4 [2.3, 8.3]	14.7 [11.2, 19.2]
55–64	28 [20.4,37.2]	2.6 [0.8, 7.9]	15.4 [11.5, 20.3]
65–74	17 [12.6, 22.5]	0.5 [0.1, 2.3]	8.7 [6.5, 11.5]
75+	7.2 [3.2, 15.2]	0	2.8 [1.3, 6.1]

*p < 0.05; **p < 0.01; ***p < 0.0001.

Significantly more males, who were unemployed (44%) and unskilled (37%) and had a secondary-level education (34%), earned less than J$12,000 per week. Those who were classified at the lower socio-economic tertile (37.8%) were current smokers of marijuana, as compared to the other categories of the socio-economic indices. Females who earned less than J$12,000 per week (8%) and who had a secondary-level education (7.2%) comprised the highest proportion of current smokers among the categories (Table 6.5.20).

Table 6.5.20: Sex-specific and Total Prevalence (%) Estimates for Current Marijuana Smokers among Jamaicans Aged 15 Years and Older within the Category of Socio-economic Groups, JHLS III 2017

Socio-economic Index	Males	Females	Total
Employment Status	***		***
Employed	29.1 [25.1, 33.6]	5.4 [3.9, 7.4]	19.2 [16.6, 22.2]
Unemployed	44.7 [36.4, 53.3]	6.4 [4.2, 9.6]	19 [15.7, 22.9]
Student	18.4 [6.1, 44]	1.6 [0.2, 10.5]	8.7 [3.3, 20.7]
Retired	9.8 [5.8, 16.3]	0.2 [0.03, 0.7]	4 [2.4, 6.7]
Occupation Category	***	**	***
Professional	10.6 [5.7, 18.7]	0.4 [0.1, 2.7]	5 [2.7, 8.8]
Highly Skilled	29.7 [22.9, 37.5]	6.5 [4.4, 9.5]	16.4 [13.2, 20.2]
Skilled	29.5 [24.8, 34.8]	8.9 [4.3, 17.6]	26.3 [22.1, 31]
Unskilled	37.4 [25, 51.7]	0.7 [0.2, 2.7]	18.3 [12.4, 26.3]
Educational Level	***	***	***
Primary/lower	28.4 [22.7, 34.7]	1.9 [0.8, 4.6]	16 [12.6, 20]
Secondary	34.2 [29.8, 38.9]	7.2 [5.5, 9.5]	21.1 [18.6, 23.8]
Post-secondary/Tertiary	6.7 [3.6, 12.2]	1.5 [0.4, 5,2]	3.3 [1.9, 5.9]
Other	15.6 [5.2, 38.1]	0	4.4 [1.4, 13.2]
Weekly Household Income (Ja$)	**	***	*
<12,000	33.6 [28.9, 38.7]	8 [5.8, 10.9]	19.2 [16.6, 22]
12,000–59999	25.8 [19.9, 32.6]	3.9 [2, 7.2]	15.4 [11.6, 10.2]
>60,000	2.5 [0.3, 17.9]	0	1.4 [0.2, 10.2]
No response	28.7 [22.3, 36.2]	2 [1.1, 3.5]	15.6 [12.1, 19.9]
Number of Household Possessions	***		***
Low (0–5)	37.8 [32.4, 43.5]	4.6 [2.9, 7.3]	22 [18.9, 25.4]
Middle (6–9)	32.1 [26.6, 38.2]	6.4 [4.8, 6.1]	18.9 [15.7,22.5]
High (10–20)	19.3 [26.2, 33.8]	3.2 [1.6, 6.1]	10.4 [7.3, 14.5]

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

One-third of parishioners in Westmoreland reported being current marijuana smokers (Males, 45.8%; Females, 14.1%; Total, 30.7%). The parishes of Kingston (27%) and Trelawney (24%) round out the top-three estimates.

Table 6.5.21: Sex-specific and Total Prevalence Estimates (%) for Current Marijuana Smoking, among Jamaicans Aged 15 Years and Older per Parish, JHLS III 2017

Parish	Males***	Females***	Total***
St Catherine	29.7	3.8	15.9
Clarendon	18.6	1.2	10
Manchester	23.8	1	12.4
St Elizabeth	25	5.2	15.3
Westmoreland	45.8	14.1	30.7
Hanover	26.9	4.4	16
St James	39.3	4	21.2
Trelawny	41.1	7	24.3
St Ann	33.7	1.5	16.5
St Mary	28.0	0	14
Portland	25.9	3.8	15
St Thomas	20.6	2.7	11.6
St Andrew	27.3	7.1	16.6
Kingston	42.9	11.4	27.2
Total	**29.4**	**4.7**	**16.7**

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

6.6. Violence and Injuries

Introduction

An injury is the physical damage that results when a human body is suddenly or briefly subjected to intolerable levels of energy.[12] Violence and injuries are a major public health concern among all age groups and across life course.[12]

The type of injury sustained can be categorised in many ways; for the purpose of this study it was categorised according to whether or not it was deliberately inflicted and by whom. Injuries were also categorised as unintentional (or accidental) and intentional (or violence related). Unintentional injuries were then categorised as road traffic accidents (RTAs) or other unintentional injuries. In this section we report on the prevalence of persons requiring medical attention after suffering different types of injuries within the 12 months preceding survey interview. In addition, prevalence estimates for use of protective devices during commuting within the 30 days preceding the survey interviews and the causes of various injuries, including those represented by sexual abuse are presented.

Injuries Requiring Medical Attention

Table 6.6.1 shows the prevalence of persons who required medical attention for different types of injuries within the 12 months preceding their survey interview. Four times as many males as females aged 15 years and older were involved in road traffic accidents in Jamaica in the year prior to the survey (Males, 1.8%; Females, 0.4%; $p < 0.05$). The highest proportions were amongst the 25–34-year-old males (3.2%). Males aged 65–74 years had the highest reports of other unintentional injuries (6.8%). There was relatively low prevalence (of reports) of violence-related injuries, with the highest proportions being reported in the 35–44-year-old age group (1.1%).

There were no statistically significant area of residence differences in the prevalence of Jamaican males aged 15 years and older requiring medical attention after suffering the various types of injuries listed in Table 6.6.2. More urban than rural females required medical attention after a road traffic accident (urban, 0.7%; rural, 0.1%, p <0.05) and violence-related injuries (urban, 0.4%; rural, 0.0%, p <0.05). Prevalence of persons requiring medical attention after unintentional injuries was generally higher among urban residents but differences were not statistically significant. (See Table 6.6.2.)

Table 6.6.1: Sex-specific and Total Population Prevalence of Persons Who Required Medical Attention in the Past 12 Months Due to Given Types of Injuries among Jamaicans Aged 15 Years and Older, JHLS III 2017

Age Group (Years)	15–24	25–34	35–44	45–54	55–64	65–74	75+	Total
Road Traffic Accident (%) [CI]								
Males	1.0 [0.4,2.6]	3.2 [1.5,6.5	2.6 [1.2,5.7]	2.1 [1.04.6]	0.5 [0.11.8]	0.5 [0.15.0]	0.9 [0.16.0]	1.8 [1.2,2.7]
Females	0.8 [0.2–3.9]	0.9 [0.2–3.7]	0	0.1 [0.0,1.0]	0	0.6 [0.1,3.2]	0	0.4 [0.2–1.2]
Total	**0.9 [0.4–2.2]**	**2.0 [1.0–3.8]**	**1.2 [0.6,2.7]**	**1.1 [0.5,2.4]**	**0.2 [0.1,0.9]**	**0.5 [0.1,2.3]**	**0.4 [0.1,2.4]**	**1.1 [0.8–1.6]**
Unintentional Injuries (%) [CI]								
Males***	5.2 [2.4–11.2]	2.7 [1.4–5.2]	2.3 [0.9,5.7]	1.0 [0.4,2.5]	1.6 [0.6,4.0]	6.8 [4.8,9.5]	3.6 [1.5,8.6]	3.2 [2.1–5.0]
Females	0.9 [0.2–4.0]	2.1 [0.6–6.9]	0.8 [0.3,2.2]	2.3 [0.7,6.8]	2.7 [1.0,6.6]	0	0	1.4 [0.7–2.7]
Total	**3.1 [1.5–6.1]**	**2.4 [1.2–4.6]**	**1.5 [0.8,3.1]**	**1.6 [0.7,3.7]**	**2.1 [1.1,4.1]**	**3.4 [2.4,4.7]**	**1.4 [0.6,3.4]**	**2.3 [1.5–3.4]**
Violence-related Injury (%) [CI]								
Males**	0.4 [0.1–2.1]	1.4 [0.4–5.2]	1.9 [0.6,5.6]	0	0.7 [0.3,1.7]	0.3 [0.0,2.4]	0	0.8 [0.4–1.6]
Female	0.6 [0.1–3.5]	0	0.3 [0.1,0.9]	0	0.1 [0.0,1.1]	0	0	0.2 [0.1–0.8]
Total	**0.5 [0.1–1.8]**	**0.7 [0.2–2.5]**	**1.1 [0.4,2.7]**	**0**	**0.4 [0.2,0.9]**	**0.2 [0.0,1.2]**	**0**	**0.5 [0.3–0.9]**

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.6.2: Prevalence of Persons That Required Medical Attention after Suffering Given Injuries in the Past 12 Months by Geographical and Sex Categories, JHLS III 2017

Cause of Injury	Males		Females		Total	
	Urban (% [CI])	Rural (% [CI])	Urban (% [CI])	Rural (% [CI])	Urban (% [CI])	Rural (% [CI])
Road Traffic Accidents	1.3 [0.7–2.5]	2.4 [1.4–4.0]	0.7* [0.2–2.1]	0.1 [0.0–0.5]	1.0 [0.6–1.8]	1.3 [0.7–2.1]
Unintentional Injury	3.3 [1.6–6.7]	3.1 [2.1–4.6]	2.1 [1.0–4.3]	0.6 [0.3–1.1]	2.7 [1.5–4.7]	1.9 [1.3–2.6]
Violence Related Injury	0.6 [0.2–2.0]	1.1 [0.5–2.4]	0.4* [0.1–1.4]	0	0.5 [0.2–1.1]	0.6 [0.3–1.2]

*p < 0.05; **p < 0.01; ***p < 0.001 – for urban-rural differences within gender and total population groups.

There were no statistically significant differences in the proportions of persons requiring medical attention due to serious injuries sustained when the socioeconomic categories were compared. More persons in the high SES category sustained accidental non-road-traffic-related injuries requiring medical attention compared with the other groups (5% vs. 3.6% (Low) and 3.1% (Middle), respectively) (See Table 6.6.3).

Table 6.6.3: Prevalence of Jamaicans Aged 15 Years and Older Requiring Medical Attention due to Injuries Sustained by Socioeconomic Levels, JHLSII 2008

Type of Injury requiring medical attention in the past Year	Socioeconomic Levels (Possessions)		
	Low	Middle	High
Road Traffic Crash	1.3	2.0	1.3
Unintentional Injuries	3.6	3.1	5.0
Violence-related Injuries	1.0	0.8	0.6

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 6.6.4: Road Traffic Accidents That Required Medical Attention among Jamaicans Aged 15 Years and Older by the Categories of Parish and Gender, JHLS III 2017

Parish	Male (%)**	Female (%)	Total (%)*
Kingston	0.6[0.1–3.6]	0	0.3[0.0–1.8]
St Andrew	0	0.7[0.1–4.7]	0.4[0.1–2.5]
St Catherine	0.6[0.1–3.8]	0.9[0.2–4.0]	0.8[0.2–2.4]
St Thomas	4.3[1.2–14.5]	0	2.1[0.6–7.4]
St Ann	3.8[1.8–7.8]	0	1.8[0.8–3.7]
St Mary	10.1[5.0–19.3]	0	5.0[2.5–9.8]
Portland	0	0	0.0
Trelawny	0	0	0
St James	6.1[1.9–17.7]	0.6[0.1–4.1]	3.3[1.2–8.8]
Hanover	2.2[0.3–14.6]	0	1.1[0.2–7.9]
Westmoreland	0	0	0
St Elizabeth	4.6[1.5–13.2]	0.4[0.0–2.8]	2.5[0.9–6.7]
Manchester	1.0[0.2–5.1]	0	0.5[0.1–2.6]
Clarendon	1.0[0.1–7.0]	0.4[0.1–2.3]	0.7[0.2–2.8]
Total	1.8[1.2–2.7]	0.4[0.2–1.2]	1.1[0.8–1.6]

*p < 0.05; **p < 0.01; ***p < 0.001.

Among males and in the total population, the prevalence of persons that required medical attention after involvement in a RTA was highest among the residents of St. Mary (Males, 10.1%; Total, 5%), whilst Kingston reported the lowest estimates of the same (Males, 0.6%; Total, 0.3%). Note however that given the small number of reports of road traffic accidents in the sample, there were several cells with no reported accidents. (See Table 6.6.4.) Some of the other accidental injuries sustained by Jamaicans include falls, burns, and animal bites. A small proportion of Jamaicans reported these types of injuries. The most common being falls (1.6%), and this was more prevalent in the older males, aged 65 years and older (7.8%). (See Table 6.6.5).

Table 6.6.5: Unintentional (Accidental) Injuries Excluding Road Traffic Accidents That Required Medical Attention in the Past 12 Months among Jamaicans Aged 15 Years and Older, by the Categories of Cause and Sex, JHLS III 2017

Type of Injury	Sex	15–24	25–34	35–44	45–54	55–64	65–74	75+	Total
Falls	Males*	3.1 [1.1–8.5]	0.3 [0.1–0.7]	1.5 [0.4–5.3]	0.6 [0.2–2.1]	0	5.4 [4.5–6.5]	2.4 [0.7–8.2]	1.6 [0.9–2.8]
	Female	0	1.5 [0.3–6.9]	0.8 [0.3–2.2]	0.5 [0.1–1.7]	1.4 [0.3–6.6]	0	0	0.7 [0.3–1.4]
	Total	**1.5 [0.5–4.3]**	**0.9 [0.3–3.4]**	**1.1 [0.5–2.7]**	**0.6 [0.3–1.2]**	**0.7 [0.1–3.3]**	**2.7 [2.2–3.2]**	**0.9 [0.3–3.3]**	**1.1 [0.7–1.9]**
Animal bites	Males	0.5 [0.1–3.5]	0	0	0	0.9 [0.3–2.4]	0.9 [0.1–6.3]	0.4 [0.1–2.6]	0.3 [0.1–0.8]
	Females*	0	0	0	0	0.1 [0.0–1.1]	0	0	0 [0.0–0.1]
	Total	**0.3 [0.0–1.8]**	**0**	**0**	**0**	**0.5 [0.2–1.3]**	**0.4 [0.1–3.2]**	**0.2 [0.0–1.0]**	**0.2 [0.1–0.4]**
Burns	Males	0	0	0	0	0	0	0	0
	Females	0.1 [0.0–0.4]	0	0	0.1 [0.0–0.3]	0	0	0	0.03 [0.0–0.1]
	Total	**0 [0.0–0.2]**	**0**	**0**	**0 [0.0–0.1]**	**0**	**0**	**0**	**0 [0–0.1]**
Other	Males	2.8 [1.0–7.1]	2.5 [1.2–5.0]	0.9 [0.3–2.6]	0.4 [0.1–1.4]	0.6 [0.2–2.1]	0	0.8 [0.2–3.5]	1.5 [0.8–2.8]
	Females	0.8 [0.2–4.2]	0.6 [0.1–3.4]	0	1.7 [0.4–6.9]	0.7 [0.4–1.5]	0	0	0.7 [0.3–1.5]
	Total	**1.8 [0.8–4.1]**	**1.5 [0.8–2.9]**	**0.4 [0.1–1.2]**	**1.1 [0.3–3.4]**	**0.6 [0.3–1.3]**	**0**	**0.3 [0.1–1.4]**	**1.1 [0.7–1.8]**

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Examination of the place of occurrence of the unintentional injuries revealed that, all burn injuries occurred at home; and the majority of animal bites (81%) also occurred at home. Falls were the most reported workplace injury (31%). Almost a third of falls also occurred at home or during sports (29% and 26%, respectively) (See Table 6.6.6).

Table 6.6.6: Unintentional (Accidental) Injuries Excluding Road Traffic Crashes That Required Medical Attention in the Past 12 Months among Jamaicans Aged 15 Years and Older, by the Categories of Cause, Type and Location of Injury, JHLS III 2017

Place of Injury	Type of Injury			
	Fall (%) (95% CI)	Burn (%)	Animal Bite (%)	Other (%)
Home	29.1[13.7–51.5]	100	81.0[41.4–96.3]	53.0[29.1–75.5]
School	0	0	0	11.2[1.5–51.5]
Workplace	30.9[18.4–47.1]	0	9.3[1.2–49.2]	15.6[9.1–39.3]
Road/Street/Highway	13.7[4.1–36.8]	0	9.6[1.2–49.2]	20.2[9.1–39.3]
Farm/ Sports/athletic area	26.3[12.8–46.6]	0	0	0

*p < 0.05; **p < 0.01; ***p < 0.001.

Of persons who sought medical care due to unintentional injuries 70% of males, 16% of females and 53% of the total population sought medical care at a hospital. Males tended to visit public health facilities (hospital, 70%; health centre, 15.2%, respectively), while females visited private physicians or hospitals (64.7%, 16.2%, respectively) (See Table 6.6.7).

Table 6.6.7: Proportion of Jamaicans 15 Years and Older with Unintentional (Accidental) Injuries Who Sought Medical Attention at Given medical Facilities, JHLS III 2017

Where Medical Attention Was Sought	Male (%)	Female (%)	Total (%)
Hospital	70.0	16.2	53.1
Health centre	15.2	13.8	14.8
Private doctor	11.4	64.7	28.1

*p < 0.05; **p < 0.01; ***p < 0.001.

Violence-related Injury, Including Interpersonal Violence

Most Jamaicans reported never being involved in a violent incident (99%) nor having a serious injury in the past year before the survey (98%). More females reported incidents of intimate partner violence (Males 0.0%; Females 4.7%, p<0.001) (See Table 6.6.8).

Table 6.6.8: Frequency, Cause and Victim-Perpetrator Relationship of Violent Incidents among Jamaicans Aged 15 Years Older by the Category of Sex, JHLS III 2017

Category	Male (%	Female (%)	Total (%)
Frequency of Being in Violent Incident*			
Rarely (1–2 times)	1.3[0.7–2.5]	0.1[0.1–0.3]	0.7[0.4–1.3]
Sometimes (3–5 times)	0	0	0
Often (6 or more times)	0	0.2[0.0–1.3]	0.1[0.0–0.7]
Never	98.7[97.5–99.3]	99.7[99.1–100]	99.2[98.6–99.6]
Cause of Injury in the Past Year***			
Gun shot	0.5[0.1–1.6]	0	0.2[0.1–0.8]
A weapon (other than firearm)	1.0[0.5–1.8]	0.0[0.0–0.2]	0.5[0.3–0.9]
Slapped/pushed/shoved	0.3[0.1–1.0]	0.3[0.1–0.7]	0.3[0.2–0.6]
Burns	0.1[0.0–0.3]	0	0.0[0.0–0.2]
Other	1.1[0.85–1.3]	0.2[0.1–0.4]	0.6[0.5–0.8]
No report of cause of serious injury	97.1[96.0–98.0]	99.5[99.1–99.7]	98.3[97.7–98.8]
Victim-Perpetrator Relationship***			
Intimate partner	0	4.7[4.7–4.7]	1.8[1.8–1.8]
Child/brother/sister/other relative	13.7[13.7–13.7]	4.7[4.7–4.7]	10.2[10.2–10.2]
Parent	0	0	0
Friend or acquaintance	10.2[8.0–13.0]	0	6.3[4.9–8.0]
Caregiver (not relative)	0	0	0
Stranger	13.9[13.9–13.9]	0	8.6[8.6–8.6]
Official or legal authority	0	0	0
Other	1.1[0.1–9.8]	4.5[4.5–4.5]	2.4[1.3–4.6]
Unknown	61.0[61.0–61.0]	86.0[86.0–86.0]	70.7[70.7–70.7]

*p < 0.05; **p < 0.01; ***p < 0.001.

Approximately, 8% of Jamaicans reported witnessing a violent act, of that 4% witnessed a violent act once or twice, and only 3% reported, three or more times. The most frequently reported violent act was fighting (males, 9.4%; females, 5.0%; total, 7.1%). These violent acts were more frequently observed in the respondent's neighbourhood (4%). One in ten persons reported regularly carrying a protective device, with the device of choice being a sharp instrument (9%). (See Table 6.6.9).

Table 6.6.9: Witnessing a Violent Act by Frequency, Type and Location among Jamaicans Aged 15 Years and Older by the Category of Sex, JHLS III 2017

Category	Male%	Female%	Total%
Witnessed a violent act	8.8[6.7–11.5]	6.9[5.3–9.0]	7.8[6.4–9.6]
Frequency of witnessing violent acts by gender			
Never	91.2[88.5–93.3]	93.1[91.0–94.7]	92.2[90.4–93.6]
1–2	4.7[3.5–6.2]	4.2[2.9–6.1]	4.4[3.5–5.6]
3–5	2.8[1.6–4.9]	2.0[1.3–2.9]	2.4[1.6–3.6]
More than 5	0.5[0.3–1.0]	0.4[0.2–1.1]	0.5[0.3–0.8]
Unstated	0.8[0.4–1.7]	0.3[0.1–1.2]	0.6[0.3–1.0]
Percentage who witnessed act in the past month			
Shooting incident	3.9[2.6–5.9]	2.9[2.0–4.3]	3.4[2.5–4.7]
Chopping/Stabbing incident	3.1[2.0–4.7]	3.0[1.9–4.8]	3.1[2.2–4.3]
Domestic dispute	3.0[1.9–4.7]	2.0[1.3–3.0]	2.5[1.8–3.4]
Fighting	9.4[6.3–13.9]	5.0[2.4–10.0]	7.1[5.0–10.2]
Other***	6.5[4.6–7.9]	2.4[2.0–2.9]	4.2[3.5–5.1]
Witnessed violent act in these locations within past month			
School/work	1.0[0.4–2.0]	0.5[0.2–1.4]	0.7[0.4–1.3]
In your neighbourhood	4.2[2.7–6.4]	4.1[2.9–5.7]	4.1[3.1–5.5]
Health facility	0.1[0.0–0.4]	0.0[0.0–0.3]	0.0[0.0–0.2]
Public area with children present	2.3[1.4–3.6]	1.6[0.8–3.2]	1.9[1.3–2.9]
Store/shop	0.8[0.8–0.8]	1.2[1.2–1.2]	1.0[1.1–1.1]
Regularly carry protective device* **	12.2[85.7–89.7]	10.8[9.0–13.0]	11.5[10.2–12.8]
Proportion of respondents carrying protective device **			
Pepper spray	0.7[0.4–1.2]	1.9[1.3–3.0]	1.3[1.0–1.9]
Sharp instrument	9.7[7.9–11.8]	8.4[6.9–10.2]	9.0[7.9–10.3]
Blunt instrument	0.1[0.1–0.1]	0.1[0.0–1.0]	0.1[0.0–0.4]
Acid	0	0.0[0.0–0.2]	0.0[0.0–0.1]
Gun	1.7[1.0–2.8]	0.3[0.1–1.2]	1.0[0.6–1.5]

*p < 0.05; **p < 0.01; ***p < 0.001.

Interpersonal Violence

Participants were asked whether they were slapped, kicked, burnt, or suffered bodily harm from an adult in the home as a child. More than half of Jamaicans (57%) reported being mistreated as a child. Almost 50% reported mistreatment at least once monthly, with more than one in ten reporting almost daily mistreatment. (See Table 6.6.10).

Table 6.6.10: Prevalence of Child Maltreatment among Jamaicans Aged 15 Years and Older by the Category of Sex, JHLS III 2017

Maltreatment Category	Male (%)	Female (%)	Total (%)
History of Child Maltreatment	56.7 [53.1–60.2]	57.4 [54.2–60.5]	57.1 [54.2–59.9]
Frequency of Maltreatment			
Never	43.3 [39.7–46.9]	42.6 [39.5–45.8]	42.9 [40.1–45.9]
Once a week – once a month	43.5 [40.0–47.1]	44.6 [41.2–48.2]	44.1 [41.1–47.1]
Almost daily	13.2 [10.9–15.9]	12.8 [10.8–15.0]	13.0 [11.3–14.9]

*p < 0.05; **p < 0.01; ***p < 0.001.

There was a significant gender disparity in reports of sexual abuse (males, 3.9%; females, 10.7%, total, 7.4% $p < 0.0001$). The mean age of onset of sexual abuse was 14.7 years (males, 17.2 years; females, 13.8 years; $p < 0.05$). A neighbour/friend/acquaintance was the most commonly reported perpetrator of the abuse (43.8%), with no gender difference in this report. A higher proportion of males reported intimate partner abuse (males, 11.4%; females, 6.0%; total, 7.4%) (See Table 6.6.11).

Table 6.6.11: Summary Statistics for Features of History of Self-Reported Sexual Abuse by the Categories of Sex, JHLS III 2017

	Male (%)	Female (%)	Total (%)
Lifetime History of Sexual Abuse (%)* **	**3.9** [2.7–5.5]	**10.7** [8.8–12.9]	**7.4** [6.2–8.7]
Mean Age of First Incident (Years)	**17.2** [14.1–19.1]	**13.8** [12.7–14.9]	**14.7** [13.7–15.8]
Victim-Perpetrator Relationship* **			
Intimate	12.9	5.9	7.9
Ex-partner	5.1	5.3	5.3
Father/stepfather	1.9	14.3	10.6
Other relative	12.2	9.1	10.0
Teacher	0	0.6	0.4
Neighbour	48.7	46	46.8
Stranger	15.4	16.5	16.1
Other	1.1	1.1	1.1
No Response	2.8	1.2	1.7

*p < 0.05; **p < 0.01; ***p < 0.001.

Use of Protective Devices When Driving/Riding

We asked persons about their use of protective devices whilst in or on a motorized form of transportation. Almost half of Jamaicans who were drivers reported that they always wore a seatbelt (males, 44.8%; females, 44.9%; total, 44.8%). More than half of persons who were front-seat passengers (61.6%) and the majority of back-seat drivers (96.6%) reported that they never or not always used a seat belt. Significantly, more females than males reported never using a seatbelt as a driver (males, 18.9%; females, 26.4%; $p < 0.01$).

Table 6.6.12: Preventative Behaviour (%) of Road Users among Jamaicans Aged 15 Years and Older by the Category of Sex, JHLS III 2017

Preventative Behaviour	Male (%)			Female (%)			Total (%)		
Seat belt use	Never Uses	Not Always	Always	Never Uses	Not Always	Always	Never Uses	Not Always	Always Uses
Driver**	18.9	36.3	44.8	26.7	28.4	44.9	22.8	32.3	44.8
Front-seat passenger**	15.6	49.7	34.6	13.4	44.7	41.9	14.5	47.1	38.4
Back-seat passenger**	85.0	10.6	4.4	82.8	14.7	2.6	83.9	12.7	3.4
Helmet use	Never	Not always	Always	Never	Not always	Always	Never uses	Not always	Always
Rider***	72.1	19.2	8.8	85.9	6.8	7.3	77.9	13.9	8.2
Pillion Rider	76.6	15.9	7.5	79.2	15.4	5.4	77.9	15.7	6.4

*p < 0.05; **p < 0.01; ***p < 0.001.

Very low proportions of Jamaicans reported always using a helmet whilst riding a motorcycle, either as a rider or pillion rider (8.2% and 6.4%, respectively). Significantly, more females reported never using a helmet as a rider on a motorcycle (85.9% vs. 72.1%, $p < 0.001$) (See Table 6.6.12).

We looked at the trends in the non-use of protective gear over the last 17 years among Jamaicans 15–74 years of age. The proportion of drivers who do not use a seatbelt has increased between 2000–2008 and plateaued thereafter over the 2007–17 period, with one in five persons reporting that they never used a seatbelt whilst driving. The non-use of seatbelt as a front-seat passenger decreased over the period of 2000–2008 (8.2% vs. 6.2%); however, there was a drastic 100% increase over the following period (6.2% vs. 14.6%). The non-use of helmets as a rider has decreased steadily over the period. (88.5% vs. 85.6% vs. 75.6%, $p < 0.0001$) (See Table 6.6.13).

Table 6.6.13: Trends in Seat Belt and Helmet Non-Use among Jamaicans Aged 15–74 Years Old, JHLS I, II, and III

Preventative Behaviour	JHLS I – 2000–2001	JHLS II – 2007–8	JHLS III – 2016–17
	Never Use (%)	Never Use (%)	Never Use (%)
Seat belt Use (Driver)	13.3	22.1	**21.1**
Seat belt Use (Front-seat passenger)	8.3	6.2	**14.6**
Helmet use (Rider)	88.5	85.6	**75.6**

6.7. Skin Bleaching

Anecdotal evidence suggests that the application of skin bleaching products to lighten the colour of the skin is a growing practice in the Caribbean. Despite the adverse health effects of skin bleaching, studies investigating skin-bleaching behaviour among these populations are limited. We sought to ascertain the prevalence of this behaviour as part of the lifestyle practices of Jamaicans. The survey gathered data on whether study participants had bleached their skin within the two weeks preceding their survey interview or at any time prior to those two weeks. Current skin bleaching was defined as skin bleaching occurring within the two weeks preceding the interview, past skin bleaching as skin bleaching prior to the two-week period and lifetime skin bleaching as any history of skin bleaching.

The percentage distribution of skin bleaching categories among Jamaicans aged 15 years and older by age and sex is shown in Table 6.7.1. Prevalence of current skin bleaching was 3.3%, while prevalence of past skin bleaching was 7.4% among Jamaicans aged 15 years and older, yielding a lifetime prevalence of 10.7% in this population. The distribution of the skin-bleaching categories differed with sex ($p<0.05$) and age ($p<0.001$) among these Jamaicans. While similar percentages of males and females were classified as currently practising skin bleaching, more females than males reported practising skin bleaching in the past (M: 5.5%; F: 9.1%), and more males than females reported never practising skin bleaching (M: 91.1%; F:87.5%). The percentage of persons who never practised skin bleaching was lowest among the 15–24 and 25–34-year-olds at 83.3% and 82.1%, respectively, and exceeded 95% in all age groups among those 45 years and older.

Hypothesis testing[14] revealed that lifetime prevalence of skin bleaching among females was significantly higher than the prevalence among males (8.9% vs 12.4%, $p<0.01$). Table 6.7.1 further shows that the highest proportion of Jamaicans aged 15 years and older who had a history of bleaching their skin (lifetime skin bleaching) was in the 25–34 age group (17.9%) and lowest in those 65 years and older (<1.5%). The proportions differed significantly with age, with estimates in the age groups among persons 35 years and older being significantly lower than prevalence in those 15–24 years of age ($p<0.001$).

Table 6.7.1: Percentage Distribution of Jamaicans Aged 15 Years and Older with Respect to Skin Bleaching History by Age and Sex Categories, JHLS III 2017

	History of Skin Bleaching			
Demographic Category	**Never**	**Past**	**Current**	**Lifetime Skin Bleaching**
Sex	*			**
Males	91.1	5.5	3.4	8.9
Females	87.5	9.1	3.3	12.4
Age (Years)	***			***
15–24	83.3	11.2	5.5	16.7
25–34	82.1	12.5	5.4	17.9
35–44	89.2	7.3	3.5	10.8
45–54	96.2	2.8	1.0	3.8
55–64	98.2	1.2	0.6	1.8
65–74	98.6	1.1	0.3	1.4
75+	99.9	0.1	0.0	0.1
Total	**89.3**	**7.4**	**3.3**	**10.7**

Table 6.7.2 shows the prevalence estimates for current and lifetime skin bleaching by demographic categories among Jamaicans aged 15 years and older. Marital status was the only demographic variable significantly associated with prevalence of current skin bleaching. Among the females (2.9% vs 7.8%) and in the total population (3.2% vs 6.7%), prevalence of current skin bleaching was significantly higher among those in visiting relationships compared with persons who were single. Lifetime prevalence of skin bleaching differed significantly with religious affiliation and marital status only. Among males ($p<0.05$) and in the total population ($p<0.01$), prevalence of lifetime skin bleaching was significantly higher in those classified as having no religion and lower in those classified as having other religion, compared with those classified as following the Christian religion. Among males ($p<0.01$), females ($p>0.001$), and the combined population of males and females ($p<0.001$), lifetime prevalence was higher among those in visiting relationships and lower among those who were divorced or separated, compared with those who were single.

Table 6.7.2: Sex-specific and Total Population Prevalence Estimates for Skin Bleaching (Current and Lifetime) among Jamaicans Aged 15 Years and Older in Demographic Groups, JHLS III 2017

	Skin Bleaching– Current			Skin Bleaching –Lifetime		
Demographic Index	**Males**	**Females**	**Total**	**Males**	**Females**	**Total**
Race						
Black	3.3	3.5	3.4	8.2	12.7	10.5
Other	3.9	0.0	2.0	21.9	8.2	15.2
Religious Affiliation						
Christian	2.8	3.2	3.0	7.7*	11.9	10.1**
Other Religion	0.0	0.0	0.0	4.0	0.0	3.9
No Religion	5.6	5.4	5.5	13.1	19.8	14.8
Marital Status						
Single	3.5	2.9*	3.2*	8.3*	9.8***	9.0***
Married/ Common-law	2.1	2.3	2.2	4.9	11.7	8.5
Divorced/ Separated	0.0	0.0	0.0	0.0	2.3	1.3
Visiting	5.6	7.8	6.7	19.9	25.8	22.8
Area of Residence						
Urban	3.7	4.1	3.6	9.8	13.9	12.0
Rural	3.0	2.4	3.0	7.9	10.8	9.3

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. (P values obtained from F tests for contrasts of proportions corrected for survey design.)

Table 6.7.3 shows the prevalence estimates for current and lifetime skin bleaching by socio-economic categories among Jamaicans aged 15 years and older. All three socio-economic indices shown in the Table were significantly associated with prevalence of current skin bleaching. Sex-specific estimates showed that prevalence of current skin bleaching was significantly higher among the unemployed males (2.5% vs 5.8%) and significantly lower among unemployed females (4.4% vs 2.1%), compared with the employed in the respective sexes. Sex-specific (Males: 5.0% vs 0.9%, p<0.001; Females: 5.1% vs 1.0%, p<0.001) and total population (5.0% vs 1.0%, p<0.001) prevalence estimates for current skin bleaching were significantly higher among those who attained secondary education, compared with persons who attained primary or lower level of education only. Sex-specific (M: 5.9% vs 0.4%, p<0.001; F: 4.4% vs 1.1%, p<0.001) and total population (5.1% vs 0.7%, p<0.001) prevalence estimates for current skin bleaching were also significantly higher among those whose weekly household income was less than J$12,000, compared with persons who did not know or respond to the question eliciting information on weekly household income.

Among males (18.6% vs 5.7%, p<0.01) and in the total population (14.6% vs 8.7%, p<0.01), lifetime prevalence of skin bleaching was significantly higher among the unemployed compared with the employed. Among males (12.2% vs 3.6%, p<0.001), females (17.0% vs 8.7%, p<0.001) and the combined population of males and females (14.5% vs 6.0%, p<0.001), lifetime prevalence was higher among those who attained secondary education as the highest level, compared with those who attained primary or lower level of education only. Among the females, prevalence of lifetime skin bleaching was significantly lower among those with post-secondary education, compared with those who attained only primary or lower level of education (3.6% vs 8.7%). Sex-specific and total population prevalence estimates for lifetime skin bleaching were also significantly higher among those whose weekly household income was less than J$12,000, compared with persons in the other income groups.

Table 6.7.3: Sex-specific and Total population Prevalence Estimates for Current and Lifetime Skin Bleaching among Jamaicans Aged 15 Years and Older within Socio-economic Groups, JHLS III 2017

Socioeconomic Index	Skin Bleaching – Current			Skin Bleaching – Lifetime		
	Males	Females	Total	Males	Females	Total
Employment Status						
Employed	2.5*	4.4*	3.3	5.7**	12.8	8.7**
Unemployed	5.8	2.1	3.4	18.6	12.5	14.6
Student	3.0	2.5	2.7	7.6	9.2	8.5
Educational Level						
Primary/lower	0.9***	1.0***	1.0***	3.6***	8.7***	6.0***
Secondary	5.0	5.1	5.0	12.2	17.0	14.5
Post-secondary	0.3	1.0	0.8	2.9	3.6	3.3
Other	0.0	1.7	1.2	0.0	11.6	83.3
Weekly Household Income (Ja$)						
<12,000	5.9***	4.4***	5.1***	13.0**	14.8*	14.0**
12,000 – 60,000	3.7	4.5	4.1	6.5	12.4	9.3
>60,000	0.0	5.4	2.5	10.2	9.2	9.7
DK/NR	0.4	1.1	0.7	5.7	9.7	7.6

*p < 0.05; **p < 0.01; ***p < 0.001. (P values obtained from F tests for contrasts of proportions corrected for survey design.)

Table 6.7.4 shows for Jamaicans aged 15 years and older the total population and sex-specific prevalence of current and lifetime skin bleaching for each parish. Among the males, prevalence of current skin bleaching was highest at 16.2% in Westmoreland, and lowest at less than 1% in the parishes of Portland, St. Ann, St Elizabeth and St. Catherine. Total population prevalence of current skin bleaching was highest in Westmoreland at 12.4% and lowest in St Elizabeth at 0.3%. These estimates differed significantly from prevalence in Kingston ($p<0.001$). The parish specific prevalence estimates for current skin bleaching among the females were not significantly different when the estimate for each parish was compared with the estimate for Kingston.

Lifetime prevalence of current skin bleaching differed significantly with parish of residence among the males ($p<0.001$), the females ($p<0.001$), and the combined population of males and females ($p <0.001$). Total population parish-specific prevalence of lifetime bleaching was less than 10% in Portland, St Mary, St Ann, St Elizabeth, Manchester, Clarendon, and St Catherine. Estimates for these parishes were significantly lower than prevalence in the parish of Kingston. Among males, parish-specific prevalence was less than 10% in the forenamed parishes as well as in St Thomas. Among the females, parish-specific estimates exceeded 10% in Kingston, St Andrew, St Thomas, St James, Westmoreland, and St Catherine, with estimates ranging from 5.2% in Manchester to a maximum 18.1% in St Andrew and St Thomas.

Table 6.7.4: Parish Specific Prevalence (%) of Current and Lifetime Skin Bleaching among Jamaicans Aged 15 Years and Older, within and across Sexes, JHLS III 2017

Parishes	Skin Bleaching – Current			Skin Bleaching – Lifetime		
	Males**	Females	Total***	Males***	Females***	Total***
Kingston	5.0	2.2	3.6	17.3	17.3	17.3
St Andrew	4.4	4.3	4.4	11.9	18.1	15.2
St Thomas	1.7	0.0	0.9	4.4	18.1	11.3
Portland	0.0	2.9	1.4	6.6	4.8	5.7
St Mary	1.8	2.5	2.2	9.0	9.5	9.2
St Ann	0.0	5.6	3.0	2.4	8.8	5.8
Trelawny	3.4	0.9	2.2	19.8	7.9	14.0
St James	8.4	6.8	7.6	13.2	13.4	13.3
Hanover	5.9	2.0	4.0	12.9	7.1	10.1
Westmoreland	16.2	8.4	12.4	22.1	17.5	19.8
St Elizabeth	0.0	0.5	0.3	2.9	7.8	5.3
Manchester	1.5	2.3	1.9	5.7	5.2	5.4
Clarendon	1.3	0.0	0.7	3.3	9.7	6.5
St Catherine	0.9	3.0	2.0	5.1	11.9	8.7

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. (P values obtained from F tests for contrasts of proportions corrected for survey design.)

6.8. Means of Transportation

Table 6.8.1 shows the percentage (%) distribution of Jamaicans aged 15 years and older according to their usual mode of transportation method by socio-demographic categories. More than three quarters of Jamaicans aged 15 years and older (76.6%) reported that their usual means of transport was the public transportation system (via bus or taxi). Private motor vehicle use was the next most commonly used mode of transportation among these Jamaicans at 18.2%. The remaining modes of transportation were each used by less than 3% of this population.

The distribution of persons who used the different modes of transportation differed significantly with each of the socio-demographic variables shown in Table 6.8.1. More females than males used the public transportation system (Males: 70.5%; Females: 82.8%), while more males reported the private motor vehicle (Males: 23.0%; Females: 13.4%) as their usual mode of transportation ($p<0.001$). The percentage of Jamaicans who used the public transportation system ranged from 69.2% among 35–44-year-olds to 87.9% among the 15–24-year-olds. The percentage using a private motor vehicle was lowest at 7.0% among the 15–24-year-olds and highest at 26.4% among the 35–44-year-olds ($p<0.001$). More rural than urban residents used the public transportation system (Rural: 82.5%; Urban: 71.3%), while more urban residents reported the private motor vehicle (Rural: 22.6%; Urban: 13.3%) as their usual mode of transportation ($p<0.01$).

The percentages who usually used the public transportation system decreased while the proportions who used private motor vehicles increased as socio-economic status defined using household possessions and education moved from low to high. Thus, the prevalence of usual use of public transportation fell from 89.3% among those with access to 0–5 household possession to 59.1% among those with access to 10–20 household possessions, while prevalence of use of the private motor vehicle increased from 3.2% to 36.3% in the respective possessions categories ($p<0.001$). Similarly, the prevalence of usual use of public transportation fell from 84.5% among those who attained only primary or lower level of education to 52.0% among those who attained post-secondary education, while prevalence of use of a private motor vehicle increased from 10.9% to 45.1% in the respective education level categories ($p<0.001$).

Table 6.8.1: Percentage (%) Distribution of Jamaicans Aged 15 Years and Older According to Their Usual Mode of Transportation Method by Socio-demographic Categories, JHLS III 2017

Socio-demographic Category	Usual Mode of Transportation					
	Walk	Chartered Bus/taxi	Public Bus/Taxi	Bicycle	Private Motor vehicle	Motor Bike
Sex						
Females***	3.0	0.7	82.8	0.1	13.4	0.1
Males	2.9	0.9	70.5	2.2	23.0	0.5
Age (Years)						
15–24***	3.6	0.9	87.9	0.4	7.0	0.1
25–34	2.9	0.2	74.3	0.4	21.2	1.1
35–44	3.3	0.0	69.2	1.1	26.4	0.0
45–54	1.7	0.8	71.9	2.1	23.4	0.2
55–64	3.0	0.5	70.8	4.0	21.5	0.1
65–74	2.7	0.3	81.5	0.5	15.1	0.0
75+	2.2	6.7	74.3	0.9	15.9	0.0
Area of Residence						
Rural**	2.6	0.4	82.5	0.9	13.3	0.3
Urban	3.2	1.1	71.3	1.4	22.6	0.3
Household Possessions (SES)						
0–5 items (Low)***	4.1	1.2	89.3	2.2	3.2	0.0
6–9 items(Middle)	2.3	0.3	85.6	1.1	10.4	0.4
10–20 items (High)	2.6	1.0	59.1	0.5	36.3	0.5
Highest Education Level						
Primary or lower***	2.3	0.6	84.5	1.6	10.9	0.1
Secondary	3.5	0.8	80.1	1.3	13.8	0.5
Post-secondary	1.8	1.0	52.0	0.0	45.1	0.1
Total	2.9	0.8	76.6	1.2	18.2	0.3

*p<0.05, **p<0.01, ***p<0.001

Table 6.8.2 shows the percentage (%) distribution of Jamaicans aged 15 years and older with respect to ease of access to public transportation in their neighbourhoods by socio-demographic categories. More than nine in ten Jamaicans aged 15 years and older (91.3%) reported that they had easy access to public transportation in their neighbourhoods.

Of the socio-demographic variables shown in Table 6.8.2, area of residence and highest education level were the only ones significantly associated with ease of access to public transportation. Fewer rural than urban residents ($p<0.001$) had easy access to the public transportation system (R: 86.4%; U: 95.6%), while more persons with post-secondary compared to primary- or lower-education level ($p<0.05$) reported easy access to the public transportation system in their neighbourhoods (post-secondary education: 95.9; primary or lower: 89.4%)

Table 6.8.2: Percentage (%) Distribution of Jamaicans Aged 15 years and Older with Respect to Ease of Access to Public Transportation in Their Neighbourhoods by Socio-Demographic Categories, JHLS III 2017

Socio-demographic Category	Access to Public Transportation	
	Not Easy	Easy
Sex		
Females	10.1	89.9
Males	7.4	92.6
Age (Years)		
15–24	9.7	90.3
25–34	8.5	91.5
35–44	7.9	92.1
45–54	9.4	90.6
55–64	6.8	93.2
65–74	8.7	91.3
75+	9.4	90.6
Area of Residence		
Rural***	13.6	86.4
Urban	4.4	95.6
Household Possessions (SES)		
0–5 items (Low)	10.7	89.3
6–9 items(Middle)	9.3	90.7
10–20 items (High)	6.8	93.2
Highest Education Level		
Primary or lower*	10.6	89.4
Secondary	9.2	90.8
Post-secondary	4.1	95.9
Total	8.7	91.3

*p<0.05, **p<0.01, ***p<0.001

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7. Self-reported Medical History and Health-seeking Behaviours

Ardene Harris • Shelly McFarlane • Jovan Wiggan • Rainford Wilks

Introduction

Family history of chronic diseases such as hypertension, diabetes, and some cancers increases the risk of inheriting these health conditions. Awareness of one's family history may foster preventive actions, better health-seeking behaviours, and adherence to medications to avert or delay the onset of diseases. In addition, self-report of conditions gives an indication of an individual's awareness of his or her health and hence the possibility of them adopting lifestyle changes to improve their health status.

Private entities as well as the government (public) provide health insurance in Jamaica. Having health insurance may influence a person's decision to seek care, access care, as well as follow through with recommendations for treatment, including adherence to medication. Employment status may influence sex differences in access to private health insurance.

Information on participants' sources of health information can help to guide health promotion and education activities, including targeting high-risk groups and focusing on media that is more commonly used by the target audience.

Thus, this chapter summarizes biological and social factors that may affect participants' health status, including personal and family history of disease, adherence to medication, and access to health insurance and health information.

7.1. Personal Medical History of Disease and Conditions

Table 7.1.1 shows the proportion of Jamaicans aged 15 years and older reporting a history of specified diseases and conditions. The majority of diseases/conditions examined were reported more frequently by females than males; heart disease, diabetes mellitus, high blood pressure, and obesity/overweight were some of the conditions that showed statistically significant association with the female sex. Stroke, broken bones, epilepsy, and sickle cell disease were more prevalent in males, with broken bones showing a statistically significant difference between males (11%) and females (5%). High blood pressure (24%) had the highest frequency among the conditions examined, this compared to 20.2% for selfreported prevalence of this condition in JHLS II, 2008. Diabetes (6.6%) decreased in prevalence by one percentage point below figures from the last JHLS II, 2008 (7.6%). Other leading self-reported prevalence estimates include asthma (10%), high cholesterol (8%), and arthritis (7%).

Table 7.1.1: Proportion (%) of Jamaicans Aged 15 Years and Older Reporting a History of Specified Diseases/Conditions by Sex, JHLS III 2017

Disease/Condition	Male	Female	Total
Heart Disease***	1.3	3.6	2.5
Diabetes Mellitus***	4.4	8.8	6.6
Glaucoma	1.7	2.4	2.1
High blood pressure***	15.4	32.2	24.0
High Cholesterol***	4.5	12.0	8.3
Stroke	1.5	0.9	1.2
Kidney Disease	0.6	1.7	1.1
Obesity/ Overweight***	2.8	9.9	6.5
Circulation Problems***	3.1	9.4	6.3
Enlarged Prostate***	2.0	-	2.0
Rheumatic Fever	1.0	1.3	1.1
Arthritis***	2.9	10.3	6.7
Asthma	9.8	10.9	10.4
Bronchitis/ Pneumonia*	2.2	3.0	2.6
Cancer***	0.2	1.3	0.8
Broken Bones***	11.1	4.7	7.8
Epilepsy	1.1	0.7	0.9
Sickle Cell Disease	0.8	0.7	0.8
Sickle Cell Trait***	1.0	3.9	2.5
Mental Health Problems[1]*	1.9	4.3	3.1

[1]Includes conditions such as major depression, anxiety, psychosis.

*$p < 0.05$, ***$p < 0.001$.

The self-reported frequency of certain chronic non-communicable diseases such as heart disease, diabetes mellitus, glaucoma, high blood pressure, high cholesterol, circulation problems, and enlarged prostate exhibited statistically significant increases with age (Table 7.1.2). Arthritis also disproportionately affected the 65-year-and-older population. However, asthma was more prevalent in the younger age categories than in the older age groups. Cancer (1%), epilepsy (1%), and sickle cell disease (1%) were the least prevalent among the conditions examined in this survey. Mental health problems – including major depression, anxiety, and psychosis – were highest among persons aged 75 years and older, but the association with age was not statistically significant (Table 7.1.2).

Table 7.1.2: Proportion (%) of Jamaicans Aged 15 Years and Older Reporting a History of Specified Conditions Based on 10-Year Age Categories, JHLS III 2017

Disease/Condition	15–24	25–34	35–44	45–54	55–64	65–74	≥75
Heart Disease***	0.3	1.1	0.5	2.2	5.6	8.8	13.1
Diabetes Mellitus***	0.5	1.3	2.1	9.5	17.0	20.4	30.8
Glaucoma***	0.2	0.1	0.9	0.8	4.0	7.7	16.8
High blood pressure***	5.1	11.7	21.2	29.9	51.1	58.0	70.2
High Cholesterol***	2.1	0.5	6.0	10.1	20.1	25.8	31.2
Stroke***	0.0	0.2	0.1	0.4	4.3	4.6	7.8
Kidney Disease	1.1	0.9	0.7	1.4	1.2	2.2	2.1
Obesity/ Overweight***	1.2	6.0	9.6	9.2	11.0	3.2	10.5
Circulation Problems***	0.9	1.7	6.1	5.6	16.8	14.8	25.7
Enlarged Prostate***	0.0	0.0	0.0	0.2	2.5	6.0	6.7
Rheumatic Fever***	0.7	1.3	1.0	0.9	3.1	1.0	0.0
Arthritis***	0.8	1.1	2.9	7.5	16.7	23.3	31.8
Asthma*	14.6	9.7	9.2	9.6	7.3	5.4	10.2
Bronchitis/ Pneumonia	1.0	2.9	2.8	3.4	4.3	3.1	2.2
Cancer***	0.0	0.0	0.7	0.6	1.8	3.8	3.6
Broken Bones***	4.4	7.4	6.7	11.4	13.7	8.5	7.2
Epilepsy	1.1	0.6	0.9	0.3	1.4	2.9	0.0
Sickle Cell Disease	0.5	0.4	0.8	2.3	0.4	0.5	0.0
Sickle Cell Trait	2.4	2.6	3.0	3.2	1.2	0.3	3.6
Mental Health Problems[1]	2.2	3.6	3.3	3.7	3.2	1.1	5.4

[1]Includes conditions such as major depression, anxiety, psychosis. *$p < 0.05$, ***$p < 0.001$.

A higher proportion of Jamaicans living in urban areas reported a history of asthma, circulation problems, and mental health problems than those residing in rural districts (Table 7.1.3). Obesity/tendency of being overweight, rheumatic fever, and cancer were significantly associated with urban dwelling. Some diseases/ conditions that more frequently affected rural participants were diabetes mellitus, high blood pressure, stroke, arthritis, and bronchitis/pneumonia.

Table 7.1.3: Proportion (%) of Jamaicans Aged 15 Years and Older Reporting a History of Specified Conditions by the Category of Urban- Rural Distribution, JHLS III 2017

Disease/ Condition	Rural	Urban
Heart Disease	2.5	2.5
Diabetes Mellitus	6.9	6.4
Glaucoma	2.1	2.0
High Blood Pressure	25.2	23.1
High Cholesterol	8.3	8.4
Stroke	1.3	1.1
Kidney Disease	1.2	1.1
Obesity/Overweight***	4.5	8.2
Circulation Problems	5.4	7.1
Enlarged Prostate	1.0	0.9
Rheumatic Fever*	0.8	1.4
Arthritis	7.7	5.9
Asthma	9.6	11.0
Bronchitis/Pneumonia*	2.7	2.6
Cancer*	0.4	1.1
Broken Bones	8.1	7.5
Epilepsy	1.1	0.7
Sickle Cell Disease	0.3	1.1
Sickle Cell Trait	2.2	2.7
Mental Health Problems[1]	3.0	3.2

[1]Includes conditions such as major depression, anxiety, psychosis

*$p < 0.05$, ***$p < 0.001$.

7.2. Adherence to Medication

Among Jamaicans who reported that they were on medication for a chronic illness, 46.0% reported that they always took their medication. Significantly more males than females (52.3% vs. 42.4%, p=0.0003) and more rural than urban residents (49.3% vs 42.9%, p =0.046) reported that they always took their medication. Among those who reported that they missed taking their medication, the most prevalent reason for this nonadherence, given by 31.8% of Jamaicans 15 years and older, was that they ran out before their next doctor's appointment. Approximately 15% of these Jamaicans reported that they missed medications because they felt better, with more females than males (15.8% vs. 13.9%) reporting this reason (Table 7.2.1). The distribution of the reasons for failure to adhere to medication differed significantly with sex (p=0.0001) and area of residence (p=0.015).

Table 7.2.1: Proportion (%) of Jamaicans Aged 15 Years and Older Reporting Adherence to Prescribed Medication and Percentage Distribution of Reasons for Non-adherence, JHLS III 2017

Features of Adherence/Nonadherence	Males	Females	Urban	Rural	Total
Adherent – Always Take Medication	***52.3	42.4	*42.9	49.3	46.0
Among the Non-adherent: Reasons for Not Taking Medication	%	%	%	%	%
Cannot afford to pay for it	***14.9	4.1	*4.5	10.9	7.5
I am feeling better	13.9	15.8	14.3	16.2	15.2
Side effects	4.4	10.0	5.6	11.3	8.3
I forget	1.9	3.6	4.2	1.7	3.0
I run out before my next doctor/clinic appointment	23.3	35.7	32.5	31.0	31.8
Think it is a burden	23.9	9.0	16.7	10.2	13.7
Tired of taking medication	0.9	4.3	2.1	4.6	3.2
Other reasons	16.9	17.5	20.2	14.1	17.3

*p<0.05, **p<0.001

Table 7.2.2 shows the age-specific proportion (%) of 15-years-and-older Jamaicans who stated their reasons for not taking medication. More than 50% of persons on medication in the 15–24 and 65+ age groups reported always taking their medication, compared to prevalence of complete adherence being less than 50% in the other age groups (p<0.001). It is also noteworthy that, among all age groups except those 25–34 years of age, the most commonly reported reason for failure to take medication is that persons said they would 'run out before my next doctor/clinic appointment.' The prevalence of this reason was between 26 and 36% for persons 35 years and older and exceeded 50% in those under 25 years of age.

Table 7.2.2: Age-specific Proportion (%) of Jamaicans Aged 15 Years and over with Given Reason for Medication Non-adherence, JHLS III 2017

Features of Adherence/Non-adherence	Age (Years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Adherent – Always Take Medication***	59.8	34.8	34.1	36.9	42.2	51.9	61.7
Among the Non-adherent:** Reasons for Not Taking Medication							
Cannot afford to pay for it	5.2	0.0	5.2	9.2	15.4	3.5	3.7
I am feeling better	17.6	34.9	18.9	21.9	8.9	12.7	9.0
Side Effects	5.7	15.3	1.0	13.3	4.3	9.2	10.5
I Forget	8.5	0.0	7.5	0.4	2.8	1.6	4.0
I run out before my next doctor/ clinic appointment	55.9	15.4	31.9	25.6	35.6	30.8	33.7
Think it is a Burden	0.0	9.7	13.3	13.9	6.9	17.8	23.5
Tired of taking Medication	0.0	10.2	0.0	2.0	1.8	7.6	3.0
Other Reasons	7.0	14.5	22.2	13.6	24.3	16.9	12.7

Table 7.2.3 shows the age-specific proportion (%) within the sexes of Jamaicans aged 15 years and older who stated their reasons for not taking medication. The prevalence of complete adherence to medication was approximately 80% in males under 35 years of age and nearly 65% in males 65 years or older. Lower prevalence estimates were obtained for the other age groups (p<0.01). Among males non-adherent to their medication, running out of medication before the next appointment was the most commonly cited reason, among those under 35 years of age, while the belief that taking the medication was a burden was most commonly reported by those 75 years and older. The belief that they felt better was the most commonly reported reason for non-adherence among males 45–54 years of age. Except among males 45–64 years of age, less than 10% of all other age groups among the males who were non-adherentreported lack of affordability as the reason for their non-adherence. Prevalence of lack of affordability as the reason for non-adherence was 11.8% among those 45-54 years of age and 37.2% among males 55-64 years of age. The distribution of the percentages giving specific reasons was not the same in all age groups (p<0.05).

The prevalence of complete adherence to medication exceeded 40% in females under 25 years of age, being 42.1%, and among those older than 44 years, ranging from 43.9% in the 55–64-year-olds to 59.1% in women 75 years and older. Lower prevalence estimates were obtained for the other age groups (p<0.001). Among females non-adherent to their medication, running out of medication before the next appointment was the most commonly cited reason, in all age groups except among the 25–34-year-olds, among whom prevalence of this reason was 8.8%. Prevalence estimates for this reason ranged from 26.4% among the 45–54-year-old females to 52.9% among females 15 to 24 years of age. The belief that they felt better was among the three most commonly specified reasons for non-adherence among females. Prevalence of this reason ranged from 7.3% among those 55-64 years of age to 37.7% among those 25–34 years of age. Less than 10% of any age group among females who were non-adherent, reported lack of affordability as the reason for their non-adherence (See Table 7.2.4). The distribution of the percentages giving specific reasons was not the same in all age groups (p<0.001).

Table 7.2.3: Age-specific Proportion (%) of Jamaicans Aged 15 Years and over with Given Reason for Medication Non-adherence

Features of Adherence/Non-adherence	Age (Years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Males							
Adherent – Always Take Medication**	78.0	81.2	47.2	18.0	39.4	65.1	64.6
Among the Non-adherent:* Reasons for Not Taking Medication							
Cannot afford to pay for it	0.0	0.0	9.8	11.8	37.2	6.0	3.8
I am feeling better	20.2	0.0	0.0	30.4	11.9	14.6	6.1
Side Effects	0.0	0.0	0.0	4.7	5.8	10.2	2.4
I Forget	0.0	0.0	0.0	0.0	4.7	0.0	2.4
I run out before my next doctor/clinic appointment	64.6	100.0	17.8	24.3	22.9	20.8	15.8
Think it is a Burden	0.0	0.0	29.6	20.2	7.5	27.5	44.8
Tired of taking Medication	0.0	0.0	0.0	0.0	3.3	0.0	0.0
Other Reasons	15.3	0.0	42.8	8.7	6.6	20.9	24.7
Females							
Adherent – Always Take Medication***	42.1	18.8	28.4	45.0	43.9	44.9	59.1
Among the Non-adherent:*** Reasons for Not Taking Medication							
Cannot afford to pay for it	7.1	0.0	3.8	7.7	3.7	2.7	3.6
I am feeling better	16.7	37.7	24.6	17.2	7.3	12.1	11.2
Side Effects	7.7	16.5	1.3	18.1	3.6	8.9	16.8
I Forget	11.6	0.0	9.7	0.7	1.7	2.1	5.1
I run out before my next doctor/clinic appointment	52.9	8.8	36.2	26.4	42.3	33.9	47.6
Think it is a Burden	0.0	10.4	8.4	10.4	6.6	14.7	6.9
Tired of taking Medication	0.0	11.1	0.0	3.1	1.0	10.0	5.4
Other Reasons	4.1	15.7	16.0	16.4	33.7	15.6	3.4

Table 7.2.4 reports the urban/rural proportion (%) of Jamaicans, stating the reasons for not taking their medication within the sexes. Neither prevalence of complete adherence nor prevalence of the several reasons for non-adherence differed significantly with area of residence within the sexes.

Table 7.2.4: Sex-specific Urban–rural Proportion (%) of Jamaicans Aged 15 Years and Older with Specific Reasons for Not Taking Medication, JHLS III 2017

Features of Adherence/Non-adherence	Rural	Urban
Males		
Adherent – Always Take Medication	53.7	51.0
Among the Non-adherent: Reasons for Not Taking Medication		
Cannot afford to pay for it	22.3	9.1
I am feeling better	14.5	13.4
Side Effects	7.2	2.2
I Forget	1.9	1.9
I run out before my next doctor/clinic appointment	25.1	21.9
Think it is a Burden	13.0	32.4
Tired of taking Medication	0.6	1.1
Other Reasons	15.5	18.1
Females		
Adherent – Always Take Medication	46.9	37.7
Among the Non-adherent: Reasons for Not Taking Medication		
Cannot afford to pay for it	6.1	2.2
I am feeling better	17.0	14.7
Side Effects	13.0	7.3
I Forget	1.7	5.3
I run out before my next doctor/clinic appointment	33.5	37.8
Think it is a Burden	9.1	9.0
Tired of taking Medication	6.2	2.5
Other Reasons	13.5	21.2

Table 7.2.5 shows the proportion (%) of Jamaicans, aged 15 years and older, with given practices that lead to non-adherence to taking medication. The most common compliance issues among the males and among the females, reported by 74.7% and 70.7%, respectively, was failure to take medication on the day before the interview. The two least commonly reported compliance issues among the males, with prevalence less than 20%, were failure to take medication without informing the physician because they felt worse when taking same and feeling burdened by taking medication. Among females, failure to take medication without informing the physician because they felt worse when taking them, was the least commonly reported compliance issue, having 23.8% prevalence.

Among the males, prevalence of all compliance issues, except for 'Feel burdened by taking treatment,' were significantly associated ($p<0.05$) with age. Prevalence of failure to take medications on the day before the interview was greater than 60% in the males under 35 and over 54 years and less than 50% in the 35–54-year-olds ($p<0.01$). The proportion of males who responded that there were days within the last two weeks that they did not take their medications, as directed by the medical practitioner, was highest (80.7%) in the 15–24 age group and the lowest (20.8%) in the 75 and older age group ($p<0.01$).

The highest proportion of males who stopped taking their medications, without informing their physicians, because they felt worse while on the medication was 65.9% in the 25–34 age group and the lowest proportion, 4.6%, was in the 35–44 age group ($p<0.05$).

More males in the 35–54 age groups, among whom prevalence exceeded 50%, reported that they forgot to take their medicines when travelling, compared with the other age groups among whom prevalence of males with this compliance issue was 31% or lower ($p<0.01$).

The prevalence of males who reported that they stopped taking their medications when they felt that their condition was under control was highest, exceeding 70%, among males 15–24 and 45–54 years of age, compared with the other age groups, among whom prevalence was less than 50% and as low as 7.3% in those 75 and older ($p<0.001$).

Table 7.2.5: Sex- and Age-specific Proportions (%) of Jamaicans Aged 15 Years and Older with Given Medication Compliance Issues, JHLS III 2017

Compliance Issues	Age (Years)							
	15–24	25–34	35–44	45–54	55–64	65–74	75+	Total
Males								
Did not take medication the day before**	78.0	100.0	43.9	48.3	74.2	63.1	90.6	74.7
Missed taking medication in past two weeks**	80.7	32.9	42.7	63.7	48.5	39.6	20.8	45.5
Stopped taking medication without informing physician because felt worse when taking*	24.9	65.9	4.6	28.4	20.1	24.6	5.0	19.9
Forget medication when travelling**	14.7	29.3	51.7	68.2	23.1	30.7	22.3	33.0
Stopped taking medication because feel condition under control ***	81.2	43.3	41.3	74.0	36.6	27.5	7.3	39.9
Feel burdened by taking medication	0.0	30.6	6.2	39.3	21.4	14.9	16.5	18.2
Females								
Did not take medication the day before***	40.6	45.1	54.0	74.5	70.3	86.0	87.9	70.7
Missed taking medication in past two weeks	44.1	53.9	54.7	64.1	49.6	51.0	34.2	51.4
Stopped taking medication because felt worse when taking without informing physician**	34.2	18.2	26.0	37.9	23.0	15.9	10.7	23.8
Forget medication when travelling	44.1	41.7	40.0	24.5	37.9	34.6	29.8	34.4
Stopped taking medication because feel condition under control*	49.1	76.0	50.3	50.5	41.6	46.6	24.5	46.1
Feel burdened by taking medication	35.0	40.6	51.6	35.7	43.0	31.1	29.1	37.9

In contrast with the males, only three of the six compliance issues featured in Table 7.2.5 were associated with age among the females. Prevalence of failure to take medications on the day before the interview was 70% or more in all the 45+ age groups and between 40 and 55% in the younger age groups (p<0.001). The highest proportion of females who stopped taking their medications, without informing their physicians, because they felt worse while on the medication was 37.9% in the 45–54 age group and the lowest proportion, 10.7%, was in the 75 and older age group (p<0.01). The prevalence of females who reported that they stopped taking their medications when they felt that their condition was under control was highest, 76%, among females 25–34 years of age, compared with the other age groups among whom prevalence was less than 51% and as low as 24.5% in those 75 and older (p<0.001).

7.3. Disability

Table 7.3.1 shows that 3.3% or 68,188 of Jamaicans aged 15 years and older had a disability of one form or another. This prevalence estimates did not differ significantly with sex (Males: 4.2%, Female: 2.4%) or area of residence (Urban: 2.8%, Rural:3.9%). The prevalence of persons with a disability did, however, differ with age (p<0.001), number of household possessions (p<0.001), and education level (p<0.001). Prevalence estimates were higher in the older, compared with the younger, age groups; in persons with 0–5, compared with larger numbers of household possessions; and among persons with primary or lower versus higher levels of education. Similar statistically significant associations were found within the sexes.

Table 7.3.1: Sex-specific and Total Population Prevalence of Persons with Any Disability among Jamaicans Aged 15 Years and Older by Socio-demographic Categories, JHLS III 2017

Socio-demographic Categories	Male %	Female %	Total %
Area of Residence			
Urban	5.1	2.6	2.8
Rural	3.4	2.2	3.9
Age Groups (years)			
15–24	3.1**	1.7***	2.4***
25–64	2.9	1.4	2.2
65+	14.4	10.0	12.3
Household Possessions			
0–5 Items	8.2**	6.2***	7.3***
6–9 Items	3.6	1.8	2.7
10–20 Items	1.2	0.2	0.7
Highest Education Level			
Primary or lower	8.7***	7.1***	8.0***
Secondary	2.9	1.5	2.2
Tertiary	2.0	0.6	1.2
Other	0.9	2.5	2.0
Total	**4.2**	**2.4**	**3.3**

**p<0.01, ***p<0.001

Table 7.3.2 shows the prevalence of specific types of disability among disabled Jamaicans aged 15 years and older. Prevalence of the specific disabilities ranged from 5.1% for speech disability to 55.3% for physical disability. Only the prevalence of persons with a learning disability and of persons with physical disability differed significantly with any of the socio-demographic variables. The prevalence of a learning disability (based on self-report) was higher in males compared with females (p<0.001); rural compared with urban residents (p<0.05); and in 15–24-year-olds compared to older age groups. Age was the only socio-demographic variable significantly associated (p<0.05) with prevalence of a physical disability. The prevalence of this type of disability was higher in the 25–64-year-olds, at 73.8%, compared with prevalence in either the 15–24-year-olds, 20.5%, or in those 65 years and older, 46.8%.

Table 7.3.2: Among Disabled Jamaicans Aged 15 Years and Older, Prevalence of Persons with Specific Types of Disability by Socio-demographic Categories, JHLS III 2017

	Type of Disability					
Socio-demographic Categories	**Sight only**	**Speech only**	**Learning disability**	**Hearing disability**	**Physical disability**	**Intellectual disability**
Sex of Participant						
Female	27.4	8.6	0.3***	15.4	61.5	9.4
Male	42.9	3.1	17.2	0.0	48.8	5.8
Area of Residence						
Urban	43.2	0.0	1.8*	4.9	50.1	6.2
Rural	32.5	9.2	18.7	6.1	55.9	7.8
Age Groups (years)						
15-24	24.7	0.0	47.4*	0.0	20.5*	0.0
25-64	31.1	11.5	6.1	1.0	73.8	9.4
65+	49.4	0.7	0.0	12.7	46.8	7.9
Household Possessions						
0–5 Items	42.9	8.0	4.0	2.5	58.1	5.9
6–9 Items	31.1	0.0	29.3	12.3	34.5	6.5
10–20 Items	12.7	0.0	0.0	4.8	87.3	20.3
Highest Education Level						
Primary or lower	44.3	3.8	3.5	9.8	59.0	10.9
Secondary	29.3	6.6	21.2	0.0	48.1	3.4
Tertiary	35.1	0.0	13.6	0.0	35.5	0.0
Other	0.0	33.9	0.0	33.9	66.1	0.0
Total	**37.3**	**5.1**	**11.1**	**5.5**	**53.3**	**7.1**

*p<0.05, ***p<0.001

7.4. Family Medical History of Chronic Diseases

The prevalence of Jamaicans 15 years and older who reported that a parent or grandparent had a history of one of the selected chronic diseases shown in Table 7.4.1 ranged from 9.9% for heart attack to 55% for high blood pressure. The prevalence of persons reporting that a sibling had a history of chronic disease ranged from 1.6% for heart attack to 11.4% for high blood pressure. Stroke was the condition least commonly recalled, by 0.2% of Jamaicans 15 years and older, as occurring in an offspring, while high blood pressure was, again, the condition most commonly recalled, by 2% of these Jamaicans, as occurring in an offspring. It is noteworthy that the estimates for persons recalling a history of a chronic disease in an offspring were not restricted to persons who had reported that they were parents. These data, nevertheless, suggest that more Jamaicans are aware of a family history of high blood pressure than of any other condition.

Table 7.4.1: Percentage (%) of Jamaicans Who Reported Family Members with History of Selected Chronic Diseases, JHLS III 2017

Chronic Diseases	Parent/ Grandparent	Sibling	Offspring
Heart Attack	9.9	1.6	0.6
High blood pressure	55.0	11.4	2.0
Stroke	19.7	4.9	0.2
Diabetes	34.0	7.4	1.2
Cancer	18.6	4.1	0.4

Table 7.4.2 shows the prevalence of persons aware of their family history of the selected chronic conditions. More females ($p<0.05$) compared with males were aware of their family history of all five conditions shown in the table. Prevalence of awareness of family history of a chronic conditions was associated with age for heart attack ($p<0.01$), high blood pressure ($p<0.01$), and cancer ($p<0.001$); with employment status, for cancer ($p<0.05$); with household possessions for high blood pressure ($p<0.01$), and diabetes ($p<0.05$); and with highest education level for high blood pressure ($p<0.01$), diabetes ($p<0.001$), and cancer ($p<0.001$). A higher percentage of the 15–24-year-olds, compared with the older age groups, was aware of their family history of high blood pressure. However, the respective proportions of 15–24-year-olds aware of family history of heart attack and cancer were lower than the proportions in the older age groups. The level of awareness of family history was higher among the employed (22.9%) and the unemployed or retired (20.1%) compared with the students. The percentages aware of family history of high blood pressure and diabetes were higher at the high SES category (10–20 items) as defined by number of household possessions, compared with persons in the lower SES categories. The percentages aware of their family history of high blood pressure, diabetes, and cancer were also greater in those with a tertiary level compared with lower levels of education.

Table 7.4.2: Proportion (%) of Persons Reporting a Family History of Named Chronic Diseases by Sociodemographic Categories, JHLS III 2017

	Family History of				
Socio-demographic Categories	**Heart Attack**	**High blood pressure**	**Stroke**	**Diabetes**	**Cancer**
Sex of Participant					
Female	14.8***	66.7***	25.0*	43.3***	25.0**
Male	7.2	50.5	19.7	32.0	18.0
Area of Residence					
Urban	11.7	57.5	23.1	35.8	20.6
Rural	10.2	59.7	21.5	39.6	22.6
Age Groups (Years)					
15-24	7.4**	63.8**	19.5	36.6	12.9***
25-64	12.5	58.0	23.5	38.2	24.2
65+	11.0	49.0	22.5	36.7	26.2
Employment Status					
Employed	11.2	56.3	22.2	35.6	22.9*
Unemployed/Retired	11.0	60.3	23.8	40.4	20.1
Student	11.1	63.7	17.7	38.8	17.9
Weekly Household Income (JA$)					
<$12,000/wk	11.3	62.9	23.6	37.0	23.0
$12,000 -$60000/wk	12.7	57.8	21.9	40.0	25.3
>$60000/wk	6.2	61.2	33.1	30.5	38.0
Household Possessions					
0–5 Items	10.4	54.5**	22.1	36.6*	19.6
6–9 Items	10.5	58.6	22.8	35.2	20.8
10–20 Items	12.3	63.6	22.9	42.4	24.6
Highest Education Level					
Primary or lower	11.8	53.2**	22.0	37.9***	21.7***
Secondary	10.5	59.0	21.7	34.1	18.3
Tertiary	12.1	65.5	25.5	50.6	32.8
Total	**11.0**	**58.5**	**22.3**	**37.6**	**21.5**

*p<0.05, **p<0.01, ***p<0.001

7.5. Health Insurance and Medication Subsidies

Private Health Insurance

A minority of of Jamaicans have private health insurance, with the proportion in the males (25.4%) being greater (p=0.03) than the proportion among females (21.5%), (See Table 7.5.1).

Table 7.5.1: Sex-specific Proportion (%) of Jamaicans Ages 15 Years and Older with Private Health Insurance, JHLS III 2017

Private Health Insurance Categories*	Gender		
	Male	Female	Total
No Private Insurance	74.6	77.6	76.6
Has Private Insurance	25.4	21.5	23.4

*p<0.05

Table 7.5.2 shows the sex-specific prevalence of the means by which persons acquired private health insurance (among persons who indicated they had access to private health insurance). Most of the persons with private health insurance, 57.2%, acquired it through the workplace. Accessing private insurance via the credit union had the lowest prevalence (1.8%). The distributions of means by which persons accessed private health insurance were not the same for both sexes (p<0.01). More than twice as many men as women accessed private health insurance as an individual (23.1% vs 10.6%) or via the credit union (2.9% vs 0.5%), while nearly three times as many women as men accessed private health insurance using other means, separate from the means of enrolment specified in Table 7.5.2.

Table 7.5.2: Sex-specific Proportion (%) of Jamaicans Aged 15 Years and Older, Showing Their Methods of Accessing Private Health Insurance, JHLS III 2017

Method of Access to Private Health Insurance**	Males	Females	Total
Workplace	56.8	57.7	57.2
Spouse's Workplace	10.4	12.7	11.4
Credit Union	2.9	0.5	1.8
Individual	23.1	10.6	17.4
Other	6.7	18.5	12.1

**p<0.01

The proportion of Jamaicans with private health insurance did not change significantly with age, ranging from 21–28% among the age groups for persons under 75 years of age, and was 15.1% in those 75 years and older (Table 7.5.3).

Table 7.5.3: Proportion (%) of Jamaicans Aged 15 years and Older, with Private Health Insurance by Agre Group, JHLS III 2017

Private Health Insurance Categories	Age Group (years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
No Private Insurance	79.0	76.5	71.7	77.7	74.7	74.5	84.9
Has Private Insurance	21.0	23.5	28.4	22.3	25.3	25.5	15.1

Table 7.5.4 shows by ten-year age bands the prevalence of the means by which persons acquired private health insurance (among persons who indicated they had access to private health insurance). The distributions of means by which persons accessed private health insurance were not the same for all age groups ($p<0.001$). Health insurance ownership through the workplace was most prevalent, being 70% or higher, among age groups between ages 25 and 54 years, and least prevalent at 30.5%, among the 15–24-year-olds. Access to private health insurance via the spouse's workplace was most common, at 32.7%, among 55–64-year-old Jamaicans and non-existent among the 15–24-year-olds and among persons 75 years and older. Those 75 years and older (46.9%) most commonly reported access to individual private health insurance. This method of access to private health insurance was least common (4.1%) among the 45–54-year-olds. The highest proportion of those with private health insurance through a Credit Union was in the 25–34 years age category (5.5%).

Table 7.5.4: Proportion (%) of Jamaicans, Aged 15 Years and Older, Showing Their Methods of Accessing Private Health Insurance, JHLS III 2017

	Method of Enrolment of Health Card***				
	Workplace	Spouse's Workplace	Credit Union	Individual	Other
15–24	30.5	0.0	0.0	36.3	33.2
25–34	70.0	7.7	5.5	8.5	8.3
35–44	75.7	13.2	1.7	9.3	0.0
45–54	74.1	19.5	0.0	4.1	2.3
55–64	51.4	32.7	2.1	11.6	2.2
65–74	44.0	10.3	1.2	28.4	16.1
75+	42.8	0.0	0.0	46.9	10.3

Government of Jamaica (GOJ) Medication Subsidies

The government of Jamaica (GOJ) provides medication subsidies that offset the cost of medication for some chronic illnesses experienced by Jamaicans. The medication subsidies that are investigated in this report are the Jamaica Drugs for the Elderly Programme (JADEP), available to persons 60 years and older, and the National Health Fund (NHF) and government of Jamaica (GOJ) health cards. The latter two are available to Jamaicans of all ages.

Table 7.5.5 shows for males, females, and the sexes combined the age group distribution of enrolment in the government's medication subsidies programmes. Just over 19% of Jamaican 15 years and older were enrolled in at least one of the Government of Jamaica medication subsidies programmes, and there was a significant sex difference in the percentages enrolled, with the percentage for females almost twice that of the males (Males:13.1%, Females: 24.8%, p<0.001). Sex-specific and total population estimates revealed that the percentage enrolled increased with age (p<0.001). As such, the proportion of senior citizens 60 years and older enrolled in at least one medication subsidies programme was almost 4.5 times as high as the proportion enrolled among persons under sixty years, within the sexes (p<0.001) and in the sexes combined (p<0.001).

Table 7.5.5: Proportion (%) Distribution of Jamaicans Aged 15 Years and Older Enrolled in Government Programme Providing Medication Subsidies, JHLS III 2017

Age Groups	Males	Females	Total
15–24	2.5***[b]	4.0***[d]	3.3***[f]
25–34	8.5	8.6	8.6
35–44	9.3	16.2	12.9
45–54	7.9	35.7	21.5
55–64	28.1	58.4	43.2
65–74	33.2	77.7	55.2
75+	54.8	73.4	63.6
<60 vs. 60+ years			
15–59	7.9***[c]	16.1***[e]	12.1***[g]
60+	40.2	73.8	56.7
Total	**13.1***[a]**	**24.8**	**19.1**

[a]***p<0.001 – Statistically significant sex difference

[b]***p<0.001 – Statistically significant ten-year age group difference in males

[c]***p<0.001 – Statistically significant <60 vs 60+ age group difference in males

[d]***p<0.001 – Statistically significant ten-year age group difference in females

[e]***p<0.001 – Statistically significant <60 vs 60+ age group difference in females

[f]***p<0.001 – Statistically significant ten-year age group difference in males and females

[g]***p<0.001 – Statistically significant <60 vs 60+ age group difference in males and females

Table 7.5.6 shows persons who indicated they had enrolled in at least one government medication subsidies programme and the distribution of the combinations of programmes in which they were enrolled. Among persons aged 15–59 years, nearly one-third had either one of the GOJ and/or the NHF health cards, and there was no statistically significant sex difference in this distribution. Among Jamaicans 60 years and older, combined enrolment for the GOJ, NHF, and JADEP cards was the most popular combination of subsidies, taken up by 27% of these Jamaicans. In this age group, more females than males (p<0.05) were enrolled for the combination of the GOJ and NHF cards and for the JADEP card alone or in combination with one other card (GOJ or NHF).

Table 7.5.6: Among Jamaicans 15 Years and Older Enrolled in the Medication Subsidies Programmes, Sex-specific and Total Population Prevalence (%) of the Combination of Subsidies for Which They Were Enrolled, JHLS III 2017

	Age 15–59 Years			Age ≥60 years		
	Male	Female	Total	Male	Female	Total
Type of Government health insurance				a*		
GOJ only	45.7	27.1	33.4	12.4	7.2	9.3
NHF only	26.1	37.9	34.0	23.9	22.7	23.2
GOJ and NHF	28.2	34.8	32.6	17.8	25.6	22.4
JADEP only				0.2	2.8	1.7
GOJ and JADEP				1.3	4.9	3.4
NHF and JADEP				8.6	15.7	12.8
GOJ, NHF and JADEP				35.9	21.0	27.2

[a]*p<0.05 – Statistically significant sex difference in Jamaicans 60 and older

Table 7.5.7 shows the sex-specific and total population distribution of Jamaicans according to enrolment for the JADEP card among Jamaicans 60 years of age and older. The proportion not enrolled was higher among the males (81.7% vs 69.2%, p<0.01).

Table 7.5.7: Sex-specific Prevalence (%) of Enrolment for the JADEP Medication Subsidies Card among Jamaicans Ages 60 Years and Older, JHLS III 2017

Enrolled for JADEP card***	Gender		
	Male	Female	Total
No	81.7**	69.2	75.5
Yes, utilizing card	14.5	22.7	18.6
Yes, but not utilizing card	3.8	8.1	5.9

*p<0.05; **p<0.01; ***p<0.001

Table 7.5.8 shows the distribution of Jamaicans according to enrolment for the JADEP card among Jamaicans 60 years of age and older, by 5-year age bands. The 60–64-year-olds had the lowest prevalence of current active card use (10.3%) or inactive (3.4%) enrolment (p<0.01).

Table 7.5.8: Prevalence (%) of Enrolment for the JADEP Medication Subsidies Card among Jamaicans Ages 60 Years and Older, by Five-Year Age Groups, JHLS III 2017

Enrolled for JADEP card**	Age Group			
	60-64	65-69	70-74	75+
No	86.3	69.7	70.5	72.7
Yes, utilizing card	10.3	23.2	23.6	19.9
Yes, but not utilizing card	3.4	7.1	5.9	7.4

*p<0.05; **p<0.01; ***p<0.001

Table 7.5.9 shows the sex-specific and total population distribution of Jamaicans according to enrolment for the NHF card among Jamaicans 15 years of age and older. More males compared with females (91.1% vs 80.7%) were not enrolled and more of the females, compared with males, were either utilizing or not utilizing their card (p<0.001).

Table 7.5.9: Sex-specific Prevalence (%) of Enrolment for the NHF Medication Subsidies Card among Jamaicans Aged 15 Years and Older, JHLS III 2017

Enrolled for NHF card***	Gender		
	Male	Female	Total
No	91.1	80.7	85.8
Yes, utilizing card	7.0	14.2	10.6
Yes, but not utilizing card	1.9	5.1	3.5

*p<0.05; **p<0.01; ***p<0.001

Table 7.5.10 shows the distribution of Jamaicans according to enrolment for the NHF card among Jamaicans 15 years of age and older, by ten-year age bands. The 15–24-year-olds had the lowest prevalence of current active card use (0.4%) or inactive (0.6%) enrolment. Prevalence of current active card use was highest amongst person 65 years and older, and the prevalence of active card use or inactive enrolment generally increased with age (p<0.001).

Table 7.5.10: Prevalence (%) of Enrolment for the NHF Medication Subsidies Card among Jamaicans Aged 15 Years and Older, by 10-Year Age Groups, JHLS III 2017

Enrolled for NHF card***	Age Group (Years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
No	99.0	97.2	92.4	83.5	61.8	53.9	44.2
Yes, utilizing card	0.4	1.1	4.8	11.4	34.4	39.3	36.0
Yes, but not utilizing card	0.6	1.7	2.7	5.1	3.7	6.8	19.9

*p<0.05; **p<0.01; ***p<0.001

Possession of Private Health Insurance (HI) and Enrolment for GOJ medication subsidies combined

Most Jamaicans 15 years and older (67.9%) had neither private health insurance nor any GOJ medication subsidy. The distribution of persons in this category did not differ with the sex of these Jamaicans (See Table 7.5.11).

Table 7.5.11: Sex-specific Prevalence (%) of Jamaicans Aged 15 Years and Older with Private Health Insurance and/or Enrolled for GOJ Medication Subsidies, JHLS III 2017

Has private health insurance (HI) and/or medication subsidy (MS)	Male (%)	Female (%)	Total (%)
Has None	68.3	67.4	67.9
Has HI and/or MS	31.7	32.6	32.1

The proportion of Jamaicans who had no private health insurance or GOJ medication subsidy significantly decreased with age ($p<0.001$), from 77.6 % in the 15–24 years age category to 50% in persons 75 years and older (Table 7.5.12).

Table 7.5.12: Prevalence (%) of Jamaicans Aged 15 years and Older with Health Card, Disaggregated by Age, JHLS III 2017

Has private health insurance (HI) and/or medication subsidy (MS)***	Age Groups (Years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Has None	77.6	72.5	66.4	67.7	56.9	47.8	50.1
Has private health insurance (HI) and/or medication subsidy (MS)	22.4	27.5	33.6	32.3	43.1	52.2	49.9

*p<0.05; **p<0.01; ***p<0.001

Table 7.5.13 shows the sex-specific distribution of the possession of private health insurance with and without enrolment for GOJ medication subsidies among Jamaicans 15 years and older who possessed at least one health card. More males had private insurance only (71.8% vs 52.4%), while more females had government subsidies only or government subsidies along with private health insurance ($p<0.001$).

Table 7.5.13: Sex-specific Prevalence (%) of Jamaicans Showing Those with Private and Government Insurance Cards, Aged 15 Years and Older, JHLS III 2017

Has private health insurance (HI) and/or medication subsidy (MS)***	Gender		
	Male	Female	Total
Private HI only	71.8	52.4	62.0
GOJ medication subsidy only	19.9	34.2	27.1
Both Private HI and Government subsidy	8.3	13.5	10.9

*p<0.05; **p<0.01; ***p<0.001

Table 7.5.14 shows by ten-year age groups the distribution of the possession of private health insurance with and without enrolment for GOJ medication subsidies among Jamaicans 15 years and older who possessed at least one health card. Prevalence of possession of private health insurance only ranged from a low of 14.6% among persons 75 years and older to 91% among those 15–24 years of age ($p<0.001$). Prevalence of the other categories generally increased with age.

Table 7.5.14: Age-band Specific Prevalence (%) of Jamaicans Showing Those with Both Private and Government Insurance Cards, Aged 15 Years and Older, JHLS III 2017

Has private health insurance (HI) and/or medication subsidy (MS)***	Age Group						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Private HI only	91.0	80.5	79.0	57.6	32.3	27.7	14.6
GOJ medication subsidy only	6.1	14.4	15.7	30.9	41.5	51.1	69.8
Both Private HI and Government subsidy	2.9	5.1	5.3	11.5	26.2	21.2	15.6

*p<0.05; **p<0.01; ***p<0.001

7.6. Sources of Health Information and Health Literacy

The sources of information on *general health*, *dental health*, *physical activity, nutrition, smoking, mental health,* and *disease* were explored, and respondents indicated all the sources of information that were applicable. Estimates were calculated based on a subpopulation consisting of persons who indicated at least one source. The findings are shown in Table 7.6.1. The three primary sources of health information, as reported by Jamaicans, were health workers, internet, and media, including television and radio. Overall, Jamaicans used their health providers as their main source of health information, with 58% of respondents consulting them for *general health* information, 52% for *dental health*, 44% for *mental health*, 49% for information on *disease,* and 29% for information on *smoking*. The second most popular source of information for each of the aforementioned areas was the internet: 30%, 22%, 25%, 31%, and 24%, respectively. The least popular source of information was that provided at fitness facilities or by way of their trainers (Table 7.6.1).

Table 7.6.1: Percentages of Jamaicans Aged 15 Years and Older Reporting on Sources of Health Information, JHLS III 2017

Sources of Health Information	General Health	Dental Health	Mental Health	Disease Health	Smoking Health
Media (Television/Radio)	17.5	12.4	10.0	12.9	12.6
Print Media (Newspaper/Brochure)	4.2	2.9	2.2	2.5	2.4
Internet	29.6	22.1	25.4	30.9	23.8
Health Provider	58.2	52.3	43.6	48.8	28.8
Public Education Sessions	1.6	1.0	0.8	0.9	0.7
Fitness Facility/Trainer	0.2	0.2	0.0	0.0	0.0
Family/Friend	4.3	2.8	2.5	2.4	3.1
Other (Library, NGO, etc.)	3.9	10.6	2.6	3.0	3.1

Age-specific estimates are shown in Table 7.6.2. Among participants in the younger age-groups (15–44 years), the sources of information on *general health* were similar to that seen for the general population. For respondents in the older age groups (45 years and older), the most popular sources were health providers, followed by the media and internet (Table 7.6.2). Overall, the use of the internet as a source of health information declined with age, whereas health advice from health care providers and the media increased with age.

Sex-specific percentages of Jamaicans reporting given main sources of nutrition and physical activity health Information are shown in Figures 7.6.1 and 7.6.2. For both these areas, the most popular source of information was again the health providers. For males, health providers (doctor or nurse) were their primary source of nutrition information (43.3%), followed by the internet (26.6%), and the media (television or radio) (16.7%). A similar trend was noted for females; however, more females sought nutrition information from the internet (34.4%) than males (26.6%). Less than 10% of Jamaican males or females received nutrition information from public health education sessions, family, friends, and co-workers or the print media. Both males (1.1%) and females (0.3%) rarely obtained nutrition information from fitness facilities or trainers.

Providers of healthcare (doctors of nurses) were the most likely source of information on physical activity for males (30.5%) and females (31.1%). Approximately, one in 10 males (11.6%) and a similar proportion of females (9.0%) received information on physical activity from fitness facilities and trainers. The media (television and radio), print media, and public health education sessions were among the least commonly reported sources of physical activity information in both the male and female population (Figure 7.6.2).

Table 7.6.2: Age-Specific Estimates (%) for Jamaicans 15 Years and Older Reporting on Sources of General Health Information, JHLSIII 2017

Sources of General Health Information	15–24	25–34	35–44	45–54	55–64	65–74	75 & Older
Media (television/radio)	11.3	20.1	15.4	23.4	18.7	22.9	17.5
Print Media (newspaper/ brochure)	3.9	4.9	4.3	5.8	3.3	1.7	1.7
Internet	45.4	40.1	29.3	19.4	9.6	8.1	3.7
Health Provider	47.5	49.1	62.0	62.3	73.6	72.7	77.2
Public Education Sessions	1.7	1.8	1.4	1.0	3.0	0.6	2.4
Fitness Facility/Trainer	0.2	0.1	0.0	0.4	0.1	0.3	0.0
Family/Friend	5.2	4.4	5.0	4.6	2.0	2.0	3.7
Other (Library, NGO, etc.)	6.2	3.2	3.1	3.3	3.8	1.8	2.8

Figure 7.6.1: Sex-specific Percentages for Jamaicans Aged 15 Years and Older with Given Primary Sources of Nutrition Health Information, JHLS III 2017

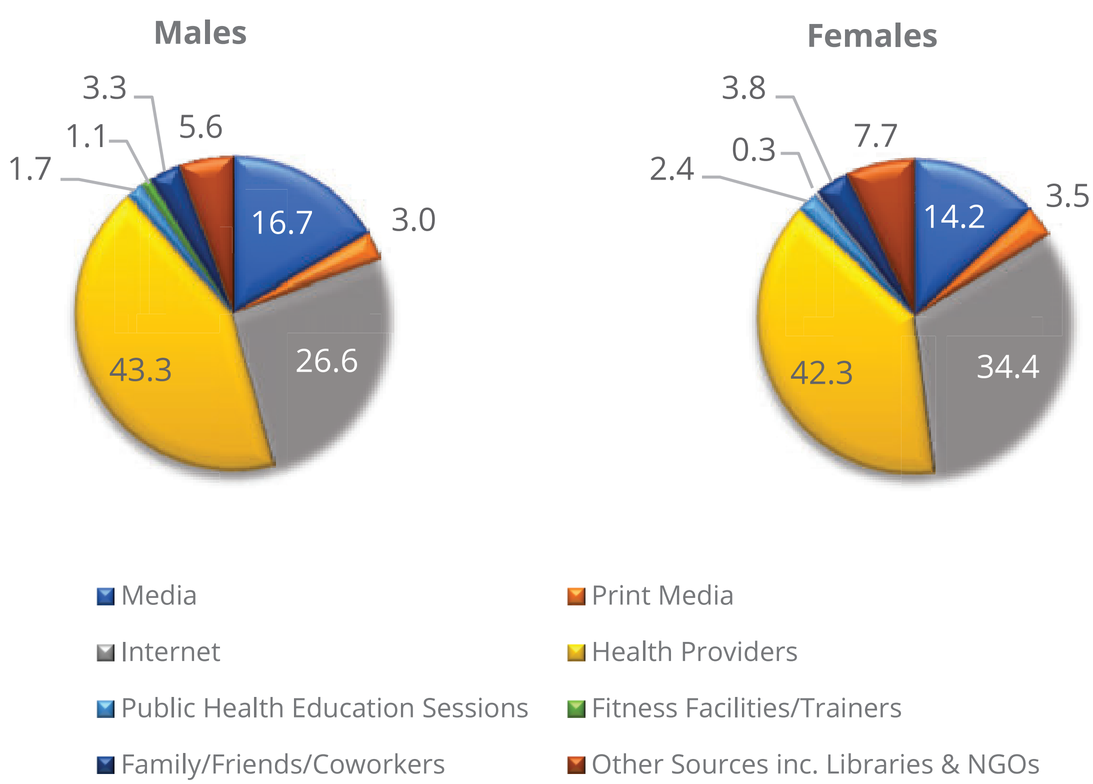
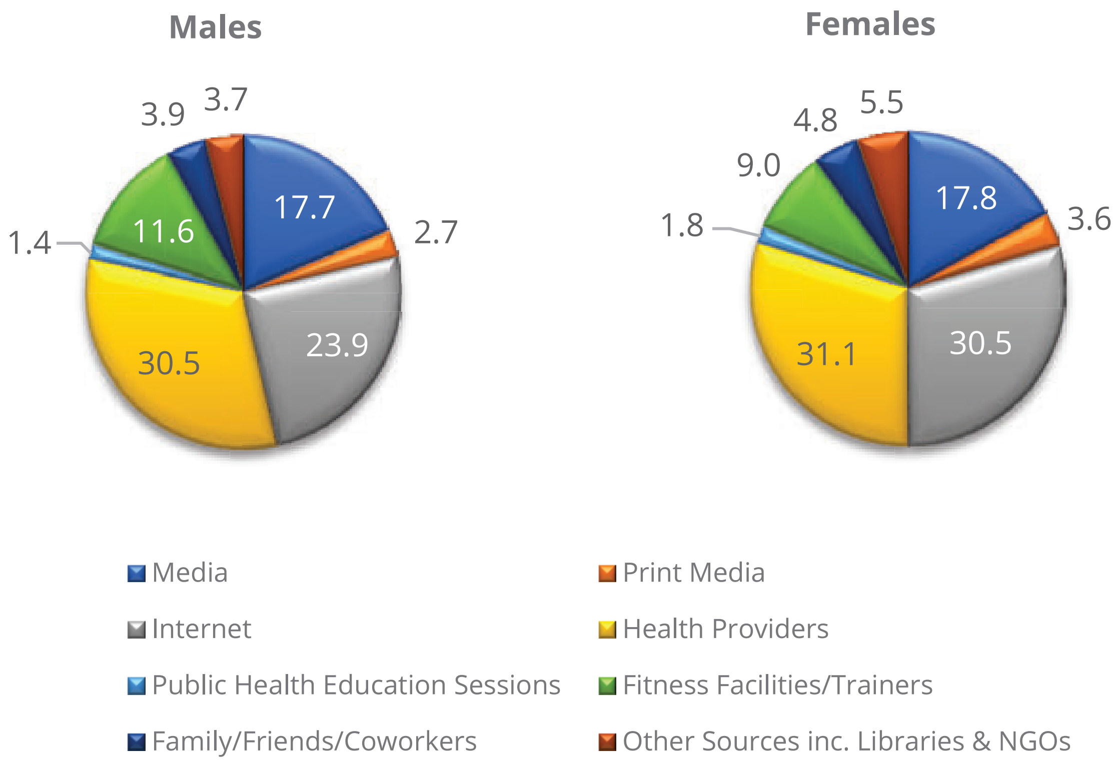


Figure 7.6.2: Sex-specific Percentages of Jamaicans Aged 15 Years and Older with Given Primary Sources of Physical Activity Health Information, JHLS III 2017



Three items were used to assess health literacy; each measured using a Likert scale. Findings are shown in Table 7.6.3. Almost three quarters of Jamaicans (73.1%) reported being competent in reading medical health information, with a slightly greater proportion of females (74.6%) than males (71.5%) reporting that they never require help to read health brochures. Just over a half of the Jamaican population (52.4%) was extremely confident in independently filling out medical forms, with a higher proportion for females (58.2%) compared to males (46.2%). Almost one- third (29%) of the participants interviewed admitted to having little or no confidence in filling out medical forms by themselves. Over 90% of the survey respondents have little or no problem learning about their medical condition because of difficulty understanding written information, with relatively equal distribution across the sexes [males (88.2%); females (92.6%)].

Table 7.6.3: Gender-specific and Total Prevalence Estimates (%) for Jamaicans Aged 15 Years and Older Reporting on Health Literacy Characteristics, JHLS III 2017

Health Literacy Characteristics	Male	Female	Total
I need help to read medical health brochures.			
Never	71.5	74.6	73.1
Occasionally	7.3	8.8	8.0
Sometimes/Often	15.9	12.0	13.9
Always	5.4	4.6	5.0
I am confident in filling out medical forms by myself.			
Not at all	9.9	6.6	8.2
A little/Somewhat	26.0	16.0	20.8
Quite	18.0	19.3	18.7
Extremely	46.2	58.2	52.4
I have problems learning about my medical condition because of difficulty understanding written information.			
Never	63.0	71.1	67.1
Occasionally	25.2	21.5	23.3
Sometimes/Often	5.7	4.3	5.0
Always	6.1	3.2	4.6

When health literacy characteristics were compared based on education level, a higher proportion of participants with primary level (or lower) education (49.6%) needed help to read medical health brochures than those with post-secondary-level education or higher (9.5%). Similarly, a greater percentage of respondents with more advanced educational levels expressed confidence in filling out medical forms without assistance than those with lower levels of education (See Table 7.6.4).

Chronic disease-specific estimates were obtained for health literacy characteristics. A greater proportion of persons with diabetes (41.6%) admitted to needing help to read medical health brochures than respondents with hypertension (34.3%), high cholesterol (29.7%), and obesity (22.5%). A higher proportion of participants with obesity (56.1%) were extremely confident in independently completing medical forms than those with diabetes (39.5%). Respondents with obesity (29.5%) and high cholesterol (36.5%) were less likely to have a problem learning about their medical condition because of difficulty understanding written information than those with hypertension (41.4%) and diabetes (44.8%). Among respondents with specific chronic diseases examined (obesity, diabetes, hypertension, and high cholesterol), those with diabetes had the lowest levels of health literacy, and those with obesity had the highest levels of health literacy (See Table 7.6.5).

Table 7.6.4: Education-specific Estimates for Jamaicans Aged 15 Years and Older Reporting on Health Literacy Characteristics, JHLS III 2017

Health Literacy Characteristics	Primary/Lower	Secondary	Post-Secondary/ Tertiary
I need help to read medical health brochures.			
Never	50.5	76.8	90.5
Occasionally	11.1	8.0	3.7
Sometimes/Often	26.7	12.0	3.8
Always	11.8	3.2	2.0
I am confident in filling out medical forms by myself.			
Not at all	17.5	6.2	2.8
A little/Somewhat	40.2	19.0	2.2
Quite	18.6	21.8	7.2
Extremely	23.7	53.0	87.8
I have problems learning about my medical condition because of difficulty understanding written information.			
Never	43.1	71.2	87.3
Occasionally	37.8	21.3	10.0
Sometimes/Often	8.7	4.1	1.7
Always	10.4	3.4	1.1

Table 7.6.5: Chronic Disease-specific Estimates for Jamaicans Aged 15 Years and Older Reporting on Health Literacy Characteristics, JHLS III 2017

Health Literacy Characteristics	Obesity	Diabetes	Hypertension	High Cholesterol
I need help to read medical health brochures.				
Never	77.5	58.3	65.7	70.3
Occasionally	7.3	11.0	7.6	8.6
Sometimes/Often	11.5	19.9	19.3	16.1
Always	3.7	10.7	7.4	5.0
I am confident in filling out medical forms by myself.				
Not at all	7.6	13.8	11.2	8.9
A little/Somewhat	14.4	28.9	26.8	23.6
Quite	21.8	17.8	19.1	18.8
Extremely	56.1	39.5	43.0	48.8
I have problems learning about my medical condition because of difficulty understanding written information.				
Never	70.6	55.2	58.7	63.5
Occasionally	21.0	29.7	27.4	25.5
Sometimes/Often	6.0	8.1	7.1	6.1
Always	2.5	7.0	6.9	4.9

8. Sexual and Reproductive Health

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This chapter explores the sexual practices and reproductive health of Jamaicans aged fifteen years and older. Female reproductive health has been covered in detail in reports based on JHLS I and II data and male reproductive health in the JHLS II Technical Report. In addition to previously covered aspects of men's health, an examination of the prevalence of severity of lower urinary tract symptoms among males is included in this current report based on JHLS III data.

8.1. Sexual Practices

Table 8.1.1 shows the total population and sex-specific prevalence of sexual behaviours for Jamaicans aged 15 years and older. Overall, 6.2% of these Jamaicans had never had sexual intercourse; this prevalence varied with gender ($p < 0.05$), such that fewer of the males reported no history of sexual intercourse. The number of sexual partners varied by sex of respondent ($p < 0.001$). Approximately nine out of ten (87%) females who were sexually active during the year preceding their interview reported having one sexual partner in that year, with less than 0.1% of these females reporting having six or more partners in the same period. In contrast, 57.3% of males reported having one partner in the year preceding their interview. Approximately one in three (33.7%) males had two to five partners, while 9% of males reported greater than six partners. Mean age at first sexual intercourse was 15.7 years (95% CI: 15.5, 15.8). Reported age at first sexual intercourse was significantly lower ($p<0.05$) for males in comparison to females. The median ages at first sexual encounter shown in Table 8.1.1 indicated that by age 15 in males and 16 in females, 50% of the sample could be expected to have had sexual intercourse for the first time. These sex-specific estimates of median values also differed significantly[a] ($p<0.001$) (See Table 8.1.1.). The estimates for these Jamaicans were similar, and their respective associations with the sex retained when the data were restricted to Jamaicans aged 15 to 74 years of age.

Table 8.1.2 shows the age-specific prevalence of sexual behaviours for Jamaicans aged 15 years and older. All sexual behaviours represented in the Table, varied significantly with age. A history of sexual intercourse ranged from 78.3% among 15–24-year-olds to 98% or more in the other age groups ($p<0.001$). The proportion of persons reporting sexual intercourse with two or more partners within the year prior to the interview generally decreased as age increased ($p<0.001$). Median age at first sexual encounter differed with age[b] in the males ($p<0.001$) and in the females ($p<0.001$). The median age at first sexual encounter in the males was 14 years in the 15–24, 35–44 and 45–54 age groups, but higher in the other age groups. Among the females, the median age at first sexual encounter was 16 years in all age groups except among the 45–54-year-olds and in persons 65 years and older, among whom the median age at first sexual intercourse was 17 years. Noteworthy is that in all the age groups the median age at first sexual encounter was lower among females compared with males. The respective associations with age groups were retained when the data were restricted to Jamaicans aged 15–74 years of age.

a. Compared using the non-parametric log-rank test.
b. Compared using the non-parametric log-rank test.

Table 8.1.1: Sex-specific and Total Population Prevalence (%) of Sexual Behaviours and Average Age of First Coitus among Jamaicans Aged 15 Years and Older, JHLS III 2017

Sexual Behaviour	Jamaicans Aged 15 Years and Older		
	Males	Females	Total
Ever had sex*			
No	4.8	7.6	6.2
Yes	95.2	92.4	93.7
Number of sexual partners in last year*[a]**			
One (1) person	57.3	87.0	69.9
Two to Five (2 –5) persons	33.7	12.9	24.8
More than Six (6) persons	9.0	0.1	5.2
Mean Age (years) at first sex (CI)*	14.7(14.4, 14.9)	16.7(16.5,16.9)	15.7(15.5, 15.8)
Median Age (years) at first sex***	15	16	16
	Jamaicans 15–74 Years		
	Males	**Females**	**Total**
Ever had sex*			
No	5.1	8.0	6.5
Yes	94.9	92.0	93.5
Number of sexual partners in last year*[a]**			
One (1) person	56.8	86.9	69.7
Two to Five (2 –5) persons	34.0	13.0	24.9
More than Six (6) persons	9.2	0.1	5.3
Mean Age (years) at first sex (CI)*	14.5(14.3, 14.8)	16.6(16.4, 16.8)	15.6(15.4, 15.8)
Median Age (years) at first sex***	15	16	16

*p<0.05, **p<0.01, ***p<0.001

[a]Of those sexually active during the year preceding the interview

Table 8.1.2: Age-specific prevalence (%) of Sexual Behaviours and Median Age of First Coitus among Jamaicans Aged 15 Years and Older, JHLS III 2017

Sexual Behaviour	15–24	25–34	35–44	45–54	55–64	65–74	75+
Ever Had Sex***							
Yes	78.3	98.5	100.0	99.1	98.5	99.8	99.6
No	21.7	1.5	0.0	0.9	1.5	0.2	0.4
Number of sexual partners in last year*[a]							
One (1)	57.6	71.3	73.0	76.4	79.8	68.0	83.0
Two to Five (2–5)	33.9	23.6	23.3	18.6	16.7	30.5	17.1
More than Six (6)	8.5	5.1	3.7	5.0	3.5	1.6	0.0
Median Age (years) at first sex							
Males***	14	15	14	14	15	15	16
Females***	16	16	16	17	16	17	17

*p<0.05, **p<0.01, ***p<0.001

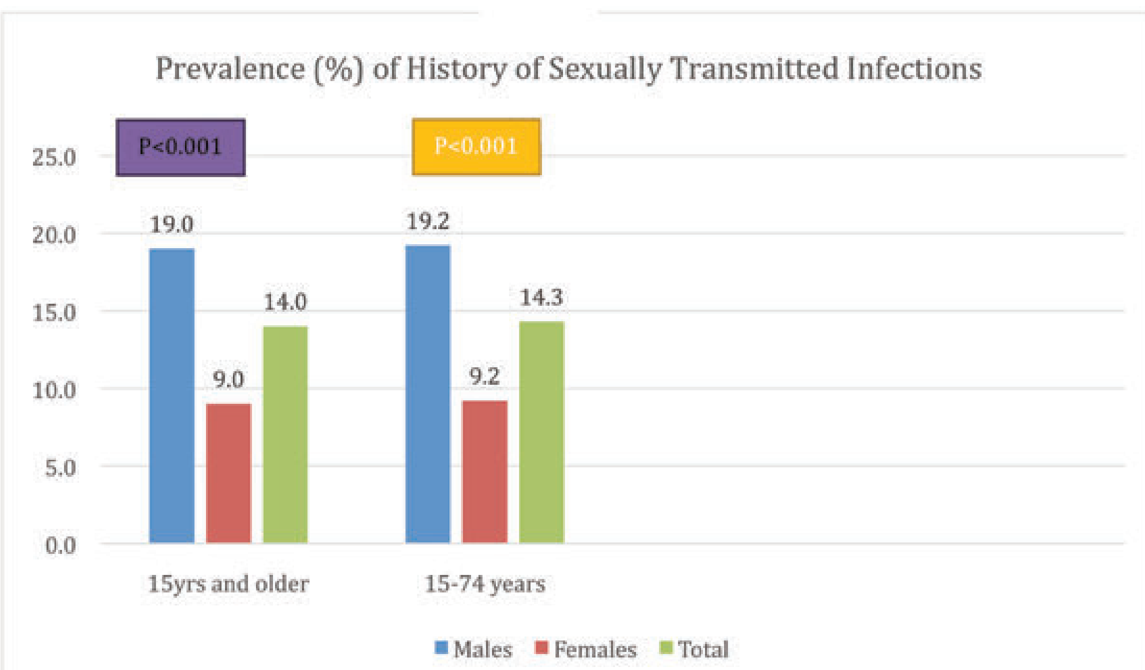
[a]Of those sexually active during the last year

Figures 8.1.1 and 8.1.2 show data for a history of a sexually transmitted infection (STI) by sex (Figure 8.1.1) and age category (Figure 8.1.2) amongst Jamaican who had a history of sexual activity. Figure 8.1.1 shows that, amongst those who were ever sexually active, the prevalence of ever having a STI was 14.0% and was higher among males (19.0% vs. 9.0%, $p < 0.0001$). Similar estimates were obtained when the data were restricted to persons 15–74 years of age.

Figure 8.1.2 shows the sex-specific and total population distributions of history of contracting a STI by age groups. All distributions differed significantly with age ($p<0.05$). Total population estimates indicated an increase in prevalence of STI from 8.6% among 15–24-year-olds to 19.6% in the 55–64 age group followed by a decrease to 10% among those 75 years and older ($p< 0.0001$). This pattern was retained among the males, with estimates increasing from 10.3% among 15–24-year-olds to 32.5% in the 55–64 age group followed by a decrease to 15.6% among those 75 years and older ($p< 0.0001$), with a decline occurring after age 65 years. Among the females, prevalence was lowest in those 75 years and older and was highest in those 25–34 years of age ($p<0.05$) (See Figure 8.1.2.).

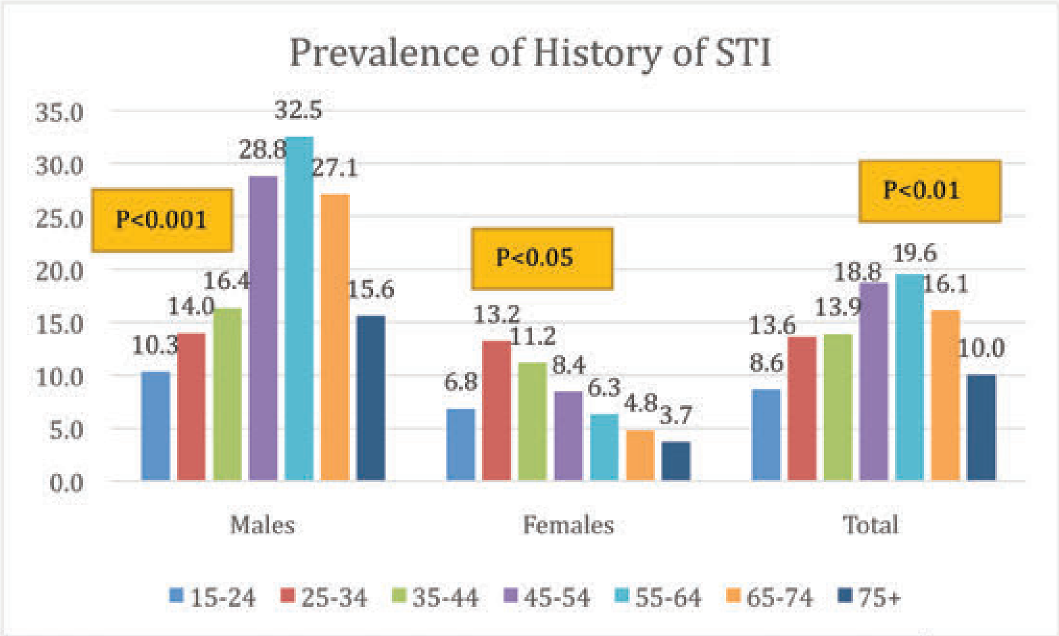
Some 336 study participants representing 261,492 Jamaicans indicated that they had previously contracted a sexually transmitted infection. Only 9 of the 336 study participants representing 2.1% or 5,322 of these Jamaicans who had a history of a STI recalled having the STI within the year preceding their interview. Table 8.1.3 shows that less than 5% of each of the sexes (M:1.4%, F: 3.6%) recalled contracting the STI within the year prior to the interview. More than 70% of Jamaicans who had a history of a STI could not recall the time when they contracted the infection. The distribution of the time of contracting the STI differed with the sex ($p<0.05$) but not with the age groups of these Jamaicans (See Table 8.1.3.).

Figure 8.1.1: Sex-specific and Total Population Percentages of Persons Reporting a History of Sexually Transmitted Infection[b] among Jamaicans Aged 15 Years and Older, JHLS III 2017



[b]Prevalence among all who previously had sexual intercourse.

Figure 8.1.2: Age-specific Population Percentages of Persons Reporting a History of Sexually Transmitted Infection[b] (STI) among Jamaicans Aged 15 Years and Older, JHLS III 2017



[b]Prevalence among all who previously had sexual intercourse.

Table 8.1.3: Total Population and Age by Sex Percentage Distributions of the Time of Contracting a Sexually Transmitted Infection among Jamaicans Aged 15 Years and Older Who Reported a History of a Sexually Transmitted Infection, JHLS III

	Percentage Distributions of the Time of Contracting a Sexually Transmitted Infection								
	Males			Females			Total		
Age Groups	In the Past Year	>1yr ago	Didn't Recall Time	In the Past Year	>1yr ago	Didn't Recall Time	In the Past Year	>1yr ago	Didn't Recall Time
15–24 Years	6.4	22.2	71.4	0.0	12.8	87.2	4.0	18.6	77.5
25–34 Years	3.9	20.7	75.3	2.6	40.1	57.3	3.3	30.5	66.2
35–44 Years	0.0	33.2	66.8	9.9	30.4	59.7	3.8	32.1	64.1
45–54 Years	0.0	14.1	85.9	3.5	31.7	64.8	0.8	18.0	81.2
55-64 Years	0.0	22.8	77.2	0.0	22.4	77.6	0.0	22.8	77.2
65–74 Years	0.0	5.9	94.1	0.0	26.1	73.9	0.0	9.0	91.0
≥75 Years	0.0	27.9	72.1	0.0	0.0	100.0	0.0	23.0	77.0
15 Years and older*c	1.4	20.7	77.9	3.6	29.7	66.7	2.1	23.5	74.4

*p<0.05, **p<0.01, ***p<0.001

[c]Significant difference in distribution for males compared to females

Table 8.1.4 shows the prevalence of contraception use by sex category. Overall, 47.9% of Jamaicans aged 15 years and older who were sexually active during the year preceding their interview reported using a condom during their last sexual encounter, and 51.1% reported usual use of condoms over the past year. Sex differences (p<0.0001) for contraceptive use were observed with a greater proportion of males compared to females reporting using a condom as the last (54.3% vs. 39.2%) and usual (59.5% vs. 39.8%) method of contraception. A greater proportion of females compared to males were classified as using other contraceptive methods (including Withdrawal, Depo-Provera injection, and birth control pills) as the last used method (33.4% vs. 17.6%). Nearly 24% of males and of females were classified as usually using other contraceptive methods.

Table 8.1.4: Sex-specific and Total Population Percentage (%) Distributions of Contraception Use among Jamaicans Aged 15 Years and Older,[d] JHLS III 2017

Contraception in Last Encounter***e	Male	Female	Total
Used condoms in last sexual encounter	54.3	39.2	47.9
Used other contraception methods in last sexual encounter[g]	17.6	33.4	24.3
No contraception used in last sexual encounter	28.1	27.3	27.8
Contraception Used Usually***f			
Usually uses condoms during sexual intercourse	59.5	39.8	51.1
Usually uses other contraception methods during sexual intercourse[g]	24.5	23.8	24.2
Usually uses no contraception during sexual intercourse	16.0	36.4	24.7

≠; *p<0.05
*p<0.05, **p<0.01, ***p<0.001
[d]Out of those who reported being sexually active during the year prior to interview
[e,f]Statistically significant sex difference
[g]Assumed if they did not specify use of a condom and did not indicate absence of use of a contraceptive method

Table 8.1.5 shows that contraception use among those who were sexually active during the year preceding their interview also varied significantly with age (p<0.0001). Prevalence of condom use as the contraceptive method at last sexual encounter or as the usual method of contraception was highest, exceeding 49%, among those 15–24 and 25–34 years of age. Prevalence of use of other methods of contraception at last sexual encounter was highest among the 25–34- and 35–44-year-olds at 31.0% and 28.0%, respectively. Prevalence of usual use of other methods of contraception was highest among persons 45 years of age and older, ranging from 32.6% among the 45–54-year-olds to 64.5% among persons 75 years and older.

Table 8.1.5: Age-specific Percentage (%) Distributions of Contraception Use among Jamaicans Aged 15 Years and Older,[h] JHLS III 2017

Contraception in Last Encounter***[i]	15–24	25–34	35–44	45–54	55–64	65-74	75+
Used condoms in last sexual encounter	61.7	49.8	43.9	43.6	27.7	40.5	21.6
Used other contraception methods in last sexual encounter[k]	22.0	31.0	28.0	21.4	13.1	11.0	16.0
No contraception used in last sexual encounter	16.4	19.3	28.1	35.0	59.1	48.5	62.4
Contraception Used Usually***[j]							
Usually uses condoms during sexual intercourse	65.4	55.9	44.0	46.2	32.3	40.0	22.8
Usually uses other contraception methods during sexual intercourse[k]	12.3	15.3	24.8	32.6	51.4	49.6	64.5
Usually uses no contraception during sexual intercourse	22.4	28.9	31.2	21.3	16.3	10.5	12.7

*p<0.05, **p<0.01, ***p<0.001
[h]Out of those who reported being sexually active during the year prior to interview
[i,j]Statistically significant age group differences
[k]Assumed if they did not specify use of a condom and did not indicate absence of use of a contraceptive method

8.2. Women's Health

8.2.1 Health-seeking Behaviours

Almost one in three (28%) women aged 15 years and older reported never having had a Pap smear, with 40% of women having had a Pap smear within the past three years (Table 8.2.1).

Visual inspection with acetic acid (VIA) is a new test offered in some government health facilities, which is provided as an alternative screening test for cervical cancer. The majority (95%) of women reported never having a VIA test (Table 8.2.1). This varied by place of residence ($p < 0.001$), with 1 in 20 (5%) women who resided in urban areas reporting having done a VIA test in comparison to 1% of women in rural locations. The Human Papilloma virus (HPV) are sexually transmitted viruses, high risk HPV can cause several types of cancer. The Ministry of Health has also provided this test for screening of cervical cancer and has also initiated the vaccine programme for females twelve years and older. The study also sought to ascertain the uptake of this new service offered for cervical cancer screening. A greater proportion of urban versus rural dwelling women had ever done an HPV test (7% versus 2%, $p < 0.001$).

Greater than two-thirds (69%) of women reported never having a mammogram (Table 8.2.1). Twenty-eight per cent of women fifteen years and older had their breasts examined by a doctor within the past year. However, 29% had never had a clinical breast exam (Table 8.2.1). A higher proportion of women residing in urban locations reported having their breasts examined by a doctor within the past year (Table 8.2.1, $p < 0.05$).

Table 8.2.1: Percentage (%) of Females 15 Years and Older with Given Features of Health-seeking Behaviours by Place of Residence, JHLS III 2017

Health-seeking Behaviour	Urban	Rural	Total
Pap Smear*			
Never	19.5	21	27.9
Yes, Less than 3 Years Ago	41.9	38.3	40.3
Yes, 3 or More Years Ago	27.6	31.9	29.6
Has Had Hysterectomy	2.1	0.6	1.4
Don't Know	0.5	0.8	0.6
No Response	0.5	0.0	0.2
VIA Test ***			
Never	92.5	97.9	94.9
Yes	4.9	1.1	3.2
Don't Know	2.6	1.0	1.9
HPV Test ***			
Never	89.8	97.0	93.0
Yes	7.5	2.0	5.1
Don't Know	2.7	1.0	2.0
Last Mammogram			
Never	67.5	70.8	69.0
Less than 1 year	5.4	7.5	6.3
More than a year	27.1	21.7	24.7
Last Clinical Breast Exam			
Never	27.1	31.3	29.0
Less than 1 year	32.0	22.7	27.9
1–2 years	40.9	46	43.1

The American Cancer Society (ACS) strongly recommends for women at average risk of cervical cancer commencement of cytological cervical cancer screening[c] at age 25 years, every three years, through to age 65 years.[1] The proportion of women in the 25–64 age range that had a history of a Pap smear within the three years preceding their interview ranged from 29.7% among the 55-64-year-olds to 56.5% among those 35–44 years of age. The proportion in this age range who reported never having a Pap smear was lowest at 9.8% among 35–44-year-olds and highest at 21.1% among those 25–34 years. Close to 50% of young women aged 20–24 years reported never having a Pap smear (See Table 8.2.2.). The low uptake of the VIA, a non-cytological cervical cancer screening method, did not differ with age, and prevalence of uptake was approximately 5% or lower in all age groups (See Table 8.2.2.).

The ACS recommends for women at average risk of breast cancer the opportunity to begin screening mammography at age 40 and regular screening starting at age 45 years.[2] There is evidence that in low resourced settings breast self-examination combined with clinical breast examination can lead to detection of breast cancer at earlier stages.[3] Clinical breast examination is regarded as a low-cost screening method that can be a promising approach for low resourced settings and could be incorporated into efforts aimed at achieving prompt and effective diagnosis and treatment of women with symptomatic lesions.[4]

c. Includes the Papanicolaou (Pap) test (or Pap smear) and liquid-based cell examination.

Over 50% (55%) of Jamaican women aged 20 years and older reported conducting monthly breast self-examination. Except for women aged 75 years and older, the proportion of women who never conducted a breast self-examination declined with age ($p < 0.001$).

Clinical breast examination increased with age ($p < 0.05$). Greater than one in four women in the target age range of 20–64 years had their breasts examined by a doctor within the past year (Table 8.2.2). Almost one-third of women aged 20 years and older had never had a clinical breast examination. Approximately, 25% of women in this age group had their last clinical breast examination in the year preceding the survey.

Table 8.2.2: Percentage (%) of Females Aged 20 Years and Older with Given Modes of Cervical Cancer and Breast Cancer Screening, JHLS III 2017

Screening Test	20–24	25–34	35–44	45–54	55–64	65–74	75+	Total
Pap Smear * **								
Never	47.4	21.1	9.8	11.6	13.2	11.9	29.0	19.9
Yes Less than 3 years ago	42.7	50.5	56.5	45.4	29.7	29.7	14.9	43.8
Yes More than 3 years ago	10.0	27.4	32.6	40.7	50.0	54.3	45.6	33.7
Has Had Hysterectomy	0.0	0.0	0.8	1.9	5.7	3.0	4.0	1.6
Don't Know/don't remember	0.0	0.1	0.3	0.4	0.7	1.1	6.5	0.7
No response	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.3
VIA Test								
Never	96.4	93.6	95.8	93.8	94.1	98.1	94.7	95.0
Yes	2.8	1.5	3.6	4.7	5.2	1.9	5.3	3.2
Don't Know	0.8	4.9	0.6	1.5	0.8	0.0	0.0	1.9
HPV Test								
Never	96.0	92.1	91.1	91.0	93.6	95.4	94.1	93.0
Yes	2.8	4.1	7.4	7.3	5.5	4.6	5.9	5.1
Don't Know	1.2	3.8	1.5	1.8	0.9	0.0	0.0	2.0
Frequency of Breast Self-Exam* **								
Never	37.9	24.6	19.6	17.5	18.1	15.8	25.0	22.8
Monthly	43.7	54.1	53.8	63.4	59.5	56.5	52.4	54.8
Quarterly	2.5	8.6	13.2	8.4	4.9	12.8	2.6	8.2
Half yearly	8.0	9.3	4.9	5.7	6.4	8.2	8.3	7.1
Yearly	5.2	2.8	5.3	2.2	6.2	5.0	6.8	4.3
Don't Know	1.9	0.5	3.2	2.5	4.9	1.6	3.8	2.4
No Response	0.8	0.0	0.0	0.3	0.0	0.0	1.2	0.2
Last Clinical Breast Exam * **								
Never	36.9	32.6	31.9	22.9	21.0	29.8	29.5	29.8
Less than 1 year	28.7	27.1	22.1	27.2	30.1	31.1	23.5	26.6
1–2 years	26.9	24.6	21.6	24.9	23.3	21.4	15.7	23.4
More than 2 years	7.0	15.3	21.1	22.3	24.9	16.9	27.9	18.5
Don't Know	0.6	0.5	3.3	2.7	0.7	0.4	3.5	1.7
No Response	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0

***p<0.0001, **p<0.001; *p<0.05

When the screening practices of women over 40 years was examined in relation to having done a mammogram, it showed that just under two-thirds of women in this age group reported that they had never had a mammogram done. Frequency of mammograms in women in the target age range of 40 years and above varied with age (Table 8.2.3 $p < 0.0001$). Approximately four out of five (85%) women aged 40–44 years had never done a mammogram (Table 8.2.3). This fell to 66% of women aged 45–54 years and was lowest at 43.5% among women aged 65–74 years (Table 8.2.3). Only 8% had one done in the past year, and a little more than a quarter had a mammogram done in more than a year prior to the interview (See Table 8.2.3.).

Table 8.2.3: Percentage (%) of Females 40 Years and Older with Given Categories for Last Mammogram, JHLS III 2017

Last Mammogram ***	40–44	45–54	55–64	65–74	75+	Total
Never had mammogram	85.2	65.9	57.6	43.5	56.7	63.7
Last Mammogram: Less than 1 year	1.6	6.7	10.2	15.6	8.3	7.9
Last Mammogram: 1–2 years	4.3	11.4	18.1	9.2	9.3	10.9
Last Mammogram: More than 2 years	8.9	14.9	14.0	31.7	23.1	16.9

***p<0.0001, **p<0.001; *p<0.05

Table 8.2.4 shows the proportion of women with various cervical cancer and breast cancer screening practices by education level, a lower proportion of women educated to the primary level had never had a Pap smear, in comparison to their secondary- and post-secondary-educated counterparts. Most women (≥90%), regardless of educational attainment reported never having done a VIA test. Compared with women who had post-secondary or primary education as their highest level of education, fewer women educated up to the secondary level had an HPV test ($p < 0.05$). The frequency of women having a mammogram within the past year increased from primary to post-secondary level ($p < 0.001$), while the proportion of women who had never had their breasts examined by a doctor declined with increasing education level ($p < 0.05$).

Table 8.2.4: Percentage (%) of Females with Given Cervical Cancer and Breast Cancer Screening Practices by Education Level, JHLS III 2017

Health-seeking Behaviour	Primary	Secondary	Post-secondary
Pap Smear			
Never	24.2	35.8	30.9
Yes	74.6	64.0	69.1
Don't Know	1.3	0.2	0.0
VIA Test			
Never	89.8	95.4	96.6
Yes	7.0	2.8	2.6
Don't Know	3.1	1.9	0.8
HPV Test *			
Never	87.8	95.2	89.3
Yes	9.0	3.3	8.4
Don't Know	3.4	1.4	2.8

Table 8.2.4 *(contd)*: **Percentage (%) of Females with Given Cervical Cancer and Breast Cancer Screening Practices by Education Level, JHLS III 2017**

Health-seeking Behaviour	Primary	Secondary	Post-secondary
Last Mammogram * **			
Never	80.9	74.7	37.6
Less than 1 year	3.9	6.5	10.7
More than a year	15.2	18.8	51.8
Last Breast Self-Exam			
Never	24.7	24.9	24.5
Less than 1 year	72.8	70.2	71.5
More than a year	2.5	4.9	4.0
Last Clinical Breast Exam*			
Never	31.2	30.5	24.5
Less than 1 year	32.5	25.8	31.4
1-2 years	36.3	43.7	44.1

***p<0.0001, **p<0.001; *p<0.05

8.2.2 History of Pregnancy and Childbirth

Approximately three quarters of Jamaican women (79%) aged 15 years and older reported having been pregnant; the proportion was slightly higher among rural compared to urban women (Rural, 81% vs. urban, 78%). There were significant differences in the number of pregnancies by geographical area, with more rural women reporting six or more pregnancies and live births compared to their urban counterparts (urban 15% rural 9% and urban, 11.7%; rural, 8.0%; $p < 0.005$ respectively). Significantly more rural women also engaged in supplemental breast feeding (7–24 months) compared to their urban counterparts (urban, 43%; rural, 61%; $p < 0.001$). Approximately one in five (19.7%) of Jamaican women reported hypertension during pregnancy, with significantly more urban women reporting (Urban 23.3% vs. Rural 15.3%, p<0.001), and 3.9% reported diabetes during pregnancy (Table 8.2.5).

Table 8.2.5: Urban-rural Percentage Distribution (%) of History of Experiences Related Pregnancy and Childbirth in Jamaican Females 15 and Older, JHLS III 2017

	Urban	Rural	Total
Have you ever been pregnant?			
Yes	78.0	81.3	79.4
No	22.1	18.8	20.6
How many times you have been pregnant? **			
Never	22.1	18.8	20.6
1 time	20.1	16.4	18.4
2 times	14.8	19.4	16.9
3–5 times	33.8	30.4	32.3
6 or more times	9.4	15.0	11.9
How many live births have you had? ***			

Table 8.2.5(*contd*): **Urban-rural Percentage Distribution (%) of History of Experiences Related Pregnancy and Childbirth in Jamaican Females 15 and Older, JHLS III 2017**

	Urban	Rural	Total
None	5.6	5.0	5.3
One	34.2	28.9	31.8
Two	22.8	24.0	23.3
Three to Five	29.5	30.5	30.0
Six or more	8.0	11.7	9.7
Duration of Breastfeeding ***			
Never/Less than 1 month	4.8	4.1	4.5
2–6 months (Recommended)	39.3	25.5	32.8
7–24 months (Supplemental)	42.6	61.6	51.6
More than 2 years	13.2	8.7	11.1
Hypertension in Pregnancy ***	23.3	15.3	19.7
Gestational Diabetes	4.0	3.7	3.9

***p<0.0001, **p<0.001; *p<0.05

Table 8.2.6 shows the age-specific percentages of the females who had different experiences related to pregnancy and childbirth for women of reproductive age, 15–49 years only. Approximately 16% of females 15–19 year of age had been pregnant at least once. The percentages of women with three or more pregnancies or live births were higher among the age groups ranging from 35 to 49 years compared with groups among those 15–34 years of age (P<0.05). These differences could be indicating that the younger women had not yet completed childbearing rather than a reflection of difference in childbearing practices in the younger versus older women. Of note, a little more than one in ten females in the age group 20 –24 years reported being pregnant three or more times.

The women were asked to report the length of the period for which they breastfed their last child. Among the women who had reported live births, there was an association of age with length of breastfeeding. While 19% and 13% of 15–19 and 20–24-year-olds, respectively, reported breastfeeding their last child for less than one month, less than 5% of women in the 35–49-year age groups reported breastfeeding for this short duration. Approximately 35% of women in the 15–19 age group reported hypertension during pregnancy, with significant variations by age (p<.0.05).

There were higher proportion of gestational diabetes in the 15–19 (7.1%) and 45–49 (7.8%) age groups compared to the other age bands (See Table 8.2.6).

Table 8.2.6: Age-specific Percentages (%) of History of Experiences Related Pregnancy and Childbirth in Jamaican Females 15–49 Years of Age, JHLS III 2017

	Age (years)						
	15–19	20–24	25–29	30–34	35–39	40–44	45–49
Have you ever been pregnant? * **							
Yes	18.3	63.5	81.3	95.2	98.7	95.7	90.9
No	81.7	36.6	18.7	4.8	1.3	4.3	9.1
How many times you have been pregnant? * **							
Never	81.7	36.6	18.7	4.8	1.3	4.3	9.1
1 time	16.0	37.6	32.1	23.8	11.0	11.7	12.8
2 times	2.3	14.5	18.8	26.2	25.8	22.8	20.8
3–5 times	0	9.9	30.4	41.4	52.9	47.6	42.6
6 or more times	0	1.4	0	3.7	9.0	13.7	14.6
How many live births have you had? ** **							
None	7.2	15.0	7.3	2.7	1.1	2.7	3.4
One	92.5	54.0	39.2	31.7	16.1	14.3	20.0
Two	0.3	21.8	33.4	34.8	33.9	30.8	19.9
Three to Five	0	6.6	20.1	29.4	41.5	47.4	45.0
Six or more	0	2.6	0	1.5	7.4	4.9	11.7
Duration of Breastfeeding[1]							
Less than 1 month	19.0	12.8	3.5	3.1	1.6	4.2	1.9
2–6mths (Recommended)	10.8	24.2	32.3	38.3	48.6	25.9	33.8
7–24mths (Extended)	70.2	58.9	50.9	53.4	38.0	54.1	38.2
More than 2 year	0	7.1	13.3	5.2	11.8	15.8	26.1
Hypertension in Pregnancy *	34.8	16.2	20.0	23.7	29.8	16.3	22.3
Diabetes in Pregnancy	7.1	3.9	0.4	3.9	1.2	3.5	7.8

If the woman was currently breastfeeding, she was asked to report on the length of the breastfeeding period for her previous child.

***p<0.0001, **p<0.001; *p<0.05

The experiences of Jamaican women aged 15 years and older in regard to pregnancy and child bearing experiences were assessed in relation to their educational status. More women who had a primary or lower level of education reported ever being pregnant compared to those who attained a secondary or post-secondary level of education (93% vs. 73% and 69% respectively p <0.005). The frequency of pregnancies and long-term breastfeeding of infants was also higher in women in this educational category, with over 70% reporting three or more pregnancies, and 73% reporting supplemental or longer breast-feeding practices (See Table 8.2.7).

Table 8.2.7: Percentage Distribution (%) of History of Experiences Related Pregnancy and Childbirth in Jamaican Females Aged 15 Years and Older by Education Level, JHLS III 2017

Experiences Related Pregnancy and Childbirth	Level of Education		
	Primary or lower	Secondary	Post-secondary
Ever been Pregnant* **			
Yes	93.2	77.3	70.9
No	6.8	22.7	29.1
No. of times pregnant* **			
Never	6.8	22.6	29.1
1 time	8.4	19.6	23.9
2 times	10.6	18.0	18.0
3–5 times	37.2	33.1	27.5
6 or more times	37.0	6.6	1.6
No. of live births* **			
None	2.0	6.2	9.2
One	26.8	40.0	44.5
Two	19.4	24.4	32.1
Three to Five	35.8	27.0	14.3
Six or more	16.0	2.5	0.0
Duration of breastfeeding last child **			
Never/Less than 1 month	4.0	4.5	5.2
Recommended (2–6 mths)	22.5	31.8	48.7
Supplemental (7–24mths)	62.1	52.0	38.5
More than 2 years	11.5	11.6	7.7
Hypertension in Pregnancy	23.8	21.2	18.8
Diabetes in Pregnancy	2.2	3.5	5.6

***p<0.0001, **p<0.001; *p<0.05

When household possessions were used as a proxy for socio-economic status (SES), we found that more women of low SES reported having been pregnant compared to those of Mid SES and High SES, (85% vs. 79% and 76%; p<0.05). They also reported increased number of pregnancies and live births, with more women of low SES reporting three or more pregnancies (61.9% vs. 38.6% and 36.5%) and live births (59.2% vs. 34.3% and 30.1%, p<0.0001) respectively. More Jamaican women of high socio-economic status breastfed their infants for the recommended 2–6 months (p<0.05) (See Table 8.2.8).

Table 8.2.8: Percentage Distribution (%) of History of Experiences Related Pregnancy and Childbirth in Jamaican Females Aged 15 Years and Older by Socio-economic Status, JHLS III 2017

Pregnancy/Breast feeding Characteristics	Household Possession Category		
	0–5 item (LOW SES)	6–9 items (MID SES)	10–20 items (HIGH SES)
Have you ever been pregnant?*			
Yes	85.4	79.1	75.5
No	14.7	20.9	24.5
How many times you have been pregnant? ***			
Never	14.7	20.9	24.5
1 time	11.8	19.6	22.1
2 times	11.8	20.9	16.9
3–5 times	38.2	28.7	31.0
6 or more times	23.7	9.9	5.5
How many live births have you had? ***			
None	3.3	6.3	5.7
One	18.6	37.5	35.6
Two	18.9	22.0	28.6
Three to Five	38.0	27.3	26.3
Six or more	21.2	7.0	3.8
Duration of breast-feeding last child *			
Never/Less than 1 month	3.7	6.2	3.6
Recommended (2–6mths)	26.1	28.9	41.2
Supplemental (7–24mths)	62.7	52.8	42.4
More than 2year	7.7	12.0	12.8

***p<0.0001, **p<0.001; *p<0.05

8.2.3 Polycystic Ovarian Syndrome

Polycystic ovarian syndrome (PCOS) is a metabolic condition, common in women of reproductive age where women have small amounts of male hormones. We asked women to report whether they had any of the symptoms of PCOS such as coarse facial hair and acne. Women were classified as having PCOS symptoms if they responded in the affirmative to both of the items asked.

Very few Jamaican women of reproductive age (2%) reported overall symptoms of polycystic ovarian syndrome (PCOS) with no urban: rural differences. More urban women reported having dark, coarse facial hair (See Table 8.2.9).

Table 8.2.9: Urban–rural Percentage Distribution (%) of History of Symptoms of Polycystic Ovarian Syndrome in Jamaican Females Aged 15–49 Years, JHLS III 2017

PCOS Symptoms	Urban	Rural	Total
Coarse Hair*	12.0	7.3	10.0
Acne	7.5	4.4	6.2
Total	2.4	1.3	2.0

***p<0.0001, **p<0.001; *p<0.05

When the symptoms of PCOS were assessed by age groups we saw that more women in 35–39-year age band reported having dark coarse facial hair compared to the other age groups (22%,

p< 0.0001). More women in the 25–29-year age band reported acne and there was also a higher prevalence of PCOS symptoms in that age group (See Table 8.2.10).

Table 8.2.10: Percentage Distribution (%) of History of Symptoms of Polycystic Ovarian Syndrome in Jamaican females of Reproductive Age in Five Age Bands, JHLS III 2017

PCOS Symptoms	15–19	20–24	25–29	30–34	35–39	40–44	45–49	Total
Coarse Hair***	2.9	1.7	11.0	13.1	21.9	12.9	12.1	10.0
Acne*	4.1	4.5	13.5	4.0	6.9	3.2	7.4	6.2
Overall***	0.0	0.0	7.8	0.0	4.8	0.3	1.3	2.0

***p<0.0001, **p<0.001; *p<0.05

More women who had a post-secondary education reported overall symptoms of PCOS whereas more women who had fewer number of possessions reported overall PCOS symptoms (See Table 8.2.11).

Table 8.2.11: Percentage Distribution (%) of History of Symptoms of Polycystic Ovarian Syndrome in Jamaican Females Aged 15–49 Years by Socio-economic Status, JHLS III 2017

	PCOS Symptoms		
Socio-economic Classification	Coarse Hair	Acne	Overall
Highest Education level			
Primary	14.7**	3.2***	2.5*
Secondary	6.7	4.0	1.1
Post-Secondary	16.7	14.4	4.5
No. Household Possessions			
0–5 Items	9.7	7.0	4.2*
6–9 items	8.9	3.8	0.5
10-20 Items	11.1	8.2	2.2

***p<0.0001, **p<0.001; *p<0.05

8.2.4 Cardiovascular Disease Risk Factors in Jamaican Women of Reproductive Age (15–49 years)

Cardiovascular disease risk factors such as overweight/obesity, diabetes, and hypertension are among the comorbidities which can influence occurrence of adverse maternal outcomes in women of reproductive age in Jamaica. Maternal mortality ratios and pregnancy-related mortality ratios for Jamaican women estimated for the periods 1998–2003, 2004–2009, and 2010–2015 demonstrated an increasing occurrence of cardiovascular, cerebrovascular, and renovascular disease over the three time periods.[5] In this Section, we present estimates for the prevalence of overweight/obesity, diabetes, and hypertension as a basis for evidence of the need for targeted interventions that can ameliorate risk of cardiovascular and other chronic diseases which complicate pregnancy, the puerperium, and beyond.[5]

Table 8.2.12 shows the distribution of BMI categories in Jamaican women aged 15–49 years of age. Prevalence of overweight, underweight, and obesity levels I, II, and III, were 5.4%, 25.2%, 20.6%, 11.5%, and 5.8%, respectively. The distribution of the BMI categories was not the same for all age groups (p<0.0001). Prevalence of underweight was highest in those 15–19 years of age and lowest in those 35–39 years of age. Estimates of prevalence of overweight and/or any one of the three levels of obesity were generally higher in the women 30–49 years of age compared with the females under 30 years of age. It is concerning and noteworthy that prevalence of overweight exceeded 20% in females 15–19 years of age and for any one of the levels of obesity, prevalence was 2.5% or greater in this age group.

Table 8.2.12: Age-specific Distribution of BMI (kg/m2) Categories in Jamaican Women of Reproductive Age (15–49 Years), JHLS III 2017

	BMI Class Categories***					
Age Group (Years)	**Underweight (≤18.5)**	**Normal (18.5–24.9)**	**Overweight (25.0–29.9)**	**Obese I (30.0–34.9)**	**Obese II (35.0–39.9)**	**Obese III (above 40)**
15–19	11.4	53.9	21.5	5.9	4.9	2.5
20–24	9.8	41.5	23.1	18.1	5.8	1.8
25–29	3.5	35.0	20.7	19.6	11.9	9.2
30–34	3.8	24.8	24.1	25.6	16.1	5.7
35–39	0.0	14.5	34.9	25.0	16.2	9.4
40–44	1.5	15.5	23.2	35.8	16.4	7.6
45–49	1.9	15.3	34.9	24.4	15.7	7.9
Total	**5.4**	**31.6**	**25.2**	**20.6**	**11.5**	**5.8**

***p<0.0001, **p<0.001; *p<0.05

Table 8.2.13 shows data on the prevalence of hypertension for women aged 15–19 years, overall and by age category. Just over 21% of women aged 15–49 years of age were classified as hypertension cases. The distribution of the cases differed significantly with age in this group of women (P<0.001). The prevalence estimates ranged from 4.8% in those 15–19 years of age to a maximum 54.0% in those 45–59 years of age (See Table 8.2.13.). There was a statistically significant increasing trend (p<0.001) in the prevalence estimates as age increased in this group of women.

Table 8.2.13: Age-specific Distribution of Hypertension in Jamaican Women of Reproductive Age (15–49 years), JHLS III 2017

	Hypertension Status#	
Age Group (Years)	**Hypertension Absent**	**Hypertension Present*** **
119	95.2	4.8
20–24	88.3	11.7
25–29	84.7	15.3
30–34	83.0	17.1
35–39	76.9	23.1
40–44	59.0	41.0
45–49	46.0	54.0
Total	**78.9**	**21.1**

***p<0.0001, **p<0.001; *p<0.05

#Definition of Hypertension case: respondent on medication prescribed for hypertension in the past or currently and/or measured blood pressure systolic ≥ 140mmHg or diastolic ≥90mmHg.

Prevalence estimates for diabetes is presented in Table 8.2.14. Just over 7% of women aged 15–49 years of age were classified as having diabetes cases. The distribution of the cases differed significantly with age in this group of women (p<0.001). The prevalence estimates ranged from 0.2% in those 20–24 years of age to 2.8% in those 15–19 years old and reached a maximum 22.2% in those 45–59 years of age. There was a statistically significant increasing trend (p<0.001) in the prevalence estimates as age increased in the group of women (This was determined using logistic regression model which had age category codes used as a quantitative variable in the model).

Table 8.2.14: Age-specific Distribution of Diabetes in Jamaican Women of Reproductive Age (15–49 Years), JHLS III 2017

	Diabetes Status#	
Age Group (Years)	**Diabetes Absent**	**Diabetes Present*** **
15–19	97.2	2.8
20–24	99.8	0.2
25–29	96.1	3.9
30–34	92.0	8.0
35–39	93.4	6.6
40–44	86.1	14.0
45–49	77.8	22.2
Total	**92.9**	**7.1**

***p<0.0001, **p<0.001; *p<0.05

#Definition of diabetes case: respondent on medication prescribed for diabetes in the past or currently and/or fasting plasma glucose ≥7.0 mmol/l.

8.3. Men's Health

Lower Urinary Tract Symptoms (LUTS) is a comprehensive term to describe the various symptoms of the prostate, bladder, and urethra that men experience as they age. While LUTS can affect men of any age, the risk of developing these conditions increases with advanced age. The prevalence of lower urinary tract symptoms (LUTS) in Jamaican men was assessed using the International Prostate Symptom Score (IPSS),[6] an internationally validated seven-item questionnaire, with each item ranging from 0–5, with an overall possible range, therefore, of 0–35; scores < 8 are considered mild; scores 8–19 are moderate, and scores > 19 are considered severe. Scores 8–35 are considered clinically significant and reported as positive, while scores < 8 are reported as negative. The survey also assessed the men's health seeking practices with regards to the digital rectal examination and whether or not they had been told by a health care professional that they had an enlarged prostate. Findings for men's health are detailed in Tables 8.3.1 to 8.3.3.

The overall prevalence of moderate/severe LUTS was 12% among men 25 years and older; prevalence of moderate/severe LUTS increased from 4.1% in men 25–39 years to 30.5% in men 60 years and older. The proportion of men who were told that they had an enlarged prostate by their health care provider rose from 0.1% in the 25–39 age group to 14% in men 60 years and older, with an overall prevalence of an enlarged prostate of 3.5%. When only men aged 40 years and older were examined, the overall prevalence of an enlarged prostate increased to 5.7%.

Only 28.2% of Jamaican men aged 25 years and older had ever done a digital rectal examination (DRE), a screening test for prostate cancer. This is a slight improvement over the finding in the JHLS II in which 21.8% of men reported having had a DRE. The proportion of men having had a DRE rose from 17.2% in the 40–44 age group to 54.7% in men 60 years and older. The proportion of men who had a DRE in the past year more than doubled in men 45–49 years (14.2%) compared to men 40–44 years (6.7%), and this proportion rose to 16% in men 60 years and older (P<0.001) (See Table 8.3.1.).

Table 8.3.1: Percentage (%) of Men with Given Aspects of Prostate Health by Given Age Groups, JHLS III 2017

Age	25–39	40–44	45–49	50–54	55–59	60+	Total
LUTS * **							
Mild	95.8	90.5	94.5	84.5	87.1	69.5	88.0
Moderate	4.0	9.5	4.8	15.5	11.7	25.5	10.8
Severe	0.1	0.0	0.8	0.0	1.2	5.0	1.2
Doctor-diagnosed Enlarged Prostate * **							
No	99.9	98.5	100.0	96.6	96.9	86.0	96.5
Yes	0.1	1.5	0	3.4	3.1	14.0	3.5
Last Digital Rectal Exam * **							
Never	90.1	82.8	59.8	64.5	57.8	45.3	71.9
Less than 1 year	1.2	6.7	14.2	12.0	12.2	16.0	8.2
1 year or more	8.7	10.5	26.1	23.5	30.0	38.7	20.0

***p<0.0001, **p<0.001; *p<0.05

There was no difference in the prevalence of moderate LUTS (11.5% vs. 10%) and severe LUTS (1.1% vs. 1.4%) between rural-dwelling and urban-dwelling men, respectively. There was no statistically significant difference in the prevalence of an enlarged prostate between rural-dwelling men (3.4%) and urban-dwelling men (3.8%). A higher proportion of urban-dwelling men reported having had a DRE compared to rural-dwelling men (32.8% vs. 23.6%, p= 0.028) (See Table 8.3.2.).

Table 8.3.2: Percentage (%) of Men with Given Aspects of Prostate Health by Place of Residence, JHLS III 2017

Region	Urban	Rural
LUTS		
Mild	88.5	87.4
Moderate	10.0	11.5
Severe	1.4	1.1
Doctor-diagnosed Enlarged Prostate		
No	96.2	96.7
Yes	3.8	3.4
Last Digital Rectal Exam *		
Never	67.3	76.4
Less than 1 year	9.1	7.3
1 year of more	23.7	16.3

***p<0.0001, **p<0.001; *p<0.05

The prevalence of LUTS was inversely related to level of educational attainment, with more educated men having a lower prevalence of moderate to severe LUTS (4.7% vs. .9.0% and 21.5% respectively p<0.0001). Having a doctor diagnosed prostate enlargement varied inversely with educational attainment, with 7.4% of men with primary education only, reporting having an enlarged prostate versus 1.8% of men with post-secondary education (P < 0.0001). The proportion of men who had never had a DRE did not vary significantly by level of educational attainment with more men who attained a secondary level education reporting never having done a DRE (See Table 8.3.3.).

Table 8.3.3: Percentage (%) of Men Aged 15 Years and Older with Given Aspects of Prostate Health by Educational Level, JHLS III 2017

Education	Primary	Secondary	Post-secondary
LUTS * **			
Mild	78.6	91.0	95.4
Moderate	18.9	8.6	2.4
Severe	2.6	0.4	2.3
Doctor-diagnosed Enlarged Prostate* **			
No	92.6	98.4	98.2
Yes	7.4	1.6	1.8
Last Digital Rectal Exam			
Never	62.4	78.9	63.5
Less than 1 year	8.6	8.2	7.5
More than a year	29.0	12.9	29.1

***p<0.0001, **p<0.001; *p<0.05

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9. Community/Neighbourhood Characteristics

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9.1. Neighbourhood Environment

Over the past few decades, there has been an increasing and marked interest in a better understanding of the role neighbourhoods play in health outcomes, particularly as the chronic non-communicable disease (CNCD) epidemic continues, seemingly unabated and despite health promotion efforts targeted at the individual level. Secondary analysis of the previous national survey, the JHLS II data completed in 2008, has revealed a significant clustering of CNCD outcomes, risk factors, and cumulative biological risk at the neighbourhood level; significant associations have also been described between obesity and low physical activity (PA) levels and neighbourhood-level characteristics such as neighbourhood infrastructure and disorder.[1, 2]

This module presents findings on the characteristics of the neighbourhood environment based on the perceptions of residents. This method, of using residents' neighbourhood perceptions, has been used in the past to augment information gathered from administrative data sources, e.g., census data. These perceptions have been used to predict not only individual health outcomes but have also assisted in the construction of aggregated ecological measures of the neighbourhood.[3]

Individual perceptions of neighbourhood characteristics were assessed in the following three domains: crime and safety, physical disorder, social disorder that were minimally adapted from scales used by I. T. Elo et al.[3] In previous studies, these scales were found to have high internal consistency and good neighbourhood-level reliability.[3] Collective efficacy (with subscales of social cohesion and informal control) was also assessed based on work by R. J. Sampson et al.[4] This is a form of neighbourhood social capital and has been associated with positive health outcomes.[5] The items used in the scales were also found to have high internal reliability.[4,5]

For the JHLS III, each domain of the aforementioned scales on neighbourhood perceptions utilized a 5-point Likert scale ranging from never (=1) to always (=5) for the crime and safety and physical disorder domains; from rarely (=1) to frequently (=5) for the social disorder domain; from strongly disagree (=1) to strongly disagree (=5) and very unlikely (=1) to very likely (=5) for the collective efficacy domain. For each domain, the sum of the rating for each item in the scale was the designated score.

The terms 'neighbourhood' and 'community' are used interchangeably throughout this chapter.

9.1.1 Perception of Neighbourhood Crime and Safety Problems

Perception of crime and safety problems was measured by seven questions regarding how worried the respondent was about crime and drug activity in their neighbourhood. These included concerns about whether drug dealers/users were hanging around, property being stolen, walking alone in the daytime, letting children go outside during the day or night, and being robbed or murdered. Higher scores indicated respondents had greater concern about crime and safety problems.

Table 9.1.1.1 displays the descriptive statistics for the crime and safety perception scale. Higher scores indicated a greater perception of crime and safety problems. For the JHLS III participants, there was an overall mean score of 11.4 out of a maximum score of 35. Items in the scale were highly correlated with a Cronbach's α of 0.8.

Table 9.1.1.1: Summary Statistics and Internal Reliability Coefficients for Components of Perception of Neighbourhood Crime and Safety Problems, JHLS III 2017

Item	Mean	SD	Range	Cronbach's α
Drug Dealers or users hanging around	1.5	1.0	1–5	Not Applicable
Having property stolen	1.7	1.2	1–5	
Walking alone during the day	1.3	0.8	1–5	
Letting children go outside during the day	1.4	1.0	1–5	
Letting children go outside during the night	2.0	1.4	1–5	
Being robbed	1.8	1.2	1–5	
Being murdered	1.8	1.3	1–5	
Crime and Safety Problems scale	11.4	5.6	7–35	0.8

Scores range from 1 = Never to 5 = Always.

Table 9.1.1.2 shows the distribution of perceived crime and safety problems by various socio-demographic variable categories. Overall, a statistically significantly lower proportion of males (28.9%) than females (35.2%) had a high perception of crime and safety problems in Jamaica ($p < 0.01$). There were no significant differences in the proportion of urban (33.7%) versus rural (30.3%) participants who had a high perception of crime and safety problems. There was also no difference in the distribution of levels of perception of crime and safety problems when the age groups were compared.

Table 9.1.1.2 also shows the distribution of the categories of perception of crime and safety problems by indices of socio-economic status, namely education and number of household possessions. Significantly higher proportions of persons who had attained post-secondary education (44.3%) had a high perception of crime and safety problems when compared to those with a high school education (31.6%) and a primary school education (25.8%). This is shown in Table 9.1.1.2. The distribution of the proportions with different levels of perception of crime and safety problems also differed by socio-economic status (SES) tertile (p=0.015). The proportion of persons with low perception of crime and safety problems fell from 47.4% among persons of the low SES based on number of household possessions, to 39.2% and 37.1%, respectively, among those in the middle and high SES classes.

Table 9.1.1.2: Percentage Distribution of Perception of Neighbourhood Crime and Safety Problems among Jamaicans by Socio-demographic Categories, JHLS III 2017

Socio-demographic Categories	Perceived Level of Crime and Safety Problems[1]		
	Low	Moderate	High
Sex**			
Males	44.6	26.5	28.9
Females	38.4	26.4	35.2
Area of Residence			
Urban	41.6	24.7	33.7
Rural	41.2	28.5	30.3
Age Groups (Years)			
15–24	42.1	25.4	32.5
25–34	36.0	30.1	33.8
35–44	40.5	28.4	31.0
45–54	39.1	23.0	37.9
55–64	47.2	24.9	28.0
65–74	47.0	28.6	24.4
75+	52.0	20.6	27.4
Highest Education Level***			
Primary or Lower	49.6	24.6	25.8
Secondary	42.1	26.4	31.6
Post-secondary	28.3	27.4	44.3
SES (No. Household Possessions)*			
Low (0–5)	47.4	22.5	30
Middle (6–9)	39.2	26.2	34.6
High (10– 20)	37.1	30.9	32
Total	**41.4**	**26.5**	**32.1**

[1]Categories represent tertiles of scores. *p<0.05, **p<0.01, ***p<0.001

Among urban male participants, 31.8% had a high perception of crime and safety problems compared to 25.9% for rural participants (Table 9.1.1.3). For females, high perception of crime and safety problems was similar for urban (35.4%) and rural participants (34.8%). There was no statistically significant area of residence differences within the sexes.

Table 9.1.1.3: Sex-specific and Total Percentage Distribution of Perception of Neighbourhood Crime and Safety Problems among Jamaicans by Urbanicity, JHLS III 2017

Perceived Level of Crime and Safety Problems[1]	Male		Female		Total
	Urban	Rural	Urban	Rural	
Low	43.4	45.8	40.0	36.4	38.4
Moderate	24.8	28.3	24.6	28.8	26.4
High	31.8	25.9	35.4	34.8	35.2
Total	**100**	**100**	**100**	**100**	**100**

[1]Categories represent tertiles of scores.

Table 9.1.1.4 shows the proportion of participant's perception of crime and safety problems by the categories of age and sex. For each category of the perception of crime and safety problems, the distribution of the age groups did not differ significantly when males and females were compared.

Table 9.1.1.4: Percentage Distribution of Categories of Perception of Neighbourhood Crime and Safety Problems among Jamaicans by Age and Sex, JHLS III 2017

Age Groups	Perceived Level of Neighbourhood Crime and Safety Problems					
	Low		Moderate		High	
	M	F	M	F	M	F
15–24	27.1	24.8	25.7	24.2	27.0	25.8
25–34	18.6	19.2	24.6	23.5	21.9	22.3
35–44	15.2	18.4	18.2	19.5	17.0	16.6
45–54	13.0	14.7	13.6	11.4	19.4	15.6
55–64	13.1	10.7	10.1	9.3	7.7	9.6
65–74	8.4	5.8	4.9	8.1	4.9	4.4
75+	4.6	6.5	3.0	4.1	2.1	5.7
Total	**100**	**100**	**100**	**100**	**100**	**100**

9.1.2 Perception of Neighbourhood Physical Disorder

This was measured based on five questions measuring whether litter/trash, graffiti on buildings, abandoned cars, vacant buildings and houses and yards not being kept up were 'a problem' in the neighbourhood.

The descriptive statistics for the physical disorder perception scale are shown in Table 9.1.2.1. Higher scores indicated a greater perception of physical disorder. The item with the highest mean score of 2.4 was 'litter or trash on the sidewalks or street.' There was an overall mean score of 8.3 out of a maximum score of 25. Items in the scale were highly correlated with a Cronbach's α of 0.8.

Table 9.1.2.1: Summary Statistics and Internal Reliability Coefficients for Components of Perception of Neighbourhood Physical Disorder, JHLS III 2017

Item	Mean	SD	Range	Cronbach's α
Litter or trash on the sidewalks or street	2.4	1.4	1–5	Not Applicable
Graffiti on buildings and walls	1.4	0.9	1–5	
Abandoned cars	1.3	0.8	1–5	
Vacant, abandoned or boarded up buildings	1.4	0.9	1–5	
Houses and yards not kept up	1.8	1.1	1–5	
Physical Disorder scale	8.3	3.8	5–25	0.8

Scores range from 1 = Never to 5 = Always.

Table 9.1.2.2 shows the distribution of physical disorder by the demographic categories of sex, urban-rural residence, and age. No significant sex or urban-rural differences were detected. However, the analyses suggested that the perception of physical disorder differed significantly ($p=0.0125$) with age. The prevalence of low perception of physical disorder increased from 33.9% among 15–24-year-olds to a 47.6% among those 75 years and older. Conversely, there was a reduction in the prevalence of high perception of physical disorder from 32.4% in the 15–24-year-olds to 20.4% among those 75 years and older. The changing prevalence estimates could reflect differences in expectation regarding physical disorder as the population ages.

We also examined the distribution of levels of perceived physical disorder by categories of education and SES as measured using number of household possessions. Table 9.1.2.2 shows that a significantly ($p < 0.01$) higher proportion of persons with secondary level education (31.5%) perceived high levels of physical disorder in their communities, compared with those who had achieved post-secondary educational levels (28.2%) and primary or lower levels of education (24.7%). The prevalence of high and moderate perception of physical disorder decreased with increasing SES as measured by number of household possessions, while the prevalence of low perception of physical disorder increased as this index of SES increased. Persons classified as having low SES had the highest proportion of perception of combined high and moderate physical disorder levels within their communities (67.1%) compared with those in the middle (65.3%) and high SES levels (55.1%). These differences were statistically significant ($p < 0.01$).

Table 9.1.2.2: Percentage Distribution of Perception of Neighbourhood Physical Disorder among Jamaicans by Socio-demographic Categories, JHLS III 2017

Socio-demographic Categories	Perception of Neighbourhood Physical Disorder Categories[1]		
	Low	Moderate	High
Sex			
Males	37.7	34.8	27.5
Females	39.1	30.1	30.8
Area of Residence			
Urban	39.8	28.7	31.5
Rural	36.9	36.5	26.6
Age Groups (Years)*			
15–24	33.9	33.8	32.4
25–34	37.8	28.0	34.2
35–44	39.7	37.5	22.9
45–54	38.9	29.6	31.5
55–64	41.5	32.8	25.6
65–74	42.4	33.4	24.3
75+	47.6	32.0	20.4
Highest Education Level			
Primary or Lower	40.9	34.4	24.7
Secondary	35.5	33.0	31.5
Post-secondary	47.1	24.7	28.2
SES (No. Household Possessions)			
Low (0–5)	32.8**	34.2	32.9
Middle (6–9)	34.8	33.5	31.8
High (10–20)	44.9	30.8	24.3
Total	**38.4**	**32.4**	**29.2**

[1]Categories represent tertiles of scores. *p<0.05, **p<0.01, ***p<0.001

Table 9.1.2.3 shows the sex-specific distribution of perception of community physical disorder with age and area of residence categories. When urban-rural differences were examined among males, statistically significantly higher proportion of urban residents perceived high levels of physical disorder (32.1%) compared with rural residents (22.7%). The distribution of the levels of perception amongfemales did not differ by area of residence.

Among males, there was significant variation ($p < 0.05$) for high levels of perception of physical disorder ranging from 19.3% in the 35–44 years age group to 35.4% in the 25–34 years age group. Among females, similarly, there was also significant variation ($p < 0.05$) in the high level of perception of physical disorder category ranging from 17.7% in the 65–74 age group to 39.3% for the 15–24 years age group.

Table 9.1.2.3: Percentage Distribution of Sex-specific Perception of Neighbourhood Physical Disorder among Jamaicans by the Demographic Categories, JHLS III 2017

Demographic Categories	Perception of Neighbourhood Physical Disorder Categories[1]					
	Males			Females		
	Low	Moderate	High	Low	Moderate	High
Area of Residence						
Urban	38.2*	29.8	32.1	41.2	27.8	31.0
Rural	37.2	40.1	22.7	36.6	32.8	30.6
Age Groups (Years)*						
15–24	35.4*	39.2	25.4	32.3*	28.4	39.3
25–34	39	25.6	35.4	36.7	30.4	32.9
35–44	40.2	40.5	19.3	39.1	34.8	26.1
45–54	39.3	27.6	33.2	38.6	31.6	29.8
55–64	39.1	38.5	22.4	43.9	27.1	29.0
65–74	30.2	38.9	30.9	54.4	27.9	17.7
75+	36.5	43.2	20.3	54.7	24.8	20.5

[1]Categories represent tertiles of scores. *p<0.05, **p<0.01, ***p<0.001

Table 9.1.2.4 shows that among persons classified as perceiving low levels of physical disorder, the distribution of the age group categories was not the same for both sexes (p=0.0159). Among the males that perceived low levels of physical disorder, higher percentages of the males, compared to females were under 35 years of age. Contrastingly, higher percentages of the females, compared to the males, were 65 years and older. In both the moderate and high perception of physical disorder categories, the distributions of the age groups did not differ significantly when the sexes were compared.

Table 9.1.2.4: Percentage Distribution of Categories of Perception of Neighbourhood Physical Disorder among Jamaicans by the Categories of Age and Sex, JHLS III 2017

Age Groups	Low*		Moderate		High	
	Males	Females	Males	Females	Males	Females
15–24	25.9	19.8	29.5	23.4	24.6	30.3
25–34	22.4	19.8	16.8	21.5	26.2	23.8
35–44	17.3	18.7	19.5	20.8	13.2	14.9
45–54	14.9	15.0	11.9	15.8	17.9	14.7
55–64	11.1	10.9	11.3	8.7	9.0	9.0
65–74	5.0	8.2	6.9	5.5	6.9	3.7
75+	3.4	7.7	4.1	4.2	2.3	3.9
Total	**100**	**100**	**100**	**100**	**100**	**100**

[1]Categories represent tertiles of scores.

9.1.3 Perception of Neighbourhood Social Disorder

This was assessed using four questions regarding a perception of a 'problem' in the neighbourhood concerning unemployed adults, public drunkenness, young adults hanging around, and gang activity.

Table 9.1.3.1 shows the descriptive statistics for the social disorder perception scale. Higher scores indicated a greater perception of social disorder. There was an overall mean score of 9.2 out of a maximum score of 20. The items with the highest mean scores of 3.1 were 'unemployed youth hanging around' and 'young adults hanging around.' Items in the scale were highly correlated with a Cronbach's α of 0.8.

Table 9.1.3.1: Summary Statistics and Internal Reliability Coefficients for Components of Perception of Neighbourhood Social Disorder, JHLS III 2017

Item	Mean	SD	Range	Cronbach's α
Drunks hanging around	1.6	1.1	1–5	Not Applicable
Unemployed youth hanging around	3.1	1.6	1–5	
Young adults hanging around	3.1	1.6	1–5	
Gang Activity	1.5	1.1	1–5	
Social Disorder scale	**9.2**	**4.3**	**4–20**	**0.8**

Scores range from 1 = Never to 5 = Always.

Table 9.1.3.2 shows the percentage distribution of levels of perception of social disorder by socio-demographic categories. There was no sex, area of residence, or age group differences in the distribution of the perception categories.

However, the perception of social disorder in Jamaican communities differed significantly with education ($p<0.001$) and household possessions SES ($p<0.001$) categories. The prevalence of low perception of social disorder increased with education level and with household possession SES. Conversely, the prevalence of high perception of social disorder was lower in the post-secondary and high household possessions SES categories, compared to the lower levels of their respective variable (education and possessions) categories. A significantly higher ($p < 0.001$) proportion, 67.4%, of the persons who had achieved primary or lower levels of education perceived social disorder as being moderate or high (combined) compared to those who had achieved secondary education (64.8%) or post-secondary education (51.3%). The highest proportion of persons with high perception of social disorder was in the low household possessions SES category (29.6%) and lowest in the high household possessions SES category at 14.5%.

Table 9.1.3.2: Percentage Distribution of Perception of Neighbourhood Social Disorder among Jamaicans by Socio-demographic Categories, JHLS III 2017

Socio-demographic Categories	Perceived level of Neighbourhood Social Disorder[1]		
	Low	Moderate	High
Sex			
Males	36.1	40.9	23
Females	38.1	39.7	22.2
Area of Residence			
Urban	38.3	36.1	25.5
Rural	35.8	44.9	19.2
Age Groups (Years)			
15–24	32.9	41.5	25.6
25–34	35.2	41.6	23.2
35–44	43.3	33.8	22.9

Table 9.1.3.2: *(contd):* **Percentage Distribution of Perception of Neighbourhood Social Disorder among Jamaicans by Socio-demographic Categories, JHLS III 2017**

Socio-demographic Categories	Perceived level of Neighbourhood Social Disorder[1]		
	Low	Moderate	High
45–54	37.3	38.8	23.8
55–64	38.3	46.3	15.4
65–74	39.0	42.2	18.8
75+	40.6	41.2	18.3
Highest Education Level* **			
Primary or Lower	32.6	46.0	21.4
Secondary	35.2	40.2	24.6
Post-secondary	48.7	33.4	17.9
SES (No. Household Possessions)* **			
Low (0–5)	29.4	41.0	29.6
Middle (6–9)	29.9	45.3	24.8
High (10–20)	50.0	35.5	14.5
Total	**37.2**	**40.3**	**22.6**

*p < 0.05, **p < 0.01, ***p < 0.001. [1]Categories represent tertiles of scores.

When sex-specific differences were analysed, as shown in Table 9.1.3.3, there was a greater proportion of urban versus rural males (26.6% vs. 19.1%) who perceived social disorder in their communities as high, and among urban versus rural females (24.6% vs. 19.4%). However, these differences were not statistically significantly different. Table 9.1.3.3 also shows the proportion of males and females by category of social disorder and age. There was no significant variation in any of the levels of perception of social disorder across the age groups for either males or females.

Table 9.1.3.3: Percentage Distribution of Sex-specific Perception of Neighbourhood Social Disorder among Jamaicans by Demographic Categories, JHLS III 2017

Demographic Categories	Perception of Neighbourhood Social Disorder Categories[1]					
	Males			Females		
	Low	Moderate	High	Low	Moderate	High
Area of Residence						
Urban	35.4	38.0	26.6	40.9	34.5	24.6
Rural	36.9	44.0	19.1	34.8	45.9	19.4
Age Groups (Years)						
15–24	31.7	44.9	23.4	34.0	38.2	27.8
25–34	36.8	36.3	27	33.8	46.6	19.7
35–44	46.4	32.8	20.9	40.6	34.7	24.7
45–54	35.4	39.1	25.6	39.3	38.6	22.1
55–64	33	51.4	15.6	43.7	41.1	15.1
65–74	30.3	50.3	19.5	47.7	34.2	18.1
75+	38.3	39.1	22.6	42.1	42.6	15.4

[1]Categories represent tertiles of scores. *p<0.05, **p<0.01, ***p<0.001

Among persons classified as perceiving moderate levels of social disorder (Table 9.1.3.4), there was significant variation in sex differences across the age group categories ($p < 0.05$). Greater proportions of males perceived moderate levels of social perception disorder for the age group categories of 15–24, 45–54, 55–64, and 65–74 years old compared to the females. In both the low and high perception of social disorder categories, there was no significant sex variation across age groups.

Table 9.1.3.4: Percentage Distribution of Categories of Perception of Neighbourhood Social Disorder[1] among Jamaicans by Age and Sex, JHLS III 2017

Age Groups	Low		Moderate*		High	
	M	F	M	F	M	F
15–24	24.8	23.2	28.8	24.9	27.6	30.7
25–34	22.4	17.6	19.3	24.3	24.7	22.5
35–44	19.6	19.8	12.0	15.7	14.3	17.5
45–54	14.4	14.8	15.4	14.2	17.3	15.1
55–64	9.7	11.0	13.2	9.9	7.8	6.5
65–74	5.1	7.3	8.1	5.1	5.4	4.3
75+	4.1	6.4	3.1	5.9	3.0	3.4
Total	**100**	**100**	**100**	**100**	**100**	**100**

*$p < 0.05$; M- male, F- female. [1]Categories represent tertiles of scores.

9.1.4 Collective Efficacy

This measure, a form of social capital, assesses the mutual trust and shared expectations among neighbours or communities. It is assessed using two subscales: 1) social cohesion, the relationships between neighbours and 2) informal social control, community pressure for norms and laws. Table 9.1.4.1 shows the five items included in each subscale.

In the informal social control subscale, the last item sought responses to closure of a 'post office' rather than 'fire station' due to budget cuts. This is a minor adaptation of the original and validated scale by Sampson et al.[4] The social cohesion subscale had a mean score of 17.3 out of a maximum of 25 with a moderate reliability of Cronbach's $\alpha = 0.6$. For the informal social control subscale, the reliability was good with a Cronbach's $\alpha = 0.8$. The highest mean score for an item was 4.0 out of a maximum score of 5 in response to the item 'Suppose that because of budget cuts the post office closest to your home was going to be closed down, how likely it is that neighbourhood residents would organize to try to do something to keep it open?' When both subscales were combined, the summary measure created, collective efficacy, had a mean score of 36.8 out of a maximum of 50 and a Cronbach's $\alpha = 0.8$. Higher scores for collective efficacy meant that the respondent believed their community was one with greater social cohesion and/or greater informal social control (suggesting that community members are more likely to work together for the good of the community).

Table 9.1.4.1: Summary Statistics and Internal Reliability Coefficients for Components of Perception of Neighbourhood Collective Efficacy, JHLS III 2017

Item	Mean	SD	Range	Cronbach's α
Social Cohesion				
This is a close-knit neighbourhood.	3.7	1.0	1–5	Not Applicable
People around here are willing to help their neighbours.	3.7	1.0	1–5	
People in this neighbourhood generally don't get along with each other.*	3.3	1.1	1–5	
People in this neighbourhood don't share the same values.*	2.9	1.2	1–5	
People in this neighbourhood can be trusted.	3.5	1.1	1–5	
Social Cohesion scale	17.3	3.5	5–25	0.6
Informal Social Control				
If a group of neighbourhood children were skipping school and hanging out on a street corner, how likely is it that your neighbours would do something about it?	3.8	1.2	1–5	Not Applicable
If some children were spray-painting graffiti on a local building, how likely is it that your neighbours would do something about it?	3.9	1.1	1–5	
If a child was showing disrespect to an adult, how likely is it that people in your neighbourhood would scold that child?	3.6	1.3	1–5	Not Applicable
If there was a fight in front of your house and someone was being beaten or threatened, how likely is it that your neighbours would break it up?	3.9	1.1	1–5	
Suppose that because of budget cuts the post office closest to your home was going to be closed down. How likely it is that neighbourhood residents would organize to try to do something to keep it open?	4.0	1.1	1–5	
Informal Social Control scale	19.4	4.6	5–25	0.8
Collective Efficacy scale	36.8	6.9	10–50	0.8

Scores range from 1 = Never to 5 = Always.

*Reverse coded.

Table 9.1.4.2 shows the distribution of the perceived levels of neighbourhood collective efficacy with socio-demographic subgroups of the population of Jamaicans aged 15 years and older. The distribution of the perceived levels differed significantly with area of residence ($p<0.001$), age group ($p<0.001$), and highest education level ($p<0.05$) attained but not with sex or socio-economic status measured using the number of household possessions. The proportion of Jamaicans aged 15 years and older who perceived that their neighbourhoods had high collective efficacy was higher among:

1. rural (33.0%) compared to urban (23.5%) residents.
2. age groups ranging from 45 to 54 years to 75+ years, being over 30%, compared with persons in the younger age groups for which prevalence ranged from 19.8% in the 25- to 34-year-olds to 27.5% in the 35- to 44-year-olds

3. persons with primary or lower education as their highest level, 35.2%, compared with persons with secondary or higher level of education, among whom the prevalence of perceived high neighbourhood collective efficacy was less than 30%.

Table 9.1.4.2: Percentage Distribution of Perception of Neighbourhood Collective Efficacy among Jamaicans by Socio-demographic Categories, JHLS III 2017

Socio-demographic Categories	Perception of Neighbourhood Collective Efficacy Categories[1]		
	Low	Moderate	High
Sex			
Males	39.0	30.7	30.3
Females	37.8	35.6	26.7
Area of Residence* **			
Urban	44.7	31.8	23.5
Rural	32.4	34.7	33.0
Age Groups (Years)* **			
15–24	45.6	31.0	23.4
25–34	46.9	33.3	19.8
35–44	35.8	36.7	27.5
45–54	31.3	34.6	34.1
55–64	26.5	30.3	43.2
65–74	29.4	32.0	38.6
75+	31.6	36.6	31.8
Highest Education Level*			
Primary or Lower	30.7	34.1	35.2
Secondary	40.0	34.5	25.5
Post-secondary	43.6	30.1	26.3
SES (No. Household Possessions)			
Low (0–5)	36.7	31.6	31.8
Middle (6–9)	43.4	29.7	26.9
High (10–20)	35.2	36.9	27.9
Total	**38.3**	**33.3**	**28.4**

*p < 0.05, **p < 0.01, ***p < 0.001. [1]Categories represent tertiles of scores.

When sex-specific associations of collective efficacy with urbanicity were examined (Table 9.1.4.3), among males there was a significantly higher proportion (p < 0.001) of rural participants who perceived collective efficacy to be high (38.5%) in their neighbourhoods as compared with urban participants (20.9%).

Table 9.1.4.3 also shows the sex-specific associations of collective efficacy with age. There was a statistically significant association of perception of neighbourhood collective efficacy with age in the males (p<0.001) and in the females (p<0.001). The prevalence of low perception of neighbourhood collective efficacy exceeded 40% among the 15–24 and 25- to 34-year-olds in both sexes, while estimates were less than this percentage in the older age groups, falling to a low of just under 27% in those 65 years and older in the males and as low as 23.8% in the 45- to 54-year-old females.

Table 9.1.4.3: Sex-specific Percentage (%) Distributions of Levels of Perception of Neighbourhood Collective Efficacy among Jamaicans by Urbanicity and Age, JHLS III 2017

Demographic Categories	Perception of Neighbourhood Collective Efficacy Categories[1]					
	Males			Females		
	Low	Moderate	High	Low	Moderate	High
Area of Residence						
Urban	48.8***	30.3	20.9	41.2	33	25.8
Rural	30.4	31.0	38.5	34.3	38.2	27.5
Age Groups (Years)						
15–24	43.7***	25.1	31.2	47.2***	36.3	16.5
25–34	52.1	32.4	15.6	42.4	34.1	23.6
35–44	33.6	33.3	33.1	37.7	39.5	22.8
45–54	38.9	36.2	24.9	23.8	33	43.2
55–64	23.1	26.2	50.7	29.9	34.5	35.6
65–74	26.7	26.7	46.6	32.3	37.6	30.1
75+	26.9	42.5	30.6	34.7	32.8	32.5

[1]Categories represent tertiles of scores. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Also, among males, 24.9% in the 45–54 age group perceived high levels of collective efficacy in their neighbourhood compared with 50.7% of males in the 55–64 age group and 46.6% in the 65- to 74-year-old age group ($p < 0.001$). Among females, the prevalence of the perception for high collective efficacy ranged from 43.2% of those in the 45- to 54-year-old age group to 16.5% among the 15- to 24-year-olds ($p < 0.001$).

Table 9.1.4.4 shows that the distributions of the age groups differed with the sexes ($p<0.01$) in the subgroup that perceived high collective efficacy in their neighbourhoods but not in the other subgroups for perception of neighbourhood collective efficacy. Among those who perceived high collective efficacy in their neighbourhoods, the proportions in all age groups except for the 25–34, 45–54, and 75+ age groups were higher among the males compared to the females.

Table 9.1.4.4: Perception of Neighbourhood Collective Efficacy (%) among Jamaicans by Age and Sex, JHLS III 2017

Age Groups	Low		Moderate		High**	
	Male	Female	Male	Female	Male	Female
15–24	32.3	34.0	18.7	21.6	20.3	15
25–34	25.0	23.0	27.1	22.4	11.0	19.8
35–44	13.1	15.8	18.9	20.7	16.6	15.5
45–54	14.3	9.1	14.0	14.8	12.7	24.5
55–64	7.6	7.5	9.1	9.1	23.4	13.9
65–74	4.8	4.6	5.8	6.4	10.5	5.7
75+	3.0	5.0	5.3	5.1	5.4	5.7
Total	**100**	**100**	**100**	**100**	**100**	**100**

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

9.2. Associations with Cardiovascular Disease Risk Indices

There have been increased efforts by researchers to understand the upstream determinants of health and well-being, often termed social determinants of health. Associations of the residential context with health and well-being outcomes and their risk factors have been examined in several developed countries.[6-10] A few similar studies have also been done within the Jamaican context from the previous national survey, Jamaica Health and Lifestyle Survey 2008 (JHLS II).[1,2] This section describes associations between the neighbourhood characteristics and cardiovascular disease risk indices such as hypertension, diabetes mellitus, obesity, depression, and low/no physical activity (PA).

9.2.1 Associations of Cardiovascular Disease Risk Indices with Perception of Crime and Safety Problems

Table 9.2.1.1 shows that there were no significant associations between perception of crime and safety problems in the neighbourhood of participants and having a diagnosis of hypertension or diabetes. However, there was a significantly higher proportion of persons suffering from obesity (31.9%, p<0.05) and depression (21.0%, p<0.001) that perceived high levels of crime and safety problems in their neighbourhoods, compared with those who perceived the levels as moderate or low.

Table 9.2.1.1: Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by the Categories of Neighbourhood Perception of Crime and Safety Problems, JHLS III 2017

CVD Risk Indices	Perception of Neighbourhood Crime and Safety Perception Categories[1]		
	Low	Moderate	High
Hypertension	36.3	31.6	32.6
Diabetes Mellitus	12.5	11.2	9.3
Obesity*	28.0	24.8	31.9
Depression***	11.1	11.2	21.0
Low/No Physical Activity*	38.1	33.2	34.6

*p < 0.05, **p < 0.01, ***p < 0.001. [1]Categories represent tertiles of scores.

Counterintuitively, the proportion of persons engaged in low/no PA was higher (p<0.05) in persons with low levels of perception of crime and safety problems, at 38.1%, compared with the prevalence in persons who perceived their neighbourhood levels of crime and safety problems as being moderate (33.2%) or high (34.6%) ($p < 0.05$).

Table 9.2.1.2 shows the sex-specific prevalence of the selected health outcomes and PA with perceived crime and safety problems. The table shows the scores for perception of neighbourhood collective efficacy categorized according to whether they were greater than the mean (shown in Table 9.1.4.1) for the scores and coded as 'high,' or less than or equal to the mean and coded as 'low.' No significant sex-specific differences were noted for hypertension or diabetes prevalence for those who perceived crime and safety problems as high versus low. However, among males only, a significantly higher proportion (p<0.05) of those who perceived crime and safety problem levels as high were obese (19.4%) versus those who thought the levels were low (13.4%). Among both males and females there was significantly higher (p<0.01) prevalence of depression (Males: 13.8% vs 7.5%, Females: 24.9% vs 14.9%) among those who perceived high levels of crime and safety problems compared to those who perceived the levels as low. For the males and for the females the prevalence of the low or no physical activity was not different when categories of perception of crime and safety problem were compared.

Table 9.2.1.2: Sex-specific Prevalence of Cardiovascular Disease Risk Indices by Categories of Perception of Neighbourhood Crime and Safety Problems, JHLS III 2017

Cardiovascular Disease Risk Indices	Perception of Neighbourhood Crime and Safety Problems[1]			
	Males		Females	
	Low	High	Low	High
Hypertension	33.7	28.0	35.4	36.5
Diabetes Mellitus	9.0	6.0	15.2	12.2
Obesity	13.4	19.4*	39.4	41.8
Depression	7.5	13.8**	14.9	24.9**
Low/No Physical Activity	28.8	24.7	45.1	40.5

*p < 0.05,**p < 0.01;·[1]Categories: High – scores > mean; Low – scores ≤ mean.

Urban–rural associations of prevalence of CVD risk indices with perception of levels of neighbourhood crime and safety problems are shown in Table 9.2.1.3. Among urban residents, compared to those who considered the crime and safety problem levels as low, those who perceived high levels of crime and safety problems had:

a. significantly lower prevalence levels of diabetes (High perception: 11.1% vs Low perception:13.5%, p<0.001);
b. significantly higher levels of depression (High perception: 21.8% vs Low perception: 12.5%, p<0.001); and
c. no significant difference in the prevalence of low/no PA.

Similarly, for rural residents, those who perceived high levels of crime and safety problems had significantly lower proportions of diabetes (10.0% vs. 14.9%, p<0.001), higher proportions of depression (22.8% vs. 13.2%, p<0.001) and no significant difference in the proportions with low/no PA level.

Table 9.2.1.3: Urban versus Rural Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by the Categories of Neighbourhood Perception of Crime and Safety Problems, JHLS III 2017

Cardiovascular Disease Risk Indices	Perception of Neighbourhood Crime and Safety Problems[1]			
	Urban		Rural	
	Low	High	Low	High
Hypertension	35.4	33.1	28.8	36.7
Diabetes Mellitus	13.5**	11.1	14.9**	10.0
Obesity	28.4	30.9	26.6	34.0
Depression	12.5**	21.8	13.2**	22.8
Low/No Physical Activity	41.0	35.3	32.0	26.5

*p < 0.05, **p < 0.01, **p<0.001. [1]Categories: High – scores > mean; Low – scores ≤ mean.

The age-adjusted odds ratios in Table 9.2.1.4 show that high perception of crime and safety problems were associated with higher odds of obesity, by 36% ($p<0.01$), and almost double the odds of depression (OR=1.98 [95% CI = 1.46–2.67], $p<0.001$).

Table 9.2.1.4: The Relative Odds Of Given Cardiovascular Disease Risk Indices (with 95% Confidence Intervals [CIs] in Brackets) Associated with High versus Low Perception of Neighbourhood Crime and Safety Problems, JHLS III 2017

Cardiovascular Disease Risk Indices	Age-adjusted Relative Odds[1] of CVD Risk (95% CI)
Hypertension	1.00(0.76–1.31)
Diabetes Mellitus	0.85(0.61–1.19)
Obesity	1.36(1.10–1.68)**
Depression	1.98(1.46–2.67)***
Low/No Physical Activity	0.89(0.69 – 1.15)

**$p < 0.01$; ***$p < 0.001$. [1]Relative odds of the respective CVD risk indices among those with high compared with low perception

9.2.2 Associations of Cardiovascular Disease Risk Indices with Perceptions of Neighbourhood Physical and Social Disorder

Table 9.2.2.1 shows that a significantly greater prevalence ($p<0.05$) of low/no PA levels (41.6%) was reported among persons who perceived low levels of physical disorder compared to those who perceived the physical disorder levels in their communities as moderate (36.0%) or high (29.0%). There was also an increasing trend in the prevalence of depression over perception of physical disorder tertile categories with estimates moving from 12.6% in the low perception category to 13.3% and 16.8% in moderate and high categories, respectively, but this variation was not statistically significant.

Table 9.2.2.1 further shows that there was a significantly greater prevalence ($p<0.001$) of low/no PA (39.5%) among persons who perceived low levels of social disorder compared to those who perceived it as moderate (39.0%) or high (25.3%). There was an increasing trend in the prevalence of depression over perception of social disorder tertiles with estimates moving from 9.9% in the low perception category (or lowest tertile) to 15.8% and 21.4% in moderate and high categories, respectively ($p=0.001$).

The analyses revealed no significant associations with hypertension, diabetes mellitus and obesity.

Table 9.2.2.1: Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by Categories of Perception of Neighbourhood Physical and Social Disorder, JHLS III 2017

	Cardiovascular Disease Risk Indices				
	Hypertension	Diabetes Mellitus	Obesity	Depression	Low/No Physical Activity
Perception of Neighbourhood Physical Disorder[1]					
High	33.2	11.0	29.9	16.8	29.0*
Moderate	30.9	11.5	27.2	13.3	36.0
Low	35.5	11.9	28.2	12.6	41.6
Perception of Neighbourhood Social Disorder[1]					
High	33.1	12.2	28.0	21.4**	25.3***
Moderate	33.3	8.9	27.4	15.8	39.0
Low	34.0	11.0	27.9	9.9	39.5

*p < 0.05, **p < 0.01, **p<0.001. [1]Categories represent tertiles of scores.

Table 9.2.2.2 shows the perception of physical and social disorder scores dichotomized according to whether they were greater than the mean for the scores (shown in Tables 9.1.2.1 and 9.1.3.1 for perception of neighbourhood physical and social disorder, respectively,) and coded as 'high,' or less than or equal to the mean and coded as 'low.' Similar significant associations were revealed, as when the scores were grouped as tertiles.

In summary, perception of high levels of perceived social disorder was associated with significantly lower prevalence of low/no PA (High perception: 30.3% vs Low perception: 40.9%, p<0.001) and higher prevalence of depression (High perception: 18.4% vs Low perception: 12.0%, p<0.001). Similarly, significant findings were found in the association between levels of perceived physical disorder and low/no PA level (High perception: 28.8% vs Low perception: 40.4%, p<0.001). Higher levels of perceived physical disorder were not significantly associated with higher prevalence of depression.

Table 9.2.2.2: Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by the Categories of Perception of Neighbourhood Physical and Social Disorder, JHLS III 2017

Perception of Neighbourhood Disorder Categories[1]	Cardiovascular Disease Risk Indices				
	Hypertension	Diabetes Mellitus	Obesity	Depression	Low/No PA
Perception of Neighbourhood Physical Disorder[1]					
High	31.2	11.0	29.5	15.9	28.8***
Low	34.6	11.8	27.7	12.9	40.4
Perception of Neighbourhood Social Disorder[1]					
High	35.2	10.4	29.5	18.4**	30.3***
Low	32.1	10.5	26.2	12.0	40.9

*p < 0.05, **p < 0.01, **p<0.001. [1]Categories: High – scores > mean; Low – scores ≤ mean.

Sex-specific associations are displayed in Table 9.2.2.3 for the dichotomized categories of perception of physical and social disorder. Among females, statistically significantly higher levels of depression ($p < 0.01$) were found among those who perceived high versus low levels of physical disorder (High: 22.3% vs Low: 16.0%, p<0.01) and social disorder (High: 24.1% vs Low: 14.7%, p<0.01), respectively.

The opposite direction was seen in the associations with low/no PA. Specifically, statistically significantly lower prevalence of low/no PA was estimated among those who perceived a high versus low level of neighbourhood physical disorder (High: 35.4% vs Low: 49.7%, p<0.01) and neighbourhood social disorder (High: 36.5% vs Low: 52.1%, p<0.001).

Table 9.2.2.3: Sex-specific Prevalence of Chronic Disease and Physical Activity among Jamaicans by Categories of Perception of Neighbourhood Physical and Social Disorder, JHLS III 2017

Cardiovascular Disease Risk Indices	Sex	Perception of Neighbourhood Physical Disorder Categories[1]		Perception of Neighbourhood Social Disorder Categories[1]	
		High	Low	High	Low
Hypertension	Males	27.8	32.8	35.4*	28.0
	Females	34.4	36.1	34.9	35.9
Diabetes Mellitus	Males	10.0	7.2	8.9	6.2
	Females	11.8	15.9	11.8	14.3
Obesity	Males	18.9	12.6	15.8	11.9
	Females	39.4	41.5	41.9	39.5
Depression	Males	9.1	9.8	12.1	9.2
	Females	22.3**	16.0	24.1**	14.7
Low/No Physical Activity	Males	21.7	30.7	23.5	29.3
	Females	35.4**	49.7	36.5***	52.1

*p < 0.05,**p < 0.01,***p < 0.001. [1]Categories: High – scores > mean; Low – scores ≤ mean.

Table 9.2.2.3 further shows that among the males, none of the cardiovascular disease risk indices was associated with perceived level of neighbourhood physical disorder and that hypertension was the only CVD risk factor associated with perceived level of social disorder. Among males, significantly higher prevalence of hypertension was seen among those who perceived social disorder as high in their communities versus those who perceived low levels of social disorder (High: 35.4% vs Low: 28.0%, p<0.05).

Table 9.2.2.4 shows the prevalence of each of the CVD risk indices by the high (scores > mean) and low (scores ≤ mean) perception categories for physical and social disorder specific to area of residence.

For the outcome of depression, among rural residents, there was significantly higher prevalence of depression ($p < 0.001$) among those who perceived high levels of physical disorder (High perception: 19.2% vs Low perception: 9.7%, p<0.001) and high levels of social disorder (High perception: 18.1% vs Low perception: 10.5%, p<0.05) compared to those who did not.

Table 9.2.2.4 also shows that prevalence of low/no PA was lower among those who perceived higher levels of physical disorder, in both the urban (High perception: 31.0% vs Low perception: 43.7%, p<0.01) and rural residents (High perception: 24.5% vs Low perception: 33.5%, p<0.01).

Among urban but not rural residents, significantly higher prevalence of diabetes was observed among those who perceived low levels of social disorder (High perception: 9.3% vs Low perception: 15.0%, $p<0.05$).

Table 9.2.2.4: Urban versus Rural Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by Categories of Perception of Neighbourhood Physical and Social Disorder, JHLS III 2017

Cardiovascular Disease Risk Indices	Area of Residence	Perception of Neighbourhood Physical Disorder[1]		Perception of Neighbourhood Social Disorder[1]	
		High	Low	High	Low
Hypertension	Urban	32.8	33.3	35.1	31.0
	Rural	30.1	33.3	31.5	31.0
Diabetes Mellitus	Urban	10.4	14.4	9.3*	15.0
	Rural	14.3	11.5	13.1	8.7
Obesity	Urban	31.7	27.7	29.7	27.3
	Rural	28.9	30.7	31.9	26
Depression	Urban	15.4	16.6	19.9	14.8
	Rural	19.2***	9.7	18.1*	10.5
Low/No PA	Urban	31.0**	43.7	30.0***	46.7
	Rural	24.5**	33.5	29.4	28.9

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. [1]Categories: High – scores > mean; Low – scores ≤ mean.

When adjusted for age, perceived high neighbourhood physical disorder was associated with 40% lower odds of low/no PA ($p<0.001$) (See Table 9.2.2.5).

Table 9.2.2.5: The Relative Odds of Given Cardiovascular Disease Risk Indices (With 95% Confidence Intervals [CIs] in Brackets) Associated with Perception of High Versus Low Neighbourhood Physical Disorder

Cardiovascular Disease Risk Indices	Age-Adjusted Relative Odds[1] of Neighbourhood Physical Disorder (95% CI)
Hypertension	1.02(0.79–1.32)
Diabetes Mellitus	1.08(0.81–1.44)
Obesity	1.15(0.91–1.45)
Depression	1.28(0.99–1.65)
Low/No PA	0.60(0.46 – 0.79)***

**$p < 0.01$; ***$p < 0.001$. [1]Relative odds of the respective CVD risk indices among those with high compared with low perception

In Table 9.2.2.6, after adjustment for age, it is seen that higher levels of perceived social disorder were associated with increased the odds of hypertension by approximately 30% (p<0.05), and depression by approximately 70% (p<0.001), but an approximately 40% (p<0.001) lower odds of low/no PA.

Table 9.2.2.6: The Relative Odds of Given Cardiovascular Disease Risk Indices (with 95% Confidence Intervals [CIs] in Brackets) Associated with Perception of High Versus Low Neighbourhood Social Disorder

Cardiovascular Disease Risk Indices	Age-Adjusted Relative Odds[1] of Neighbourhood Social Disorder (95%CI)
Hypertension	1.31(1.02–1.69)*
Diabetes Mellitus	1.05(0.72–1.53)
Obesity	1.23(0.98–1.54)
Depression	1.67(1.16–2.40)**
Low/No Physical Activity	0.62(0.50 – 0.76)***

**p < 0.01; ***p < 0.001. [1]Relative odds of the respective CVD risk indices among those with high compared with low perception

9.2.3 Associations of Cardiovascular Disease Risk Indices with Perceptions of Neighbourhood Collective Efficacy

The associations of collective efficacy with select chronic non-communicable diseases (CNCDs) and low PA are shown in Table 9.2.3.1. There was a significantly higher prevalence of hypertension (p < 0.001) among those with perceived high versus moderate and low levels of collective efficacy (High: 36.6% vs. Moderate: 35.9% vs. Low: 25.6%). An opposite statistically significant trend was seen for depression (p < 0.01), with high levels of perception of collective efficacy associated with lower levels of depression, 10.4%, compared with 18.1% for those with low levels of perception of collective efficacy in their neighbourhoods. No significant associations were seen with the occurrence of diabetes mellitus, obesity, and low PA.

Table 9.2.3.1: Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by Categories of Perception of Neighbourhood Collective Efficacy, JHLS III 2017

Perception of Neighbourhood Collective Efficacy Categories[1]	Cardiovascular Disease Risk Indices				
	Hypertension	Diabetes Mellitus	Obesity	Depression	Low/No Physical Activity
High	36.6***	14.1	23.7	10.4**	31.4
Moderate	35.9	12.4	32.3	12.5	38.3
Low	25.6	11.9	26.6	18.1	33.4

p < 0.01,*p < 0.001. [1]Categories represent tertiles of scores.

Table 9.2.3.2 shows the perception of neighbourhood collective efficacy scores dichotomized according to whether they were greater than the mean for the scores (shown in Table 9.1.4.1) and coded as 'high,' or less than or equal to the mean and coded as 'low.' Similar significant associations were revealed, as when the scores were grouped as tertiles, with the prevalence estimates for depression being higher ($p<0.01$) and for hypertension being lower ($p<0.001$) among persons who perceived their neighbourhoods to have low collective efficacy.

Table 9.2.3.2: Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by the Categories of Perception of Neighbourhood Collective Efficacy, JHLS III 2017

Perception of Neighbourhood Collective Efficacy Categories[1]	Cardiovascular Disease Risk Indices				
	Hypertension	Diabetes Mellitus	Obesity	Depression	Low/No PA
High	36.2***	13.2	28.3	11.5**	35.1
Low	25.6	11.9	26.6	18.1	33.4

*p < 0.05, **p < 0.01, **p<0.001. [1]Categories: High – scores > mean; Low – scores ≤ mean.

Table 9.2.3.3 displays sex-specific evidence of the association of prevalence of cardiovascular disease risk indices with perception of levels of neighbourhood collective efficacy. Among males, the prevalence estimates for hypertension (36.4% vs. 21.1%, $p < 0.001$) and depression (14.0% versus 6.0%, $p < 0.05$) were significantly higher in person who believed their neighbourhoods had high collective efficacy versus low collective efficacy. Among the females, the prevalence estimates were lower for depression (9.3% vs. 29.5%, $p < 0.001$) and low/no physical activity (42.7% vs. 45.2%, $p < 0.05$) when the females who perceived high versus low collective efficacy were compared

Table 9.2.3.3: Sex-specific Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by Perception of levels of Neighbourhood Collective Efficacy, JHLS III 2017

Cardiovascular Disease Risk Indices	Perception of Neighbourhood Collective Efficacy			
	Males		Females	
	Low	High	Low	High
Hypertension	21.1***	36.4	29.6	36.1
Diabetes Mellitus	8.4	8.9	15.1	16.8
Obesity	11.5	13.1	40.4	41.0
Depression	6.0*	14.0	29.5***	9.3
Low/No Physical Activity	21.5	26.2	45.2*	42.7

***p < 0.001, *p < 0.05. [1]Categories: High – scores > mean; Low – scores ≤ mean.

Among urban residents, high compared to low levels of perceived collective efficacy were significantly associated with higher prevalence of hypertension (43.0% vs. 24.3%), diabetes (17.6% vs. 9.9%) and low/no PA (43.7% vs. 33.9%). Among rural residents, a statistically significant difference in perceived collective efficacy categories was seen for depression ($p<0.001$) and hypertension ($p<0.05$). In these residents, prevalence of depression (10.8%) among those with perceived high levels of collective efficacy was almost half the prevalence (22.2%) estimated for those with perceived low levels of collective efficacy. Conversely, the prevalence of hypertension in the rural residents was higher at 33.2% among persons with perceived high neighbourhood collective efficacy compared to those with perceived low levels of collective efficacy for whom prevalence was 24.9%. These results are displayed in Table 9.2.3.4.

Table 9.2.3.4: Urban versus Rural Prevalence of Cardiovascular Disease Risk Indices among Jamaicans by Categories of Collective Efficacy, JHLS III 2017

Cardiovascular Disease Risk Indices	Collective Efficacy			
	Urban		Rural	
	Low	High	Low	High
Hypertension	24.3***	43.0	24.9*	33.2
Diabetes Mellitus	9.9**	17.6	17.5	15.3
Obesity	26.5	33.9	29.4	29.5
Depression	18.6	17.1	22.2***	10.8
Low/No Physical Activity	33.9**	43.7	29.8	27.5

After adjustment for age, depression was the only CVD risk index significantly associated with perceived level of neighbourhood collective efficacy. Perceived high collective efficacy was associated with 45% lower odds of depression when the estimate is adjusted for age, as shown in Table 9.2.3.5.

Table 9.2.3.5: The Relative Odds of Given Cardiovascular Disease Risk Indices (with 95% Confidence Intervals [CIs] in Brackets) Associated with High Versus Low Perception of Neighbourhood Collective Efficacy

Cardiovascular Disease Risk Indices	Age-adjusted Relative Odds of CVD Risk[1] (95% CI)
Hypertension	1.23(0.91–1.68)
Diabetes Mellitus	0.86(0.63–1.17)
Obesity	1.01(0.73–1.38)
Depression	0.55(0.38–0.79)**
Low/No PA	1.05(0.81-1.36)

**p < 0.01; ***p < 0.001. [1]Relative odds of the respective CVD risk indices among those with high compared with low perception

9.3. Associations with Substance Use

This section describes associations between the perception of neighbourhood characteristics and individual outcomes related to substance use, namely current and lifetime use of alcohol, marijuana, tobacco, as well as the use of any of the aforementioned substances. Current use is defined as substance use within the past 30 days and lifetime use as use of a substance at any time previously.

9.3.1 Associations of Substance Use with Perception of Neighbourhood Crime and Safety Problems

Table 9.3.1.1 shows the prevalence of different forms of substance use by categories representing a perceived level of neighbourhood crime and safety problems. The data gave no evidence of a statistically significant association of substance use with tertiles of neighbourhood perception scores. The association approached statistical significance (p=0.0496) for lifetime use of alcohol only. A higher proportion of persons who perceived high or moderate levels of crime and safety problems in their neighbourhoods reported lifetime use of alcohol (greater than 60%), compared with those who perceived the problems as low (57%).

Table 9.3.1.1: Prevalence of Substance Use among Jamaicans by Categories of Perception of Neighbourhood Crime and Safety Problems, JHLS III 2017

Substances	Categories[1] of the Perception of Neighbourhood Crime and Safety Problems		
	High	Moderate	Low
Current Use of			
Alcohol	42.9	44	39.3
Marijuana	16.1	16.4	18.2
Tobacco	18.7	12.6	13.5
Any Substance	45.9	48.7	44.8
Lifetime Use of			
Alcohol	63.3[&]	64	56.8
Marijuana	30.2	33.8	32.7
Tobacco	25.1	22.3	24.4
Any Substance	67.2	68.4	62.5

[&]p =0.0496≈0.05. [1]Categories represent tertiles of scores.

The sex-specific prevalence estimates for use of individual substances (alcohol, marijuana, tobacco) and any of those three substances currently and for a lifetime, by perceived levels of neighbourhood crime and safety problems are shown in Table 9.3.1.2. Among males, there was a significantly higher current use of tobacco among those who perceived high versus low levels of crime and safety problems in their communities (High: 31.2% vs. Low: 23.8%). Among females, a significantly higher proportion of those who perceived high levels of crime and safety in their neighbourhoods were lifetime users of alcohol (High: 53.7% vs. Low: 42.7%). The data gave no additional evidence of sex-specific association of substance use with perceived level of neighbourhood crime and safety problems.

Table 9.3.1.2: Sex-specific Prevalence of Substance Use among Jamaicans Aged 15 Years and Older by Categories of Perception of Neighbourhood Crime and Safety Problems, JHLS III 2017

Substances	Perception of Neighbourhood Crime and Safety Problems[1]			
	Males		Females	
	High	Low	High	Low
Current Use of				
Alcohol	57.9	58.6	28.8	24.1
Marijuana	30.5	29.2	5.0	5.3
Tobacco	31.2*	23.8	6.4	3.7
Any Substance	66.5	66.6	28.8	25.6
Lifetime Use of				
Alcohol	76.0	75.2	53.7**	42.7
Marijuana	51.0	48.6	13.9	17.2
Tobacco	40.2	39.8	10.5	9.2
Any Substance	68.7	68.1	29.2	26.2

*p < 0.05,**p < 0.01;[1]Categories: High – scores > mean; Low – scores ≤ mean.

Urban and rural estimates for prevalence of substance use by perceived levels of neighbourhood crime and safety problems are shown in Table 9.3.1.3. Current tobacco use was the only form of substance use significantly associated with perceived level of neighbourhood crime and safety problems among urban residents. Among the urban residents, prevalence of current tobacco use was significantly higher (16.9% vs. 10.5%, $p < 0.05$) among those who perceived high versus low levels of crime and safety problems in their communities. None of the forms of substance use was significantly associated with perceived level of neighbourhood crime and safety problems among rural residents.

Table 9.3.1.3: Prevalence of Substance Use among Urban and Rural Jamaicans Aged 15 Years and Older by Categories of Perception of Neighbourhood Crime and Safety Problems, JHLS III 2017

Substances	Perception of Crime and Safety Problems[1]			
	Urban		Rural	
	High	Low	High	Low
Current Use of				
Alcohol	44.0	39.2	40.7	43.5
Marijuana	18.5	15.6	16.6	18.2
Tobacco	16.9*	10.5	12.8	13.4
Any Substance	47.5	42.9	44.8	48.2
Lifetime Use of				
Alcohol	63.5	56.2	64.8	63.1
Marijuana	33.8	32.4	30.6	33.5
Tobacco	22.0	22.8	19.5	21.8
Any Substance	48.4	43.8	45.8	49.4

*p < 0.05,**p < 0.01;[1]Categories: High – scores > mean; Low – scores ≤ mean.

Tables 9.3.1.4 show the odds ratios and their 95% confidence intervals, adjusted for age groups, that quantify associations of perceived level of neighbourhood crime and safety problems with substance use. Neither lifetime nor current use of any one or more than one substance was associated with perceived level of neighbourhood crime and safety problems after adjustment for age.

Table 9.3.1.4: The Relative Odds of Given Forms of Substance Use (with 95% Confidence Intervals [CIs] in Brackets) Indicating Their Association with Perceived High Versus Low Level of Neighbourhood Crime and Safety Problems, JHLS III 2017

Substances	Age-adjusted Relative Odds of Substance Use (95% CI)
Current Use of	
Alcohol	0.95(0.71–1.28)
Marijuana	0.90(0.66–1.21)
Tobacco	1.29(0.94–1.77)
Any Substance	0.92(0.71–1.18)
Lifetime Use of	
Alcohol	1.17(0.91–1.51)
Marijuana	0.85(0.63–1.15)
Tobacco	0.96(0.68–1.35)
Any Substance	1.16(0.93-1.45)

**p < 0.01; ***p < 0.001. [1]Relative odds of the respective forms of substance use (current or lifetime) among those with high compared with a low perception of neighbourhood crime and safety problems.

9.3.2 Associations of Substance Use with Perception of Neighbourhood Physical and Social Disorder

Table 9.3.2.1 shows prevalence estimates for current and lifetime use of alcohol and use of any substance were significantly associated with perceived level of neighbourhood physical disorder.

Prevalence of current use of alcohol was higher ($p<0.01$) among those who perceived high (43.8%) and moderate (46.4%) levels of neighbourhood physical disorder compared with those who perceived low levels of neighbourhood physical disorder (35.9%). There was significantly greater prevalence ($p<0.001$) of lifetime alcohol use (66.4%) among persons who perceived high levels of neighbourhood physical disorder compared to those who perceived the physical disorder levels in their communities as moderate (63.9%) or low (52.0%).

Among those who perceived high levels of physical disorder almost 46% were current substance users compared with a prevalence of current use of any substance being 51.7% and 40.3% among those who perceived, respectively, moderate and low levels of physical disorder ($p<0.001$). A similar pattern for prevalence of lifetime use of any substance ($p<0.001$) was observed – High: 47%; Moderate: 52.9%; Low: 41.1%. (See Table 9.3.2.1.)

Significant differences ($p < 0.001$) in prevalence of current and lifetime use of any substance were also found across the categories of perception of physical disorder.

Table 9.3.2.1: Prevalence of Substance Use among Jamaicans Aged 15 Years and Older by Categories of Perception of Neighbourhood Physical and Social Disorder, JHLS III 2017

Substances	Perception of Neighbourhood Physical Disorder Categories[1]			Perception of Neighbourhood Social Disorder Categories[1]		
	High	Moderate	Low	High	Moderate	Low
Current Use of						
Alcohol	43.8**	46.4	35.9	47.5*	43.5	39.1
Marijuana	15.1	19.7	15.1	20.5	16.7	16.4
Tobacco	15.9	16.7	13.9	17.4	14.1	15
Any Substance	45.8***	51.7	40.3	53.5*	46.5	44.6
Lifetime Use of						
Alcohol	66.4***	63.9	52.0	67.8***	65.0	54.4
Marijuana	33.7	34.1	29.9	40.5**	34.8	30.2
Tobacco	25.6	24.6	21.6	23.0	27.7	22.0
Any Substance	47.0***	52.9	41.1	55.0*	48.3	45.3

*p < 0.05, **p < 0.01, ***p < 0.001. [1]Categories: High – scores > mean; Low – scores ≤ mean.

Table 9.3.2.1 further shows that compared with persons who perceived moderate or low levels of neighbourhood social disorder, persons who perceived high levels of neighbourhood social disorder had significantly greater prevalence of current alcohol use ($p<0.05$), current use of any of the three substances ($p<0.05$), and lifetime use of alcohol ($p<0.001$), marijuana ($p<0.01$), and any of the three substances ($p<0.05$). For each other forenamed forms of substance use, prevalence was highest among persons who perceived high levels of neighbourhood social disorder and lowest among those who perceived low levels of social disorder.

Sex-specific associations for the dichotomized categories of perceived neighbourhood physical and social disorder are displayed in Tables 9.3.2.2 and 9.3.2.3, respectively. Table 9.3.2.2 shows that for the males, there was significantly higher prevalence of current alcohol use ($p < 0.01$) among those with perceived high versus low levels of neighbourhood physical disorder (66.6% vs. 53.4%). Prevalence estimates for lifetime alcohol use (High: 83.6% vs. Low: 70.7%, $p<0.001$) and lifetime marijuana use (High: 55.4% vs. Low: 45.5%, $p<0.01$) were also higher among males who perceived high versus low levels of neighbourhood physical disorder.

Among females, lifetime use of alcohol was the only form of substance use associated with perceived level of neighbourhood physical disorder. Similar to the observations among the males, the prevalence of lifetime use of alcohol among females was also higher among those who perceived high versus low levels of physical disorder in their communities (High: 52.0% vs. Low: 41.7%, $p<0.01$).

Table 9.3.2.2: Sex-specific Prevalence of Substance Use among Jamaicans Aged 15 Years and Older by Categories of Perception of Neighbourhood Physical Disorder, JHLS III 2017

Substances	Perception of Neighbourhood Physical Disorder [1]			
	Males		Females	
	High	Low	High	Low
Current Use of				
Alcohol	66.6**	53.4	27.0	23.3
Marijuana	30.8	28.2	4.5	4.8
Tobacco	26.0	24.4	6.3	3.9
Any Substance	69.9	64.8	27.9	24.4
Lifetime Use of				
Alcohol	83.6***	70.7	52.0**	41.7
Marijuana	55.4*	45.5	15.9	16.7
Tobacco	43.0	36.2	12.2	8.8
Any Substance	72.0	66.1	28.4	24.9

*p < 0.05,**p < 0.01;[1]Categories: High – scores > mean; Low – scores ≤ mean.

The sex-specific associations of perceived neighbourhood social disorder with substance use are displayed in Table 9.3.2.3. While there were no statistically significant sex-specific associations between perceived high versus low levels of social disorder and any index of current substance use, significant sex-specific associations were seen for lifetime substance use. The table shows among the males significantly higher prevalence of lifetime use of alcohol ($p<0.001$), marijuana ($p<0.01$), tobacco ($p<0.05$), and any one or more of these substances ($p<0.05$) in those who perceived high versus low levels of social disorder. For females, significantly higher prevalence of lifetime alcohol use ($p < 0.001$) was found for those who perceived high vs low levels of social disorder (54.0% vs. 42.0%).

Table 9.3.2.3: Sex-specific Prevalence of Substance Use among Jamaicans Aged 15 Years and Older by Categories of Perception of Neighbourhood Social Disorder, JHLS III 2017

Substances	Perception of Neighbourhood Social Disorder [1]			
	Males		Females	
	High	Low	High	Low
Current Use of				
Alcohol	62.4	57.2	29.0	25.1
Marijuana	32.7	28.5	4.7	5.8
Tobacco	26.9	25.4	4.9	5.7
Any Substance	71.3	65.2	30.0	26.5
Lifetime Use of				
Alcohol	83.7***	71.0	54.0***	42.0
Marijuana	57.5**	46.0	20.0	17.2
Tobacco	44.9*	34.7	12.4	9.4
Any Substance	74.7*	66.1	30.4	27.1

*p < 0.05,**p < 0.01;[1]Categories: High – scores > mean; Low – scores ≤ mean

Evidence of association of the dichotomized categories of perceived neighbourhood physical disorder with different forms of substance use, specific to urban and rural residents, is displayed in Table 9.3.2.4.

Table 9.3.2.4: Prevalence of Substance Use among Urban and Rural Jamaicans Aged 15 Years and Older by Perceived Category of Neighbourhood Physical Disorder, JHLS III 2017

Substances	Perception of Neighbourhood Physical Disorder [1]			
	Urban		Rural	
	High	Low	High	Low
Current Use of				
Alcohol	46.5**	37.1	42.8	40.4
Marijuana	18.5	14.3	19.1	17.0
Tobacco	17.0**	8.1	10.9*	15.5
Any Substance	48.4*	41.1	44.6	46.2
Lifetime Use of				
Alcohol	65.4**	53.0	66.0	59.6
Marijuana	38.6*	30.0	32.3	31.5
Tobacco	28.6***	15.8	20.1	22.6
Any Substance	49.8*	41.7	46.5	48.8

*p < 0.05,**p < 0.01; [1]Categories: High – scores > mean; Low – scores ≤ mean.

Compared with urban residents who perceived low levels of physical disorder, there were significantly higher estimates of prevalence of current use of alcohol, tobacco, and any one or more of the three named substances among urban residents who perceived high levels of physical disorder in their communities (Table 9.3.2.4). Current tobacco use was twice as common among those urban residents who perceived high neighbourhood physical disorder (High: 17.0% vs. Low: 8.1%). Prevalence of lifetime use of each of alcohol (65.4% vs. 53.0%, $p < 0.01$), marijuana (38.6% vs. 30.0%, $p < 0.05$), tobacco (28.6% vs. 15.8%, $p < 0.001$), and of use of any one or more these three substances (49.8% vs 41.7%, p<0.05) was significantly higher among urban residents who perceived their neighbourhoods had high levels of neighbourhood physical disorder, compared with those urban residents who perceived low levels of physical disorder.

For rural residents, current tobacco use was the only form of substance use significantly associated with the dichotomized perceived neighbourhood physical disorder variable. In contrast with the experience of urban residents, prevalence of current tobacco use was lower among those who perceived high levels of neighbourhood physical disorder, compared with those who perceived low levels (10.9% vs 15.5%, p<0.05).

Evidence of the association of the dichotomized categories of perceived neighbourhood social disorder with substance use, specific to urban and rural residents, is displayed in Table 9.3.2.5. There was a significantly higher proportion of current use of alcohol (46.9% vs. 38.4%, $p < 0.05$) and current use of any one or more of the three substances (51.9% vs. 41.4%, $p < 0.01$) in urban residents who perceived their communities had high versus low levels of neighbourhood social disorder. Also, among urban residents, significantly higher proportions of those who perceived high versus low levels of neighbourhood social disorder were lifetime users of each of alcohol (67.9% vs 52.2%, p<0.001), marijuana (41.4% vs 32.1%, p <0.05), tobacco (29.3% vs 16.3%, p <0.001), and of any one or more these three substances (53.8% vs 42.1%, p<0.01).

Among rural residents, lifetime use of alcohol was the only substance use outcome significantly associated with perceived level of neighbourhood social disorder. Prevalence of lifetime use of alcohol was significantly higher (69.1% vs 58.9%, p<0.01) among those who perceived high versus low levels of social disorder in their neighbourhoods.

Table 9.3.2.5: Prevalence of Substance Use among Urban and Rural Jamaicans Aged 15 Years and Older by Categories of Perception of Neighbourhood Social Disorder, JHLS III 2017

Substances	Perception of Neighbourhood Social Disorder[1]			
	Urban		Rural	
	High	Low	High	Low
Current Use of				
Alcohol	46.9*	38.4	43.5	41.6
Marijuana	19.9	15.7	17.7	14.2
Tobacco	15.8	10.4	14.8	13.7
Any Substance	51.9**	41.4	45.7	47.5
Lifetime Use of				
Alcohol	67.9***	52.2	69.1**	58.9
Marijuana	41.4*	32.1	64.1	27.1
Tobacco	29.3***	16.3	23.8	19.7
Any Substance	53.8**	42.1	48.3	48.9

*p < 0.05,**p < 0.01;[1]Categories: High – scores > mean; Low – scores ≤ mean.

Table 9.3.2.6 shows the odds ratios and their 95% confidence intervals, adjusted for age groups, that quantify associations between perceived neighbourhood physical disorder and substance use. Perception of high levels of neighbourhood physical disorder were statistically significantly associated with increased odds of current alcohol use (30%), lifetime alcohol use (61%), lifetime tobacco use (49%), and lifetime use of any substance (41%) of the three reported on in this section.

Table 9.3.2.6: The Relative Odds of Given Forms of Substance Use (with 95% Confidence Intervals [CIs] in Brackets) Indicating Their Association with Perceived High Versus Low Level of Neighbourhood Physical Disorder, JHLS III 2017

Substances	Age-adjusted Relative Odds[1] of Substance Use (95% CI)
Current Use of	
Alcohol	1.30(1.06–1.58)*
Marijuana	1.02(0.77–1.35)
Tobacco	1.25(0.87–1.79)
Any Substance	1.13(0.93–1.39)
Lifetime Use of	
Alcohol	1.61(1.32–1.97)***
Marijuana	1.17(0.95–1.44)
Tobacco	1.49(1.16–1.91)**
Any Substance	1.41(1.15-1.71)**

**p < 0.01; ***p < 0.001. [1]Relative odds of the respective forms of substance use (current or lifetime) among those with high compared with a low perception of neighbourhood physical disorder.

Table 9.3.2.7 show the odds ratios and their 95% confidence intervals, adjusted for age categories, that quantify associations between perceived neighbourhood social disorder and substance use. Perceived high level of neighbourhood social disorder was associated with significantly higher odds of lifetime use of alcohol by as much as 71%, lifetime marijuana use by 35%, lifetime tobacco use by 40%, and lifetime use of any of the three substances by 56%.

Table 9.3.2.7: The Relative Odds of Given Forms of Substance Use (with 95% Confidence Intervals [CIs] in Brackets) Indicating Their Association with Perceived High Versus Low Level of Neighbourhood Social Disorder, JHLS III 2017

Substances	Age-adjusted Relative Odds[1] of Substance Use (95% CI)
Current Use of	
Alcohol	1.20 (0.96–1.49)
Marijuana	1.07 (0.79–1.46)
Tobacco	1.00 (0.70–1.43)
Any Substance	1.19(0.94-1.49)
Lifetime Use of	
Alcohol	1.71(1.38–2.13)***
Marijuana	1.35(1.05–1.73)*
Tobacco	1.40(1.09–1.79)**
Any Substance	1.56(1.25-1.94)***

**p < 0.01; ***p < 0.001. [1]Relative odds of the respective forms of substance use (current or lifetime) among those with high compared with a low perception of neighbourhood social disorder.

9.3.3 Associations of Substance Use with Perception of Neighbourhood Collective Efficacy

The associations of perception of levels of neighbourhood collective efficacy with different forms of substance use are shown in Table 9.3.3.1. Current use of alcohol, tobacco, and any one of the three named substances were each significantly associated with perceived level of neighbourhood collective efficacy.

There was a significantly higher prevalence of current alcohol use ($p < 0.05$) among those who perceived high levels of neighbourhood collective efficacy compared to moderate and low levels (46.7% vs. 35.3% vs. 40.6%). The opposite trend, though not statistically significant, was seen for current marijuana use, with 15.8% of persons who perceived high neighbourhood collective efficacy reporting current marijuana use, compared with 16.2% of those who perceived moderate collective efficacy and 21.5% of those who perceived low levels of collective efficacy in their neighbourhoods. Significant associations were also seen between perceived collective efficacy levels and current, as well as lifetime use of tobacco and of any of the three substances under study (See Table 9.3.3.1).

Table 9.3.3.1: Prevalence of Substance Use among Jamaicans by Categories of Perceived Neighbourhood Collective Efficacy, JHLS III 2017

Substances	Perception of Neighbourhood Collective Efficacy Categories[1]		
	High	Moderate	Low
Current Use of			
Alcohol	46.7*	35.3	40.6
Marijuana	15.8	16.2	21.5
Tobacco	17.2***	9.4	23.5
Any Substance	49.5**	39.3	50.6
Lifetime Use of			
Alcohol	60.3	52.3	61.1
Marijuana	30.6	31.6	37.2
Tobacco	24.0***	16.3	33.8
Any Substance	63.3**	60.0	70.2

***p < 0.001, **p < 0.01, *p < 0.05.[1]Categories represent tertiles of scores.

The sex-specific prevalence of substance use associated with collective efficacy categories is displayed in Table 9.3.3.2. Among males (24.4% vs. 41.3%, p < 0.01) and among females (2.8% vs. 8.3%, p < 0.01), there was significantly lower prevalence current use of tobacco in persons who perceived high versus low neighbourhood collective efficacy.

There was also a lower prevalence of lifetime alcohol use (38.5% vs. 48.4%, p < 0.05) among females who perceived high neighbourhood collective efficacy compared with those females who perceived low levels. In addition, sex-specific prevalence estimates for lifetime tobacco use (p<0.01) and lifetime use of any of the three substances studied (p<0.05) were lower among those who perceived high versus low levels of neighbourhood collective efficacy (See Table 9.3.3.2.)

Table 9.3.3.2: Sex-specific Prevalence of Substance Use among Jamaicans Aged 15 Years and Older by Categories of Perception of Neighbourhood Collective Efficacy, JHLS III 2017

Substances	Perception of Neighbourhood Collective Efficacy[1]			
	Males		Females	
	High	Low	High	Low
Current Use of				
Alcohol	61.9	53.7	22.1	28.3
Marijuana	30.6	37.6	3.1	6.3
Tobacco	24.4**	41.3	2.8**	8.3
Any Substance	66.7	72.8	23.7	29.9
Lifetime Use of				
Alcohol	76.2	74.5	38.5*	48.4
Marijuana	49.0	56.5	15.4	19.1
Tobacco	33.9***	56.5	7.2**	14.4
Any Substance	81.9*	87.9	43.5*	53.6

*p < 0.05,**p < 0.01;[1]Categories: High – scores > mean; Low – scores ≤ mean.

Evidence of the association of the dichotomized categories of perceived neighbourhood collective efficacy with substance use, specific to urban and rural residents, is displayed in Table 9.3.3.3. Current alcohol use was the only index of current substance use associated with perception of neighbourhood collective efficacy among rural residents. There was a significantly lower prevalence of current alcohol use ($p < 0.05$) among those who perceived high levels of collective efficacy compared to those who did not (39.7% vs. 47.7%). For urban residents, prevalence was significantly lower for current use of marijuana (14.8% vs. 27.0%, $p < 0.01$), tobacco (9.5% vs. 22.5%, $p < 0.05$), and for use of any of the three substances studied (42.1% vs. 54.0%, $p < 0.05$) among those who perceived high versus low levels of neighbourhood collective efficacy.

Table 9.3.3.3: Prevalence of Substance Use among Urban and Rural Jamaicans Aged 15 Years and Older by Categories of Perception of Neighbourhood Collective Efficacy, JHLS III 2017

Substances	Perception of Neighbourhood Collective Efficacy [1]			
	Urban Residents		Rural Residents	
	High	Low	High	Low
Current Use of				
Alcohol	39.7	40.7	39.7*	47.7
Marijuana	14.8**	27.0	19.0	18.4
Tobacco	9.5*	22.5	13.3	19.4
Any Substance	42.1*	54.0	45.2	52.1
Lifetime Use of				
Alcohol	51.6*	61.1	61.9	69.0
Marijuana	34.4	40.7	33.4	37.1
Tobacco	15.7**	32.2	19.7*	31.0
Any Substance	58.8**	71.5	66.5*	75.4

*p < 0.05,**p < 0.01;[1]Categories: High – scores > mean; Low – scores ≤ mean.

Associations with lifetime substance use are also shown in Table 9.3.3.3 with a consistent pattern of lower lifetime substance use among those who perceived high versus low levels of collective efficacy in their communities. Statistically significant differences were seen among urban residents for lifetime use of alcohol (51.6% vs. 61.1%, $p < 0.05$), tobacco (15.7% vs. 32.2%, $p < 0.01$), and any one or more of the three substances studied (58.8% vs. 71.5%, $p < 0.01$). Among the rural residents, significant differences were seen for tobacco use (19.7% vs. 31.0%, $p < 0.05$) and use of any one or more of the three substances studied (66.5% vs. 75.4%, $p < 0.05$).

Table 9.3.3.4 show the odds ratios and their 95% confidence intervals, adjusted for age categories, that quantify associations between perceived neighbourhood collective efficacy and substance use. Perception of high collective efficacy was associated with 51% lower odds of current tobacco use, 54% lower odds of lifetime tobacco use and 31% lower odds of lifetime use of any of the three substances studied (See Table 9.3.3.4)

Table 9.3.3.4: The Relative Odds of Given Forms of Substance Use (with 95% Confidence Intervals [CIs] in Brackets) Indicating Their Association with Perceived High Versus Low Level of Neighbourhood Collective Efficacy, JHLS III 2017

Substances	Age-adjusted Relative Odds of Substance Use (95% CI)
Current Use of	
Alcohol	1.07 (0.82–1.40)
Marijuana	0.75 (0.52–1.10)
Tobacco	0.49(0.33–0.75)**
Any Substance	0.83(0.63 – 1.08)
Lifetime Use of	
Alcohol	0.83(0.64–1.08)
Marijuana	0.77(0.60–1.01)
Tobacco	0.46(0.35–0.61)***
Any Substance	0.69(0.54-0.88)**

**p < 0.01; ***p < 0.001. [1]Relative odds of the respective forms of substance use (current or lifetime) among those with high compared with a low perception of neighbourhood collective efficacy.

9.4. Summary

This chapter documents the investigation of the perception of neighbourhood characteristics among Jamaicans aged 15 years and older in relation to socio-demographic variables. In addition, the chapter provided evidence of the association of the perceived levels of neighbourhood characteristics with cardiovascular disease risk indices and with various forms of substance use.

Persons with better socio-economic status, whether measured by the highest education level or number of household possessions,lived in communities that they perceive to have less social and physical disorder. Persons of lower socio-economic status, older age, or resident in rural settings perceived their communities to have greater collective efficacy. This perception can be leveraged in community-based efforts to improve health outcomes.

The data further gave evidence that the prevalence of depression was higher, particularly among females and rural residents who perceived that their community had high levels of crime and safety problems or physical and/or social disorder as well as low levels of collective efficacy. The data further suggested that there was a higher prevalence of low or no physical activity among persons resident in communities they perceived to have low levels of social disorder. In addition, the results revealed a lower prevalence of lifetime substance use among persons who perceived high collective efficacy in their communities.

Health care professionals may have reason to assess their clients' perception of their neighbourhood environments regarding features such as those assessed in this chapter. Future research also needs to be done to validate these scales for the Jamaican context in the quest to inform neighbourhood interventions that may improve CNCD outcomes and mitigate against their risk factors.

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10. Communicable Arthropod-borne Diseases

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Introduction

Three Arthropod-borne viruses (arboviruses), the dengue (DENV), zika (ZV), and chikungunya (CHIK V) viruses, are now believed to be endemic in Jamaica.[1] This state of endemicity with respect to these viruses is a consequence of the *Aedes aegypti* mosquito, the primary vector for these three viruses being endemic to Jamaica,[1,2] and outbreaks of diseases produced by these viruses at different periods between the nineteenth and twenty-first centuries in the island.[1,3,4,5] A high seroprevalence of dengue Immunoglobulin G (IgG) antibodies in healthy Jamaicans has also been documented.[5] In the Caribbean (including Jamaica) and the Gulf of Mexico in 1827–28, there was an outbreak of a disease, originally thought to be dengue, but further analysis indicated that it had clinical characteristics of 'classic chikungunya disease.' During this outbreak, the disease was called 'dunga' in Cuba, a precursor to the current name 'dengue.'[6] In 1977, Jamaica had its first large, recorded outbreak of dengue,[4] although the dengue virus was identified in Jamaica years earlier.[4] Decades later, in 2014, the chikungunya virus was (re)introduced to Jamaica, followed by zika virus in 2016.[1]

Transmission

Arboviruses are viruses that are transmitted by arthropods (invertebrates such as insects, crustaceans, and arachnids) to vertebrates such as humans. Of the hundreds of known arboviruses, approximately 100 are known to infect humans. Re-emerging arboviral diseases such as yellow fever, zika, and chikungunya have been recognized as public health threats, with zika declared a Public Health Emergency of International Concern (PHEIC) by the World Health Organization on February 1, 2016.[7] The aforementioned arboviral diseases are transmitted by mosquito vectors that are members of the *Aedes species*, some of which are endemic to Jamaica.

Clinical Features

Chikungunya, dengue, and zika are all characterized by fever, rash, and joint pain with different degrees of severity and duration; each of these symptoms are considered classical for each disease. Other symptoms may include headache, vomiting, or diarrhoea, and muscle pain. Clinical features include changes in body fluid distribution and blood concentration of white blood cells, red blood cells, and platelets.[8,9,10,11]

Incidence

The attack rates for CHIK V epidemics that occurred before the new epidemic in the Caribbean have ranged from 38% to 63%.[11] Although not all individuals infected with CHIK V developed symptoms, it has been reported that between 3% and 28% of persons with antibodies to CHIK V have asymptomatic infections.[1,12]

The first major outbreak of zika virus infection occurred in Yap in 2007, where approximately 73% of the population were infected, and symptomatic disease developed in approximately 18% of infected persons.[13]

Jamaica reported similar trends in 2016, where 327,888 cases of 1,782,000 expected ZV infections (18.4%) were symptomatic.[1]

10.1. Chikungunya

Responses to questionnaire items eliciting information on chikungunya symptoms and bioassays of blood samples produced data on occurrence of chikungunya. A suspected case of chikungunya fever, a disease characterized by fever and severe joint pains, was defined as a person self-reporting the chikungunya symptoms of fever and severe joint pain (arthralgia) or joint swelling. The serum samples were defined as seropositive if the blood tested positive for CHIK V antibodies: Immunoglobulin M (IgM) and/or Immunoglobulin G (IgG). Some 41% of the survey sample representing 44.8% of the population of Jamaicans aged 15 years and older gave blood samples which were assayed for chikungunya virus antibodies.

10.1.1 Prevalence within Socio-demographic Categories

Approximately half (48.8%, representing 998,045) of Jamaicans aged 15 years and older self-reported that they had chikungunya-like symptoms; of these, 49.6% met the case definition for chikungunya (overall 24.2% of Jamaicans aged 15 years and older met the case definition for chikungunya). Of the near 45% of Jamaicans aged 15 years and older who gave blood samples, 78.8% had evidence of chikungunya infection based on a positive result for a serum antibody test. Among the self-reported cases, significantly more females (53.8% [95% CI = 50.8 to 56.8%]) than males (43.5% [95% CI = 39.8, 47.3%]) reported having chikungunya ($p<0.05$). However, this difference was not observed for those with seropositive test results (Females: 79.3% [95% CI=75.9, 82.4%], Males: 78.1[95% CI=74.3, 81.5%]), (See Table 10.1.1).

The seroprevalence of chikungunya was significantly different across age groups in the combined population of males and females ($p<0.01$) and was driven by the statistically significant association between seroprevalence of chikungunya and age among the males ($p<0.01$), only. Seroprevalence was greatest among the youngest (15–24) and oldest age cohorts (65 and over). There was no significant difference found for seroprevalence between males and females (See Tables 10.1.1 and 10.1.2).

Table 10.1.1: Sex-specific Prevalence (%) Chikungunya by the Category of Sex, JHLS III 2017

Indicator	Male	Female	Total
Self-reported***	43.5[39.8,47.3]	53.8[50.8, 56.8]	48.8[46.1, 51.5]
Suspected Chikungunya***	21.5[19.1, 24.1]	26.8[24, 29.7]	24.2[22.2, 26.3]
Seropositive[1]	78.1[74.3, 81.5]	79.3[75.9, 82.4]	78.8[76.1, 81.2]

[1]Percentages out of the subpopulation of persons tested.

*p < 0.05; **p < 0.01; ***p < 0.001.

The proportion of self-reported, suspected, and seropositive chikungunya cases differed significantly across parishes. Eastern-most parishes of St Thomas (67.2%), St Mary (65.5%), and Portland (63.9%) had the greatest proportion of self-reported cases, while Westmoreland (19%), Manchester (24.0%), and St Ann (32.7%) had the lowest proportion of self-reported cases. Kingston (95.6%), St Thomas (95.5%), and St James (91.8%) had the greatest seroprevalence, and Manchester (43.4%), Westmoreland (57%), and St Elizabeth (61.3%) had the lowest seroprevalence (See Table 10.1.3).

Table 10.1.2: Prevalence (%) of Chikungunya by Ten-Year Age Bands in Jamaicans Aged 15 Years and Older, JHLS III 2017

Indicator	Age Group (Years)						
	15–24	25–34	35–44	45–54	55–64	65–74	75+
Total **Self-reported*** **	48.6 [42.7, 54.5]	43.1 [37.4, 49.0]	60.2 [54.5, 65.6]	53.6 [48.3, 58.9]	44.4 [40.3, 48.7]	45.2 [40.2, 50.2]	32.3 [26.5, 38.8]
Suspected Chikungunya* **	19.9 [15.6, 25.2]	23.7 [19.1, 28.9]	32.3 [27.5, 37.6]	30.1 [24.6, 36.2]	22.6 [19.2, 26.4]	16.2 [12.4, 20.8]	14.6 [11.1, 19.1]
**Seropositive[1] ** **	84.3 [78.6, 88.7]	72.5 [67.4, 77.1]	79.6 [74, 84.2]	77 [72, 81.4]	74.5 [70.4, 78.2]	84.1 [78.9, 88.2]	80 [73.2, 85.4]
Females **Self-reported** **	49.7 [42.1, 57.3]	52.2 [44.6, 59.8]	62.5 [56.2, 68.4]	54.6 [48.7, 60.5]	60.8 [53, 68]	49.1 [42.8, 55.4]	41.6 [32.6, 51.1]
Suspected Chikungunya **	21.4 [16.4, 27.4]	28.2 [22.1, 35.2]	33.5 [27.6, 39.9]	30.7 [24.6, 37.5]	30.8 [25.3, 36.9]	16.6 [12, 22.5]	18.2 [13.1, 24.8]
Seropositive[1]	82.8 [76.2, 87.9]	77.1 [69, 83.6]	76.4 [68.9, 82.5]	80.9 [74.6, 86]	75.4 [67.5, 82]	85.5 [78.1, 90.7]	78.1 [68, 85.7]
Males **Self-reported*** **	47.4 [39.2, 55.7]	33.6 [26.5, 41.6]	57.6 [49.2, 65.5]	52.6 [44.2, 60.9]	28.4 [22, 35.8]	41.2 [33.6, 49.2]	18.0 [3, 24.4]
Suspected Chikungunya* **	18.5 [12.9, 25.9]	19.0 [12.8, 27.1]	31.1 [23.5, 39.9]	29.5 [22.4, 35]	14.6 [9.5, 21.8]	15.7 [10.6, 22.7]	9.1 [5.7, 14.2]
Seropositive[1] **	85.8 [78.1, 91.1]	66.7 [57.6, 74.8]	83.6 [73.4, 90.4]	73.1 [65.1, 79.8]	73.5 [65.5, 80.3]	82.9 [76.8, 87.6]	82.9 [75.5, 88.4]

[1]Percentages out of the subpopulation of persons tested.
*p < 0.05; **p < 0.01; ***p < 0.001.

Table 10.1.3: Prevalence (%) of Chikungunya by Parish, *Listed in Comparative Rank Order*, in Jamaicans Aged 15 Years and Older, JHLS III 2017

Rank	Self-reported*** (Parish: %[95%CI])	Suspected Chikungunya*** (Parish: %[95%CI])	Seropositive[b]*** (Parish: %[95%CI])
1	**St Thomas:** 67.2[60, 73.7]	**Portland**: 35.3[27.8, 43.7]	**Kingston**: 95.6[91.8, 97.7]
2	**St Mary**: 65.5[61.2, 69.7]	**Hanover**: 33.7[26.6, 41.7]	**St Thomas**: 95.5[91.5,97.7]
3	**Portland**: 63.9[57.2, 70.2]	**St Mary**: 32.5[26.7, 39]	**St James**: 91.8[85.7, 95.5]
4	**St Andrew:** 60.7[53.1, 67.8]	**St Thomas**: 31.4[26.7, 36.5]	**Portland**: 90.7[88.2, 92.7]
5	**Kingston:** 56.2[48.3, 63.8]	**Clarendon**: 30.4[25.2, 36.1]	**St Andrew**: 90.0[81.7, 94.7]
6	**Clarendon:** 53.3[45.9, 60.6]	**St Andrew**: 27.5[22, 36.8]	**Hanover**: 86.3[77.6, 92.0]
7	**St Catherine:** :49.9[41.8, 58.1]	**St James**: 26.1[17.5, 37.1]	**St Mary**: 83.1[77.0, 87.9]
8	**Trelawny**: 49.1[42.2, 56]	**Trelawny**: 24.8[19.6, 30.9]	**St Catherine**: 78.8[76.1, 81.2]
9	**St James**: 45.0[33.2, 57.4]	**Kingston**: 23.3[18.1, 29.4]	**Clarendon**: 77.4[69.9, 83.5]
10	**Hanover**: 42.4[33.2, 57.4]	**St Elizabeth**: 22.6[18.7, 26.9]	**Trelawny**: 76.2[66.1, 84.1]
11	**St Elizabeth**: 37.1[29.4, 45.5]	**St Catherine**: 22.5[17.1, 29.1]	**St Ann**: 62.0[47.2, 74.9]
12	**St Ann**: 32.7[26, 40.3]	**Manchester**: 12.8[7.8, 20.2]	**St Elizabeth**: 61.3[48.8, 72.5]
13	**Manchester**: 24.0[16.8, 33]	**St Ann**: 12.1[8.6, 16.6]	**Westmoreland**: 57.0[51.0, 62.8]
14	**Westmoreland:** 19.0[14.3, 24.9]	**Westmoreland**: 11.7[8.8, 15.4]	**Manchester**: 43.4[32.8, 54.6]

[b] Percentages out of the subpopulation of persons tested.
Statistical significance of parish differences: *p < 0.05; **p < 0.01; ***p < 0.001.

10.1.2 Prevalence of Symptoms of Chikungunya

Sex-specific and total population prevalence estimates showed that the five most commonly reported symptoms among persons who self-reported chikungunya were joint pain (Total:87.4%, M: 88.2%, F: 86.8%); fever (Total: 69.8%, M: 72.8%, F: 67.4%); muscle pain (Total: 64.2% M: 62.7%, F: 65.4%); severe joint pain (63.4%, M: 60.2%, F: 65.8%); and headache (59.3%, M: 59.0%, F: 59.6%). Skin rash ($p<0.001$) and joint swelling ($p<0.05$), ranked the sixth and seventh most reported symptoms, respectively, were the only symptoms for which prevalence differed significantly with sex. They were more commonly reported by females than males (See Table 10.1.4.).

Table 10.1.4: Sex-specific and Total Population Prevalence (%) of Symptoms, *in Comparative Rank Order*, among Persons Self-reporting to Have Chikungunya, JHLS III 2017

Rank	Frequency (%)		
	Male [a] (Symptom: %[95%CI])	Female (Symptom: %[95%CI])	Total (Symptom: %[95%CI])
1	**JP**: 88.2[83.3, 91.8]	**JP**: 86.8[83.2, 89.7]	**JP**: 87.4[84.3, 90.0]
2	**Fev**:72.8[67.0, 77.9]	**Fev**:67.4[63.3, 71.3]	**Fev**:69.8[66.0, 73.3]
3	**MuP**:62.7[57.6, 67.5]	**SJP**:65.8[61.3, 70.1]	**MuP**:64.2[611, 67.2]
4	**SJP:** 60.2[54.3, 65.7]	**MuP**:65.4[62.1, 68.6]	**SJP**:63.4[59.6, 67.0]
5	**Hea:** 59.0[53.8, 64.0]	**Hea**:59.6[54.4, 64.6]	**Hea**: 59.3[55.6, 62.9]
6	**SkiR:** 7.7[23.6, 32.2]***	**SkiR**:53.4[50.2, 56.7]	**SkiR**:42.2[39.5, 45.0]
7	**JSw:** 17.6[13.1, 23.2]*	**JSw**:24.8[21.3, 28.7]	**JSw**:21.7[18.4, 25.3]
8	**NauV**: 11.7[8.8, 15.5]	**NauV**:13.6[11.0, 16.8]	**NauV**:12.8[10.6, 15.4]
9	**MuW**: 0.9[0.4, 2.1]	**MuW**: 0.7[0.3, 1.8]	**MuW**: 0.8[0.4, 1.6]
10	**Dia**: 0.4[0.1, 1.3]	**WkB**: 0.7[0.3, 2.0]	**Dia**: 0.5[0.2, 0.9]
11	**EyP**: 0.4[0.1, 1.5]	**Dia**: 0.5[0.2, 1.1]	**WkB**: 0.4[0.2, 1.1]
12	**LOA**: 0.4[0.1, 1.5]	**BkP**: 0.4[0.1, 1.2]	**LOA**: 0.3[0.1, 0.8]
13	**Diz**: 0.2[0.02, 1.4]	**Fai**: 0.4[0.06, 2.5]	**BkP**:0.22[0.07, 0.7]
14	**SwLN**: 0.2[0.03, 1.6]	**Diz**: 0.2[0.03, 1.5]	**Diz**: 0.2[0.04, 0.8]
15	**Itc**: 0.1[0.01, 1.0]	**FluS**: 0.2[0.03, 1.2]	**EyP**: 0.2[0.06, 0.7]
16	**FluS**: 0.07[0.01, 0.6]	**LOA**:0.2[0.05, 0.5]	**Fai**: 0.2[0.04, 1.4]
17	**Abs**: 0.0	**Itc**: 0.1[0.02, 0.6]	**SwLN**:0.2[0.04,0.6]
18	**BkP**: 0.0	**SwLN**:0.1[0.02, 0.6]	**FluS**: 0.1[0.03, 0.6]
19	**Fai**: 0.0	**Abs**:0.09[0.01, 0.6]	**Itc**: 0.1[0.03, 0.4]
20	**WkB**: 0.0	**EyP**: 0.0	**Abs**:0.05[0.008, 0.34]

[a]Symptom: Abs - Abscess, BkP - Back Pain, Dia - Diarrhoea, Diz – Dizziness, EyP – Eye problems, Fai – Fainting, Fev – Fever , FluS – Flu-like Symptoms, Hea – Headache, Itc – Itching, JP – Joint pain, JSw – Joint Swelling, LOA – Loss of Appetite, MuP – Muscle pain, MuW – Muscle Weakness, NauV – Nausea/vomiting, SJP – Severe Joint Pain, SkiR – Skin rash, SwLN – Swollen lymph nodes, WkB – Weak Bladder

Statistical significance of sex difference: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 10.1.5 gives the sex-specific and total prevalence of the seropositive status among Jamaicans aged 15 years and older who reported they had the respective chikungunya virus symptoms. In the total population represented by those who provided blood samples, 60.7% of those who reported no symptom were seropositive. Some 95.2% of the population who reported no recollection of CHIK V symptoms were seropositive. Within and across the sexes and for most of the symptoms, more than 90% of persons who reported a given symptom tested positive for the chikungunya virus. These prevalence estimates represented preliminary estimates of the positive predictive value for chikungunya virus symptoms. These estimates were significantly higher when compared with the prevalence of seropositive status in persons who did not report the respective chikungunya virus symptoms.

Less than 2.5% of Jamaican females and less than 0.4% of Jamaican males who were either self-reported, suspected, or seropositive chikungunya cases reported being hospitalized due to the chikungunya virus. The sex difference in prevalence of persons hospitalized was statistically significant for self-reported ($p<0.001$) and suspected ($p<0.01$) chikungunya cases but not for the seropositive cases. Only among the females who were seropositive for chikungunya was there age-related statistically significant difference ($p<0.05$) in prevalence of hospitalisation due to the disease. Just under 4% of the seropositive females in the 45–54 age group were hospitalized for the disease, but there was no occurrence of hospitalization in the other age groups (See Table 10.1.6.).

Table 10.1.7 shows the statistically significant sex difference in the prevalence of hospitalization due to CHIK V symptoms among the rural (M: 0.1% (95% CI: 0.02 to 0.7%), F: 1.4% (95% CI: 0.6 to 3.5%), $p<0.01$) and urban (M: 0.04% (95% CI: 0.01 to 0.34%), F: 1.9% (95% CI: 0.8 to 4.6%), $p<0.001$) residents who were self-reported cases of the chikungunya virus. There was also statistically significant sex difference (0.0% in males vs 3.6% in females $p<0.05$) in the prevalence of hospitalisation in the urban suspected CHIK V cases. There were also statistically significant differences in the parish prevalence estimates for hospitalization among females who self-reported chikungunya ($p<0.001$) or who were seropositive ($p<0.05$). The three highest estimates for prevalence of hospitalization among females who self-reported chikungunya were for the parishes of Manchester (17%), Hanover (6.7%), and St Elizabeth (3.0%). Among females who self-reported chikungunya no hospitalization was recorded for the parishes of St Thomas, St Ann, St James, Westmoreland, Clarendon, and St Catherine. Among females who were seropositive for chikungunya prevalence of hospitalization due to symptoms was 1.7% for the parish of St Andrew, 3.4% for the parish of Hanover, and 0% prevalence in all other parishes. Among the males, prevalence of hospitalization was 0% for most parishes for each of the chikungunya states (self- reported, suspected, or seropositive), and differences in estimates were not statistically significant.

Table 10.1.5: Prevalence (%) Seropositive Status, *in Comparative Rank Order,* in Persons Reporting Symptoms+ of Chikungunya, JHLS III 2017

	Males		Females		Males & Females	
Rank	**Symptom Reported**	**Seropositive Prevalence**	**Symptom Reported**	**Seropositive Prevalence**	**Symptom Reported (n+)**	**Seropositive Prevalence**
1	Joint Swelling (47)	100	Weak Bladder (5)	100	Diarrhoea(n=5)	100
2	Diarrhoea (3)	100	Diarrhoea (2)	100	Eye problems(n=2)	100
3	Muscle Weakness (3)	100	Dizziness (1)	100	Itching(n=2)	100
4	Eye Problems (2)	100	Fainting (1)	100	Back Pain(n=1)	100
5	Itching (1)	100	Itching (1)	100	Fainting(n=1)	100
6	Loss of Appetite (1)	100	Muscle Weakness (6)	100	Dizziness(n=1)	100
7	Skin rash (65)	99	Back Pain (1)	100	Loss of Appetite(n=1)	100
8	Muscle pain (155)	98.6	Muscle pain (299)	97.1	Muscle Weakness (n=9)	100
9	Joint pain (203)	98.2	Fever (288)	97	Weak Bladder(n=5)	100
10	Severe Joint Pain (145)	98.0	Skin rash (199)	96.6	Muscle pain (454)	97.8
11	Fever (157)	97.6	Joint pain (376)	96.2	Skin rash (264)	97.4
12	Headache (112)	97.4	Nausea/vomiting (61)	95.8	Fever (n=445)	97.3
13	Nausea/vomiting (24)	94.2	Severe Joint Pain (316)	95.8	Joint pain (n=579)	97.2
14	Back Pain (0)	0	Joint Swelling (140)	95.4	Joint Swelling (n=187)	97.2
15	Dizziness (0)	0	Headache (262)	95.3	Severe Joint Pain (n=461)	96.7
16	Fainting	0	Eye problems	0	Headache (374)	96.2
17	Weak Bladder	0	Loss of Appetite	0	Nausea/vomiting (85)	95.1
	Reported No Symptom (152)	58.0	Reported No Symptom (204)	63.8	Reported No Symptom (n=356)	60.7
	No Recollection of Symptoms (3)	100.0	No Recollection of Symptoms (6)	84.6	No Recollection of Symptoms (n=9)	95.2

NE: No estimate because symptom not reported in the subpopulation tested for CHIK V

+: Abscess, flu-like symptoms, swollen lymph nodes were not reported by the subsample who provided data.

++: Numbers in sample

Table 10.1.6: Proportion (%) of Persons Hospitalized for Chikungunya among the Self-reported, Suspected, and Seropositive Chikungunya Cases, by the Categories of Sex and Age Group the JHLS III 2017

Indicator	Self-reported Chikungunya			Suspected Chikungunya			Seropositive Chikungunya		
Age Band (years)	Total	Male	Female	Total	Male	Female	Total	Male	Female
15–24	0.95[0.3, 2.6]	0	1.8[0.7, 5]	2.3[0.8, 6.2]	0	4.3[1.5, 11.3]	0	0	0*[a]
25–34	1.5[0.4, 5.5]	0	2.5[0.7, 8.7]	1.2[0.2, 7.7]	0	1.9[0.3, 12]	0	0	0
35–44	0.51[0.2, 1.7]	0	0.9[0.3, 3]	0.9[0.3, 3.1]	0	1.7[0.5, 5.7]	0	0	0
45–54	1.7[0.6, 4.8]	0	3.2[1.1, 9]	1.9[0.5, 7.3]	0	3.8[1, 13.2]	1.8[0.5, 6.2]	0	3.9[1.1, 12.9]
55–64	0.25[0.04, 1.4]	0.8[0.1, 4.4]	0	0	0	0	0.8[0.3, 2.3]	2.2[0.7, 6.7]	0
65–74	0.57[0.2,1.9]	0.4[0.1, 3.3]	0.7[0.1, 3]	0	0	0	0.3[0.04, 2.7]	0.6[0.1, 4.4]	0
75+	0.81[0.1, 4.8]	0.1[0.02, 0.3]	1.7[0.2, 6.1]	1.8[0.3,10.1]	0	2.4[1.3, 4.4]	0	0	0
Total (over all age groups)	0.99[0.5, 1.8]	0.08[0.02,0.31] ***[s]	1.7[0.5,1.8]	1.4[0.7, 2.5]	0**[s]	2.4[1.3, 4.4]	0.5[0.2, 1.2]	0.3[0.1,0.7]	0.6[0.2, 2.1]

*p < 0.05; **p < 0.01; ***p < 0.001.

[a]Age differences in prevalence statistically significant. [s]Sex difference in prevalence statistically significant.

Table 10.1.7: Proportion (%) of Persons Hospitalized for Chikungunya among the Self-reported, Suspected, and Seropositive Chikungunya Cases, by the Categories of Sex and Place of Residence, JHLS III 2017

Indicator	Self-reported Chikungunya			Suspected Chikungunya				Seropositive Chikungunya	
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Parish									
Kingston	0.5[0.1, 2.0]***p	0.7[0.09,4.9]	0.3[0.04, 1.9]***p	0	0	0	0.4[0.05, 3.3]	0.8[0.1, 6.3]	0*p
St Andrew	1.4[0.4, 4.5]	0	2.6[0.8,8.4]	2.3[0.8, 6.5]	0	4.5[1.6, 12.1]	1[0.3, 3.6]	0	1.7[0.4, 6.8]
St Thomas	0	0	0	0	0	0	0	0	0
Portland	1[0.2, 4.2]	0	2.0[0.4, 8.3]	1[0.1, 7.6]	0	2.0[0.2, 13.9]	0	0	0
St Mary	0.9[0.1, 5.7]	0	1.6[0.2, 9.9]	1.8[0.3, 11.1]	0	2.7[0.4, 17.3]	0	0	0
St Ann	0	0	0	0	0	0	0	0	0
Trelawny	1[0.2, 4.6]	1.9[0.3,10.7]	0.4[0.05,3.1]	0.4[0.05, 3.5]	0	0.8[0.09, 6.3]	4.4[1.4, 13.3]	8.5[2.5, 24.8]	0
St James	0	0	0	0	0	0	0	0	0
Hanover	4[1.2, 12.3]	0	6.7[2.0,19.9]	5[1.6, 15.1]	0	9.0[2.8, 25.6]	1.7[0.2, 12.9]	0	3.4[0.4, 22.2]
Westmoreland	0	0	0	0	0	0	0	0	0
St Elizabeth	1.8[0.4, 7.3]	0	3.0[0.8,11.2]	3[0.8, 11.1]	0	4.4[1.2, 15.5]	0	0	0
Manchester	8.9[2.7, 25.3]	0	17.0[4.7,45.9]	7.6[2.2, 23.4]	0	13.9[3.7, 40.7]	0	0	0
Clarendon	0	0	0	0	0	0	0	0	0
St Catherine	0	0	0	0	0	0	0	0	0
Area of residence Rural	0.90[]	0.1[0.02,0.7]**s	1.4[0.6, 3.5]	0.8[0.4,1.8]	0	1.3[0.6, 2.9]	0.3[0.1,0.8]	0.4[0.1, 1.7]	0.1[0.01, 0.9]
Urban	1.1[0.4,2.5]	0.04[0.01, 0.34]***s	1.9[0.8, 4.6]	1.9[0.9,4.1]	0*s	3.6[1.6, 7.7]	0.5[0.1,1.8]	0.09[0.01, 0.7]	0.9[0.2, 3.6]

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

[p]Parish differences in prevalence statistically significant. [s]Sex difference in prevalence statistically significant.

Some 85 students representing 121,279 Jamaicans self-reported that they had chikungunya virus. Of this subpopulation, 66.0% reported absence from school and/or work[23a] because of their illness. Among the students, there was no statistically significant sex difference in the distribution of self-reported chikungunya virus cases over the categories indicating absence, no absence or uncertainty about absence from work or school. There were also no statistically significant urban-rural or parish differences in the distribution of cases over the said categories related to absence from work or school because of illness. Age group, however, was associated with prevalence of absence from school and/or work ($p<0.05$), with a smaller percentage of the more mature students, aged 35–44 years, reporting absence because of illness (See Table 10.1.8.).

Table 10.1.8: Percentage (%) of Students and Employed Persons Reporting Absence from School and/or Work as a Result of Chikungunya, by Demographic Categories, among Jamaicans Aged 15 Years and Older, JHLS III 2017

<table>
<tr><th rowspan="2">Category</th><th colspan="2">Self-reported Chikungunya</th><th colspan="2">Suspected Chikungunya</th><th colspan="2">Seropositive Chikungunya</th></tr>
<tr><th>Students (n=85)</th><th>Employed persons (n=710)</th><th>Students (n=40)</th><th>Employed persons (n = 362)</th><th>Students (n = 695)</th><th>Employed persons (n = 695)</th></tr>
<tr><td colspan="7">Age groups</td></tr>
<tr><td>15–24 years</td><td>66.7* [50.2,79.9]</td><td>*63.08 [47.88,76.06]</td><td>75.9 [50.4, 90.7]</td><td>65.63 [45.03,81.66]</td><td>66.3 [50.88,78.88]</td><td>63.0* [46.81,76.72]</td></tr>
<tr><td>25–34 years</td><td>87.4 [49.0,98.1]</td><td>61.86 [49.13,73.15]</td><td>86.0 [45.4, 97.8]</td><td>65.22 [46.8,79.99]</td><td>87.67 [49.57,98.09]</td><td>62.52 [51.3,72.53]</td></tr>
<tr><td>35–44 years</td><td>2.4 [0.20, 23.0]</td><td>57.31 [46.0,67.91]</td><td>NE</td><td>72.1 [57.4, 83.2]</td><td>NE</td><td>60.63 [50.31,70.09]</td></tr>
<tr><td>45–54 years</td><td rowspan="4">NE[1]</td><td>69.44 [60.42,77.19]</td><td>100.0</td><td>78.4 [63.9, 88.2]</td><td>2.381 [.1994,22.95]</td><td>67.83 [58.97,75.57]</td></tr>
<tr><td>55–64 years</td><td>66.09 [53.92,76.45]</td><td rowspan="3">NE</td><td>67.2 [49.8, 80.9]</td><td rowspan="3">NE</td><td>63.97 [50.5,75.55]</td></tr>
<tr><td>65–74 years</td><td>69.17 [52.89,81.77]</td><td>82.6 [64.3, 92.6]</td><td>72.12 [58.16,82.8]</td></tr>
<tr><td>75+</td><td>92.62 [73.83,98.24]</td><td>89.1 [61.8, 97.6]</td><td>93.04 [75.84,98.27]</td></tr>
<tr><td colspan="7">Area of Residence</td></tr>
<tr><td>Rural</td><td>73.6 [51.42,88.01]</td><td>*69.6 [63.53,75.05]</td><td>79.4 [47.7, 94.2]</td><td>75.6 [68.3, 81.7]</td><td>72.31 [48.69,87.79]</td><td>71.13** [65.68,76.03]</td></tr>
<tr><td>Urban</td><td>62.4 [42.33,78.99]</td><td>58.31 [49.68,66.46]</td><td>76.7 [46.7, 92.5]</td><td>68.2 [57.2, 77.5]</td><td>62.85 [44.16,78.36]</td><td>57.82 [49.57,65.66]</td></tr>
<tr><td colspan="7">Parish</td></tr>
<tr><td>Kingston</td><td>86.31 [38.17,98.47]</td><td>*57.6 [44.54,69.68]</td><td>81.59 [30.06,97.86]</td><td>79.6 [60.0, 91.0]</td><td>86.42 [38.58,98.47]</td><td>57.97* [44.99,69.93]</td></tr>
<tr><td>St Andrew</td><td>51.25 [20.1,81.45]</td><td>56.46 [42.03,69.88]</td><td>88.26 [47.1,98.45]</td><td>69.8 [50.5, 84.0]</td><td>48.71 [21.4,76.81]</td><td>55.7 [41.64,68.91]</td></tr>
</table>

[1]NE- No estimates.

a. Some persons classified as students reported that they missed work, and some persons classified as employed indicated that they missed school.

Table 10.1.8 *(contd)*: **Percentage (%) of Students and Employed Persons Reporting Absence from School and/or Work as a Result of Chikungunya, by Demographic Categories, among Jamaicans Aged 15 Years and Older, JHLS III 2017**

Category	Self-reported Chikungunya		Suspected Chikungunya		Seropositive Chikungunya	
	Students (n=85)	Employed persons (n=710)	Students (n=40)	Employed persons (n = 362)	Students (n = 695)	Employed persons (n = 695)
St Thomas	70.29 [25.8,94.15] [25.8,94.15]	56.9 [34.56,76.75]	66.5 [26.09,91.77]	66.6 [41.3, 85.0]	69.35 [22.01,94.78]	52.61 [34.08,70.45]
Portland	71.96 [25.27,95.11]	62.88 [48.7,75.13]	100.0	69.9 [57.5, 79.9]	71.89 [26.09,94.88]	65.97 [52.49,77.28]
St Mary	71.94 [49.6,86.98]	59.64 [49.18,69.3]	100.0	59.1 [38.0, 77.3]	73.16 [52.33,87.13]	58.72 [49.01,67.81]
St Ann		65.84 [34.54,87.56]	NE	95.4 | [66.4, 99.5]	NE	62.27 [36.91,82.32]
Trelawny	66.4 [20.51,93.79]	76.77 [62.9,86.56]	100.0	78.3 [61.5, 89.1]	72.92 [26.79,95.2]	80.46 [69.71,88.05]
St James	74.04 [41.04,92.11]	65.17 [52.26,76.18]	100.0	63.2 [46.6, 77.1]	72.69 [46.04,89.25]	70.56 [56.72,81.43]
Hanover	81.14 [42.59,96.15]	60.44 [48.58,71.18]	100.0	66.0 [53.7, 76.4]	81.44 [44.73,95.97]	65.56 [51.68,77.22]
Westmoreland	NE[1]	51.14 [25.59,76.11]	NE	51.9 [22.8, 79.8]	NE	65.82 [55.82,74.59]
St Elizabeth		72.31 [56.79,83.84]		87.9 [72.6, 95.2]		70.75 [56.6,81.77]
Manchester	80.33 [41.89,95.86]	86.68 [71.7,94.36]	61.1 [12.5, 94.6]	89.4 [57.0, 98.2]	81.82 [45.14,96.09]	87.54 [76.9,93.69]
Clarendon	88.16 [53.09,98]	65.24 [53,75.76]	73.2 [23.1, 96.1]	72.5 | [59.0, 82.9]	84.37 [45.49,97.22]	65.82 [55.12,75.13]
St Catherine	61.51 [32.75,83.98]	67.17 [53.69,78.32]	48.7 [5.6, 93.8]	69.4 [47.6, 85.0]	63.56 [34.57,85.2]	65.35 [50.75,77.54]
Sex						
Males	61.3 [36.4,81.4]	63.2 [55.2,70.5]	97.5 [81.0, 99.7]	73.04 [61.4, 82.2]	58.55 [35.56,78.33]	64.42 [57.41,70.87]
Females	70.1 [54.6, 82.1]	63.1 [56.4,69.2]	68.0 [41.5,86.38]	69.55 [62.8, 75.6]	71.9 [55.86,83.91]	62.79 [55.94,69.15]
Total	**66.0 [50.5, 78.7]**	**63.1 [57.6,68.3]**	**77.4 [54.9,90.6]**	**71.6 [64.7, 77.6]**	**65.8 [51.15,77.96]**	**63.8 [58.6,68.7]**

*p < 0.05; **p < 0.01; ***p < 0.001. [1]NE- No estimates.

Some 710 employed persons representing 537,510 Jamaicans self-reported that they had the chikungunya virus. Of this subpopulation, 63.1% reported absence from work and/or school because of their illness. Among these employed persons, there was a statistically significant sex difference in the distribution of self-reported chikungunya virus cases over the categories of those who reported absence, no absence, or uncertainty about absence from work or school. There were also statistically significant age-group (p=0.0429), urban-rural (p=0.0237), or parish (p=0.037) differences in the distribution of categories of persons who did or did not report absence from school because of illness. Parish percentages of persons reporting absence from work ranged from 51.1% in the parish of Westmoreland to 76.8% in the parish of Trelawny, while age group percentages ranged from 57.3% among the 35–44-year-olds to 92.6% in persons 75 years and older. Some 58.3% of employed urban residents and 69.6% of employed rural residents reported absence from work because of chikungunya virus symptoms (See Table 10.1.8.).

A total of forty students representing 36,577 Jamaicans were suspected chikungunya virus cases. Of this subpopulation, 77.4% reported absence from school or work because of their illness. Among the students, there were no statistically significant sex, parish, or urban-rural differences in the distributions of persons over the categories of those who reported no absence from school, reported absence from school, or could not recall or failed to respond regarding absence from school (See Table 10.1.8).

A total of 362 employed persons representing 278,741 Jamaicans were suspected chikungunya virus cases. Of this subpopulation, 71.6% reported absence from school or work because of their illness. Among these employed persons, there were statistically significant sex (p=0.033) and parish (p=0.046) differences, but no age-related or urban-rural differences, in the distributions of persons over the categories of those who reported no absence from school, reported absence from school, or could not recall or failed to respond regarding absence for school. An estimated 73.0% [95% CI: 61.4 to 82.2%] of males and 69.6% [95% CI: 62.8 to 75.6%] of females reported absence from school because of illnesses associated with chikungunya. The parish-specific estimates of prevalence of absence from work or school among the employed suspected chikungunya virus cases ranged from 51.9% [95% CI: 22.8 to 79.8%] in Westmoreland to 95.4% [95% CI: 66.4 to 99.5%] in St Ann (See Table 10.1.8).

A total of eighty-four students representing 144,464 Jamaicans were seropositive chikungunya virus cases. Of this subpopulation, 65.8% reported absence from school or work because of their illness. Among the students, there was no statistically significant sex, parish, or urban-rural differences in the distributions of persons over the categories of those who reported no absence from school, reported absence from school, or could not recall or failed to respond regarding absence for school (See Table 10.1.8).

A total of 695 employed persons representing 723,765 Jamaicans were seropositive chikungunya virus cases. Of this subpopulation, 63.8% reported absence from school or work because of their illness. Among these employed persons, there were statistically significant sex (p= 0.0019), age-related (p= 0.04), urban-rural (p= 0.005), and parish (p=0.023) differences in the distributions of persons over the categories of those who reported no absence from school, reported absence from school, or could not recall or failed to respond regarding absence for school. An estimated 64.4% [95% CI: 57.4 to 70.9%] of males and 62.8% [95% CI: 55.9 to 75.6%] of females reported absence from school because of illnesses associated with chikungunya.[b] The age group estimates ranged from 60.6% [95% CI: 50.3 to 70.1%] in the 35–44-year-olds to 93.0% [95% CI: 75.8 to 98.3%] among those 75 years and older. An estimated 71.1% [95% CI: 65.7,76.0%] of rural residents and 57.8% [95% CI: 49.6, 65.7%] of urban residents reported absence from school because of illnesses associated with chikungunya. The parish-specific estimates of prevalence of absence from work or school among the employed seropositive chikungunya virus cases ranged from 52.6% [95% CI: 34.1,70.5%] in St Thomas to

b. The association between absence from work or school and sex among the employed sera positive chikungunya cases was driven by the sex difference in the proportion who could not recall or response regarding their absence from wok (M:2.5 [95% CI: 1.2, 5.3%], F: 9.9[95% CI: 6.7,14.4%]).

87.5% [95% CI: 76.9,93.7%] in Manchester (See Table 10.1.8.). Table 10.1.9 shows the proportion (%) who self-reported relapse of chikungunya by demographic categories of Jamaicans aged 15 years and older who were either self-reported, suspected, or seropositive chikungunya cases. Among the self-reported and the seropositive cases of the disease, significantly more females reported relapse of chikungunya ($p<0.05$). The prevalence of a relapse of the disease also differed with age among those who were suspected chikungunya cases and among those who were seropositive for the disease. Prevalence estimates were 11.6% and higher among those 25–34 and 45–54 years of age for all three chikungunya classifications, as well as among the 55–64-year-old suspected cases but less than 10% in all other age groups. Prevalence of experiencing a relapse further differed with respect to area of residence ($p< 0.05$) among the seropositive cases, being higher among rural dwellers.

Table 10.1.9: Proportion (%) of Chikungunya Cases Who Self-reported Relapse of Chikungunya by the Demographic Categories, JHLS III 2017

Demographic Categories	Self-reported Chikungunya	Suspected Chikungunya	Seropositive Chikungunya
Sex of Participant			
Male	5.8*	7.1	5.9*
Female	10.4	13.5	10.8
Age group			
15–24 years	7.8	6.7*	7.3**
25–34 years	11.6	14.0	12.5
35–44 years	4.4	6.1	3.6
45–54 years	12.6	17.2	13.6
55–64 years	9.5	14.1	9.9
65–74 years	3.2	2.2	3.6
75+	3.802	6.2	4.4
Area of Residence			
Rural	9.6	11.1	9.7**
Urban	7.4	10.1	7.5
Parish of Residence			
Kingston	6.3	10.4*	6.1***
St Andrew	7.8	11.7	7.6
St Thomas	6.1	6.0	5.7
Portland	15.1	16.5	15.8
St Mary	3.7	5.2	3.3
St Ann	17.5	33.6	21.1
Trelawny	9.4	19.5	12.2
St James	5.2	7.4	4.7
Hanover	2.2	2.8	1.4
Westmoreland	5.0	7.5	4.1
St Elizabeth	9.5	8.5	7.7
Manchester	8.0	4.9	7.7
Clarendon	8.6	8.2	8.8
St Catherine	9.8	11.9	10.9
Total	**8.4**	**10.6**	**8.5**

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

For all three chikungunya classifications shown in Table 10.1.9, prevalence of a relapse of the condition was lowest in Hanover and highest in St Ann. Prevalence of a relapse among the self-reported cases ranged from 2.2% in Hanover to 17.5% in St Ann, but this variation was not statistically significant. Parish of residence was, however, associated ($p<0.05$) with prevalence of a relapse in the suspected cases, ranging from 2.8% in Hanover to 33.6% in St Ann. Prevalence of a relapse among the seropositive cases ranged from 1.4% in Hanover to 21.1% in St Ann ($p<0.001$).

10.2. Zika

A suspected case of zika was defined as a person presenting with a rash or fever and one or more of the following symptoms: (1) arthralgia or myalgia (joint pain or muscle pain); (2) non-purulent conjunctivitis or conjunctival hyperaemia (redness of the eyes, conjunctiva); (3) headache or malaise.

Six per cent or an estimated 122,475 Jamaicans self-reported zika; of these 80% met the case definition for zika, resulting in 4.8% prevalence of suspected case. The proportion of self-reported and suspected zika differed significantly across age groups for males, however, not for females. More females (7.7%) than males (4.2%) self-reported zika, an estimated 41,618 and 80,857 Jamaicans, respectively.

Table 10.2.1: Prevalence (%) of Zika by Ten-Year Age Bands in Jamaicans Aged 15 Years and Older, JHLS III 2017

	Age in Years							
	15–24	25–34	35–44	45–54	55–64	65–74	75+	Total
Total								
Self-reported	5.6**a	5.4	7.1	9.4	5.5	3.7	0.9	6.0
Suspected Zika	5.0*a	4.0	4.9	7.8	4.4	2.5	0.9	4.8
Males								
Self-reported	5.1***a	1.3	4.3	9.2	3.5	0.7	1.1	4.2*b
Suspected Zika	4.4**a	0.5	3.1	8.4	2.1	0.0	1.1	3.4
Females								
Self-reported	6.0	9.2	9.6	9.6	7.5	6.8	0.7	7.7
Suspected Zika	5.5	7.4	6.6	7.2	6.7	5.0	0.7	6.2

*p < 0.05; **p < 0.01; ***p < 0.001. [a]P-value for age group differences; [b]P-value for sex difference

The proportion of self-reported and suspected zika cases differed significantly across parishes; Portland (9.1%), St Andrew (8.5%) and St Ann (7.6%) had the greatest proportion of self-reported cases, while Westmoreland (0.6%), Clarendon (4%), and St Elizabeth (4.1%) had the lowest proportion of self-reported cases. Portland (8%), St Andrew (6.7%), and Manchester (6.1%) had the greatest proportion of suspected cases, while Westmoreland (0.6%), Trelawny (2.6%), and Clarendon (3.3%) had the lowest seroprevalence (See Table 10.2.2).

Table 10.2.2: Sex-specific and Total Prevalence (%) of Zika by Parish in Jamaicans Aged 15 Years and Older, JHLS III 2017

Parish	Self-reported Zika**			Suspected Zika		
	Total**	Male**	Female***	Total*	Male**	Female***
Kingston	6.0	7.7	4.2	3.5	4.7	2.2
St Andrew	8.5	10.0	7.1	6.7	7.7	5.7
St Thomas	5.2	1.7	8.7	4.2	0.0	8.3
Portland	9.1	5.9	12.3	8.0	5.2	11.0
St Mary	4.7	2.4	7.0	3.4	2.4	4.3
St Ann	7.6	0.7	13.5	5.3	0.7	9.4
Trelawny	5.9	5.6	6.1	2.6	1.7	3.5
St James	4.9	1.8	7.8	4.7	1.8	7.4
Hanover	5.0	0.8	9.4	4.2	0.8	7.9
Westmoreland	0.6	0.0	1.2	0.6	0.0	1.2
St Elizabeth	4.1	0.1	7.2	4.1	1.1	7.2
Manchester	7.3	5.8	8.8	6.1	5.2	7.1
Clarendon	4.0	3.8	4.3	3.3	3.8	2.9
St Catherine	5.6	1.3	9.4	4.5	1.3	7.3

*p < 0.05; **p < 0.01; ***p < 0.001.

Presentation of Zika

Skin rash (69.0%) was the most common symptom present among persons who reported that they had zika, followed by joint pain (60.9%), headache (56.0%), fever (49.0%), and red eyes/conjunctivitis (40.3%). Significantly more females reported skin rash (81.0%) than males (47.3%).

Table 10.2.3: Sex-specific and Total Frequency (%) of Reported Symptoms of Zika, JHLS III 2017

Symptom	Frequency (%)		
	Male	Female	Total
Skin Rash***	47.3	81.0	69.0
Red Eyes/Conjunctivitis	36.5	42.4	40.3
Fever	53.1	46.7	49.0
Joint Pain	54.0	64.7	60.9
Joint Swelling	10.8	17.9	15.4
Muscle pain	45.0	35.5	38.9
Nausea/vomiting	4.9	15.1	11.5
Headache	64.4	51.3	56.0
Unspecified Symptoms	3.0	6.7	5.4

*p < 0.05; **p < 0.01; ***p < 0.0001.

10.3. Environmental Risk Factors

Risk Factors for Vector-borne Diseases

Just over 75% of Jamaicans reported storing water with the most commonly used storage container being the covered drum, used by 44.6%, followed by bottles (used by 44.5%) and open kegs (used by 21.1%). There were significant differences between parishes with respect to the distributions of proportions of residents storing water and the proportions of residents using different types of storage containers.

Table 10.3.1 shows the proportion of reported water storage practises by parish. Hanover had the highest proportion of persons storing water (96.9%), while St Ann had the lowest proportion (54.6%). Across parishes, covered drums and bottles were the most common storage methods and open tanks were the least common. Almost 60% of persons in St Catherine used covered drums, and this method was the preferred option in that parish. Covered drums were also common in St Mary, Trelawny, St Thomas, Portland, Kingston, St Andrew, and Manchester – where 45% or more persons reported using this method. In contrast, persons from Westmoreland reported the lowest use of covered drums (16.9%).

Table 10.3.1: Proportion (%) of Reported Water Storage Practices by Parish for the Jamaican Population, Aged 15 and Over, JHLS III 2017

		Water Storage Containers (%)						
Parish of residence	Proportion (%) Storing Water	Covered Tank***	Open Tank***	Covered Drum***	Open Drum***	Bottles***	Covered Keg***	Open Keg***
Kingston	58.4	6.8	0.0	45.5	0.2	59.5	0. 4	16.1
St Andrew	71.1	16.3	0.0	45.7	2.3	55.9	14.1	16.7
St Thomas	88.5	27.2	0.5	49.6	4.1	32.5	3.7	12.2
Portland	89.5	42.4	0.0	45.9	9.1	61.1	0.6	7.1
St Mary	96.2	29.0	0.3	53.8	7.9	66.8	3.0	36.4
St Ann	54.6	20.4	2.0	24.3	2.3	41.7	4.4	21.3
Trelawny	73.5	33.5	0.4	49.9	5.5	6.4	6.9	11.1
St James	93.0	35.6	1.4	41.9	7.0	48.9	1.2	19.9
Hanover	96.9	59.0	0.0	40.3	5.3	35.4	36.0	55.7
Westmoreland	57.1	5.5	0.0	16.9	1.7	19.1	4.5	75.1
St Elizabeth	92.9	56.3	1.8	40.4	4.8	33.0	5.2	26.6
Manchester	95.4	35.6	0.6	44.9	7.2	43.6	8.1	13.8
Clarendon	81.9	32.1	0.2	39.6	17.4	54.9	0.0	6.1
St Catherine	80.4	28.0	0.0	57.1	4.3	36.9	4.2	17.7
Total	**76.2**	**29.1**	**0.5**	**44.6**	**5.9**	**44.5**	**7.3**	**21.1**

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

In five parishes, more than 50% of persons used bottles to store water in contrast to only 6.4% using this method in Trelawny. Meanwhile, Hanover reported the highest use of covered tanks (59.0%) followed by St Elizabeth (56.3%), while only 5.5% of persons in Westmoreland used this method. In most parishes, covered kegs were not a popular option for storing water; the greatest proportion of persons using this method occurred in Hanover and St Andrew, where 36% and 14.1% of persons respectively used this method.

Although the use of open kegs was not a popular water storage method in most parishes, this was the most common method in Westmoreland, where 75.1% reported this method. This was followed by a fairly high proportion of persons in Hanover (55.7%) and St Mary (36.4%) also using open kegs. Conversely, only 6.1 % of persons in Clarendon used this method. Methods of water storage differed from one parish to the next, and statistically significant differences were also noted across parishes.

Table 10.3.2 shows that collection of garbage by truck was the most common trash disposal method, followed by burned or incinerated trash and garbage thrown away in public dumpster. Methods less frequently used include burial, disposal in vacant lot or gully, or disposal in container. The highest proportion of persons reporting collection of garbage by truck occurred in Kingston and St Andrew where 87.5% and 84.7% respectively reported this method, while only 36.0% in Clarendon used this option. Burning or incineration were the most common disposal methods used in Clarendon and Westmoreland and were reported by 64.0% and 54.5% of persons respectively in these parishes. Other parishes that reported fairly high usage of burning and incineration include St Thomas, St Elizabeth, Trelawny, St Mary, St Catherine, Manchester, and St James where more than one in five persons used this method. Meanwhile, 39.3% and 35.0% respectively in Hanover and St James used public dumpsters. Proportions significantly varied between methods of disposal and differences observed were statistically significant.

Table 10.3.2: Parish-specific Proportions (%) of Jamaicans Aged 15 Years and Older Who Given Reported Trash Disposal Methods, JHLS III 2017

Parish	Reported Trash Disposal (%)***					
	Picked up by a Garbage Truck	Thrown Away in the Public Dumpster	Thrown Away in a Container	Burned/ Incinerated	Buried	Thrown Away in a Vacant Lot or Gully
Kingston	87.5	8.6	2.2	1.5	0.0	0.2
St Andrew	84.7	2.5	0.9	11.1	0.0	0.8
St Thomas	54.3	2.0	1.1	40.8	0.0	1.8
Portland	64.9	10.0	2.9	15.0	7.0	0.3
St Mary	59.5	2.6	1.5	34.5	0.0	1.9
St Ann	85.0	4.5	0.2	10.3	0.0	0.0
Trelawny	59.2	2.9	1.1	35.4	0.5	0.9
St James	41.7	35.0	0.2	21.4	0.0	1.7
Hanover	42.8	39.3	2.5	15.1	0.0	0.2
Westmoreland	42.4	2.6	0.4	54.5	0.0	0.0
St Elizabeth	61.3	0.0	0.0	38	0.0	0.7
Manchester	70.3	6.5	0.0	22.7	0.5	0.0
Clarendon	36.0	0.0	0.0	64.0	0.0	0.0
St Catherine	67.2	0.0	0.0	31.0	1.0	0.9
Total	**856.83**	**973.33**	**13**	**395.3**	**9**	**18.4**

*p < 0.05; **p < 0.01; ***p < 0.001.

[NB – The two categories of vacant lot and gully were combined to form (thrown away in a vacant lot or gully).]

Table 10.3.3 shows the parish-specific proportions of Jamaicans living in dwellings that with screens without holes or tears over doors and windows. Most individuals did not have unbroken screens over doors and windows. Trelawny reported the highest absence of intact screens (92.6%) and the lowest gap (48.6%) occurred in Clarendon. Dwellings with unbroken screens over some doors and windows range from 0.9% in Westmoreland to 20.1% in St Elizabeth. The parish of Clarendon had the largest proportion of dwellings (23.3%) with undamaged screens, while the lowest proportion (0.5%) was seen in St Mary. These differences were statistically significant.

Table 10.3.3: Parish-specific Percentage Distribution of the Jamaicans Aged 15 Years and Older Who Lived in Dwellings with Windows and Doors with Screens, JHLS III 2017

Parish	Doors and Windows That Open Have Screens without Holes or Tears***		
	None	Some	All
Kingston	78.2	10.4	11.4
St Andrew	86.8	8.2	5.0
St Thomas	83.1	8.9	7.9
Portland	92.1	5.4	2.5
St Mary	89.2	10.3	0.5
St Ann	84.1	10.1	5.8
Trelawny	92.6	3.6	3.7
St James	87.3	7.8	4.8
Hanover	92.1	6.2	1.7
Westmoreland	91.9	0.9	7.2
St Elizabeth	71.5	20.1	8.4
Manchester	75.9	16.0	8.1
Clarendon	48.6	28.1	23.3
St Catherine	74.9	18.5	6.6
Total	**78.9**	**12.8**	**7.4**

*p < 0.05; **p < 0.01; ***p < 0.001.

Table 10.3.4 shows prevalence of self-reported chikungunya and zika by risk factors for vector-borne diseases. Comparison of self-reported prevalence of chikungunya among individuals who stored water versus persons who did not store water, showed no significant differences within males and females. However, when sexes were combined, there was a statistically significant difference in the prevalence of self-reported chikungunya (50.2% vs 44.0%) among those who stored water.

Analyses of self-reported chikungunya prevalence by type of water storage container, demonstrate that, for the most part, there were no significant differences in prevalence based on storage method. However, females using covered and open drums were the exceptions to this trend. Within females using covered drums (57.7%) and those who did not use this method (50.7%), there was a statistically significant difference in the prevalence of self-reported chikungunya among those who used covered drums. Likewise, a statistically significant difference of self-reported chikungunya was also noted within females who used open drums (39.5%) compared to those who did not use this method (54.7%).

Table 10.3.4: Self-Reported Prevalence (%) of Chikungunya and Zika Diseases by Categories of Risk Factors for Vector-borne Diseases among Jamaicans Aged 15 Years and Older, JHLS III 2017

Risk Factor	Chikungunya			Zika		
	Male	Female	Total	Male	Female	Total
Respondents store water						
Yes	45.4	54.4	50.2*	5.0*	7.9	**6.5**
No	38.3	51.0	44.0	2.1	7.7	**4.6**
Type of Water Storage Containers						
Covered Tank						
Yes	46.3	54.3	50.8	6.3	10.7*	**8.8**
No	47.1	53.7	50.4	4.8	6.0	**5.4**
Open Tank						
Yes	44.2	19.1	37.5	0.0	67.4***	**17.6**
No	47.5	54.1	50.9	5.3	7.3	**6.3**
Covered Drum						
Yes	44.3	57.7*	51.4	5.4	7.1	**6.3**
No	48.9	50.7	49.8	5.0	7.7	**6.4**
Open Drum						
Yes	35.3	39.5*	37.5*	6.4	9.8	**8.2**
No	47.6	54.7	51.3	5.1	7.3	**6.2**
Bottles						
Yes	47.5	50.3	49.0	3.5**	8.0	**5.2****
No	46.4	56.9	51.8	6.6	6.7	**7.3**
Open Keg						
Yes	41.8	55.8	49.2	6.9	6.0	**6.4**
No	48.2	53.4	50.9	4.8	7.8	**6.3**
Covered Keg						
Yes	44.7	54.9	49.9	13.4	4.9	**9.0**
No	47.1	53.8	50.6	4.6	7.6	**6.1**
Reported Trash Disposal						
Thrown away in a vacant lot/gully	85.8**	84.8*	85.3**	10.1	0	**5.1**
Buried	69.6	34.8	44.4	0	13.8	**10.0**
Burned/incinerated	41.8	59.1	50.3	5.7	7.3	**6.5**
Thrown away in a container	82.7	62.3	74.5	3.5	7.8	**5.1**
Thrown away in a public dumpster	33.4	43.6	38.3	1.7	7.3	**4.5**
Picked up by a garbage truck	44.4	52.5	48.7	3.7	8.1	**6.0**
Doors and Windows that Have Screens without Holes and Tears						
None	42.0	55.0	48.7	4.2	6.4**	**5.3***
Some	54.0	48.1	50.8	5.0	13.8	**9.7**
All	46.3	52.6	49.4	2.3	11.6	**6.8**

*p < 0.05; **p < 0.01; ***p < 0.0001.

Findings of self-reported zika prevalence by type of water storage container reveal that there was a statistically significant difference within males who stored water (5.0%) compared to males who did not store water (2.1%). As with chikungunya, analyses by method of water storage showed no significant differences by type of water storage for most storage methods. Within females using covered tanks 10.7% self-reported zika, compared to 6.0% who used this method and did not report a zika infection. A large proportion of females using open tanks (67.4%) self-reported zika infection, while only 7.3% who did not use open tanks self-reported zika. This difference was statistically significant (p<0.0001). Within males, self-reported Zika prevalence among those using bottles to store water was 3.5% compared to 6.6%. Likewise, within males and females who used bottles 5.2% self-reported zika, while the prevalence among individuals who did not use bottles were 7.3%. These differences were statistically significant (p<0.0001).

Analyses of self-reported chikungunya prevalence within males, females, and both sexes showed that individuals using vacant lots or gullies had the highest prevalence for chikungunya compared to persons using other disposal methods. These differences were statistically significant. Among males, females, and combined sexes who used vacant lots or gullies self-reported prevalence was 85.8%, 84.8% and 85.3%, respectively. Individuals who threw away garbage in containers, reported the next highest prevalence of chikungunya, namely 82.7%, 62.3% and 74.5%, respectively among males, females, and both sexes. But these differences were not statistically significant.

Self-reported zika prevalence by use of door and window screens show that most persons reporting zika infection had screens on some or all doors and windows. A small proportion of persons self-reporting zika had no screens on windows and doors. Within males this difference was not statistically significant. However, among females and both sexes statistically significant differences were observed.

10.4. Knowledge Related to the Chikungunya Virus

Table 10.4.1 shows the proportions of Jamaicans aged 15 years and older with responses indicating different beliefs based on their knowledge of the chikungunya virus. The table also shows the proportion of Jamaicans with a possible gap in their knowledge in relation to the virus and who could be targeted in educational campaigns aimed at mitigating the effects of mosquito-borne viruses. The proportion of Jamaicans that could be targeted in these educational campaigns ranged from 25.9 to 80.3%. As few as 25.9% of Jamaicans were neutral regarding, in agreement with, or unable/unwilling to indicate their level of agreement with the statement about contracting CHIK V by touching, while a maximum of 80.3% were either neutral regarding, unable/unwilling to state their level of agreement with, or in agreement with the statement that fogging is harmful to health. The minimum and maximum percentages indicating the knowledge gap are in bold font in Table 10.4.1.

More than four in every ten of these Jamaicans (42.4%) accurately indicated that 'CHIK V is only transmitted through mosquito bites.' This percentage was divided among individuals who agreed (36.1%) and strongly agreed (6.3%) that only mosquitoes transmit CHIK V. However, 28.6% and 6.7% respectively disagreed and strongly disagreed that mosquitoes are the sole route of CHIK V transmission; thus, a combined total of 35.3% of Jamaicans aged 15 years and older gave inaccurate responses, while 15.4% did not indicate their level of agreement with the statement (via a 'don't know' [DK] response or a nonresponse [NR]).

Meanwhile, 32.4% of Jamaicans agreed that CHIK V cannot be caught from air, while 6.4% strongly agreed, giving a combined total of 38.8% who gave accurate responses. On the other hand, a similar proportion (36.7%) gave inaccurate responses; 33.2% and 3.5% respectively disagreed and strongly disagreed with the statement and 15.8% did not indicate their level of agreement with the statement.

More than one-third of Jamaicans aged 15 years and older (38.1%) disagreed with the statement that CHIK V came from an outside force. The proportion of persons who disagreed and strongly disagreed with this statement was 30.7% and 7.4%, respectively. In contrast, a combined total of 28.2% agreed with the statement – 22.7% indicated agreement and 5.5% strongly agreed, while 23.1% did not indicate their level of agreement with the statement.

Most Jamaicans in the age group being studied (74.1%) accurately indicated that CHIK V cannot be caught by touching; 60.4% and 13.7%, respectively, disagreed and strongly disagreed with the statement 'CHIK V can be caught by touching.' Nonetheless, less than 10% responded inaccurately with 8.3% and 0.9%, respectively, agreeing and strongly agreeing with the statement, and nearly 11% did not indicate their level of agreement with the statement (via a 'don't know' [DK] response or a nonresponse [NR]).

Nearly one-half of Jamaicans aged 15 years and older agreed (47.3%) that CHIK V is preventable when steps are taken to avoid mosquito bites, while 14.9% strongly agreed. The combined total of those who agreed and accurately responded was 62.2%. However, just over one-fifth (20.2%) disagreed with this prevention strategy – 17.3% disagreed and 2.9% strongly disagreed with the statement and approximately 10% did not indicate their level of agreement with the statement.

When presented with the following statement 'removing mosquito breeding sites from around homes does not reduce the chance of getting CHIK V,' just over four in ten Jamaicans aged 15 years and older (43.5% based on 38.3% and 5.2% who disagreed and strongly disagreed, respectively) accurately responded and indicated that this statement was false. On the other hand, 40% agreed with the statement – 34.7% and 5.2% agreed and strongly agreed, respectively, while 9.4% did not indicate their level of agreement with the statement.

Over 40% (41.2%) accurately indicated that CHIK V could have been reduced by more fogging in their communities as 37.7% and 3.5%, respectively, disagreed and strongly disagreed with the statement 'CHIK V could not have been reduced by more fogging ….' However, 36.0% did not believe that CHIK V could have been reduced by fogging in their communities with 31.2% indicating agreement and 4.8% strong agreement with the statement. Another 14.3% did not indicate their level of agreement with the statement.

Most Jamaicans (58.5%) believed that 'fogging is harmful to your health,' with 44.2% and 14.3%, respectively, stating agreement and strong agreement with the statement. Only 19.7% clearly stated their disbelief as 17.8% and 1.9%, respectively, disagreed and strongly disagreed with the statement, and 13.0% did not indicate their level of agreement with the statement.

Close to 30% of Jamaican aged 15 years and older agreed (28.8%), disagreed (33.9%), or did not indicate their level of agreement (29.5%) with the statement that 'CHIK V cannot be caught more than once.' Almost a quarter (24.7%) agreed with the statement, while 4.1% strongly agreed, totalling the 28.8% who agreed. Of the 33.9% who disagreed with the statement, 31.0% disagreed and 2.9% strongly disagreed.

Table 10.4.1: Proportion of Jamaicans Aged 15 Years and Older with Different Beliefs Based on Their Knowledge Related to the Chikungunya Virus, JHLS III 2017

Knowledge Scale Items	Frequency (%)							
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	DK	NR	Percent with Knowledge Gap
CHIK V is transmitted only through mosquito bites	6.7	28.6	7.0	36.1	6.3	15.0	0.4	57.7
CHIK V cannot be caught from the air	3.5	33.2	8.7	32.4	6.4	15.3	0.5	61.2
CHIK V came from an outside force (e.g., CIA, plane crash) / power (e.g., spiritual)	7.4	30.7	10.1	22.7	5.5	23.1	0.5	61.9
CHIK V can be caught by touching	13.7	60.4	5.8	8.3	0.9	10.6	0.3	**25.9**
CHIK V can be prevented by taking steps to avoid mosquito bites	2.9	17.3	7.7	47.3	14.9	9.5	0.3	37.7
Removing mosquito breeding sites from around homes does not reduce the chance of getting CHIK V	5.2	38.3	7.2	34.7	5.2	9.1	0.3	56.5
CHIK V could not have been reduced by more fogging in your community	3.5	37.7	8.6	31.2	4.8	13.9	0.4	58.9
Fogging is harmful to your health	1.9	17.8	8.8	44.2	14.3	12.6	0.4	**80.3**
CHIK V cannot be caught more than once	2.9	31.0	8.0	24.7	4.1	28.9	0.6	66.3

DK: 'Don't Know'; NR: 'No Response'

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11. Report of the Qualitative Study

Ishtar Govia • Tiffany Palmer

Non-communicable Disease (NCDs) in a Jamaican Working-class Urban Community

Summary

A total of 30 persons, comprising four focus groups, participated in focus group discussions aimed at eliciting from participants, the various barriers to, and facilitators of the appropriate management and prevention of NCDs. The focus groups consisted of women only nine persons), men only (six persons), male-target dyads (seven persons) and female-target dyads (eight persons). The target of the male- and female-target dyads was, respectively, a male and a female, who self-reported that they had at least one NCD. The key themes elicited from the focus group discussions (FGDs) were NCD awareness and beliefs, physical activity, dietary practices and medication adherence. The FGDs revealed, among group members, an awareness of lifestyle practices that could support appropriate management and prevention of NCDs, but financial challenges were seen as barriers to the uptake of these practices. The FGD participants believed that, in the wider community, fatalistic attitudes and unwillingness to change behaviours were barriers to NCD prevention. The reported use of herbal medicines, in response to lack of funds and possible side effects of prescribed medicines, highlight a possible gap in health literacy. This gap could be filled by providing patients with user-friendly and reader-friendly explanation of the purposes of medication prescribed. In addition, there is a need for data gathering from patients regarding their concomitant use of herbal and prescription medicines. Also, relevant stakeholder collaborations that support production of educational material highlighting the contraindications imposed by concomitant use of herbal and prescription medicines are needed.

11.1. Background

Previous Jamaica Health and Lifestyle Survey (JHLS) surveys (JHLS I [1999–2000][1] and JHLS II [2007–8][2]) indicated high prevalence of non-communicable diseases (NCDs) and their shared risk factors. As chapter 12 in this report illustrates, there has been a further increase in prevalence of the NCDs in approximately ten years between JHLS II (2007–8)[3] and this most recent JHLS III (2016–17). For example, relative to the prevalence of diabetes among 15–74-year-olds increased from 7.2% to 7.9% and then 10.2% for the 2000–2001 (based on JHLS I), 2007–8 (based on JHLS II), and 2016–17 (based on JHLS III) periods, respectively. The prevalence of hypertension in the same age group was estimated at 20.8% in the JHLS I, 25.2% based on JHLS II, and was further increased to 31.5% in the JHLS III.

The strategies to manage and prevent these NCDs are interrelated.[3] It is generally accepted that physical activity, healthy food choices, adherence to prescribed medications, and help-seeking behaviours, such as early screening and regular doctor visits, can reduce the risk of NCDs and their complications, including premature mortality and disability.[3,4] Despite this evidence, Jamaican data show that most persons living with NCDs or those who are at risk for the diseases are not engaging in these practices continue to be afflicted with poor health and continue to experience or be at risk for multi-morbidities.[2,5,6] In addition to the increase in prevalence of NCDs and risk factors, each of the JHLS surveys reported differences between men and women in prevalence, medication adherence, and help-seeking patterns among the population.

The JHLS III replicates and extends the previous surveys; it includes a qualitative study to understand more about the perceptions and experiences of Jamaicans that may be related to the high prevalence of NCDs and related risk factors.

While the quantitative approaches characteristic of the JHLS provide useful prevalence information on the diet, physical activity, and medication adherence of the Jamaican population, they do not allow us to fully understand many of the attitudes, beliefs, and behaviours informing the numbers. Qualitative research may provide insight into the reasons for these findings on prevalence and risk factors and inform approaches that can be taken to address the NCD epidemic. This can assist with the design and implementation of contextually appropriate and effective interventions to target these risk factors.

Table 11.1.1 further clarifies the importance and value of the first ever qualitative module of the JHLS by outlining the different kinds of information gained from the quantitative versus qualitative aspects of the study.

Table 11.1.1: Quantitative versus Qualitative Research Components, JHLS III 2017

Quantitative Research Component	Qualitative Research Component
Prevalence of NCDs and risk factors	Increased knowledge and understanding of how attitudes, beliefs, experiences, and practices may contribute to NCD risk factors, and how health policy and practice can more directly impact NCD prevention
Levels of disease awareness and control by gender	Increased knowledge and understanding of underlying factors (such as cultural gender norms) affecting differences in levels of disease awareness and control by gender, and a better understanding of how to tailor health policy to address these differences
Levels of adherence to medication and behavioural recommendations	Increased knowledge and understanding of factors, which support and/or prohibit individual medication adherence, and increased understanding of how health practitioners can help improve adherence rates
Gender and SES differences in help-seeking behaviours	Increased knowledge and understanding of how gender and socio economic status may support and/or prohibit health-seeking behaviours and an understanding of how public health decision makers can more effectively encourage help-seeking behaviours

11.2. Qualitative Research Methodology

To explore, in a context-sensitive manner, Jamaicans' NCD-relevant beliefs and experiences, the qualitative methodology known as the case study approach was used.[7-11] Case study involves '... the study of an issue explored through one or more cases in a bounded system (i.e., setting, context).'[8] The case study approach is the most appropriate qualitative strategy when one of the main intents is to explore contextual conditions that are believed to be relevant to the phenomenon of interest.[7,11,12] NCD-relevant beliefs and experiences exist in specific contexts, and the boundaries are not clear between this phenomenon and the context, making it an ideal fit for the case study approach. The case or bounded unit[7,8] in which the qualitative study was focused was the community, specifically an urban working-class community sampled in the JHLS III quantitative data collection, hereafter referred to as 'Jamaica Town.' The qualitative study did not aim to collect data from JHLS III individual survey participants. Instead, the qualitative study was linked with the JHLS III quantitative study in terms of the sampling of one of the *communities*. The community was the unit of analysis for the case study, and the JHLS III–sampled community that was selected for the study was 'Jamaica Town.'

Data Collection Strategy

The data collection strategy was focus groups. This data collection approach was used to obtain several perspectives about the same topic, to gain insights into the shared understandings of everyday life of persons with these diagnosed health conditions and to explore the ways individuals with these health conditions were influenced by others in a group situation. Research suggests that while attitudes, feelings, and beliefs may be partially independent of a group or its social setting, they are more likely to be revealed via the social gathering and the interaction that ensues within a focus group. Compared to individual interviews, focus groups elicit a multiplicity of views and emotional processes within the group context,[8] and research suggests that these play a crucial role in the health-related behaviours of those with diagnosed health conditions, such as hypertension and diabetes.[13] In addition, focus groups are particularly useful when it is likely that group, context and/or cultural factors may be at work.[8,14]

Research Question

The qualitative research aimed to learn about Jamaicans' NCD-relevant beliefs and experiences in a way that was sensitive to the important role that broader contextual factors play.

The main qualitative research question and sub-questions were:

What are the barriers and facilitators for diet, physical activity, medication adherence, and help seeking for NCDs for adult Jamaicans who live in a working-class urban community?

1. What are their beliefs, experiences, and practices with respect to diet, physical activity, medication adherence, and help seeking for NCDs?
2. How do those beliefs, experiences, and practices differ for Jamaican men and women?
3. Do we gain different information about those beliefs, experiences, and practices when we explore them from the individual perspective versus as household dyads?

Focus Groups Design

The study included four different focus groups designed, as described below and illustrated in Figure 11.2.1: (1) Male only; (2) female only; (3) male target-household dyad; (4) female target-household dyads.

1. *Male only*: This focus group consisted of men living in Jamaica Town, between the ages of 35 and 59 years, and had at least one self-reported NCD.
2. *Female only*: This focus group consisted of women living in Jamaica Town, between the ages of 35 and 59 years, and had at least one self-reported NCD.
3. *Male target-household dyad*: This group consisted of pairs from the same household in which the male had to have a self-reported NCD. The other relative may or may not have had an NCD. Participants in this dyad had to be 18 years and older but did not have to be male.
4. *Female target-household dyad*: This group consisted of pairs from the same household in which the female had to have a self-reported NCD. The other relative may or may not have had an NCD. Participants in this dyad had to be 18 years and older but did not have to be female.

Figure 11.2.1: Qualitative Research Case Study Focus Groups Design (Using Four Focus Groups) for One Urban Working-class Community Sampled in the Quantitative Study, JHLS III 2017

	Age group: 35–59 yrs	Family Dyads (Age ≥ 18 yrs)
Men	6–10 persons	4–6 dyads in which target family member is Male
Women	6–10 persons	4–6 dyads in which target family member is Female

The design for the focus groups was based on the following assumptions:

i. Premature deaths from NCDs in men and women aged 30–70 years can be prevented or delayed by implementing policies and programmes for prevention and control of NCDs.

ii. Men and women will discuss health issues more freely in sex-specific groups, particularly those concerning help-seeking behaviours linked, in particular, to men's and women's health indices (e.g., early screening for prostate and cervical and breast cancers) and other practices around which there may be culturally based stereotypes and stigma (e.g., whose role is it to do meal preparations vs. who has the explicit or implicit authority to decide food group preferences for meals).

iii. Information from relationship dyads within a household may be different from the perspective of one individual in the household.

Recruitment

Focus group participants were first recruited from 'Jamaica Town' by members of the research team over a two-week period in 2017. Researchers mapped the roads and lanes of the community and then walked through the community in quadrants to ensure that no section of the community was missed. A recruitment script was used to engage prospective participants. The name and contact details of interested, eligible community members were recorded by research team members who later followed up with them about availability for participation.

Snowball sampling was also used as participants referred researchers to other community or family members or made suggestions as to which street or houses to check for potential participants. Snowball sampling helped to build the community members' trust in the research team members. It demonstrated a value of participants' insights about their community membership, community members' schedule and availability (especially outside of the recruitment times), and geospatial layout of the community.

A community leader who had been engaged during the quantitative data collection from that community was engaged to secure a community hall as the venue – a centrally located site – for the collection of data from the focus group discussions.

Data Collection Procedure

Data collection was carried out by competent research assistants. Upon arrival at the venue for the focus group discussions, participants were greeted by the team of three persons, inclusive of research assistants, and guided through the registration process, which included the completion of an informed consent form, a brief demographic questionnaire, and a remuneration record form. Participants had the freedom to select their own seats around a discussion table.

The moderator welcomed participants, introduced the research team, and reminded the participants of the purpose of the focus group. The moderator was assisted by two notetakers who were positioned at opposite ends of the discussion table with audio recorders. To start off the focus group discussion (FGD), audio recorders were turned on by the facilitator or notetakers after gaining verbal consent from participants to record the session. The facilitator was aided by a focus group guide, which consisted of a list of topic areas and questions on experiences, beliefs, behaviours, and perceptions of NCDs to guide the focus group discussion. Each focus group discussion lasted approximately from 1.5 to two hours.

During the focus group discussion, participants voluntarily answered questions posed by the moderator or engaged in discussions among themselves about topics raised or raised their own topics for discussion. Notetakers noted the various responses, discussions, and topics that were raised by participants. They also created a diagram of the seating arrangement of participants and made notes of non-verbal communication among participants.

At the end of the focus group, participants were thanked and provided with refreshments. After participants left, the research team engaged in a debriefing of the session, guided by a debriefing form that each team member completed during the discussion. The form captured initial ideas about themes that arose in the focus group discussion, logistical issues, adjustments to be made to the focus group guide, interactions between participants and the research team, and areas for further exploration or clarification. Each research assistant also developed a memo to document their reflective thoughts, feelings, or observations after each focus group conducted.

Preparation for Data Analyses

The audiotapes of each focus group discussion were transcribed verbatim. Using the procedures consistent with qualitative research data analysis methods, the focus group transcripts were reviewed by data collection personnel and the qualitative lead. Each transcript was read several times and hand-coded to capture the critical issues and thoughts identified by the participants. The categories of critical issues and thoughts expressed by participants were then clustered together based on connectivity and a codebook, which included pre-set and iteratively identified codes, as is the standard practice in qualitative analyses.[15,16] The clusters of categories facilitated the identification of themes within the data. These themes were then grouped according to the different health behaviours that are the focus of the qualitative work (diet, physical activity, medication adherence, and help-seeking behaviours). Deviant cases were also discussed. The data was triangulated by cross-referencing the findings of the focus group data to geospatial observations and textual data. Together this allowed for a more comprehensive understanding of the NCD-relevant beliefs and experiences of persons in the Jamaica Town community. Participant anonymity and confidentiality were protected for all reporting purposes.

11.3. Findings

Description of the Qualitative Research Study Participants

Tables 11.3.1 and 11.3.2 provide summary statistics that describe the sample of participants in the qualitative research study, with respect to demographic characteristics and health-related outcomes, respectively. A total of 30 individuals participated across the four focus groups. Just under 37% of the sample recruited were male, and study participant ages ranged from 25 years to 78 years of age, with mean age 50.2 years. Each focus group consisted of at least six participants [‘Men Only’: *n* = 6, ‘Women Only’: *n* = 9, ‘Dyad with Female Target’: *n* = 8, 4 dyads, ‘Dyad with Male Target’: *n* = 7, 3 dyads]. (See Table 11.3.1.)

Profile of Each Focus Group

Men Only. Participants' (*n* = 6) ages ranged from 42 to 62 years (mean = 52.2 () years). Over 80% of the men-only focus group participants achieved grade levels 7–12 [All Age/Junior High (*n* = 3) and Secondary/High School (*n* = 2)] as their highest education level. Nearly 70% were either self-employed (*n* = 3) or employed for part-time (*n* = 1) (jobs included welder, cook, contractor) and two (33%) were unemployed (See Table 11.3.1.).

Four (66.7%) of the participants in the men-only focus group reported having diabetes, three (50%) reported having hypertension, and two (33.3%) reported having heart disease (See Table 11.3.2.). Fifty per cent of the males reported having two co-morbid NCDs (data not shown). In terms of health-related behaviours in response to chronic illnesses, two participants currently visited a doctor and four reported visiting a doctor in the past, with none reporting that they visited a 'traditional healer' or take 'herbal or natural remedies.' Half of the men were currently taking prescribed medication, while the other half reported taking prescribed medication in the past. Similarly, half of the men reported currently reducing their salt intake. (See Table 11.3.2.)

Women Only. Participants (*n* = 9) ages ranged from 35 to 57 years (mean = 51.4 () years). Just under 45% of participants were unemployed (*n* = 4); while the other 55% were primarily self-employed (*n* = 2) or employed part-time (*n* = 2) (jobs included domestic worker, janitorial worker, street vendor). Two-thirds of the women reported completing Secondary/High school or Technical/Vocational training (*n* = 6), with the others reporting completion of Primary or All Age/Junior High (*n* = 3) education. (See Table 11.3.1.)

All nine participants in the women-only focus group reported having hypertension, most reported also having diabetes (55.6%, *n* = 5), and two reported having heart disease. (See Table 11.3.2.) In terms of health-related behaviours in response to chronic illnesses, all nine participants reported that they currently visited a doctor, take prescribed medication, and reduce their salt intake. All except one woman reported that they had never taken 'herbal or natural remedies' (88.9, *n* = 8) with the exception being a woman who had this response to her illness, at the time of *none* of the participants in the women-only focus group, had a history of seeing a 'traditional healer' as a response to their chronic disease. (See Table 11.3.2.)

Male-target Dyads. Ages of the seven participants ranged from 26 to 68 years (mean = 49.3 () years). Only five (71.4%) of the seven focus group members were male. Just over 70% of the members of this focus group achieved grade levels 7–12 (all age/junior high and secondary/high school) as their highest education level. The majority, 85.7%, of the group members were unemployed, and the remainder reported being retired. (See Table 11.3.1.)

Some 57% of the focus group members reported having diabetes, and the same percentage reported that they were hypertension cases as well. (See Table 11.3.2.) In response to their chronic illnesses, at least 42% of the seven participants reported current visits to the doctor (42.9%), use of prescribed medication (57.1%), and lower salt intake (42.9%). (See Table 11.3.2.)

Female-target Dyads. Ages of the eight participants ranged from 25 to 78 years (Mean = 48.4 () years). All eight focus group members were female. Just over 60% of the members of this focus group achieved grade levels 7–12 (all age/junior high and secondary/high school) as their highest education level. The majority, 75%, of the group members were employed –12.5% full-time, 50.0% part-time, and 12.5% self-employed – and the remainder reported being unemployed. (See Table 11.3.1.)

Some 12.5% of the focus group members reported having diabetes, and the same percentage reported that they had heart disease. Hypertension was the most commonly reported condition (87.5%) among these focus group participants. (See Table 11.3.2.) In response to their chronic illnesses, at least 75% of the eight participants reported current visits to the doctor (87.5%), use of prescribed medication (75.0%), and lower salt intake (75.0%). (See Table 11.3.2.)

Table 11.3.1: Percentage (%) Distribution of Categorical Demographic Variables and Measures of Average and Spread/Variation for Age among Qualitative Research Study Participants within Each Type of Focus Group, JHLS III 2017

Demographic Variables	Total Sample (*n* = 30)	Focus Group Types			
		Men Only (*n* = 6)	Male-target Dyads (*n* = 7 (3 Dyads))	Women Only (*n* = 9)	Female-target Dyads (*n* = 8 (4 Dyads))
Age (Years) Range	25–78	42–62	26–68	35–57	25–78
Mean (SD[1])	50.3(12.3)	52.2(8.6)	49.3(14.7)	51.4(7.4)	48.4(17.8)
Gender Male (%)	36.7	100	71.4[a]	0.0	0.0
Education[2] Basic School/ None	0.0	0.0	0.0	0.0	0.0
Primary	20.0	16.7	14.3	22.2	25.0
All Age/Jr High[3]	26.7	50.0	28.6	11.1	25.0
Secondary[4]	43.3	33.3	42.9	55.6	37.5
Post-secondary Training[5]	10.0	0.0	14.3	11.1	12.5
Tertiary/College	0.0	0.0	0.0	0.0	0.0
Employment Status[6] Full-time	6.7	0.0	0.0	11.1	12.5
Part-time	23.3	16.7	0.0	22.2	50.0
Self-employed	20.0	50.0	0.0	22.2	12.5
Not employed	46.7	33.3	85.7	44.4	25.0
Retired	3.3	0.0	14.3	0.0	0.0

[1]Standard deviation.

[2]Highest level achieved assumed: [3]Grade 7–9 is the highest level; [4]grades 10–12 is the highest level; [5]vocational or technical training.

[6]Status in primary occupation assumed.

[a]5 Males.

Table 11.3.2: Prevalence (%) of Self-reported Chronic Illnesses and Health-related Behaviours among Qualitative Research Study Participants in Each Type of Focus Group, JHLS III 2017

Health-related Outcomes	Total Sample (*n* = 30)	Focus group Types			
		Men Only (*n* = 6)	Male-target Dyads [*n* = 7 (3 Dyads)]	Women Only (*n* = 9)	Female-target Dyads [n = 8 (4 Dyads)]
Self-reported Chronic Illnesses					
Diabetes	46.0	66.7	57.1	55.6	12.5
Hypertension	76.7	50.0	57.1	100	87.5
Heart Disease	6.7	33.3	0.0	22.2	12.5
Cancer	0.0	0.0	0.0	0.0	0.0
Health-related Behaviours in Response to Chronic Illnesses					
Visits the Doctor					
In the Past	16.7	66.7	14.3	0.0	0.0
Currently	70.0	33.3	42.9	100	87.5
Never	10.0	0.0	14.3	0.0	0.0
No Response	3.3	0.0	28.6	0.0	12.5
Takes Prescribed Medication					
In the Past	13.3	50.0	0.0	0.0	12.5
Currently	73.3	50.0	57.1	100	75.0
Never	3.3	0.0	14.3	0.0	0.0
No Response	10.0	0.0	28.6	0.0	12.5
Sees a Traditional Healer					
In the Past	0.0	0.0	0.0	0.0	0.0
Currently	3.3	0.0	0.0	0.0	12.5
Never	86.7	100	71.4	100	75.0
No Response	10.0	0.0	28.6	0.0	12.5
Takes Herbal Remedies					
In the Past	0.0	0.0	0.0	0.0	0.0
Currently	16.7	0.0	14.3	11.1	37.5
Never	73.3	100	57.1	88.9	50.0
No Response	10.0	0	28.6	0	12.5
Uses Less Salt					
In the Past	3.3	16.7	0.0	0.0	0.0
Currently	70.0	50.0	42.9	100	75.0
Never	16.7	33.3	28.6	0.0	12.5
No Response	10.0	0.0	0.0	0.0	12.5

Key Themes

The key themes that emerged from the focus group data are presented under five overarching areas, which have been found to affect NCD prevalence and trends. These themes are the following:

- NCD awareness and beliefs
- Physical activity
- Dietary practices
- Medication adherence
- Help-seeking behaviours

These themes, some of which are recurring, are reported in terms of gender-related similarities and differences that reflect the design of 'Men Only' versus 'Women only' focus groups.

NCD Awareness and Beliefs

NCD awareness. Most participants reported having an awareness of NCDs, such as diabetes, hypertension and cancer, prior to their own diagnoses. However, a few participants reported that had no awareness of NCDs, such as diabetes and hypertension, until receiving their own diagnoses from a doctor.

> 'Me never have no experience about sugar or diabetes, so the doctor tell me say a sugar, diabetes me have, and me start take some tablet from there...'
> *– P6, M, 61 yr, Employed*

NCD awareness appeared to result primarily from their exposure to notable symptoms and NCD-related deaths among family members (e.g., parents and siblings).

> 'I don't have [hypertension], so because I see what it does to my family and friends, so that's why I don't use salt period ... yeah, I want to live to see my grandkids dem.'
> *– P3, M, 42 yr, Self-employed*

Despite indirect experiences with NCDs, most participants revealed that they became aware of their NCD diagnoses as a result of routine health visits, particularly among the women, or visits due to concerning symptoms. There was a clear gender difference in regular doctor or health centre visits, with women reporting that they maintain routine check-ups and follow-up appointments whereas the men reported avoidance of doctor and health centre visits unless they perceived symptoms as severe. A few female participants also spoke of gestational diabetes, which is developing diabetes during pregnancy, and about being diagnosed with diabetes and/or hypertension either during pregnancy check-up appointments or at the time of delivering their babies.

> 'But how I did know, when I did pregnant wid mi likkle girl, she is 14 now. When I did ready dem admit mi to have her dem seh dat ah have sugar and pressure ....'
> *– P4, F, 53 yr, Employed part-time*

Behaviour change motivators. Two participants expressed that they were motivated to change their behaviours after seeing family members' NCD-related experiences, such as disabling symptoms and having to take multiple types of medication every day.

> 'Because growing up to see my father taking this heap a tablet, I told myself I'm not going to take these heap a tablet … so me just use him sickness as an example.'
> *– P5, M, 45 yr, Self-employed*

However, vicarious NCD experiences did not seem to motivate most participants to get regular check-ups or to change their lifestyles, until they experienced their own 'health scares.' For many of the participants, behaviour change for their own wellbeing was motivated not only by 'health scares,' but also by concerns about caring for dependents and loved ones (in the future).

> 'I don't have [hypertension], so because I see what it does to my family and friends, so that's why I don't use salt period… yeah, I want to live to see my grandkids dem.'
> *– P3, M, 42 yr, Self-employed*

> '… what makes me have to change is that I got a mild heart attack once, and I realize that I have to change my diet … and I tried to stick to my diet and things like dat, and I've never been to the hospital [since 2008].'
> *– P8, F, 57 yr, Unemployed*

Dyad men shared more personal experiences with 'scares' (severe symptom experiences and deaths of friends and/or community members) motivating behaviour change (particularly health care seeking, adhering to medications, and cessation of alcohol misuse) and also expressed their beliefs that 'scare tactics' (including showing people 'scary images') will be useful in health campaigns.

Health myths. Many of the misconceptions about health and health behaviours expressed by both male and female participants surrounded the causes of hypertension and diabetes, as well as lifestyle strategies for reducing symptoms of these conditions. With regards to the onset of diabetes, participants believed that it could be caused by one period of eating large quantities of foods high in sugar content (e.g., during the Easter or Christmas seasons). Participants did not appear to understand the actual risk factors for diabetes or hypertension but believed common myths.

> '…roun' two year ago, roun' this time, Easter holiday, eat up whole heap ah bun and cheese … after that mi find myself jus' ah feel a way … but when she [doctor] tell mi bout di sugar me ah seh ah di whole heap a sweet weh mi consume …'
> *– P5, M, 45 yr, Self-employed*

In terms of practices believed to reduce symptoms of hypertension and diabetes, many participants believed that reducing their intake of foods high in sugar ('sweets') and salt content was adequate to reduce symptoms. Additionally, some participants believed that they could counteract the impact of sugar and salt intake by taking medication before partaking in such foods, by 'diluting the salt or sugar' with high water consumption afterwards or by doing exercise to 'sweat out the salt.'

> '… I did my own personal research to figure out, to find out how I could get rid of the salt out of my blood, and I found that ahm a lot of water and a lot of sweets would dilute the salt … but the physical exertion is best because you get to perspire the salt.'
> *– P1, M, 62 yr, Employed part-time*

Though both groups demonstrated misconceptions about health, women appeared to rely on these more in validating their health behaviours. Women's emphasis on the influence of heredity in developing hypertension, diabetes, and obesity, for example, was coupled with a belief that the development of NCDs is not within one's personal control and, consequently, is outside of one's personal responsibility. While heredity appeared to motivate the men to change their lifestyles, more of the women seemed to use it as an excuse for unhealthy behaviours.

Community health resources. The men expressed more understanding of and positive sentiments towards the importance of community health resources than their female counterparts and believed that the community should utilize its own resources and community assets (e.g., the positive influence of women about healthier diets, older males mentoring younger males, and backyard gardening) to promote healthy lifestyles and behaviours in Jamaica Town.

> 'My … wife play a significant role in what I eat and what I drink. When she come and she see a bottle of [soda] she say, "It ah go kill yuh."'
> *– P3, M, 42 yrs, Self-employed*

Some men also expressed a strong desire to get involved in health promotion and community development, ranging from mentoring young men on the street corner to creating a community space for exercise and other recreational activities. Men spoke about the importance of positive leadership, social support, and intergenerational mentorship in community health and the role of women in maintaining healthy lifestyles. On the other hand, the women's perceptions of the community with regards to health appeared to focus on a sense of hopelessness regarding the health behaviours of other community members. Though the men emphasized the significant positive influence that the women have on healthy behaviours (such as healthy eating, adherence to medication, and seeking care) among men in the community, the women felt ill-equipped to positively influence the lifestyle choices of young people in the community and, further, expressed little confidence that there would be any notable change in the behaviours of the youth and elderly men in the community due to fatalistic attitudes and socio-economic factors, such as high rates of unemployment. The women felt, for example, that unemployment promotes physical inactivity, because community members tend to become comfortable with and accustomed to being unproductive.

> '… But wi in a society now weh people nuh willing to help nobady. Everybody is jus' fah demself … So even if t'ings could be better to help our one anoder, some people don't wish to help each other. Even if some wish help, is like they don't wish to change.'
> *– P7, F, 45 yr, Self-employed*

> 'Is jus' like my fada. My fada grow up wid, ah grow 'mongst set ah man … Di whola dem t'ink one way … Nuh care weh yuh eat … do. Nuh care weh yuh eat, yuh mus' dead.'
> *– P5, M, 45 yr, Self-employed*

Physical Activity

Health myths. Participants demonstrated an awareness of the importance of regular exercise but tended to believe that the physical demands of housework and work-related activities (including standing for long hours) is sufficient to constitute adequate exercise.

> 'Mi nuh wah do no more exercise cau' mi work a school.'
> *– P1, F, 54 yrs, Employed full-time*

> ‘Well, I do welding work, so I don’t have to really do a lot of exercise.’
> *– P6, M, 61 yrs, Employed*

Perception of safety. Though the women noted that for several years there has been minimal community violence in Jamaica Town, they attributed their apprehension regarding walking on the streets for exercise, whether alone or in groups, to concerns about safety. They noted that though the community is now relatively peaceful, they have concerns about people who drive and walk through the community given its central location. There appears to be a lingering perception of being unsafe among women, despite absence of ‘war’ (gang-related violence) that limits their willingness to exercise outdoors.

> ‘Not really in di community, probably depends where you going to walk on di road and when a lot ah people a pass and vehicle can drive up an’ tek yuh away or somet’ing ....’
> *–P2, F, 32 yr., Self-employed*

> ‘... is not safe for you to go out in the mawnin’ and exercise ....’
> *– P7, F, 45 yr, Self-employed*

Access to physical space for exercise. Participants expressed the need for greater access to community spaces and facilities for exercise, such as an affordable community gym.

> ‘... If we have a community gym, we could have more people exercising.’
> *– P7, F, 45 yr, Self-employed*

The men emphasized the perceived benefits of organized exercise groups and active community sports clubs but felt that the available sports activities and facilities are more appropriate for younger men than men in their age group.

> ‘... I see a lot of stuff for young people ... I don’t really see, uhm, activities in the community for my age group.’
> *– P1, M, 62 yr, Employed part-time*

> ‘... at my age ... a lot of people would like facilities ... dem say dem would love di facility if it was like closer ... where everybody is dere. If dem have di facility around dere where you can access it for like walking, old people would walk ... Very rare people do that.’
> *– P4, M, 56 yr, Unemployed*

Some of the men believed that with community members taking personal responsibility for creating appropriate spaces for recreation and physical activity, Jamaica Town could have such spaces available to community members of all ages.

Dietary Practices

Health Myths. Several female participants expressed their beliefs that, once portion control is considered, persons, even those diagnosed with NCDs, should be free to eat any type of food.

> 'But I don't think what you eat affect the body. Is just how much you intake … You supposed to can eat everything dat is out dere to eat but is jus' how much of it you eat. Cause all of dese t'ings are good for yuh body ….'
> *– P7, F, 45 yr, Self-employed*

Some women believed that taking one's medication for diabetes would protect them from the negative impact of consuming sugar-sweetened foods and beverages. Several participants, both male and female, also believed that effective management of their diabetes symptoms could be achieved with alternating periods of removing sugar-sweetened foods and beverages from their diets when their 'sugar is high' and consuming foods high in sugar content when their blood sugar levels are lower.

> 'I drink alcohol after I took mah medication ….'
> *– P7, F, 45 yr, Self-employed*

Personal responsibility. Both male and female participants spoke about the importance of individual accountability in health behaviours. Common attitudes among participants regarding health include an emphasis on the importance of personal responsibility in health and lifestyle management. They expressed their belief that individuals and families need to take personal initiative in ensuring that their choices and behaviours support a healthy lifestyle for themselves and their families, rather than relying on governmental policies and programmes to promote change on a community and/or societal level.

> '… It's just that each household have to teach their family how to deal with … deh have to have a balanced meal … The Prime Minister or di Minister of Health cannot control di whole Jamaica. Is each household have to, ahm, teach their family how to have a balanced meal ….'
> *– P7, F, 45 yr, Self-employed*

Participants emphasized the need for personal responsibility in maintaining a healthy diet. The women felt that men who live alone or spend a lot of their time outside the home tend to buy from the fast-food restaurants and cook shops, while the women tend to eat food prepared at home.

> 'Some of the men buy fast food because they are living by themselves.'
> *– P7, F, 45 yr, Self-employed*

> '… I watch that [my diet] a lot. I'm not saying that I'm perfect, but 80–90% of the time my diet is up to par … I don't like to take medication, so that's the reason why I try to watch what I eat ….'
> *– P3, M, 42 yr, Self-employed*

Behaviour change motivators. Of note, many participants reported changing their diet only after being diagnosed with diabetes and/or hypertension, despite expressing an awareness of the impact of poor diet and the need for personal responsibility.

> 'Eat less … I have diabetes and I know that certain things what you eat is not really good for it so jus' have to cut out certain things jus' for the health.'
> *- P2, F, 32 yr, Self-employed*

> 'Yes … I feel it physical. Whenever I eat anything with salt, I have a headache, so I try to eat less. I am hypertensive, and I try to cut out most of the salt. I don't really love fresh food, but I try to cut out the salt, most of it out, yuh know, for my health.'
> *– P5, F, 57 yr, Unemployed*

> 'Me have high cholesterol, high cholesterol, so me stop eat certain meat like oxtail, cowfoot and all them ting deh. Me used to love them, me cyaan eat dem ting deh no more. Me stop.'
> *– HD P1, M, 63 yr, Unemployed*

Additionally, a few participants reported that they changed their eating habits because of concerns about caring for their dependents, whether children or parents.

> 'Yes, because when I really basically thinking and seh Oh my God this pressure is so high. I have a daughter to deal wid, mother living wit' me. If I am sick and in the hospital, who is going to take care of her or my mother? So I have to take a decision and just cut out the salt complete.'
> *– P3, F, 56 yr, Unemployed*

Stress. Women spoke about the impact of stress (from financial challenges, loss of loved ones, and experiences of physical abuse) on their eating habits and other health behaviours such as smoking and alcohol misuse. Many of the women reported that self-control is sometimes a challenge, particularly resisting the temptations of 'fast food' and foods high in sugar content.

Communication barriers. Though some women demonstrated an awareness of the importance of reading labels when purchasing food items, many of them expressed their concern that many product labels at the shops in their community are written in the Chinese language.

> '… All di juice are from China or supp'n like that. How much of us can read China?'
> *– P7, F, 45 yr, Self-employed*

Additionally, both men and women reported having difficulty understanding standard measurement terms and abbreviations. The men were more aware and knowledgeable about portion sizes and measurement terms (e.g., milligrams) and spoke a lot more about the benefits of organic/farm grown produce over imported fruits (e.g., American apples) and packaged food products. It is important to note here that more of the men had exposure to other countries and had lived outside of Jamaica (e.g., the US or Canada) for a period when compared with the women.

> 'Because is not a lot of people understand di grams or di milli whatsoever … And a lot of people don't even know the meaning of MSG … These macaroni thing that they sell in the shop, these Ramen soup … a lot of people don't understand that have MSG in it.'
> *– P3, M, 42 yr, Self-employed*

Effectiveness of health campaigns. Many of the women felt that the Jamaican population does not pay adequate attention to the healthy diet campaigns, particularly those encouraging reduced consumption of sugar-sweetened beverages. However, some women believed that the campaigns encouraging increased consumption of water have been effective.

> '… You realize that a lot of people cut down on sweets… now yuh frighten to see how them drinking they wata mostly you go on di road now.'
> *– P2, F, 32 yr, Self-employed*

The men believed that there is a lot of information about the negative impact of salt and sugar on in the media. Some men felt that healthy diet campaigns would be more effective if communicated by way of popular culture, such as reggae music, and communicated by respected 'health champions' in the society.

> 'So if you put it in the way that it's supposed to put in, in the context of yuh reggae music or some play or something that is gonna … grab the persons … They [Jamaicans] listening to someone who is uhm a shotta … or a uplifting person in society. They will listen. Trust me.'
> *– P3, M, 42 yr, Self-employed*

Accessibility of healthy food options. In addition to the limited number of fruit and vegetable vendors in the community and the absence of a health food store, participants also felt that the limited healthy food options available in their community were regarded by residents as being too expensive.

> 'Yestudeh mi cook. Mi buy one cabbage yesideh. Seventy dolla' mi pay fi di cabbage. But di people dem up yah [vendors in Jamaica Town] t'ief! 'Undred an' twenty dolla' dem a sell one pound ah cabbage up yah fah enuh! An t'irty dalla' fi it ah town.'
> *– HD P2, F, 46 yr, Unemployed*

Participants expressed their belief that most 'cooks' or chefs in Jamaica Town use too much salt in their dishes. However, it was also expressed that most community members dislike food prepared with less salt and make unhealthy food choices. Community members, including some of the participants, indicated a preference for dishes high in salt and carbohydrate content, sugar-sweetened beverages, and fried foods. Focus group members reported that **the few chefs in the community who try to use healthier cooking methods, therefore, receive complaints and are forced to use more salt to keep their customers.**

> 'One day I remember, cook two pot of rice without salt … is a lady call me and say 'What kinda bad taste bad food that yuh ah sell come gi me'… Yuh nuh taste how it fresh? … I am a chef, and sometime the salt, and special di powder seasoning weh yuh have to use, yeah it carry, yuh use dat so this amount of salt weh yuh use … once yuh tip powder season it carry it [salt content] up.'
> *– P5, M, 45 yr, Self-employed*

> 'Fried, most pure fry t'ings me see dem a eat … Chips and all dem t'ings nuh good ….'
> *– HD P1, M, 63 yr, Unemployed*

> 'And if I don't have a lot of salt in my food is like I am not eating anything.'
> *– P4, M, 56 yr, Unemployed*

Financial constraints. Participants expressed concerns about the affordability of healthy food options.

> 'That's why sometime … we know seh it nuh right fi wi suppose to eat but cyaan buy the right things so yuh jus eat what you have.'
> *– P2, F, 32 yr, Self-employed*

> '… but sometime mi doh have the money to buy veg an' fruits.'
> *– P1, F, 54 yr, Employed full-time*

Participants also noted that most residents in the community do not have adequate space to engage in backyard gardening, and that those who do often find it difficult to procure paid or unpaid assistance from younger community members with reaping the produce.

> '… if you call them [young men in community] Miss and say give me a hand even weed out the calaloo, them tell you them coming … they are not coming ….'
> *– P3, F, 56 yr, Unemployed*

Most of the available and more affordable food options tended to be processed and packaged foods high in starches and sugars sold in corner shops seen on most lanes and roads throughout the community. Of note, within the same urban working-class community, there was indication of variation in socio-economic status among participants that influenced beliefs regarding affordability. Among the men, the differences were primarily related to their ability to afford healthy food options, with some men speaking of buying fruits and vegetables and using kitchen appliances to make smoothies and natural juices at home, while other men spoke of only being able to afford less healthy food options. Among the women, some expressed disapproval regarding the typical contents of children's lunch boxes, while others emphasized that they are forced to pack the lunch boxes with whatever they can afford, even those items that they know are not the healthiest options.

> '… to live healthy … very expensive … a lot of people can't afford it … I would love to live and do everything di healthy way. I, I cannot do it unlike some odda people because I don't have the resources to do it … people around di area would like to live healt'y, but when I look around I see a whole lot of people can't manage … can't. Some people can just buy a soft drink and a bulla.'
> *– P4, M, 56 yr, Unemployed*

Medication Adherence

Communication barriers. It was evident that many participants did not understand much of the typical health-related jargon that are typically used in doctor-patient communications, on posters at the health centres and in health promotion activities. The women, in particular, did not understand the term 'medication adherence.' Some men also described experiences with healthcare personnel in which the purposes of prescribed medications were not explained to them and with the difficulty they had in their attempts to understand the information inserts packaged with their medications. They emphasized that they would prefer to understand the reasons for taking medications and possible side effects, and that increased knowledge about medications would possibly reduce their apprehension about complying with the medical recommendations.

Side effects. Participants spoke a lot about the perceived ineffectiveness of prescribed medication and their unpleasant side effects.

> 'See all the medication you tekin,' you not getting betta … But when mi tek it it mek me jus' ah sleep. It mek me sleep and mi drowsy. Sometime mi cyaan boda wid di tablit … The tablet gi' yuh side effeck.'
> *– P1, F, 54 yr, Employed full-time*

> 'No, but sometimes you go doctor and yuh get the tablets and the tablets mek yuh more so sick.'
> *– P7, F, 45 yr, Self-employed*

The men had major concerns about the impact of medication for hypertension on their sexual performance and, consequently, their relationships with women and reputations.

> 'Yes, but don't take it [medication] the way I should take it, reason I don't like it … like side effects … and even sexual way. From I started to take this medication it make me feel a way and is like it [sexual performance] going away and I say 'No this is not me'… I know my body and I know what I am capable of doing … I hear that when you take pressure tablet … it makes your sex drive goes down and it make you have problem with it … so you might have problem with yuh lady and yuh lady might gone leave you ….'
> *– P2, M, 47 yr, Unemployed*

Stress. Fatalistic attitudes and negative stigma regarding medication were identified by both men and women as factors impacting on medication adherence. The women similarly believed that stress impacts not only on their eating habits and alcohol use, but also on their medication adherence.

> '… most of the time we are so stress out. Sometime is like you don't even want to see the medication. Is like you mind not focus there, especially when you have something bothering you and it start to stress you ….'
> *– P5, F, 57 yr, Unemployed*

Non-traditional approaches. Participants spoke of a perceived Jamaican stigma regarding medication being 'bad' and natural remedies being 'good.' They felt that many Jamaicans, including some participants, perceive natural remedies as being more effective and less harmful to the body. A few participants also explained that they opt for natural remedies because of the expense and limited availability of prescribed medications.

> '… the medication that you takin'… every medication that you have, now yuh hear that this is side effect and that is side effect … I very particular with what I'm taking because I'm afraid of the side effects, and you hear that this cause this, cancer and whatsoever … Jamaicans like myself have this stigma of medication that it's not good for you … so a real Jamaican will say 'Who me, me nah … bodda tek cause them ah kill off people ….'
> *– P3, M, 42 yr, Self-employed*

> '… I am on an' off dat medication because sometime I goh to clinic I cannot get di medication when docta' look afta mi an' write di prescription. An' when I come out, I don' get di medication. I can't badda fi goh to Drug Serv, soh I jus' bwoil some tyme tea an' drink. Dat is my medication … Mi goh clinic weh day. When mi goh clinic docta tell mi seh mi ahright, everyt'ing ahright, mi mus' continue doing what mi doing. Soh obviously right about now my pressure ahright (laugh). Soh when mi feel like mi 'ead a hurt mi, mi jus' gwaan drink likkl tyme tea. So mi hahright soh far ….'
> *– HD P2, F, 46 yr, Unemployed*

Financial constraints. Some participants spoke about their inability to afford the medications, particularly those that are not available at the health centre and must, therefore, be purchased at pharmacies. Of note, there were differences in the abilities of participants to afford medications within households. Dyad siblings dealt with healthcare and getting medications on their own, sometimes with one sibling managing to take their medications on a consistent basis and the other taking their medication when they could afford them. Many participants reported inconsistent medication adherence, because of financial constraints and having to direct limited funds to basic household expenses and caring for dependents.

> '… cause I'm not gonna lie, sometimes me go to the docta ah UWI and me get some t'ings, me nuh buy dem. **And me have my t'ree pickney dem, me fi buy eight and ten thousand dolla' worth a medication.** Stay a mi yaad till me get betta, yeah, or buy weh mi can buy … true.'
> *– HD P8, F, 36 yr, Unemployed*

> 'Ahm, always like be like she and take me medication on time and take it regular, not take it when ah feel like cause sometime, well what really happen sometime … ah nuh 'ave the funds fi really buy the medication, so it happen that sometimes ah miss it fi all one, two day ….'
> *– HD P6, M, 55 yr, Unemployed*

Help-seeking Behaviours

Financial constraints. Among the women, differences in socio-economic status appeared to influence their ability and choice to seek screening and testing for health conditions, with some women expressing that women need to be more proactive in seeking services in private facilities and others emphasizing that they are unable to afford the services in private facilities.

> 'Sometimes yuh doh have any money to go to docta'… cause when you get the likkle money fi pay rent, haffi ah pay yuh light bill, yuh nah ha' nuh money.'
> *– P1, F, 54 yr, Employed full-time*

Gender-related help-seeking behaviours. Both male and female participants reported gender differences in help-seeking behaviours. They reported a culture of avoidance of health care and treatment among men in the community, which they attributed, in part, to the impact of 'macho culture' on health-seeking behaviours among men.

> '… Yuh hard fi reach … especially the men. You see my wife, any how her head ah hot har, she reach ah doctor … You see man, man will sick … and him nah go no doctor ….'
> *– P6, M, 61 yr, Employed*

The men demonstrated limited awareness of the available health facilities and services, while the women were familiar with services offered in the public and private sectors. Female participants were more engaged with health services available in the public and private sectors than their male counterparts.

Communication Barriers. Generally, participants demonstrated limited awareness and understanding of typical medical jargon. Differences in education and employment status may have affected the differences in perceptions of health education or information at the clinics. Some spoke about learning about NCD management from doctors at health centres, whereas others felt that the doctors at hospitals do not provide adequate information to the patients.

> '… this doctor came now and when he take this thing and he hit me at mi helbow, ma foot bottom, ma hankle. I was wondering why she was doing it. And is when I ask a nurse she was saying that he want to find out how I would reac,' if I would develop fits or strokes because of how the pressure was so high.'
> *– P3, F, 56 yr, Unemployed*

> 'And after going to the health centa' and the doctor out there inform me on what I am supposed to do, then I make the change.'
> *– P8, F, 57 yr, Unemployed*

In terms of health promotion strategies, some of the men believed that while community members will not listen to the advice of family members and friends, they will listen to doctors and professionals.

> '… So I believe unless a professional person, like a doctor, all these information is filtered down from the government to the people … Because I'm not no doctor … I'm just a lay person, he [friend] will not take me seriously.'
> *– P1, M, 62 yr, Employed part-time*

Personal responsibility. Men and women expressed marked concerns about family and/or community members refusing to seek care and/or change health behaviours due to a belief that health outcomes are outside of their control.

> 'Well, well my bredda, my bredda now, you see him have high blood pressure and him have sugar … and him ah bind, and him just a drink the liquor like him don't care and him just a eat anyt'ing like him nuh care. So me would a like, you know, him to stop … Try fi carry him go doctor, him nuh want go no doctor … You can't help him, … rum a go help him (laughter) – the rum. And him just ah drink the rum twenty-four seven.'
> *– HD P1, M, 63 yr, Unemployed*

Perception of public health care system. Female participants, who utilized health care services more than their male counterparts, reported marked concerns about 'free health care' and the impact that it has on the quality of services offered by the public health care system. They described their dissatisfaction with limited availability of medications and staffing at the public hospitals and health centres, as well as the consequences of long wait time to see a doctor.

> 'Improve the health centre out there. More doctor come and more medication …. an' if yuh go dere with your prescription they may have only two medications.'
> *– P7, F, 45 yr, Self-employed*

> '… The free health is not good because if yuh sick and yuh go to Public yuh deh dere whole day and night, yuh won't get no help cause it is free. So if you go to Public is a fifty fifty chance you may survive or dead. So the free health system is not working. It tek too long to see a doctor.'
> *– P7, F, 45 yr, Self-employed*

11.4. Discussion

The key themes that emerged from the focus group discussion highlighted barriers to and facilitators of the appropriate management and prevention of NCDs. The experience of family members and friends with NCDs generated awareness of the diseases and stimulated the practice of health lifestyles, but there was a perceived gap in knowledge resulting from lack of the lucidity of health promotion information, as provided by health facilities and the media. It was felt that better efforts at communication would facilitate awareness of NCDs and comprehension of information provided. Low perception of safety in the community, both with respect to violent attacks as well as motor vehicle accidents, was presented as a barrier to physical exercise in the community environs of the focus group members. The focus group members also presented the poor comprehension of food labels, with some even in a foreign language, as a barrier to healthy food choices. Limited finance was presented as a barrier to healthy food choices, medication adherence and help-seeking behaviours such as access to care in private facilities. Gender roles in the promotion of health and wellness was emphasized. The females in the households were viewed as enablers of availability of healthy meals and as encouraging healthy food choices.

Use of herbal medicines instead of/or concomitant with use of prescription medicines was identified as a response to lack of funds and mitigating possible side effects of prescribed medicines. This behaviour indicates as need for collaboration, between, for example, medical doctors and entities such as the Natural Products Institute that supports comprehension of the possible contraindications imposed by concomitant use of herbal and prescription medicines and data gathering from patients regarding this practice.

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12. Secular Trends in Health and Lifestyle Indices in Jamaica (2001–17)

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This chapter summarizes the secular trends in health and lifestyle indices among Jamaicans aged 15–74 years of age for the period 2001–17. The tabular displays in this chapter present prevalence estimates for various indices as obtained using the data gathered during 2000–2001, 2007–8, and 2016–17 during the execution of the JHLS I, JHLS II, and JHLS III, respectively. The chapter presents the estimates for the indices based on definitions applied to the data from the respective surveys and which were used in the compilation of the technical reports. This chapter also provides estimates of prevalence of indicators used to monitor the non-communicable disease response in the Americas and that are based on definitions used by the Pan American Health Organization and the World Health Organization.[1]

12.1. Prevalence Estimates for Indices of Obesity

Table 12.1.1 shows the prevalence of obesity indices[2] as estimated from each round of the JHLS between 2001 and 2017. Just under 27% of 15–74-year-old Jamaicans were classified as overweight (BMI = 25–29.99 kg/m^2) for the period under study. The estimates obtained from the respective surveys remained unchanged for the 2001–17 period as indicated by the considerable overlap between confidence intervals for the prevalence estimates for the respective surveys. However, the prevalence of the persons classified as obese (BMI ≥ 30 kg/m^2) changed significantly ($p<0.05$) between 2001 and each of the periods represented by the JHLS II and JHLS III. Estimates increased from 19.7% to 25.2% and 28.6%, respectively. Consequently, the prevalence of overweight/obese individuals also increased significantly ($p<0.05$) over the period, moving from 45.8% in 2001 to 53.9% in 2017.

Indices of central obesity, namely increased waist circumference (WC) and increased waist-to-hip ratio (WHR), also changed significantly over the period under study. The prevalence of increased WC increased by nearly 33%[3] ($p<0.05$) in the periods represented by JHLS II and JHLS III, relative to that represented by JHLS I for which the prevalence was 36.1%. The prevalence of increased WHR also changed significantly, by 36.4%[3] in 2008 and 16.4% in 2017, relative to the 30.5% prevalence estimated for the 2001 survey.

The burden of all obesity indices for the three surveys was higher in Jamaican 15–74-year-old women compared to the men of the same age range. It is noteworthy that the sex disparity in the estimates for overweight prevalence lessened between the JHLS I and the JHLS III. Sex-specific prevalence estimates were significantly different ($p<0.05$) based on the JHLS I data (M: 21.2 [95% CI=(17.4, 25.4)]; F: 30.8 [95% CI=(28.3, 33.5)]) but were not significantly different when the sexes were compared for JHLS II (M: 26.0 [95% CI=(22.7, 29.6)]; F: 27.1 [95% CI=(24.7, 29.8)]) and JHLS III (M: 23.9 [95% CI=(20.6,27.4)]; F: 26.3[95% CI=(23.9, 28.7)]) (See Table 12.1.1).

Prevalence of increased WC in the males did not change significantly over the period under study, while the prevalence of increased WHR in the females dropped ($p<0.05$) in 2017 compared to the 2001 estimate. Sex-specific estimates for the other indices of obesity increased when the 2017 estimates were compared with the 2001 estimates ($p<0.05$), and some increments based on the 2008 survey also achieved statistical significance. Thus, with the women bearing the greater burden of the obesity indices, the statistically significant sex differences ranged from just under 10% for prevalence of overweight obtained for JHLS I to approximately 60% for prevalence of increased WHR obtained for JHLS II (See Table 12.1.1.).

Table 12.1.1: Sex-specific and Total Population Prevalence (%) of Obesity Indices with 95% Confidence Intervals [in Brackets] from 2001 to 2017 for Jamaicans 15–74 Years of Age, JHLS I, JHLS II, and JHLS III

Measure of Obesity	MALES			FEMALES			TOTAL		
	2001	2008	2017	2001	2008	2017	2001	2008	2017
Overweight (BMI=25–29.99 kg/m^2)	21.2 [17.4, 25.4]	26.0 [22.7, 29.6]	23.9 [20.6, 27.4]	30.8 [28.3, 33.5]	27.1 [24.7, 29.8]	26.2 [23.6, 28.8]	26.1 [23.6, 28.8]	26.6 [24.6, 28.6]	25.1 [23.0, 27.3]
Obese (BMI≥ 30kg/m^2)	9.0 [7.0, 11.5)	12.3 [9.4, 15.9]	14.8 [12.2, 18.0]	30.0 [27.0, 33.3]	37.5 [34.6, 40.5]	42.0 [39.4, 44.7]	19.7 [17.5, 22.2]	25.2 [22.9, 27.5]	28.9 [27.0, 30.8]
Overweight/ Obese (BMI≥ 25kg/m^2)	30.2 [26.0, 34.8]	38.3 [34.0- 42.7]	38.7 [35.0- 42.6]	60.8 [57.5, 64.1]	64.6 [61.8, 67.3]	68.3 [65.3, 71.1]	45.8 [42.7, 49.0]	51.7 [49.1, 54.4]	53.9 [51.7, 56.2]
Increased Waist	14.6 [11.8, 17.9]	19.6 [16.9, 22.6]	17.4 [14.9, 20.4]	56.8 [53.2, 60.2]	69.8 [67.3, 72.1]	67.7 [65.1, 70.3]	36.1 [33.2, 39.1]	45.2 [43.3, 47.1]	43.3 [41.7, 44.9]
Increased Waist-to-hip Ratio	6.1 [4.3, 8.5]	10.7 [8.4, 13.5]	22.7 [19.8, 26.0]	54.3 [50.5, 58.1]	71.2 [68.5, 73.8]	46.5 [43.6, 49.4]	30.5 [28.0, 33.2]	41.6 [39.9, 43.3]	35.0 [33.0, 36.9]

BMI: Body Mass Index; WC: Waist Circumference; WHR: Waist-to-hip Ratio

Table 12.1.2 shows trends in prevalence of overweight Jamaicans (BMI=25–29.99 kg/m^2) by age and sex. In all survey periods, sex-specific and total population prevalence estimates generally increased as age increased up to age 45–54 and/or 55–64 years and then decreased. In all age groups excepting the 55–64-year-olds, total population estimates remained relatively unchanged over the 2001–17 period, as suggested by the considerable overlap of confidence interval estimates for each survey period. Among the 55–64-year-olds, the prevalence of overweight fell from 39% in 2001 to 28% in 2017. The absence of evidence of change in the total population age group estimates over the survey periods was the result of a similar absence of statistically significant changes in the estimates for the sex-specific age group estimates. Among the males, prevalence of overweight increased noticeably for the 25–34- and 45–54-year-olds, while a reduction was observed among the 55–64-year-olds, based on the overlap of confidence intervals for the respective survey estimates. However, these changes were not deemed statistically significant but could, nevertheless, indicate the respective increasing and decreasing trends. Among the females, in all age groups, except for the 15–24-year-olds, there was a drop in the prevalence of overweight over the survey periods. Although the overlap of confidence interval estimates indicated that these changes were not statistically significant, they did represent a decreasing trend in the prevalence of overweight in the respective age groups.

Table 12.1.2: Prevalence (%) of Overweight (BMI=25–29.99 kg/m²) Individuals, with 95% Confidence Intervals [in Brackets], among Jamaicans Aged 15–74 Years by Age and Sex during 2001–17, JHLS I, JHLS II, and JHLS III

	Prevalence of Overweight (BMI=25–29.99 kg/m²) Jamaicans								
	Males			Females			Total		
Age Groups	2001	2008	2017	2001	2008	2017	2001	2008	2017
15–24 Years	10.3 [6.1, 16.9]	12.6 [8.0, 19.2]	8.4 [4.7, 14.5]	21.0 [16.5, 26.4]	21.5 [16.6, 27.3]	22.5 [17.1, 29.0]	15.9 [12.4, 20.1]	17.0 [13.7, 21.0]	15.5 (12.2, 19.4)
25–34 Years	18.7 [13.1, 26.0]	21.5 [14.6, 30.4]	31.5 [23.6, 40.7]	31.1 [26.3, 36.3]	24.7 [20.0, 30.1]	22.6 [17.5, 28.7]	25.1 [20.9, 29.7]	23.2 [18.6, 28.5]	26.7 (22.5, 31.4)
35–44 Years	26.6 [19.0, 35.8]	37.5 [29.4, 46.3]	26.6 [19.4, 35.4]	38.3 [32.1, 45.0]	27.8 [22.5, 33.8]	29.4 [24.1, 35.2]	32.7 [27.5, 38.3]	32.5 [27.3, 38.1]	28.1 (23.3, 33.4)
45–54 Years	25.6 [17.2, 36.2]	32.9 [22.6, 45.0]	34.5 [26.5, 43.6]	36.3 [30.3, 42.8]	34.2 [29.3, 39.5]	30.9 [24.0, 38.7]	30.7 [25.0, 36.9]	33.5 [28.0, 39.5]	32.7 (27.8, 37.9)
55–64 Years	41.1 [30.9, 52.2]	35.4 [26.3, 45.7]	28.5 [21.2, 37.2]	36.0 [27.5, 45.5]	33.8 [27.2, 41.2]	28.2 [21.3, 36.4]	38.6 [31.5, 46.3]	34.6 [28.5, 41.2]	28.4 (23.7, 33.5)
65–74 Years	26.1 [17.5, 37.0]	29.1 [19.1, 41.5]	24.3 [17.4, 32.7]	34.8 [26.4, 44.1]	33.3 [26.9 40.4]	30.5 [23.4, 38.7]	30.5 [24.2, 37.6]	31.3 [24.9, 38.4]	27.4 (22.6, 32.8)

Table 12.1.3 shows trends in prevalence of obese Jamaicans by age and sex. In all survey periods, sex-specific and total population prevalence estimates generally increased as age increased up to age 45–54 then decreased, except for the 2017 estimates among the females among whom estimates increased up to age 55–64 and then decreased. Except among males 65–74 years of age, sex-specific and total population estimates of prevalence of the obese demonstrated an increasing trend between 2001 and 2017. Among the females, some increments, relative to the 2001 estimate, achieved statistical significance ($p<0.05$).

The pattern seen in the prevalence of obese individuals (as shown in Table 12.1.3) among Jamaicans 15–74 years of age led to the general increasing prevalence of the combination of overweight and obese persons over the 2001 to 2017 period shown in Table 12.1.4. Prevalence of the overweight and obese increased over the survey periods among males in all age groups except for the males older than 54 years of age, and this led to a similar reduction in the total population estimates when the 2017 estimate was compared with the 2001 estimate. Prevalence of the overweight and obese demonstrated an increasing trend in all age groups among the females, exceeding 80% in the 2008 and 2017 surveys among women between 45 and 64 years of age (See Table 12.1.4).

Table 12.1.3: Prevalence (%) of Obese (BMI≥30kg/m²) Individuals, with 95% Confidence Intervals [in Brackets], among Jamaicans Aged 15–74 Years by Age and Sex during 2001–17, JHLS I, JHLS II, and JHLS III

	Prevalence of Obese (BMI≥30kg/m²) Jamaicans								
	Males			Females			Total		
Age Groups	2001	2008	2017	2001	2008	2017	2001	2008	2017
15–24 Years	5.1 [2.3, 11.0]	9.0 [5.3, 15.1]	10.8 [5.8, 19.4]	11.3 [8.0, 15.6]	16.5 [12.7, 21.2]	19.2 [14.4, 25.1]	8.3 [5.9, 11.6]	12.8 [9.8, 16.6]	15.0 [10.8, 20.5]
25–34 Years	8.4 [4.7, 14.5]	9.4 [4.9, 17.1]	12.2 [7.6, 19.0]	34.9 [29.7, 40.4]	37.4 [32.6, 42.6]	43.7 [37.6, 50.0]	22.0 [18.7, 25.8]	24.1 [20.8, 27.8]	29.2 [25.4, 33.4]
35–44 Years	12.5 [7.4, 20.3]	13.4 [7.8, 22.1]	20.6 [14.4, 28.6]	38.2 [31.9, 45.0]	50.5 [42.8, 58.2]	55.1 [49.4, 60.7]	25.8 [21.1, 31.1]	32.6 [27.0, 38.7]	38.7 [34.4, 43.2]
45–54 Years	13.1 [7.1, 23.0]	21.6 [14.4, 31.1]	22.0 [15.8, 29.7]	42.2 [34.4, 50.5]	47.3 [41.0, 53.7]	52.0 [43.5, 60.4]	26.9 [20.1, 35.0]	34.3 [29.9, 88.9]	37.1 [32.5, 41.9]
55–64 Years	10.6 [5.7, 19.1]	12.1 [6.8, 20.6]	13.9 [9.3, 20.3]	39.5 [30.9, 48.7]	47.4 [39.9, 54.9]	54.1 [45.3, 62.7]	24.7 [18.7, 31.9]	29.5 [24.7, 34.7]	34.4 [29.1, 39.9]
65–74 Years	7.6 [3.7, 14.9]	12.1 [6.2, 22.2]	7.7 [4.6, 12.6]	36.5 [27.9, 46.0]	41.2 [33.9, 48.9]	48.0 [39.9, 56.1]	22.3 [16.7, 29.1]	27.3 [22.7, 32.3]	28.2 [23.7, 33.2]

Table 12.1.4: Prevalence (%) of Overweight and Obese (BMI≥25kg/m²) Individuals, with 95% Confidence Intervals [in Brackets], among Jamaicans Aged 15–74 Years by Age and Sex during 2001–17, JHLS I, JHLS II, and JHLS III

	Prevalence (%) of Overweight and Obese (BMI≥25kg/m²) Jamaicans								
	Males			Females			Total		
Age Groups	2001	2008	2017	2001	2008	2017	2001	2008	2017
15–24 Years	15.4 [10.2, 22.7]	21.6 [15.7, 29.0]	19.2 [12.4, 28.5]	32.3 [26.8, 38.3]	38.0 [31.0, 45.5]	41.7 [34.3, 49.5]	24.2 [19.7, 29.3]	29.8 [25.3, 34.7]	30.5 (24.7, 36.9)
25–34 Years	27.1 [20.4, 35.0]	30.9 [21.8, 41.6]	43.7 [34.3, 53.7]	65.9 [60.0, 71.4]	62.1 [56.9, 67.1]	66.3 [59.8, 72.2]	47.1 [42.0, 52.2]	47.2 [41.8, 52.8]	55.9 [50.8, 61.0]
35–44 Years	39.0 [29.2, 49.9]	50.9 [41.2, 60.5]	47.2 [38.9, 55.7]	76.6 [70.5, 81.7]	78.3 [73.7, 82.3]	84.5 [76.7, 87.6]	58.4 [51.8, 64.8]	65.1 [59.5, 70.3]	66.8 [62.0, 71.3]
45–54 Years	38.7 [29.6, 48.6]	54.5 [44.0, 64.5]	56.5 [49.1, 63.6]	78.6 [70.8, 84.7]	81.5 [76.4, 85.7]	82.9 [76.7, 87.6]	57.6 [50.8, 64.1]	67.8 [62.6, 72.5]	69.7 [64.8, 74.3]
55–64 Years	51.7 [41.2, 62.1]	47.5 [38.1, 57.0]	42.4 [34.4, 50.8]	75.5 [68.4, 81.4]	81.2 [75.1, 86.1]	82.3 [75.3, 87.7]	63.3 [56.3, 69.8]	64.1 [58.0, 69.8]	62.7 [57.6, 67.5]
65–74 Years	33.6 [23.1, 46.0]	41.1 [30.3, 52.9]	32.0 [25.1, 39.7]	71.2 [61.8, 79.1]	74.5 [66.0, 81.4]	78.4 [70.1, 84.9]	52.7 [44.1, 61.3]	58.5 [50.5, 66.1]	55.6 [50.5, 60.7]

Table 12.1.5 shows trends in the prevalence of central adiposity as determined using increased waist circumference (WC) by age and sex. In all survey periods, sex-specific and total population prevalence estimates generally increased as age increased up to age 45–54 or age 55–64 and then decreased. Except among estimates for males and the total population aged 55–74 years of age, the other sex-specific and total population estimates of prevalence of persons with increased WC demonstrated an increasing trend between 2001 and 2017. Among the females, some increments achieved statistical significance ($p<0.05$) as indicated by the absence of or minimal overlap between the 2001 confidence interval estimate and the confidence interval estimate for subsequent survey periods.

Table 12.1.5: Prevalence (%) of Increased Waist Circumference (Inc. WC), with 95% Confidence Intervals [in Brackets], among Jamaicans Aged 15–74 by Age and Sex Categories during 2001–17, JHLS I, JHLS II, and JHLS III

	Prevalence of Increased Waist Circumference								
	Males			Females			Total		
Age Groups	2001	2008	2017	2001	2008	2017	2001	2008	2017
15–24 Years	4.4 [2.1, 9.1]	8.5 [4.5, 15.3]	5.9 [2.4, 13, 6]	25.7 [20.6, 31.4]	38.9 [33.1, 44.9]	31.5 [24.6, 39.2]	15.5 [12.3, 19.5]	23.7 [20.4, 27.4]	18.7 [14.9, 23.3]
25–34 Years	10.5 [6.3, 17.1]	11.1 [6.5, 18.4]	15.1 [9.4, 23.6]	57.9 [52.4, 63.3]	67.3 [62.2, 72.0]	68.4 [61.4, 74.6]	34.8 [30.3, 39.6]	40.6 [36.6, 44.8]	43.9 [39.9, 48.0]
35–44 Years	17.0 [10.6, 26.1]	25.0 [18.7, 32.5]	26.7 [18.8, 36.5]	73.2 [67.7, 78.0]	86.0 [81.1, 89.7]	86.2 [80.9, 90.3]	46.0 [40.3, 51.9]	56.5 [52.3, 60.7]	58.0 [53.0, 62.8]
45–54 Years	21.3 [13.5, 32.0]	36.7 [28.4, 45.8]	26.3 [19.5, 34.5]	78.3 [71.7, 83.7]	85.3 [80.4, 89.2]	89.4 [84.9, 92.6]	48.6 [40.8, 56.4]	60.7 [56.2, 64.9]	58.0 [53.8, 62.0]
55–64 Years	35.4 [25.6, 46.7]	29.6 [23.2, 37.0]	21.7 [15.9, 29.0]	77.2 [68.7, 83.8]	88.0 [83.2, 91.5]	84.8 [77.9, 89.8]	55.6 [47.8, 63.2]	58.4 [54.0, 62.7]	53.0 [48.5, 57.4]
65–74 Years	26.1 [16.8, 38.2]	26.0 [16.6, 38.2]	18.5 [12.8, 26.0]	79.7 [70.4, 86.6]	86.8 [79.9, 91.5]	80.1 [72.0, 86.3]	53.3 [45.7, 60.8]	57.7 [50.9, 64.2]	49.9 [45.1, 54.7]

Table 12.1.6 shows trends in prevalence of central adiposity as determined using increased waist-to-hip ratio (WHR) by age and sex. In all survey periods, sex-specific and total population prevalence estimates generally increased as age increased. Among the males, prevalence of increased WHR increased over the survey periods with increments achieving statistical significance ($p<0.05$), particularly when the 2017 estimates for all age groups excepting the 15–24-year-olds were compared with the 2001 estimates for the respective age groups. Among the females, the estimates, relative to the 2001 period, appeared to demonstrate a decreasing trend although the overlap of confidence intervals for the respective survey estimates suggested that the changes were not statistically significant. Bearing in mind the increasing trend in the age-group-specific prevalence estimates for increased WC in the females, shown in Table 12.1.5, the decreasing trend in the prevalence of increased WHR for females would suggest that the hip circumference for women was increasing, leading to a lower mean waist-to-hip ratio and a consequent lower prevalence of increased WHR. Nonetheless, in all age groups except for age groups among persons 15–34 years, the total population prevalence of increased WHR did exhibit an increasing trend, although the changes relative to the 2001 estimates did not achieve statistical significance.

Table 12.1.6: Prevalence (%) of Increased Waist-to-Hip Ratio (Inc. WHR), with 95% Confidence Intervals [in Brackets], among Jamaicans Aged 15–74 by Age and Sex Categories during 2001–17, JHLS I, JHLS II, and JHLS III

	Prevalence of Increased WHR								
	Males			Females			Total		
Age Groups	2001	2008	2017	2001	2008	2017	2001	2008	2017
15–24 Years	0.7 [0.09, 5.2]	4.6 [2.0, 10.1]	5.6 [3.0, 10.2]	26.4 [20.2, 33.7]	42.0 [35.8, 48.3]	20.9 [16.1, 26.8]	14.1 [10.6, 18.6]	23.3 [19.9, 27.1]	13.3 [10.3, 17.0]
25–34 Years	4.5 [1.9, 10.4]	4.3 [1.9, 9.4]	14.3 [9.1, 21.6]	54.8 [48.2, 61.2]	68.3 [63.5, 72.8]	42.7 [35.8, 49.9]	30.1 [25.7, 34.8]	37.9 [35.2, 40.7]	29.6 [25.2, 34.5]
35–44 Years	8.3 [4.2, 15.6]	6.4 [3.4, 11.9]	27.4 [19.0, 37.7]	65.9 [59.2, 72.1]	83.4 [78.8, 87.2]	55.1 [48.6, 61.4]	37.8 [33.3, 42.6]	46.2 [43.2, 49.3]	41.9 [36.5, 47.6]
45–54 Years	7.2 [3.2, 15.5]	23.7 [14.8, 35.8]	35.2 [28.3, 42.8]	73.1 [65.7, 79.5]	87.4 [83.1, 90.8]	61.0 [53.4, 68.2]	38.7 [32.0, 45.9]	55.1 [49.1, 60.9]	48.2 [43.0, 53.3]
55–64 Years	12.6 [6.5, 22.9]	22.6 [14.7, 33.1]	39.1 [30.2, 48.8]	73.5 [64.8, 80.8]	91.1 [86.8, 94.0]	65.8 [56.9, 73.8]	41.8 [35.7, 48.2]	56.3 [51.5, 61.0]	52.4 [46.3, 58.4]
65–74 Years	18.1 [10.9, 28.5]	28.9 [18.8, 41.6]	49.8 [43.2, 56.4]	88.0 [79.5, 93.3]	93.9 [88.8, 96.8]	72.8 [65.8, 78.8]	53.4 [46.1, 60.6]	62.8 [56.5, 68.7]	61.5 [57.1, 65.7]

12.2. Prevalence Estimates for Other Indices of Cardiovascular Risk – Hypertension, Diabetes, Depression, and Low Physical Activity

Hypertension

Table 12.2.1 shows that the prevalence of hypertension[4] for the 15–74-year-old males, females, and the sexes combined increased significantly between 2001 and 2017, moving from approximately 20% prevalence in 2001 to prevalence exceeding 30% in 2017. Age group-specific estimates for each sex and in the total population also demonstrated an increasing trend with increments among the 35–44-year-old and 55–64-year-old females, relative to the 2001 estimate, achieving statistical significance ($p<0.05$).

Table 12.2.1: Age- and Sex-specific and Total Population Prevalence of Defined Hypertension (%) with 95% Confidence Intervals [in Brackets] for the Period 2001–17 for Jamaicans 15–74 Years of Age, JHLS I, JHLS II, and JHLS III

	Prevalence of Defined Hypertension								
	Males			Females			Total		
Age Groups	2001	2008	2017	2001	2008	2017	2001	2008	2017
15–24 Years	2.9 [1.1, 7.7]	8.8 [5.5, 14.0]	7.8 [4.8, 12.4]	3.7 [1.8, 7.2]	3.7 [1.7, 7.9]	8.3 [5.4, 12.6]	3.3 [1.7, 6.3]	6.3 [4.2, 9.2]	8.1 [5.8, 11.1]
25–34 Years	11.0 [6.7, 17.7]	12.8 [7.3, 21.6]	20.3 [13.8, 28.6]	9.8 [7.1, 13.2]	12.2 [9.2, 16.0]	16.1 [11.6, 22.0]	10.4 [7.8, 13.7]	12.5 [8.9, 17.3]	18.0 [13.8, 23.3]
35–44 Years	23.3 [16.9, 31.1]	22.6 [16.2, 30.7]	27.7 [21.3, 35.1]	20.9 [16.0, 26.9]	23.1 [18.8, 28.1]	31.5 [26.7, 36.9]	22.1 [17.9, 26.8]	22.9 [18.6, 27.8]	29.7 [25.7, 34.1]
45–54 Years	28.5 [18.9, 40.6]	41.1 [33.3, 49.4]	45.1 [35.5, 55.0]	45.0 [36.7, 53.6]	49.8 [44.2, 55.3]	53.7 [46.3, 60.8]	36.4 [28.9, 44.7]	45.4 [40.0, 50.9]	49.4 [43.0, 55.8]
55–64 Years	46.8 [35.4, 58.5]	58.6 [47.6, 68.8]	64.4 [56.9, 71.2]	56.1 [47.6, 64.3]	62.6 [54.1, 70.4]	75.8 [68.7, 81.6]	51.4 [44.2, 58.5]	60.5 [52.4, 68.1]	70.0 [64.4, 75.1]
65–74 Years	65.7 [55.1, 74.9]	60.5 [49.5, 70.6]	68.6 [62.5, 74.2]	72.0 [64.3, 78.6]	71.3 [64.1, 77.6]	75.5 [64.9, 83.7]	68.9 [62.9, 74.4]	66.1 [59.8, 72.0]	72.1 [66.3, 77.3]
15–74 Years	19.9 [16.7, 23.6]	25.0 [22.2, 27.9]	30.2 [27.2, 33.4]	21.7 [18.5, 25.2]	25.5 [23.5, 27.7]	32.8 [30.5, 35.2]	20.8 [18.5, 23.3]	25.2 [23.3, 27.3]	31.5 [29.7, 33.5]

Diabetes

Table 12.2.2 also shows for diabetes[5] prevalence among the 15–74-year-old males, females, and the sexes combined an increasing trend from 2001 to 2017. Prevalence among the males remained below 10% for the 2001–17 period, but the estimate for the females exceeded 10% in 2017. The 2017 prevalence estimate for females, at 12.6%, was also significantly higher ($p<0.05$) than the 2001 estimate. The difference between the 2001 and 2017 estimates among the females contributed to the statistical significance of the total population estimates for the said periods. In the respective age groups, the prevalence of diabetes among the females exhibited an increasing trend. However, for the 45–54-year-old females, only, the difference between the 2017 and 2001 estimates achieved statistical significance ($p<0.05$). Among the males, age-group-specific estimates showed that prevalence of diabetes demonstrated an increasing trend for age groups among persons 25–44 years of age and a decreasing trend in age groups among persons 45–64 years of age. The other age groups, the 15–24- and 65–74-year-olds, demonstrated neither an increasing nor a decreasing trend.

Table 12.2.2: Age- and Sex-specific and Total Population Prevalence of Defined Diabetes (%) with 95% Confidence Intervals [in Brackets] for the Period 2001–17 for Jamaicans 15–74 Years of Age, JHLS I, JHLS II, and JHLS III

	Prevalence of Defined Diabetes								
Diabetes	Males			Females			Total		
Age Groups	2001	2008	2017	2001	2008	2017	2001	2008	2017
15–24 Years	0.0	1.4 [0.4, 4.5]	1.6 [0.3, 7.2]	0.0	0.9 [0.3, 2.5]	1.5 [0.5, 4.6]	0.0	1.2 [0.5, 2.6]	1.5 [0.6, 4.0]
25–34 Years	2.4 [0.7, 7.5]	0.9 [0.2, 3.8]	5.3 [2.0, 13.3]	3.7 [2.1, 6.3]	3.3 [1.7, 6.2]	5.8 [3.1, 10.6]	3.1 [1.8, 5.2]	2.2 [1.2, 3.9]	5.6 [3.2, 9.5]
35–44 Years	2.4 [0.8, 7.0]	5.1 [2.2, 11.0]	7.7 [3.8, 15.0]	5.1 [2.9, 8.9]	9.4 [7.0, 12.4]	9.8 [6.5, 14.6]	3.8 [2.3, 6.1]	7.3 [5.2, 10.2]	8.8 [5.9, 12.8]
45–54 Years	17.7 [10.2, 28.8]	13.6 [9.0, 21.0]	13.5 [8.4, 21.1]	11.9 [7.7, 17.9]	14.6 [11.0, 19.1]	23.3 [17.2, 30.9]	14.9 [10.5, 20.7]	14.1 [10.8, 18.3]	18.4 [14.7, 22.8]
55–64 Years	22.4 [14.5, 32.9]	26.7 [17.7, 38.1]	14.7 [9.9, 21.4]	29.4 [20.5, 40.0]	24.8 [18.7, 32.1]	27.5 [21.5, 34.3]	25.8 [19.6, 33.2]	18.5 [13.8, 24.4]	21.2 [17.1, 25.9]
65–74 Years	15.8 [9.9, 24.3]	26.7 [17.7, 38.1]	14.7 [10.4, 20.4]	36.2 [28.8, 44.2]	32.2 [26.7, 38.3]	40.3 [33.1, 48.1]	26.3 [21.2, 32.1]	29.6 [24.0, 35.8]	27.5 [23.3, 32.2]
15–74 Years	6.3 [4.6, 8.6]	6.4 [4.7, 8.6]	7.7 [5.8, 10.2]	8.0 [6.7, 9.5]	9.3 [8.1, 10.6]	12.6 [10.9, 14.6]	7.1 [6.1, 8.4]	7.9 [6.8, 9.1]	10.2 [8.9, 11.7]

Depression

The data shown in Table 12.2.3 suggest that the prevalence of depression had fallen over the 2001–17 period. The definitions for depression applied to the JHLS II and JHLS III[6] were identical, but the 2008 estimates were significantly higher than the 2017 estimates for the prevalence of depression among the females in all age groups. The difference between prevalence estimates based on data from the 15–64-year-old males in these two surveys approached statistical significance, but estimates among males in the other age groups did not differ significantly although they exhibited the decreasing trend over time. Consequently, the total population prevalence for 2017 was also lower than the 2008 estimate and significantly different among the 15–64-year-olds as well as among the entire population of 15–74-year-olds.

Table 12.2.3: Total Population, Sex- and Age-specific Prevalence of Depression with 95% Confidence Intervals [in Brackets] for the Period 2001–17 for Jamaicans 15–74 Years of Age, JHLS I, JHLS II, and JHLS III

	Prevalence of Depression								
	Males			Females			Total		
Age Groups	2001	2008	2017	2001	2008	2017	2001	2008	2017
15–64 Years	22.3 [18.4, 26.7]	14.8 [11.6, 18.7]	9.8 [7.5, 12.7]	32.1 [27.9, 36.7]	26.1 [23.1, 29.3]	18.5 [15.8, 21.4]	27.3 [23.8, 31.1]	20.6 [18.0, 23.4]	14.2 [12.3, 16.4]
65–74 Years	22.9 [15.5, 32.6]	14.8 [9.3, 22.7]	7.9 [4.8, 12.6]	19.6 [13.6, 27.5]	18.9 [12.8, 27.1]	13.0 [8.0, 20.6]	21.2 [15.3, 28.6]	16.9 [12.4, 22.7]	10.5 [7.3, 14.8]
15–74 Years	22.3 [18.7, 26.5]	14.8 [11.9, 18.3]	9.7 [7.5, 12.4]	31.3 [27.1, 35.8]	25.6 [22.7, 28.7]	18.1 [15.7, 20.8]	26.9 [23.5, 30.6]	20.3 [17.9, 22.9]	14.0 [12.1, 16.0]

Low Physical Activity

The estimates for prevalence of the physical activity levels are shown in Table 12.2.4 and were determined using the International Physical Activity Questionnaire (IPAQ) Short Form protocol for classification of physical activity.[7] The JHLS II and JHLS III questionnaires incorporated the IPAQ Short Form, but the JHLS I questionnaire did not. As such, the items, and responses to items in the physical activity section of the JHLS I questionnaire were matched as closely as possible to, respectively, items on the short form and possible responses. Scores determined using the averages of limits for ranges (as given in the JHLS I physical activity questionnaire) representing duration and frequency of activities and/or numbers indicating frequency or duration greater than a possible maximum were used in the calculation of the IPAQ scores. As such, it is acknowledged that the estimates of the metabolic equivalent obtained using JHLS I data and used in the classification of physical activity could underestimate physical activity in persons who were very highly active. Nevertheless, these highly active persons would have been classified at the high physical activity level.

Total population estimates shown in Table 12.2.4 showed that close to one-third of Jamaicans 15–74 years of age were at cardiovascular risk due to low physical activity, for the three periods represented by the 2001, 2008, and 2017 estimates. For all the periods represented by the survey data, prevalence of low physical activity among females exceeded estimates among the males. Prevalence of low physical activity among the males remained under 30% for the 2001–17 period, and the 2008 and 2017 estimates were not different from the 2001 estimate. Among the females, however, the 2001 and 2017 prevalence estimates for low physical activity were similar, exceeding 40% but significantly higher than the 2008 estimate.

Table 12.2.4: Sex-specific and Total Population Prevalence of Physical Activity Levels with 95% Confidence Intervals [in Brackets] for the Period 2001–17 for Jamaicans 15–74 Years of Age, JHLS I, JHLS II, and JHLS III

	Prevalence of Physical Activity Levels								
	Males			Females			Total		
PA Levels	2001	2008	2017	2001	2008	2017	2001	2008	2017
Low	27.5 [23.8, 31.6]	29.2 [24.9, 33.9]	26.5 [22.8, 30.6]	41.0 [37.3, 44.7]	34.4 [31.5, 37.4]	42.9 [39.7, 46.2]	34.4 [31.5, 37.4]	38.4 [35.3, 41.6]	34.7 [31.8, 37.7]
Moderate	36.3 [30.4, 42.8]	25.8 [22.4, 29.4]	23.7 [21.1, 26.5]	31.0 [28.2, 33.8]	33.6 [30.0, 37.4]	30.6 [27.1, 34.3]	33.6 [30.0, 37.4]	30.7 [28.2, 33.2]	27.1 [24.8, 29.6]
High	36.2 [31.0, 41.7]	45.1 [40.0, 50.3]	49.8 [45.7, 54.0]	28.1 [24.6, 31.9]	32.0 [28.6, 35.6]	26.5 [23.5, 29.8]	32.0 [28.6, 35.6]	31.0 [28.0, 34.0]	38.2 [35.4, 41.1]

12.3. Indicators Used to Monitor the Non-communicable Disease Response

Definitions

Table 12.3.1 gives the definitions used to create CVD risk indices tabulated in this section of this chapter. The definitions of some of the indicators used to monitor the non-communicable disease response in the Americas differed from the definitions for the measures compiled in the various JHLS technical reports and previous sections of this chapter. However, it was deemed important that the indices defined in the PAHO Compendium of Indicators[1] be incorporated into this report to provide a context for the estimates and a basis for comparisons with other territories within the PAHO region.

Table 12.3.1: Definitions for Biomedical and Lifestyle CVD Risk Indices Used by the PAHO to Monitor the Non-communicable Disease Response in the Americas

Indicator	Definition
High Total Cholesterol	On medication to treat high cholesterol or had cholesterol measurement ≥ 5.2 mmol/l. For JHLS III, estimates were obtained from persons with complete lipid profile (Triglycerides, HDL, LDL, total cholesterol).
Elevated BP	Systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥ 90 mmHg.
Defined Hypertension	Systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥ 90 mmHg or on medication for hypertension.
Elevated BG/ Diabetes	Fasting plasma glucose concentration ≥ 7.0 mmol/l (using readings truncated between 2.5 and 30 mmol/l) or on medication for raised blood glucose or was told by health professional they have diabetes. Fasting duration was between 6 and 24 hours (inclusive).
Defined Diabetes Mellitus	On medication for raised blood glucose or having fasting plasma glucose concentration ≥ 6.1 mmol/l and using readings truncated between 2.5 and 15 mmol/l for JHLS I; ≥ 6.5mmol/l and using readings truncated between 1.1 and 28 mmol/l for JHLS II; and ≥ 7.0mmol/l and using readings truncated between 2 and 33 mmol/l for JHLS III.
Harmful Episodic Drinker	Consuming five or more drinks in a single day within the past week for JHLS II or consuming six or more drinks in one sitting within the past month for JHLS III. Questionnaire item that could yield this classification was not used in JHLS I.

Biomedical CVD Risk Indices

Table 12.3.2 gives estimates for the prevalence of indicators used to monitor the non-communicable disease response in the Americas.[1] There was generally an increase in the prevalence of the biomedical risk factors between 2001 and 2017. Total population estimates demonstrated statistically significant increments ($p<0.05$) between JHLS I in 2000–2001 and JHLS III in 2016–17 for the outcomes elevated total cholesterol (TC), elevated blood pressure (BP), and defined diabetes mellitus (DM). These increments were driven by similar changes in the prevalence of elevated BP for both sexes and for elevated total cholesterol (TC) and defined DM in the females, only.

Between 2001 and 2017, the periods represented by JHLS I and JHLS III, respectively, total population prevalence of elevated TC moved from just under 15% to approximately 24% ($p<0.05$) as driven by a change in this outcome from 18.4% to 30.4% in females. The prevalence of elevated TC among males increased when the 2001 and 2017 estimates were compared, but the difference between the estimates was not significantly different.

Between the 2001 and 2017 surveys, total population prevalence estimates for elevated blood pressure changed from 13% to 21% to 27%, respectively, for JHLS I, II, and III. These estimates were driven by the respective changes from 15% to 23% to 28% in the males and 11% to 19% to 27% in the females. All represented statistically significant increments in 2008 and 2017, relative to 2001. Elevated BP in Table 12.3.2 represented uncontrolled blood pressure in persons who were and were not diagnosed with hypertension. It is noteworthy that the burden of this outcome remained lower in the females for all the surveys, but the sex disparity based on the 2008 estimates was greatest. The sex disparity attained statistical significance in the JHLS II survey only and was non-existent when estimated using the JHLS I and JHLS III data.

Dietary and Lifestyle Indices

The Pan American Health Organisation/World Health Organisation (PAHO/WHO)[8] recommends an intake of 5 or more servings of vegetables and fruits per day.[8] A cup is deemed equivalent to two servings.[8] Data gathered in the JHLS surveys indicated the times per day for consumption of food items. We assume that a 'time' is equivalent to at least one serving.

Estimates for the prevalence of dietary indices and a lifestyle practice that is viewed as risky behaviour, namely harmful episodic drinking, are provided for 15–74-year-old Jamaicans in Table 12.3.2. High intake of hot and/or cold sugar-sweetened beverages (SSBs) which is defined as intake that equals or exceeds two times per day increased from 42.9% in 2001 to 53.1% in 2008 ($p<0.05$). There were no 2017 data for the intake of the combination of hot and/or cold SSBs because the 2017 survey gathered data on intake of cold SSBs only. The sex-specific and total population 2017 prevalence estimates represented a drop ($p<0.05$) in prevalence of high intake of cold SSBs, relative to the respective 2008 estimates for the 15–74-year-old Jamaicans.

For the 2008 survey, relative to the other two surveys, there was very low prevalence of optimum intake of the combination of fruits and vegetables, which is intake of five or more times or servings per day. This prevalence estimate was less than 1% for each of the sexes and, consequently, in the total population of 15–74-year-old Jamaicans. Both the sex-specific and total population prevalence estimates for the 2001 and 2017 surveys were less than 5% and, for each subgroup, the two survey prevalence estimates were not significantly different from each other.

Relative to estimates from the 2001 and 2008 surveys, prevalence estimates for fruit intake equal two or more times per day among the females and in the total population were higher when estimated from the

2017 data ($p<0.05$). Among the males, the 2017 estimate was higher ($p<0.05$) than the 2008 but not the 2001 prevalence. While vegetable intake of two or more times per day for the 2017 survey exceeded that for the 2008 survey ($p<0.05$), the 2017 estimate was not significantly different from the 2001 estimate. This was true for the males, females, and the total population of Jamaicans 15–74 years of age.

The prevalence of heavy episodic drinking did not change significantly between the 2008 and the 2017 surveys. This was true for the males, females, and total population. The sex-specific and total population estimates exhibited an increased trend over the two survey periods, but the estimates for the females remained below 4%, while estimates for the males exceeded 10%.

Table 12.3.2: Among Persons 15–74 years, Total Population and Sex-specific Percentage Distributions for Indicators Used to Monitor NCD Response in the Americas, JHLS I, JHLS II, and JHLS III

Indicators	JHLS I (2001)	JHLS II (2008)	JHLS III (2017)
TOTAL			
High Total Cholesterol[a]	14.8 [13.1, 16.8]	11.7 (10.3, 13.2)	23.7 (20.5, 27.2) [a]
Elevated BP[b]	13.0 [11.1,15.2]	21.0 [19.0,23.1]	27.4 [25.6,29.3]
Defined Hypertension[c]	20.8[18.5,23.3]	25.2[23.3, 27.3]	31.5[29.7,33.5]
Elevated BG/Diabetes[d]	13.9 [12.5,15.3]	9.9 [8.6,11.4]	12.4 [10.7,14.2]
Defined Diabetes Mellitus[e]	7.1[6.1,8.4]	7.9 [6.8,9.1]	10.2[8.9,11.7]
COLD Sugar Sweetened Beverage intake (≥ 2 times/day)	15.4 [11.3, 20.7]	22.3[18.6,26.4]	11.5 [9.9,13.3]
HOT Sugar Sweetened Beverage intake (≥ 2 times/day)	4.3[2.6, 7.0]	7.7[6.3, 9.4]	NE
HOT AND/OR COLD Sugar Sweetened Beverage intake (≥ 2 times/day)	42.9[37.8, 48.1]	53.1 [49.3, 56.9]	NE
Fruit intake (≥ 2 times/day)	5.9 [3.9,9.0]	1.3 [0.9,2.0]	11.8 [10.3,13.6]
Vegetable intake (≥ 2 times/day)	22.2 [18.3,26.5]	9.9 [8.4,11.7]	17.5 [15.7,19.6]
Fruit and Vegetable intake (≥ 5 times/day)	3.8 [2.3,6.3]	0.3 [0.1,0.8]	4.7 [3.8,5.7]
Harmful Episodic Drinker[f]	NE	7.0 [5.7,8.5]	8.6 [7.3,10.0]
MALES			
High Total Cholesterol[a]	11.1 [8.5, 14.4]	7.5 [5.8, 9.6]	17.1 (13.0, 22.0) [a]
Elevated BP[b]	14.7 [11.8,18.2]	23.3 [20.4,26.4]	28.2 [25.1,31.4]
Defined Hypertension[c]	19.9[16.7,23.6]	25.0[22.2,28.0]	30.2[27.2,33.4]
Elevated BG/Diabetes[d]	13.4 [11.0,16.2]	8.3 [6.3,10.8]	9.8 [7.6,12.5]
Defined Diabetes Mellitus[e]	6.3[4.6,8.6]	6.4 [4.7,8.6]	7.7[5.8,10.2]
COLD Sugar Sweetened Beverage intake (≥ 2 times/day)	17.2[12.1, 23.9]	21.3[17.3, 26.0]	10.5 [8.5,12.8]
HOT Sugar Sweetened Beverage intake (≥ 2 times/day)	4.9[3.0, 8.0]	6.8[5.0, 9.3]	NE
HOT AND/OR COLD Sugar Sweetened Beverage intake (≥ 2 times/day)	43.5[36.7, 50.6]	51.3 [46.4, 56.2]	NE
Fruit intake (≥ 2 times/day)	6.2 [3.5,10.9]	1.2 [0.6,2.4]	11.1 [8.7,14.1]
Vegetable intake (≥ 2 times/day)	22.3 [17.8,27.6]	11.2 [9.0,13.7]	18.3 [15.4,21.6]
Fruit and Vegetable intake (≥ 5 times/day)	4.3 [2.8,6.6]	0.4 [0.1,1.5]	4.6 [3.3,6.4]
Harmful Episodic Drinker[f]	NE	11.6 [9.3,14.4]	13.5 [11.3,16.0]

Table 12.4.1 *(contd):* **Among Persons 15–74 years, Total Population and Sex-specific Percentage Distributions for Indicators Used to Monitor NCD Response in the Americas, JHLS I, JHLS II, and JHLS III**

Indicators	JHLS I (2001)	JHLS II (2008)	JHLS III (2017)
Females			
High Total Cholesterol[a]	18.4 [16.6,20.4]	15.6 [13.8,17.6]	30.4 (26,4,34.7)[a]
Elevated BP[b]	11.4[9.1,14.4]	18.7 [16.8,20.8]	26.7 [24.1,29.5]
Defined Hypertension[c]	21.7[18.5,25.2]	25.5 [23.5,27.7]	32.8[30.5,35.2]
Elevated BG/Diabetes[d]	14.3 [12.9,15.8]	11.5 [10.2,13.0]	14.8 [12.7,17.3]
Defined Diabetes Mellitus[e]	8.0[6.7,9.5]	9.3 [8.1,10.6]	12.6[10.9,14.6]
COLD Sugar Sweetened Beverage intake (≥ 2 times/day)	13.7[10.0, 18.5]	23.2[19.3, 27.6]	12.6 [10.5,15.1]
HOT Sugar Sweetened Beverage intake (≥ 2 times/day)	3.6[2.0, 6.5]	8.6[6.9, 10.6]	NE
HOT AND/OR COLD Sugar Sweetened Beverage intake (≥ 2 times/day)	42.3[37.7, 47.0]	54.9 [50.9, 58.8]	NE
Fruit intake (≥ 2 times/day)	5.7 [3.8,8.4]	1.4 [0.9,2.2]	12.5 [10.4,15.1]
Vegetable intake (≥ 2 times/day)	22.0 [17.9,26.8]	8.7 [6.9,11.0]	16.8[14.5,19.5]
Fruit and Vegetable intake (≥ 5 times/day)	3.4 [1.7,6.6]	0.2 [0.1,0.5]	4.7 [3.5,6.3]
Harmful Episodic Drinker[f]	NE	2.5 [1.8,3.4]	3.6 [2.6,4.9]

[a]Defined as being on medication to treat high cholesterol or had cholesterol measurement ≥ 5.2 mmol/l. For JHLS III, estimates obtained from persons with complete lipid profile (Triglycerides, HDL, LDL, total cholesterol).

[b]Defined as systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥ 90 mmHg.

[c]Defined as systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥ 90 mmHg or on medication for hypertension.

[d]Defined as fasting plasma glucose concentration ≥ 7.0 mmol/l (using readings truncated between 2.5 and 30 mmol/l) or on medication for raised blood glucose or was told by health professional they have diabetes. Fasting duration was between 6 and 24 hours (inclusive).

[e]Defined as being on medication for raised blood glucose or having fasting plasma glucose concentration ≥ 6.1 mmol/l and using readings truncated between 2.5 and 15 mmol/l for JHLS I; ≥ 6.5mmol/l and using readings truncated between 1.1 and 28 mmol/l for JHLS II; and ≥ 7.0mmol/l and using readings truncated between 2 and 33 mmol/l for JHLS III.

[f]Defined as consuming 5 or more drinks in a single day within the past week for JHLS II or consuming 6 or more drinks in one sitting within the past month for JHLS III. Question was not asked in JHLS I.

NE – No estimates because relevant data were not gathered.

12.4. Summary of Findings

The prevalence of persons who were obese and who had evidence of high central adiposity increased between 2001 and 2017. Women continued to bear the greater burden of these conditions, but estimates among both males and females reflected the increasing prevalence with time. Sex-specific and total population estimates revealed that the prevalence of hypertension increased in each age group and in the age groups combined. In the total population of males, females, and the sexes combined, prevalence moved from close to 20% in 2001 to just over 30% in 2017. The prevalence of diabetes also increased in all age groups among the females but not in all age groups among the males. Among males 45–54 and 55–64 years old, there was a reduction in the diabetes prevalence estimates in 2017, relative to 2001. The prevalence of low PA among the males remained relatively stable, under 30%, for the 2001–17 period but, among women at least one-third of the women were classified as having low PA in each period represented by the three surveys. The data also suggested that the prevalence of persons daily consuming five or more servings of the combination of fruits and vegetables had improved over the period although the estimate was still very low in 2017, at just under 5%. Prevalence of persons with daily consumption of two or more servings of sugar-sweetened beverages, in total, was trending upwards between 2001 and 2008. Coordinated efforts and focused interventions are required to halt the rising trend in the prevalence of risk factors for cardiovascular disease.

List of References

1. PAHO. Compendium of indicators for monitoring regional and global noncommunicable disease response in the Americas. Washington, DC: PAHO; 2015.
2. See Appendix 5 for definitions used to classify persons.
3. This increment is estimated as a percentage of the 2001 baseline value.
4. All three surveys used the JNC–7 criteria to define hypertension. See Appendix 5.
5. See Appendix 5 for definitions used for the different surveys. JHLS II estimates were based on the WHO 2006 Recommendations but used 6.5 as the cut-point for high capillary fasting glucose.
6. See Appendix 6.
7. IPAQ Research Committee. Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ) – Short and Long Forms 2005. Available from: http://www.ipaq.ki.se/scoring.pdf.
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PART 3

Discussions and Recommendations

13. Discussion

Shelly McFarlane

The Jamaica Health and Lifestyle Survey 2017 (JHLS III) has sought to provide data needed to respond to the issues affecting disease control, especially the increasing chronic non-communicable disease burden and the associated risk factors. The survey provides key information on the health and lifestyle and socio-demographic indices that affect health, such as the built environment. The JHLS III is therefore a key step in achieving strategy 1.2 of the National Development Plan Vision 2030, which is to 'Strengthen Disease Surveillance, Mitigation, Risk Reduction and the Responsiveness of the Health System.'[1] The goal of the survey was to estimate the burden and the risk factors for major health conditions in Jamaica, assess the secular trends in the burden and risk factors, and to gain an understanding of the reasons for the health behaviours of Jamaicans.

The findings from the survey data suggest that the main risk factors that increase the burden of chronic non-communicable diseases (CNCDs) are obesity/overweight and sedentariness. Addressing these risk factors will require long-term interventions that entail cultural behaviour changes. There is also a lack of recreational physical activity with increased motorized transport. Improving the built environment can encourage the use of transportation-related physical activity and recreational physical activity.

As global health care systems shift towards a more comprehensive approach to patient care, the key factors that need to be considered to address the health burden include social determinants of health – such as age and gender – and socio-economic indicators like employment and education, and health-seeking behaviours.

Gender Differences

Prevalence estimates for the non-communicable diseases studied are unacceptably high in the Jamaican population of persons 15 years and older. Women in this population have higher prevalence of hypertension, diabetes, dyslipidaemia, obesity, mental health indices, and chronic kidney disease. This is consistent with global data on non-communicable diseases. Prehypertension and increased triglycerides were significantly higher in males. The reported cardiovascular outcomes of heart attack and stroke were also higher in males. The overall prevalence of heart attack and stroke was 1.6%, which translates to almost 32,000 Jamaicans who would require beds space and possible rehabilitation in the health sector. More males considered suicide, but they neither made a plan nor attempted. More females who considered suicide made a plan and attempted suicide. The global data show, however, that more men actually complete suicide.[2]

When evaluating other chronic diseases such as sickle cell disease, the data underscore a lack of awareness of the condition. While the data indicate a prevalence of 10%, only 3% of persons self-reported that they had the sickle cell trait. Less than 10% of males and 20% of females who had a live birth reported being tested for the condition. This highlights that some women are uninformed about the range of tests included in the antenatal panel. As a result, there is a great need to not only offer antenatal screening but also public health education on the significance of the tests being conducted. This can increase women's awareness of their health status to enable their informed decision-making.

The report showed that four times as many males as females were involved in road traffic accidents. There was no gender difference in the use of safety equipment among Jamaican road users, and the overall prevalence was low. The use of helmets has increased since the last survey; however, the use of safety belts has decreased. There was no difference in mistreatment as a child by gender. However, more females reported sexual abuse, with the perpetrator most frequently reported being a stranger in the highest instance and then a father/stepfather. For males who reported sexual abuse, the perpetrator in almost half of the cases was a neighbour.

When the sexual practices of Jamaicans aged 15 years are older were examined by gender, the results are consistent with the global statistics where men are more sexually active than women, have more sexual partners, and start sex at an earlier age.

Only 30% of women surveyed said they had ever done a mammogram or a recent pap smear. The uptake or knowledge of visual inspection with acetic acid, the newer cervical cancer screening method which gives an earlier result, was very low, with less than 5% of women responding. This is a screening tool that can be optimized, especially in the low-resource settings, as it is an inexpensive procedure. The turnaround time for a result is instant even though studies have shown it to have a lower sensitivity and specificity than the pap smear.[3,4] The uptake of the HPV test was also low, and this is the test recommended by the WHO for screening in the 'screen and treat' guideline.[5]

One in five men report ever having a digital rectal examination done, with only one in ten having the procedure done in the last year. Lower urinary tract symptoms occur in one in four males over 25 years old, which highlights the need for increased awareness of the importance of cancer screening in the Jamaican population.

When the nutritional habits of Jamaicans were examined by sex, the data showed that more females reported reading food labels. However, more females also reported adding salt to foods at the table and eating high-sodium processed foods. There were no gender differences in the consumption of sugar-sweetened beverages, nor fast-food consumption. More males reported eating fruits, and more males were involved in high levels of physical activity. When the other risk factors for CNCDs were examined, the report showed that more males drank alcohol and had heavy alcohol intake, smoked cigarettes more frequently, and were current users of marijuana. More males also reported always taking their medication although males also reported that taking medication was a burden.

A gender-specific approach should be part of the public health management of obesity and hypertension even though there are disparities in all chronic non-communicable diseases. This would be a start, as these diseases place the highest burden on the health sector. Improved awareness of the importance of screening is also a tool that should be utilized, using a holistic approach and involving all health care personnel.

Variation by Age

Jamaica has a growing ageing population. The weighted estimates indicate that around 20% of the population is aged over 55 years, which has significant implications for the increased utilization of health care services, particularly hospitalizations, since the burden of CNCDs is generally higher in this age group. The data from the JHLS III shows that there is now a slight shift in the prevalence of some CNCDs, even though hypertension prevalence is still highest in the 55 and older age group: approximately 50% of persons in the 45–54-year age band had hypertension, and prehypertension was highest in the 25–34-year age group. Persons in the 25–54-year age band, which is the working-age population, also had highest prevalence of pre-obesity and overweight/obesity as measured by body mass index and increased waist circumference. Overweight and obesity are also major risk factors for other cardiovascular diseases and, as such, health education should be integral in this population.

Targeted public health interventions should also focus on the young adults in this age group. The prevalence of diabetes increased with age, with an overall population estimate of 12%. A little more than a quarter of the population had impaired fasting glucose, with the highest estimate occurring in the 45–54-year age group. The highest levels of dyslipidaemia, with the exception of total cholesterol, were also found in the 45–54-year age band. The prevalence of cardiovascular disease was highest in the 55–64-year age group, but there were reported cases in the 25–44-year age group which had prevalence of 0.7%. Chronic kidney disease increased with age, with an overall prevalence of 15% in Jamaicans aged 18 years and older. Of note is that 0.3% of this population, which approximates to 6,000 Jamaicans, were reported to have kidney failure; 1% of that figure was from the 25–44-year age band.

The highest prevalence of depression was found in the most vulnerable persons 75 years and older and the youth 15–24 years.

Asthma defined as presumed/possible cases had the highest prevalence in the 15–24 age group. Another major contributor to the strain on the health system are unintentional injuries. The report highlighted that most persons who reported unintentional injuries said they visited a hospital. The majority of these injuries were road accidents involving males 25–34 years; the other unintentional injuries involved 65–74-year-old males. More than half of Jamaican males reported being current drinkers, with the highest proportions being in the 35–44 age group. This age group also had the highest prevalence of cigarette smoking. Marijuana smoking and the use of other recreational drugs was highest in the 15–24-year age group.

The survey revealed that when reproductive health was evaluated by age, over 40% of young adults aged 15–24 reported having more than two sexual partners. This age group also had the highest prevalence of a sexually transmitted infection in the past year. However, on a positive note, this same age group also had the highest rate of condom use at their last or usual sexual encounter, which accounted for two-thirds of all young adults aged 15–24. It is worth noting that over half of the persons in the 55 and older age group reported not using any contraception during their last sexual encounter, highlighting the need for increased public health education to encourage the use of condoms.

The prevalence of chronic diseases was higher in older age groups for all conditions under study except for asthma. These findings are similar to the National Health Interview Survey conducted in 2018 in the US.[6] With the increasing ageing population in Jamaica, this can place a further burden on the health care system, especially since the data show that most NCDs are being manifested earlier in the population, from the age of 25 years. Screening activities could therefore begin with that age group for all NCDs, and the use of community outreach agencies can assist in reducing the burden on the health care system. Measures to curb the increasing burden of NCDs should therefore begin with the youth. The study showed that almost half of the younger age groups report getting their general health information via the internet. This may be a resource that could be tapped to reach these groups with positive health messages, especially regarding policies to reduce alcohol and tobacco use and to improve road safety, using increased legislative activities on mandatory seat belt use and defensive driving techniques.

Social Determinants

The survey revealed that more than half of Jamaicans have attained at least a secondary-level education. There were low levels of educational achievement, with almost 40% of the population having never passed any examination. The data, however, showed that more than 60% were in skilled employment. This suggests that a large proportion of the population have pursued opportunities through technical training. When household possessions were categorized in tertiles to represent socio-economic levels, there was even representation across the tertiles, with approximately 30% of the population in each category.

The survey utilized educational levels and household possessions as proxies for socio-economic status (SES). Both measures were discriminatory markers in the relationship between SES and obesity, hypertension, diabetes, and dyslipidaemia.

The prevalence of obesity, including central obesity, was highest in persons categorized as high SES based on both education and household possessions.

The prevalence of diabetes, hypertension, chronic kidney disease, and dyslipidaemia was highest in persons categorized as having low SES.

Public health strategies should focus on persons in the low socio-economic strata, as this sector carries the highest burden of chronic non-communicable disease and creates more demands on the public health system.

Variation Associated with Place of Residence

Urbanicity is the impact of a person living in an urban area. It therefore speaks to how one would characterize a specific geographical area as a city. Persons in the study were designated as living in an urban or rural area based on the definition given by STATIN. Studies have shown that urbanicity has negative effects on markers of chronic disease.[7,8] The study found the prevalence of overweight/obesity was significantly higher in urban residents. This was the same for self-reported and actual measured indices. This may be due to the preponderance of fast-food outlets seen in urban areas and also the pace for the urban lifestyle. The difference in the estimates between the two groups, although significant, was approximately 6%. This has implications for the health sector, as one can see an increase in urbanization in the communities. The study showed no urban-rural differences in other chronic diseases such as diabetes or hypertension, and this could also be due to a wider distribution of some of the fast-food outlets in Jamaica.

The built environment and lack of access to transport-related physical activity may also play a role in the difference in estimates of obesity by place of residence. Data from the community and neighbourhood characteristics explored in the study showed that there were no urban-rural differences with regards to person's perception of crime and safety problems, physical disorder, and social disorder. There were, however, differences regarding neighbourhood collective efficacy, with more rural persons having high collective efficacy. This suggests that rural persons perceive their community members as persons who would work together to better their communities.

The neighbourhood characteristics also highlighted that persons who had high perceptions of neighbourhood crime were more likely to be obese or depressed. Those with high perception of neighbourhood physical disorder were less likely to engage in physical activity. Persons with a higher perception of social disorder were more likely to have hypertension or be classified as depressed and were less likely to engage in physical activity. Perceived high collective efficacy was associated with a lower odds of being classified as depressed. These results are in keeping with other studies that found that neighbourhoods with the most perceived problems had higher rates of hypertension, lower physical activity, and decreased emotional well-being,[9,10] whereas neighbourhoods with high collective efficacy were more likely to engage in physical activity and were less likely to be classified as depressed.[11,10]

Health-Seeking Behaviours

Almost two-thirds of the persons with diabetes were aware of their condition. Of that number the majority, 93%, were on treatment for their condition, but only one-third of that number were controlled. Similar proportions were seen for hypertensive cases, with two-thirds of cases being aware of their condition. However, only 70% were on treatment and one-third controlled. One-third of persons with high total cholesterol levels reported being aware of their condition, while two-thirds of those who were aware were on treatment. Only 35% of those on treatment were controlled. The data show that even though there has been an increase in screening programmes for non-communicable diseases that has improved the awareness of diabetes and hypertension, increased screening programmes for dyslipidaemia may be of benefit.

The low rates of control for major NCDs pose a public health challenge. Further investigation is necessary to gain insight into potential barriers to improved control, which can help alleviate the burden on primary health care services. The data shows low self-reported estimates for almost all cardiovascular and NCDs, excepting those that have an associated physical outcome, such as heart attacks or strokes. Conditions such as the 'silent killer,' hypertension, and obesity were significantly underreported, especially among males, while there was equal low reporting of all other conditions. This again reinforces the need for building awareness and increased education and screening for persons at risk, especially males.

Qualitative Research Study

The results of the focus group studies conducted as part of the survey emphasized the need to address certain misconceptions Jamaicans have towards living with and managing their condition. The respondents who participated in the discussions were aware of NCDs, especially since most had a family member who had or had died from an NCD.

The idea of considering routine work-related activities as exercise was introduced, along with other notions such as the improper practice of taking medication dependent on food intake and drinking excessive amounts of water after consuming sweets (for individuals with diabetes). Another component that requires attention is the maintenance of behaviour change. Although persons reported changes in behaviour after initial diagnosis, they often do not continue due to various factors, including financial constraints and lack of social support. These two risk factors are areas in which interventions can occur. While agencies may not be able to address finances in the outset, other factors such as improved resources for physical activities, such as improved green spaces and areas for transportation-related physical activity, may be beneficial. Support groups in communities, especially peer-led activities, are also useful in addressing social support and promoting positive nutritional practices. Studies have shown that peer-led interventions are useful in improving the management of chronic diseases. Health education in the primary care setting may also be a useful tool in delivering health services to persons with NCDs.

Secular Trends in the Data

The data reveals secular trends indicating a 10% rise in obesity and hypertension over the ten-year period from 2001 to 2017, irrespective of age or gender. Diabetes also showed an upward trend, albeit with a smaller increase of 3%. Conversely, depression demonstrated an approximate 10% decrease over the same period. High physical activity levels saw an increase, particularly during the ten years from 2008 to 2017, possibly due to interventions implemented by the Ministry of Health as part of the Healthy Lifestyle Policy and Strategic Plan.

The gender disparity in the burden of non-communicable diseases observed in the 2001 survey was considerably reduced by the 2017 survey, despite females continuing to bear a greater burden of non-communicable diseases.

Conclusion and Recommendation

To maximize effectiveness, public health strategies aimed at preventing chronic diseases should be gender-specific and also to target individuals from low socioeconomic households, and those with low levels of education. As conditions like prehypertension and impaired glucose tolerance do not increase proportionally with age, promoting healthy diets, physical activity, and regular medical check-ups through public campaigns should be focused on young individuals to facilitate prevention in future generations.

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APPENDICES

Appendix 1:
Jamaica Health and Lifestyle Survey III Questionnaire

Investigators:
Rainford Wilks • Marshall Tulloch-Reid • Karen Webster-Kerr • Andriene Grant

Consent Form

Purpose of Study

Investigators from the Tropical Medicine Research Institute-Epidemiology Research Unit of the University of the West Indies and the Ministry of Health, Jamaica are carrying out community-based research on persons aged 15 and older in Jamaica. The purpose of this study is to find how people's lifestyle behaviours put them at risk for chronic illnesses such as hypertension (pressure) or diabetes (sugar) so that we can help to reduce the number of persons who have these conditions and help those who have these illnesses to be in better control.

Procedure

You are being asked to be a part of this study, which has two parts. The first part asks questions on diet, physical exercise, mental health, living environment, general well-being, violence, alcohol, tobacco and drug use, sexual behaviour, and sources of health information. You have the right to refuse any question, which makes you feel uncomfortable. We will also measure your blood pressure, height, weight, hip, andwaist size. In the second part, we will also be collecting blood using a finger prick to measure sugar and cholesterol levels and blood from a vein to measure CHIK V, sugar and cholesterol levels, kidney and liver function, as well as other tests of heart and general health. We will collect the samples first thing in the morning. Blood samples taken will be stored and will be used in other studies, with the appropriate ethicscommittee approval for such investigations. Along with these blood samples, we will be asking you for ahair and urine sample also collected first thing in the morning. You will be given a device to wear for seven days to see how physically active you are. This device is waterproof and does not need to be taken off when bathing or sleeping. We will collect it from you after one week of wearing it.

You will be interviewed in your home. The questionnaire and body measures will take about an hour to complete. The finger prick or blood measures take an additional five minutes to complete. We would like to do the blood work first thing in the morning, before you have eaten. If you agree, I will come back tomorrow morning to do this part.

You may choose not to participate in the first or second part of the study. <u>Your participation is entirely voluntary. If you do not wish to participate, it will not interfere with any care or treatment you may receive or are receiving.</u>

Benefits

Research is used to benefit society by gaining new knowledge. You will not receive anything for taking part in this study. However, if we find anything abnormal with you during the study, we will refer you to the appropriate health department for further care. The information we collect will be used to develop future programmes to protect the Jamaican population from chronic illnesses and other health conditions.

Risks

Sometimes things happen to people in research studies that may make them feel bad. These are called 'risks.' This study poses minimal risks to you. There may be temporary discomfort or bruising at the site where the blood is drawn. Some questions may make you feel uncomfortable. If you feel uncomfortable about any of the questions, the interviewer can skip those questions and go on to the next section. When collecting blood, a new sterile needle will be used for each person.

Participation in Future Studies

We are interested in learning about how your health now will affect your health in the future and wouldlike to keep in touch with you to find out how you are doing. This may involve our reviewing the notesfrom your doctor or hospital to know if you were hospitalized or had any major illnesses or surgeries.

We may also invite you to be part of other smaller research studies. Some of these studies may involve talking with you (alone or as part of a group) about how you take care of your health and the health or your family. Others may involve doing more specialized tests to check your heart health and memory. We will ask for your permission again if you are willing to be a part of these smaller studies.

Confidentiality

All answers will be confidential and will be available only to the researchers on this project. The overall results of this study will be presented in a report. Wherever the results are presented, your identity will not be revealed, and the results will be presented for the group.

Contact Numbers

This study has been approved by the Ethics committees of the University of the West Indies and the Ministry of Health. If you have any questions about the research or your participation, contact either Professor Rainford Wilks of the Tropical Medicine Research Institute at (876) 927-2471, email: rainford.wilks@uwimona.edu.jm OR Dr Karen Webster-Kerr, at the Ministry of Health at (876) 633-8189), Email: WebsterK@moh.gov.jm

Independent Advice:

For independent advice, please contact the Chair, Ministry of Health Ethics committee, Professor Owen Morgan at (876) 633-7150, or the office of Professor Horace Fletcher, Dean, Faculty of Medical Sciences,

U.W.I. Mona at (876) 927-2556

DECLARATION

This form has been read to me. I was given the opportunity to ask questions which were answered to my satisfaction. I voluntarily give permission to participate in this research project and indicate this by signing on the designated space, below. I am entitled to be given a copy of this form if I so desire.

Participant NO. QUESTIONNAIRE ID | | | | | | | | | | | | | |

Reg Par Con ED Dw H Re

I am willing to be contacted in the future by members of the team about my health Yes No

I am willing to be contacted again about related research studies by members of the team Yes No

Name : ______________________ DOB | | | | | | | | | |

D D M M M Y Y Y Y

Address: ______________________

Signature ______________________ Date: ____/______/____

Witness

Name: ______________________

Address: ______________________

Signature ______________________ Date: ____/______/____

JAMAICA HEALTH AND LIFESTYLE SURVEYIII – 2016

ID NO. |___|___|___|___|___|_ __|___|___|___|___|___|___|___|_|___|___|___| QUESTIONNAIRE ID NO. [__]__] __] __]
Reg Par Con ED Dw H Re

PARISH________________________________What is the name of the area you live in

____

REGION NO.	|____|	DWELLING NO.	|____|____	
PARISH NO. CONSTITUENCY NO.	|____|__ | |____|	HOUSEHOLD NO.	|____|____	
ENUMERATION DISTRICT NO.	|___|___|_		RESPONDENT NO.	|____|

Interview Visit	**Visit 1**	**Visit 2**	**Visit 3**	**Final Visit**
Date (dd/mmm/yy)				
Status of Visit				
Interviewer's Initials				
Interviewer's ID Number				
Supervisor's Initials				
Supervisor's ID Number				
Date and Time of next appt.				

Interview Status codes	**o Refusal Status**	**Partial Refusals**
1. Completed household interviews: assessment of eligibility **2.** No individual available for household interview – **REVISIT** 3. Household interviews completed – selected respondent not at home or available - REVISIT 4. Completed household interview - selected Respondent available – completed questionnaire 5. Partially completed questionnaire – REVISIT 6. Partially completed questionnaire – anthropometry and biomedical measures outstanding 7. Partially completed questionnaire – anthropometry outstanding 8. Partially completed questionnaire – biomedical measure incomplete 9. Refusal – individual	**Complete refusal** 1. Study not relevant to me 2. No time, too busy 3. Invasion of privacy 4. Too personal 5. Didn't believe information was confidential 6. Other (specify	1. Questionnaire incomplete 2. Anthropometry refused 3. Blood pressure refused 4. Biomedical measures refused 5. Blood draw refused 6. Urine sample refused

START TIME OF INTERVIEW - HOUR [__] MINUTE [__]__] AM/PM (Visit_____)

END TIME OF INTERVIEW - HOUR [__] MINUTE [__]__] AM/PM

TOTAL TIME OF INTERVIEW – HOURS |___| MINUTES |___|___|

KISH TABLE

How many eligible persons live in this household? ________Number

Please Record the Names and Other Particulars of All Eligible Persons (15 years and older) Who Live In This Household. This Should Include All Who Usually Eat And Sleep Here. List all males first, START WITH THE OLDEST MALE MEMBER, THEN THE NEXT OLDEST, THEN All FEMALES, beginning with the oldest.

SCHEDULE OF ALL PERSONS LIVING IN HOUSEHOLD * Sex codes **1**- Male **2**-Female

Line NO.	Name *Please give me all the names of all persons who usually live in your household*	* *male or female*	AGE *How old is this person*
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			

IF THERE IS ONE OR MORE ELIGIBLE RESPONDENTS, SELECT THE ONE TO BE INTERVIEWED, BASED ON THE INSTRUCTIONS GIVEN AND USING THE RANDOM TABLE SHOWN BELOW.
THEN COMPLETE THE INDIVIDUAL QUESTIONNAIRE FOR THE SELECTED RESPONDENT
IF ELIGIBLE RESPONDENT HAS REFUSED, COMPLETE TITLE PAGE AND MOVE ON TO THE NEXT HOUSEHOLD

RANDOM SELECTION OF RESPONDENT
Questionnaire Number ________
Number of eligible persons ________

Last digit on questionnaire number	**Number Of Eligible Persons In Household**									
	1	2	3	4	5	6	7	8	9	10
0	1	2	3	1	2	5	2	8	7	10
1	1	1	1	2	3	6	3	1	8	1
2	1	2	2	3	4	1	4	2	9	2
3	1	1	3	4	5	2	5	3	1	3
4	1	2	1	1	1	3	6	4	2	4
5	1	1	2	2	2	4	7	5	3	5
6	1	2	3	3	3	5	1	6	4	6
7	1	1	1	4	4	6	2	7	5	7
8	1	2	2	1	5	1	3	8	6	8
9	1	1	3	2	1	2	4	1	7	9

SEQUENCE NUMBER OF PERSONS SELECTED FOR INTERVIEW: ________

**AFTER COMPLETING THE HOUSEHOLD QUESTIONNAIRE,
RETURN TO TITLE PAGE AND
COMPLETE INFORMATION ON RESPONDENT ID**

For all questions ***circle*** the appropriate responses unless otherwise indicated.

THIS SECTION IS TO BE COMPLETED BY THE SUPERVISOR:

Has this questionnaire been returned to correct errors?	Yes |___| (tick)	No |___| (tick)
If yes, list items:		
Questionnaire Checked: Supervisor (name) ____________________________________ ____________________________________ (Supervisor's signature)	Date: _____/_____/20____	

SECTION 1
DEMOGRAPHIC INFORMATION

1.0 OBSERVED RACE: 1. Black 2. Mixed 3. Indian 4. Caucasian 5.Other_____________]
1.1 Do you consider yourself to be: 1. Black 2. Mixed 3. Indian 4. Caucasian 5.Other_____________]

1.2 OBSERVED SEX: 1. Male 2. Female

1.3 BIRTHDATE:______/____/______
DD MMM YY

1. 4 AGE (At last birthday):__________Years

1.5 What is your union status? (Circle only one) *PROMPT IF NECESSARY*| |__|__|
0. None (Single) 1. Married
2. Common law 3. Widowed
4. Divorced 5. Separated
6. Visiting
88. Don't know 99. No response

1.6 What is the highest level or grade you have reached in school? (Circle only one) |__|__|
PROMPT IF NECESSARY
0. No schooling (Go to Q1.9) 1. Basic School
2. Primary 3. All Age/Junior High
4. Secondary/High School 5. Technical/Vocational school
6. College/tertiary 8. Other (Specify)__________________|__|__|
88. Don't know 99. No response

1.7 How many years did you spend at? (Probe, confirm total number of years spent in each institution)

Institution	# years	Don't Know/remember	No response
Basic School			
Primary School			
Secondary School			
Post-secondary			
Other, specify			

1.8 What is the highest examination that you passed? |__|__|

0. None 1. GSAT/Common Entrance/11+
2. Grade 9 Achievement 3. School Certificate, CXC Basic
4. O-Level/CXC Gen, CSEC 5. A-Levels /CAPE
6. College diplomas, Certificates 8. University degrees, Professional qualifications
9. Other (Specify)__________________|__|__|
88. Don't know 99. No response

1.9 What is your employment status? PROMPT IF NECESSARY |__|__|
1. Full-time (30 or more hours/week) 2. Part-time (29 or fewer hours/week)
3. Seasonally employed 4. Unemployed and looking (Go to Q 1.16)
5. Unemployed and not looking (Go to Q1.16) 6. Student (Go to Q 1.16)
7. Retired 8. Other_________________(specify) |__|__|
88. Don't know 99. No response

1.10 What is your primary occupation, that is the job which you spend most time doing?

____ |__|__|

1.11 Are you self-employed in this occupation? |__|__|
0. No 1.Yes
88. Don't know 99. No response

1.12 Do you have another occupation? |__|__|
0. No (Go to Q1.16) 1. Yes
88. Don't know (Go to Q 1.16) 99. No response (Go to Q 1.16)

1.13 What is your secondary occupation?
____ |__|__|

1.14 Are you self-employed in this occupation? |__|__|
0. No 1.Yes
88. Don't know 99. No response

1.15 What is your employment status in this occupation? PROMPT IF NECESSARY |__|__|
1. Full-time (30 or more hours/week) 2. Part-time (29 or fewer hours/week)
3. Seasonally employed 4. Other________________(specify) |__|__|
88. Don't know 99. No response

1.16 Do you have a religious affiliation? *PROMPT IF NECESSARY* |__|__|
0. None (Go to Q1.18) 1. Catholic
2. United Church of Jamaica (*Presbyterian, Congregational, Disciples of Christ*)
3. Seventh Day Adventist 4. Methodist
5. Anglican 6. Baptist
8. Church of God 8. Pentecostal
9. Rastafarian 10. Muslim
11. Other Non-Christian__________(specify) 12. Other Christian__________(specify)
88. Don't know 99. No response

1.17 How often have you attended a religious service in the past month? |__|__|
0. Never 1. Less than once in the past 30 days
2. Once or twice in the past 30 days 3. Weekly or almost weekly
4. More than once per week
88. Don't know 99. No response

1.18 Do you have a disability? (e.g., being blind, wheel-chaired bound, dyslexic) |__|__|
0. No (Go to Q1.21) 1.Yes
88. Don't know (Go to Q1.21) 99. No response (Go to Q1.21)

1.19 Does the disability limit your activities compared with most people of the same age? |__|__|
0. No 1.Yes
88. Don't know 99. No response

1.20 What type of disability do you have? (Multiple responses allowed) |__|__| |__|__|
1. Sight only 2 Hearing only
3. Speech only 4. Physical disability
5. Learning disability 6. Intellectual disability 8. Other (specify) __________
88 Not stated 99. No response

1.21 Now I am going to ask you some questions about your home. Remember all this is confidential information. ANSWER ALL QUESTIONS. Write the appropriate code 0 – No, 1 – Yes, Which of the following do you have?

ITEM	NO [0]	YES [1]
1. Gas Stove		
2. Electric Stove		
3. Refrigerator or Freezer		
4. Microwave Oven		
5. Air Conditioner		
6. Fan		
7. Telephone (Landline or Cell)		
8. Radio/Cassette Player/Stereo Equipment/Component Set		
9. Electronic Gaming Equipment		
10 Video Cassette Recorder/ DVD		
11. Washing Machine		
12. Clothes Dryer		
13. TV Sets		
14. Cable TV		
15. Water Heater (Solar or Electric)		
16. Water Tank		
17. Bicycle		
18. Motorbike		
19. Car, Other Vehicle		
20. Computer/ Tablet		
21. Computer Accessories /Printer/Fax/Scanner		
22. Smart Phone		
23. Internet Service		

1.22 What type of toilet facilities do you have? (Circle only one) |__|__|

0. None
1. Hole in the earth
2. Pit Latrine shared
3. Pit latrine, unshared
4. Water closet, shared
5. Water closet, unshared
88. Don't know
99. No response

1.23 What is your main source of water for drinking? |__|__|

1. Standpipe
2. River
3. Pipe inside of house
4. Pipe outside the house
5. Private tank
6. Community tank
8. Water drum
8. Spring
9. Bottled water
10. Other, specify __________
88. Don't know
99. No response

1.24 How many persons live in this household (including you)?

1. Number under 18years old________|__|__|
2. Number 18years and older___________|__|__|
3. Total in household___________ |__|__|
88. Don't know
99. No response

1.25 How many rooms are occupied by this household (excluding kitchens and bathrooms)? ___ |__|__|

1.26 How many rooms are used for sleeping?________ |__|__|

1.27 What is your **usual** means of transport**?** |__|__|

1. Walk
2. Chartered bus/taxi
3. Public Bus/Taxi
4. Bicycle
5. Private Car
6. Other ________________
88. Don't know
99. No response

1.28 How long does it take you to get to and from work or school? ___H_____M

77. Not applicable |__|__|

1.29 Do you have easy access to public transportation in your neighbourhood? |__|__|

0. No
1. Yes
88. Don't know
99. No response

1. **30** What is your weekly household income in Jamaican dollars (total sum of money earned by all adults in home)? PROMPT (Circle only one) |__|__|

1. More than $60,001/week
2. $23,001.00–$60,000/week
3. $12000–$23,000/week
4. $6200–$11999/week
5. Less than $6200.00/week
88. Don't know/Not sure
99.No response

1.30.1 Note: If participant provides fortnightly, monthly or annual salary, record amount given and circle appropriate period (month/ year)

$________________________ fortnight month year

1.31 Have you ever lived outside of Jamaica for a period of three (3) consecutive months or longer?

0. No
1. Yes |__|__|
88. Don't know
99. No response

SECTION 2

FAMILY'S HEALTH HISTORY

Now I would like to ask you some questions about your family's health.
Including living and deceased, have any of your blood relatives (grandparents, parents, brothers, sisters, and children) suffered from any of the following and if so, which relative/s and how many?
ASK FOR EACH DISEASE SEPARATELY. Use the codes as follows: Suffered

conditions: No – **0;** Yes – **1;** Not applicable – **77** Don't Know **-88;** NR– **99**

	Any Grand parent	Mother	Father	Sister	Brother	Children
Heart Attack						
No. of such relatives?						
High Blood Pressure						
No. of such relatives?						
Stroke						
No. of such relatives?						
Diabetes						
No. of such relatives?						
Cancer						
No. of such relatives?						

SECTION 3

MEDICAL HISTORY

Now I would like to ask you some questions about your own health.

3.1. Has a health provider/doctor ever told that you have any of the following? Please respond to all items

(a) Heart Disease	0. No	1. Yes	88. Don't know	99. No Response [__]
(b) Diabetes Mellitus (sugar)	0. No	1. Yes	88. Don't know	99. No Response [__]
(c) Glaucoma	0. No	1. Yes	88. Don't know	99. No Response [__]
(d) High Blood Pressure	0. No	1. Yes	88. Don't know	99. No Response [__]
(e) High Cholesterol *(fat in blood)*	0. No	1. Yes	88. Don't know	99. No Response [__]
(f) Stroke	0. No	1. Yes	88. Don't know	99. No Response [__]
(g) Kidney Disease	0. No	1. Yes	88. Don't know	99. No Response [__]
(h) Obesity/Overweight	0. No	1. Yes	88. Don't know	99. No Response [__]
(i) Circulation Problems	0. No	1. Yes	88. Don't know	99. No Response [__]
(j) Enlarged Prostate*(males only)*	0. No	1. Yes	88. Don't know	99. No Response [__]
(k) Rheumatic Fever	0. No	1. Yes	88. Don't know	99. No Response [__]
(l) Arthritis	0. No	1. Yes	88. Don't know	99. No Response [__]
(m) Asthma/Wheezing	0. No	1. Yes	88. Don't know	99. No Response [__]
(n) Bronchitis/Pneumonia	0. No	1. Yes	88. Don't know	99. No Response [__]
(o) Cancer	0. No	1. Yes	88. Don't know	99. No Response [__]
(p) Broken Bones/Fractures	0. No	1. Yes	88. Don't know	99. No Response [__]
(q) Epilepsy/Fits	0. No	1. Yes	88. Don't know	99. No Response [__]
(r) Sickle Cell Disease	0. No	1. Yes	88. Don't know	99. No Response [__]
(s) Sickle Cell Trait	0. No	1. Yes	88. Don't know	99. No Response [__]
(t) Mental Health Problems	0. No	1. Yes	88. Don't know	99. No Response [__]
(u) Psychosis	0. No	1. Yes	88. Don't know	99. No Response [__]
(v) Major Depression	0. No	1. Yes	88. Don't know	99. No Response [__]
(w) Anxiety	0. No	1. Yes	88. Don't know	99 No Response [__]
(x) Chikungunya	0. No	1. Yes	88. Don't know	99 No Response [__]
(y) Any other condition	0. No	1. Yes, specify____________________|__|__|		

3.2 What is your height? ______Feet ______inches OR___________Centimetres |__|__|

88. Don't know 99. No Response

3.3 What is your weight? _________Pounds OR ______Kilogrammes |__|__|

88. Don't know 99. No Response

Now I would like to as you about some of these health conditions in more detail

HIGH BLOOD PRESSURE

3.4 Have you ever had your blood pressure measured by a doctor or other health worker**?** |__|
0. No (Go to Q3.7) 1. Yes

3.5 Where have you had your blood pressure measured? ***Circle all that apply*** |__| |__||__| |__|_|
1. Private Doctor's office 2. Health centre 3. Hospital
4. Health fair 5. Pharmacy 6. At a plaza/shopping centre
7. Home 8. Other, specify ________________________

3.6 How long has it been since you last had your blood pressure taken by a doctor, nurse, or other health professional? ***(Circle only one)*** **PROMPT IF NECESSARY** |__|_|

0. Never 1. Less than 6 months (0–6 months) 2. Six months to less than a year
3. One to two years ago 4. Over 2 years ago
88. Don't know 99. No response

3.7 Have you ever been told by a doctor or other health worker told that you have high blood pressure? |__||
0. No (Go to Q3.11) 1. Yes, in the past 12 months
2. Yes, more than 12 months ago
88. Don't know (Go to Q3.11) 99. No response (Go to Q3.11)

3.8 How old were you when you were told that you have high blood pressure? |__|__| Yrs
88. Don't know/don't remember 99. No response

3.9 Because of your high blood pressure have you ever done any of the following **ANSWER ALL QUESTIONS**
(Multi response responses)
a. Taken prescribed medication 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|_|
b. Controlled or lost weight? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|_|
c. Used less salt in your diet? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|_|
d. Start an exercise programme? 0.No 1.Yes, in the past 2. Yes, currently 99. No response |_|_|
e. Reduced/eliminated alcohol? 0.No 1.Yes, in the past 2. Yes, currently 77.Never drink 99. No response |_|__|
f. Stopped smoking? 0.No 1.Yes, in the past 2.Yes, currently 77. Non-smoker 99. No response |_|_|
g. Got a home blood pressure machine 0.No 1.Yes, in the past 2. Yes, currently 77.Non-smoker 99.No response |_|
h. Seen a traditional healer 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|_|
i. Taken herbal or natural remedies? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|_|

If yes, specify type of remedy used:_______________________________________|__|__|, |__|__|, |__|__|

3.10 About how long has it been since you last visited a doctor or health professional about your high blood pressure? |__|_|
0. Never 1. Less than 6 months
2. Six months to less than one year 3. One–five years ago
4. More than 5 years
88. Don't know 99. No response

DIABETES

3.11 Have you ever had your blood sugar measured by a doctor or other health worker? ***(Include both finger stick and laboratory measurements.)*** |__|__|

0. No (Go to Q3.22) 1. Yes

88. Don't Know (Go to Q3.22) 99. No response (Go to Q3.22)

3.12 Where have you had your blood sugar measured? ***Tick all that apply*** |__| |__| |__| |__| |__| |__|

1. Private Doctor's office 2. Health centre 3. Hospital

4. Health fair 5. Pharmacy 6. At a plaza/shopping centre |

7. Home 8. Other, specify ________________________

3.13 Have you ever been told by a doctor, nurse, or other healthcare professional that you have diabetes (sugar)?

0. No (Go to Q3.22) 1. Yes, in the past 12 months |__|__|

2. Yes, more than 12 months ago

88. Don't Know (Go to Q3.22) 99. No response (Go to Q3.22)

3.14 How old were you when you were told that you have diabetes (sugar)? |__|__| Years

88. Don't know 99. No response

3.15 Have you been prescribed **oral** medication for your diabetes (sugar)? |__|__|

0. No 1. Yes

88. Don't know 99. No response

3.16 Have you been prescribed **insulin** for your diabetes (sugar)? |__|__|

0. No 1. Yes

88. Don't know 99. No response

3.17 Because of your diabetes have you ever done any of the following? ANSWER ALL QUESTIONS *(multi-response)*

a. Taken prescribed medication 0. No 1. Yes, in the past 2. Yes, currently. 99. No response |_|_|

b. Controlled or lost weight? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |__|__|

c. Used less salt in your diet? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |__|__|

d.Start an exercise programme? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|_]

e. Reduced/eliminated alcohol? 0. No 1.Yes, in the past 2.Yes, currently 77.Never drink 99. No response |_|__|

f. Stopped smoking? 0. No 1. Yes, in the past 2. Yes, currently 77. Non-smoker 99. No Response |_|__]

g. Check your own blood sugar 0. No 1. Yes, in the past 2. Yes, currently 77. Never drinks 99.No response |_|__|

h. Seen a traditional healer 0.No 1.Yes, in the past 2. Yes, currently 99. No response |_|__|

i. Taken herbal or natural remedies? 0. No 1.Yes, in the past 2.Yes, currently 99. No Response |_|__|,

If yes, specify type of remedy used:____|_|__|, |__|__|, |__|__|

3.18 About how long has it been since you last visited a doctor or health professional about your diabetes ('sugar')?

0. Never 1. Less than 6 months |__|__|

2. Six months to less than one year 3. One–five years ago

4. More than 5 years

88. Don't know 99. No response

3.19 When was the last time your eyes were examined as a part of your diabetes management or care? |__|_|

0. Never 1. Within the last year

2. One–five years ago 3. More than 5 years

88. Don't know 99. No response

3.20 At your last doctor's visit were you asked to take off your shoes and socks by the doctor or nurse as a part of your diabetes management or care? |__|__|

0. No 1. Yes

88. Don't know 77.Can't remember 99. No response

3.21 Have you received counselling from a doctor/nurse or health care professional about how to take care of your diabetes? |__|__|

0. No 1. Yes

88. Don't know 99. No response

Foot Complications

3.22 Have you ever had an amputation? (Cutting off of one or more toes, part of the foot or leg or thigh) |__||
0 No (Go to Q3.26)   1. Yes
88. Don't know   99. No Response

3.23 If yes, please indicate the location of amputation: |__|__|
1. Right lower limb   2. Left lower limb   3. Both right and left lower limbs
88. Don't know.   99.No Response

3.24 If you had a lower limb amputation please state site of amputation: |__|__|
1. Above Knee   2. Below knee   3. One or more than one toes,
4. Other, Specify ____ |__|
88. Don't know.   99. No Response

3.25 Was the amputation due to diabetes? If no, state cause |__|__|
0. No Cause______________________|__|__| 1. Yes
88. Don't know   99. No Response

3.26 Have you ever had an ulcer (i.e., open sore) on your foot or leg?
0. No   1. Yes
88. Don't know   99. No Response

3.27 Have you ever been told by a doctor or health care worker that you have a foot infection, (*e.g., infected ulcer/sore, abscess, cellulitis)?* |__|__|
0. No   1. Yes
88. Don't know   99. No Response

3.28 Do you experience any of the following symptoms?

a	Burning pain in the feet	0. No	1. Yes	88. Don't know	99. No Response|__|__|
b	Tingling in the feet	0. No	1. Yes	88. Don't know	99. No Response|__|__|
c	Numbness in the feet	0. No	1. Yes	88. Don't Know	99. No Response|__|__|
d	Loss of feeling in the feet	0. No	1. Yes	88. Don't Know	99. No Response|__|__|

PERIPHERAL VASCULAR DISEASE

3.29 Do you get a pain or discomfort in your leg(s)/calves when you walk? |__|__|
0. No (Go to Q3.34)   1. Yes
77. I am unable to walk   88. Don't know   99. No Response

3.30 Does this pain ever begin when you are standing still or sitting? |__|__|
0. No   1. Yes
88. Don't know   99. No Response

3.31 Do you get this pain if you walk uphill or hurry? |__|__|
0. No   1. Yes
88.Don't know   99. No Response

3.32 Do you get this pain when you walk at an ordinary pace on the level? |__|__|
0. No   1.Yes
88. Don't know   99. No Response

3.33 While having this pain, what happens to it if you stop moving and stand still? |__|__|
0. Nothing   1. Usually disappears in 10 minutes or less   2. Usually continues more than 10 minutes
88. Don't know   99. No Response

ANGINA

3.34 Do you ever have any pain or discomfort in your chest? |__|__|
0. No (Go to Q3.37) 1.Yes
88. Don't know 99 No response

3.35 When you walk at an ordinary pace on the level does this produce the pain? |__|__|
0. No 1. Yes 2. Unable to walk
88. Don't know 99. No response

3.36 When you walk uphill or hurry does this produce the pain? |__|__|
0. No 1. Yes 2. Unable to walk
88. Don't know 99. No response

HEART ATTACK

3.37 Have you ever been told by a doctor or other healthcare professional that you have suffered a heart attack?
0. No (Go to Q3.46) 1. Yes |__|__|
88. Don't know (Go to Q3.46.) 99. No response (Go to Q3.46)

3.38 Have you had more than one heart attack? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.39 Have you done any special tests to check the heart since your heart attack? |__|__|
0. No (Go to Q3.41) 1.Yes
88. Don't know (Go to Q3.41) 99.No response (Go to Q3.41)

3.40 What tests have you done to check your heart (Circle all that apply) |__|__|, |__|__||__|__|
0. No tests done (Go to Q3.41) 1. ECG 2. Echocardiogram (ultrasound of the heart)
3. Stress test (running on a machine or given a medication to make the heart race)
4. Catheterization of the heart (wire passed up the leg or hand to look at the heart)
5. Other, specify_______________________________________|__|__|,
88. Don't know 99. No response

3.41 Because of your heart attack have you ever done any of the following ANSWER ALL QUESTIONS ***(Multi-response)***
a. Taken prescribed medication 0. No 1. Yes, in the past 2. Yes, currently. 99. No response |_|__|
b. Controlled or lost weight? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|__|
c. Used less salt in your diet? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|__|
d. Start an exercise programme? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|__|
e. Reduced/eliminated alcohol? 0. No 1. Yes, in the past 2. Yes, currently 77.Never drinks 99.No response|__|
f. Stopped smoking? 0. No 1. Yes, in the past 2. Yes, currently 77. Non-smoker 99. No response |__|
g. Seen a traditional healer 0. No 1. Yes, in the past 2. Yes, currently 99. No response |__|__|
h. Taken herbal or natural remedies? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |__|__|
If yes, specify type of remedy used:________________________________|__|__|, |__|__|,

3.42 Are you taking a blood thinner (like Plavix)? |__|__|
0. No 1. Yes, in the past 2. Yes, currently
77. Not applicable 88. Don't know 99. No response

3.43 Are you currently taking cholesterol lowering medications (*Lovastatin/Simvastatin/Atorvastatin or any other statin*) regularly to prevent or treat heart attack? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.44 Are you taking special blood pressure medications for the heart? |__|__|

0. No 1. Yes, in the past 2. Yes, last 2 wks
88. Don't know 99. No response

3.45 Have you been to a specialist doctor (such as a cardiologist) for your heart attack? |__|__|

0. No 1. Yes
88. Don't know 99 No response

STROKE

3.46 Have you ever been told by a doctor, nurse, or other health professional that you have suffered a stroke? (Circle only one) |__|__|

0. No (Go to Q3.51) 1. Yes
88. Don't know (Go to Q3.51) 99. No response (Go to Q3.51)

3.47 Because of your stroke are you now taking aspirin or other blood thinners such as Plagril, Plavix? |__|__|

0. No (Go to Q3.49) 1. Was never told by health professional to take it (Go to Q3.49)
2. Yes, but I stopped taking it (Go to Q3.49) 3. Yes (Go to Q3.49)
88. Don't know 99. No response (Go to Q3.49)

3.48 Why have you stopped?______________________________|__|__|, |__|__|

3.49 Because of your stroke are you now/have you... ANSWER ALL QUESTIONS

a. taken prescribed medication 0. No 1. Yes, in the past 2. Yes, currently 99. No response |__|__|
b. controlled or lost weight? 0. No 1. Yes, in the past 2.Yes, currently 99. No response |__|__|
c. used less salt in your diet? 0. No 1. Yes, in the past 2.Yes, currently 99. No response |__|__|
d. been on an exercise programme? 0. No 1. Yes, in the past 2.Yes, currently 99. No response |__|__|
e. reduced alcohol intake? 0. No 1. Yes, in the past 2.Yes, currently77.Never drinks 99. No response |__|
f. stopped smoking? 0. No 1. Yes, in the past 2.Yes, currently 77.Never smokes 99. No response|_|
g seen a traditional healer 0. No 1. Yes, in the past 2. Yes, currently 99. No response |_|_|
h. taken herbal or natural remedies? 0. No 1. Yes, in the past 2. Yes, currently 99. No response |__|__|
i. done anything else? 0. No 1. Yes, in the past 2.Yes, currently 99. No response |__|__|
If yes Specify:____________|__|__|, |__|__|, |__|__|

3.50 Because of your stroke have you experienced any of the following loss in function? |__|__|
(Multi-response)

0. No impairment 1. Speech impairment 2. Limited mobility
3. Memory impairment
88. Don't know 99. No response

LIPID LEVELS

3.51 Cholesterol is a fatty substance in the blood. Have you ever had your cholesterol (fat levels in your blood) measured by a doctor or other health worker? |__|__|

0. No (Go to Q3.54) 1. Yes
88. Don't know (Go to Q3.54) 99. No response (Go to Q3.54)

3.52 Were you told by a doctor, nurse, or other healthcare professional that your cholesterol was high? |__||

0. No (Go to Q3.54) 1. Yes
88. Don't know/can't recall (Go to Q3.54) 99. No response (Go to Q3.54)

3.53 Because of your high cholesterol are you now/have you... ANSWER ALL QUESTIONS

a. Taken prescribed medication 0. No 1. Yes, in the past 2. Yes, currently 99. No response |__|__|

b. Controlled or lost weight? 0. No 1. Yes, in the past 2.Yes, currently 99. No response |__|__|

c. Used less salt in your diet? 0. No 1. Yes, in the past 2.Yes, currently 99. No response |__|__|

d. been on an exercise programme? 0. No 1. Yes, in the past 2.Yes, currently 99. No response |__|__|

e. Reduced your alcohol intake? 0. No1. Yes, in the past 2.Yes, currently77.Nondrinker 99. No response |__|__|

f. Stopped smoking? 0. No 1. Yes, in the past 2.Yes, currently 99. No response 77.Never smokes|__|__|

g. Seen a traditional healer 0. No 1. Yes, in the past 2. Yes, currently 99. No response |__|__|

h. Taken herbal or natural remedies? 0. No 1. Yes, in the past 2. Yes, currently 99. No response

i. Done anything else? 0. No 1. Yes, in the past 2.Yes, currently 99. No response |__|__|

If yes, specify______________________

ASTHMA

3.54 Were you told by a doctor, nurse, or other healthcare professional that you have asthma? |__|__|
0. No (Go to Q3.60) 1. Yes
88. Don't know/can't recall (Go to Q3.60) 99. No response (Go to Q3.60)

3.55 Do you still have asthma? |__|__|
0. No (Go to Q3.61) 1. Yes
88. Don't know/Not sure (Go to Q3.61) 99. No response (Go to Q3.61)

3.56 Do you take medication for your asthma? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.57 Have you ever seen a traditional healer for your asthma? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.58 Are you currently taking any herbal or traditional remedy for your asthma? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.59 Have you visited a hospital/casualty department/the emergency room in the last year because of your asthma? 0. No 1. Yes
88. Don't know 99. No response

3.59.1 If Yes, how often:
0. None 1. Once 2. Twice 3. Three or more times |__|__|
88. Don't know 99. No response

EPILEPSY

3.60 Have you ever been told by a doctor, nurse, or other healthcare professional that you have epilepsy/seizure/fits? *(Circle only one)* |__|__|
0. No (Go to Q3.63) 1. Yes
88. Don't know (Go to Q3.63) 99. No response (Go to Q3.63)

3.61 Have you had a seizure in the past year? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.62 Do you take medication for your seizures? |__|__|
0. No 1. Yes, I have taken medication
2. Yes, I am still on medication.
88. Don't know 99. No response

CANCER

3.63 Has a doctor sent you for any tests to look for cancer? |__|__|

0. No (Go to Q3.66) 1. Yes

88. Don't know(Go to Q3.66) 99. No response (Go to Q3.66)

3.64 Have you ever asked the doctor to do special tests to look for cancer? |__|__|

0. No 1. Yes, If so why ___________________

88. Don't know 99. No response

3.65 What screening tests have you ever done to look for cancer?

Screening test	Done	Reason Not done					
		Put it off	Too expensive	Too painful	Too young	Fear	No response
Chest X-ray							
Stool test							
Endoscopy Stomach Large Bowel/ Colonoscopy							
Barium Enema							
Colposcopy							
Mammogram/ breast exam							
Pap smear							
PSA blood test							
Rectal Exam							

3. **66** Have you ever been told by a doctor, nurse, or other healthcare professional that you have cancer? (*Circle only one*) |__|__|

0. No (Go to Q3.70) 1. Yes

88. Don't know (Go to Q3.70) 99. No response (Go to Q3.70)

3.67 What type of cancer do you/did you have? (Multiple responses allowed) Tick all that apply |__|__||__|__||__|__|

Type of Cancer	Type of treatment						
	Surgery	Chemotherapy	Radiation	Natural Remedy	Other	Not applicable	No response
Stomach							
Lung							
Breast							
Cervical							
Prostate							
Colon							
Other							

3.68 Have you seen a cancer specialist for your care? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.69 Are you still on treatment for your cancer? |__|__|
0. No 1. Yes
88. Don't know 99. No response

ADHERENCE TO MEDICATION

You indicated that you are taking medication for your health condition (such as "High blood pressure," asthma). Some persons have identified several issues regarding their medication-taking behaviour and we are interested in your experiences. There is no right or wrong answer. Please answer each question, frankly, based on your personal experience with your taking your medication.

3.70 Are you on any medication for a health condition? |__|__|
0. No (Go to Q 3.78) 1. Yes
88. Don't know (Go to Q 3.78) 99. No response (Go to Q 3.78)

3.71 When you don't take your medication, what is the reason? (*Multiple responses allowed*) |__|__||__|__|
0. I always take my medication 1. Cannot afford to pay for it
2. I am feeling better 3. I get side effects
4. I hear there are side effects 5. I forget
6. I run out before my next doctors/clinic appointment 8. Other reason ________________
88. Don't know 99. No response

3.72 People sometimes miss taking their medications for reasons other than forgetting. Think about the past two weeks, were there any days when you did not take your medicine? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.73 Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.74 When you travel or leave home, do you sometimes forget to bring along your medication? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.75 Did you take your medicine yesterday? |__|__|
0. No 1. Yes 2. Don't remember
88. Don't know 99. No response

3.76 When you feel like your condition is under control, do you sometimes stop taking your medicine? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.77 Taking medication every day is a real inconvenience for some people. Do you ever feel burdened about your blood pressure treatment plan? |__|__|
0. No 1. Yes
88. Don't know 99. No response

SICKLE CELL DISEASE

3.78 Have you ever been tested for sickle cell disease? |__|__|
0. No (Go to Q3.81) 1. Yes
88. Don't know (Go to Q3.81) 99. No response (Go to Q3.81)

3.79 What was the result of the test? |__|__|
0. No trait/No disease 1. Sickle cell trait (SCT) 2. Sickle cell disease (SCD)
88. Don't know (Go to Q3.81)

3.80 If you know the type of trait or sickle cell disease, please write it here______________|__|__|
88. Don't know

3.81 Do you think you may be at risk of having a child with sickle cell disease? |__|__|
0. No 1. Yes
88. Don't know 99. No response

3.82 Does your partner/spouse have sickle cell trait or disease? |__|__|
0. No 1. Yes
77. Not applicable 88. Don't know 99. No response

3.83 Do any of your children have sickle cell trait or disease? |__|__|
0. No 1. Yes
77. Not applicable 88. Don't know 99. No response

SECTION 4

RISK FACTORS FOR CHIKUNGUNYA & OTHER VECTOR BOURNE ILLNESSES

4.1 Do you work outdoors?
0. No 1. Yes |__|__|
77. Not applicable 88. Don't know 99. No response
If yes, how many hours do you work outdoors on a typical day? (If *varies, estimate the average.)*
___________number of Hours |__|__|

4.2 On average, on how many days do you spend the following hours outdoors? (*Select the appropriate number of days)*

1. 6–8 am	ϒ 0	ϒ 1	ϒ 2	ϒ 3	ϒ 4	□ 5	ϒ 6	ϒ 7	|__|__|
2. 4:30–6 pm	ϒ 0	ϒ 1	ϒ 2	ϒ 3	ϒ 4	□ 5	ϒ 6	ϒ 7	|__|__|

4.3 Do you store water at your apartment/house
0. No (Go to Q 4.7) 1. Yes |__|__|
88. Don't know (Go to Q 4.7) 99. No response (Go to Q 4.7)

4.4 Where do you store water?
1. In the house 2. Outside the house 3. Both |__|__|
77. Not applicable 88. Don't know 99. No response

4.5 Where do you get the stored water? |__|__|
1. From the water faucet in my house 2. From the water faucet in my neighbourhood
3. From a well 4. From a river or stream 5. Rain water 6. Truck
7. Bought in some place (*do not include bottled water*) specify ____________________
88. Don't know 99. No response

4.6 What do you store water in? (*Tick all that apply)* |__|__| |__|__|
1. Covered tank 2. Open Tank 3. Covered drum 4. Open drum
5. Bottles 6. Other, specify________________
88. Don't know 99. No response

4.7 How is trash from your apartment/house disposed of? (*Only one response*) |__|__|
1. Picked up by a garbage truck 2. Thrown away in the public dumpster
3. Thrown away in a container 4. Burned/incinerated
5. Buried 6. Thrown away in a vacant lot
7. Thrown away in a gully 8. Thrown away in a river, lake or sea
9. Other, specify________________ 88. Don't know 99. No response

4.8 Do you have air conditioning in your home? |__|__|

0. No 1. Yes, Central air conditioning 2. Yes, window/room AC units for bedroom only
3. Yes, Window/room AC units for whole house
88. Don't know 99. No response

4.9 When you are at home, how often do you leave your windows and/or doors open? |__|__|
0.. Never 1. Rarely (less than once per week) 2 Sometimes (once per week)
3. Often (2–3 times per week) 4. Always (nearly every day)
88. Don't know 99. No response

4.10 Do all doors and windows in your home that open have screens without holes or tears?
0. No 1. Yes, All 2. Yes, some |__|__|
88. Don't know 99. No response

I will now ask you some questions about the recent Zika Virus (ZIK V) outbreak

4.11 Did/Do you have ZIK V-like symptoms? *(If answer is No then proceed to **Q 4.13**)*
0. No 1. Yes |__|__|
88. Don't Know / Can't Remember (***Go to Q 4.13***) 99. No Response

4.11.1 If yes, when did the symptoms start _______month _________year

4.12 Did you have any of the following symptoms?

Symptoms	**No**	**Yes**	**Don't Know / Remember**	**No Response**
4.12.1 Skin Rash	0	1	88	99
4.12.2 Red Eyes/Conjunctivitis	0	1	88	99
4.12.3 Fever	0	1	88	99
4.12.4 Joint Pain	0	1	88	99
4.12.5 Joint Swelling	0	1	88	99
4.12.6 Muscle Pain	0	1	88	99
4.12.7 Nausea/Vomiting	0	1	88	99
4.12.8 Headache	0	1	88	99
4.13.9 Other (if, **yes, specify**)	0	1	88	99

I will now ask you some questions about the Chikungunya Virus (CHIK V) outbreak.

4.13 For each of the following statements, please indicate your level of agreement

Knowledge	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Don't**	**No Response**
4.13.1 CHIK V is transmitted only through mosquito bites	1	2	3	4	5	88	99
4.13.2 CHIK V cannot be caught from the air	1	2	3	4	5	88	99
4.13.3 CHIK V came from an outside force (e.g., CIA, plane crash) / power (e.g., spiritual)	1	2	3	4	5	88	99
4.13.4 CHIK V can be caught by touching	1	2	3	4	5	88	99
4.13.5 CHIK V can be prevented by taking steps to avoid mosquito bites	1	2	3	4	5	88	99
4.13.6 Removing mosquito breeding sites from around homes does not reduce the chance of getting CHIK V	1	2	3	4	5	88	99
4.13.7 CHIK V could not have been reduced by more fogging in your community	1	2	3	4	5	88	99
4.13.8 Fogging is harmful to your health	1	2	3	4	5	88	99
4.13.9 CHIK V cannot be caught more than once	1	2	3	4	5	88	99

4.14 Did you have CHIK V-like symptoms? *(If answer is No then proceed to Section 5 or 6 as applicable)*

0. No 1. Yes |__|__|

88. Don't Know/Can't Remember (Go to end of module) 99. No Response

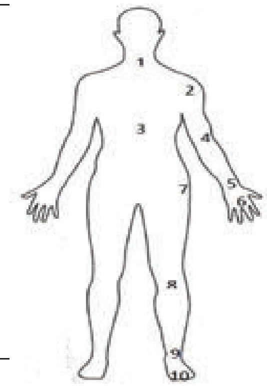
4.14.1 If yes, when did the symptoms start ________month _________year

4.15 Did you have any of the following symptoms?

Symptoms	**No**	**Yes**	**Don't Know / Remember**	**No Response**
4.15.1 Fever	0	1	88	99
4.15.2 Joint Pain	0	1	88	99
4.15.3 Severe Joint Pain	0	1	88	99
4.15.4 Joint Swelling	0	1	88	99
4.15.5 Skin Rash	0	1	88	99
4.15.6 Muscle Pain	0	1	88	99
4.15.7 Nausea/Vomiting	0	1	88	99
4.15.8 Headache	0	1	88	99
4.15.9 Other (if, **yes, specify**)	0	1	88	99

4.16 If you experienced joint pain or severe joint pain (Answer 'Yes' to Q. 4.15.2.2 or 4.15.3, above) please indicate which joints were affected using the chart provided *(Tick all that apply)*
NOTE TO INTERVIEWER: ASK RESPONDENT TO POINT TO AFFECTED JOINTS USING CHART AND TAKE PARTICIPANT THROUGH EACH OPTION.
PROBE TO DETERMINE WHETHER THE RIGHT, LEFT OR BOTH JOINTS WERE AFFECTED.

No.	Joint Affected	R	L
1	Neck		
2	Shoulder		
3	Back		
4	Elbows		
5	Wrist		
6	Hands		
7	Hips		
8	Knees		
9	Ankles		
10	Feet		



4.17 On a scale of 1 to 5, how sick were you?

(Not sick) 0 1 2 3 4 5 (Very Sick) |__|__|

4.18 As a result of CHIK V have you been bothered by any of the following?

Feelings	No	Yes	Not Applicable	Don' t Know /Remember	No Response
4.18.1 Little interest or pleasure in doing things	0	1	77	88	99
4.18.2 Feeling down, depressed or hopeless	0	1	77	88	99

4.19 Was your illness diagnosed by a medical doctor? |__|__|
0. No 1. Yes
88. Don't Know/ Can't Remember 99. No Response

4.20 Where did you seek care for CHIK V ?
0. Did not seek care (Go ***to Q4.23***) 88. Don't Know / Can't Remember 99. No Response

Health Care Facility	No	Yes	Not Applicable	Don' t Know /Remember	No Response
3.106.1 Public	0	1	77	88	99
3.106.2 Private	0	1	77	88	99
3.107.3 UHWI	0	1	77	88	99

4.21 How many visits did you make to following health practitioner(s) outside of hospital admission for treatment of CHIK V ?

1. Doctor _____ 2. Nurse_____ 3. Pharmacist____ 4. Midwife ____ 5. Healer____ |__|__|

6. Other (Specify)______ 77. Not Applicable / None / Zero ***(Go to Q4.23)***
88. Don't Know 99. No Response

4.22 Were you admitted to hospital for CHIK V ? |__|__|
0. No (Go to Q4.23) 1. Yes 88. Don't Know / Can't Remember 99. No Response

(If yes, where were you admitted?)

Type of Hospital	**No**	**Yes**	**Not Applicable**	**Don't Know /Remember**	**No Response**
4.22.1 Public	0	1	77	88	99
4.22.2 Private	0	1	77	88	99
4.22.3 UHWI	0	1	77	88	99

4.23 What did you use to treat CHIK V ?

Treatment	**No**	**Yes**	**Not Applicable**	**Don't Know /Remember**	**No Response**
4.23.1 Paracetamol – Cetamol / Panadol	0	1	77	88	99
4.23.2 NSAIDs (Cataflam / Brufen / Voltaren/ Advil / Aleve)	0	1	77	88	99
4.23.3 Religious Healing	0	1	77	88	99
4.23.4 Bissy Tea	0	1	77	88	99
4.23.5 Papaya Tea	0	1	77	88	99
4.23.6 Ganja Tea	0	1	77	88	99
4.23.7 Other (if, yes, specify________________________________)	0	1	77	88	99

4.24 How long did your first episode of illness last? ________Days |__|__|
77. Not Applicable 88. Don't Know / Can't Remember 99. No Response

4.25 Did the illness prevent you from attending work/school? |__|__|
0. No ***(Go to Q4.26)*** 1. Yes
77. Not Applicable 88. Don't Know / Can't Remember 99. No Response

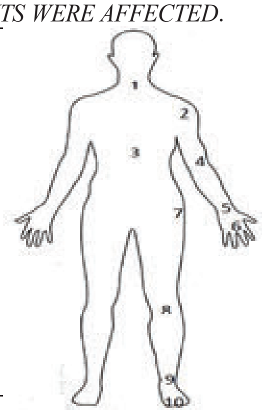
4.25.1 How many days were you absent from work because of the illness?_______Days |__|__|
77. Not Applicable 88. Don't Know / Can't Remember 99. No Response

4.25.2 How many days were you absent from school because of the illness?___________Days |__|__|
77. Not Applicable 88. Don't Know / Can't Remember 99. No Response

Relapse	**No**	**Yes**	**Not Applicable**	**Don' t Know / Remembe**	**Response**
4.26 Did you have a relapse (recurrence) of the illness? ***(If no go to Q4.32)*** *Relapse means: Did you start to feel better and then start to feel ill again.*	0	1	77	88	9
4.27 During the relapse did you have any of the following symptoms?					
4.27.1 Joint Pain	0	1	77	88	9
4.27.2 Joint Swelling	0	1	77	88	9
4.27.3 Fatigue	0	1	77	88	9
4.27.4 Muscle Pain	0	1	77	88	9
4.27.5 Feeling Sad /Depression	0	1	77	88	9
4.27.6 Other (if, yes, specify________________________________)	0	1	77	88	9
4.28 Are you currently having any of these symptoms?	0	1	77	88	9
4.29 Are you currently taking medication for any of these symptoms ?	0	1	77	88	9
4.30 Did the relapse of the illness cause you to be absent from work? (If no Go to Q4.31)	0	1	77	88	9
4.30.1 How many days did the relapse of the illness caused you to be absent from work?______Days	0	1	77	88	9
4.30.2 How many days did the relapse of the illness caused you to be absent from school?_____ Days	0	1	77	88	9

4.31 If you experienced joint pain or severe joint pain during your relapse (Answer 'Yes' to Q. 4.27.1 or 4.27.2 above) please indicate which joints were affected using the chart provided *(Tick all that apply)*
NOTE TO INTERVIEWER: ASK RESPONDENT TO POINT TO AFFECTED JOINTS USING CHART. PROBE TO DETERMINE WHETHER THE RIGHT, LEFT OR BOTH JOINTS WERE AFFECTED.

No.	**Joint Affected**	**R**	**L**
1	Neck		
2	Shoulder		
3	Back		
4	Elbows		
5	Wrist		
6	Hands		
7	Hips		
8	Knees		
9	Ankles		
10	Feet		



4.32 Has anyone in your household died from CHIK V ?
0. No 1. Yes
77. Not Applicable 88. Don't Know / Can't Remember 99. No Response

SECTION 5
WOMEN'S HEALTH

WOMEN ONLY (FOR MALES GO TO Section 6 MEN'S HEALTH)

5.1 Have you had a period in the last six months? |__|__|
0. No — 1. Yes (Go to Q 5.3)
88. Don't know (Go to Q 5.3) — 99. No response (Go to Q 5.3)

5.2 What is the reason you have not had a period? |__|__|
0. Never had a period (Go to Q5.5) — 1. Natural Menopause (Age___yrs) (Go to Q5.5)
2. Surgery (Age___yrs) (Go to Q5.5) — 3. Pregnant/Post-partum
4. Contraceptives — 5. Prescribed medications
6. Ill-health
88. Don't know — 99. No response

5.3 How long is it usually between the start of one period and the next? |__|__|
1. Less than 21 days — 2. 21–25 days
3. 26–28 days — 4. 29–31 days
5. 32–39 days — 6. 40 or more days
88. Don't know — 99. No response

5.4 Have you been on oral contraceptives or medication for irregular periods in the past year? |__|__|
0. No — 1. Yes
88. Don't know — 99. No response

The next questions ask about cervical cancer prevention. Screening tests for cervical cancer prevention can be done in different ways, including Visual Inspection with Acetic Acid/vinegar (VIA) an inspection of the surface of the uterine cervix after acetic acid (or vinegar) has been applied to it, pap smear and Human Papillomavirus (HPV) test. For both pap smear and HPV test, a doctor or nurse uses a swab to wipe from inside your vagina, take a sample and send it to a laboratory. It is even possible that you were given the swab yourself and asked to swab the inside of your vagina. The laboratory checks for abnormal cell changes if a pap smear is done and for the HP virus if an HPV test is done.

5.5 Have you ever had any of these screening tests for cervical cancer, above? |__|__|

HPV	0.No|__|	1. Yes|__|	88. Don't know	99. No response
VIA	0.No|__|	1. Yes|__|	88. Don't know	99. No response
Pap smear?	0.No|__|	1. Yes|__|	88. Don't know (Go to Q5.7)	99. No response

5. **6.** How long has it been since you had your last pap smear? (Circle only one) PROMPT
(Pap smear – scraping of the neck of the womb) |__|__|
0. Never had a pap smear — 1. Less than 1 year
2. One to two years — 3. Three or more years
4. Three years — 5. Has had hysterectomy
88. Don't know — 99. No response

5. **7** How often do you examine or feel your own breasts for lumps? (Circle only one) PROMPT. |__|__|
0. Never — 1. Every year
2. Every 6 months — 3. Every 3 months
4. Monthly (or more often)
88. Don't know — 99. No response

5.8. About how long has it been since you had your breasts examined by a doctor, nurse, or health professional?
(*Circle only one*) **PROMPT** |__|__|
0. Never — 1. Three or more years
2. One to two years — 3. Less than 1 year
88. Don't know — 99. No response

5.9 A mammogram is an x-ray of each breast to check for the possibility of breast cancer. When was the last time you had a mammogram?

0. Never had a mammogram 1. Less than 1 year
2. One to two years 3. Three or more years
88. Don't know 99. No response

5. **10** In your lifetime how many times have you been pregnant (including any miscarriages, abortions, and still-births)? (*Circle only one*) |__|__|

0. Never (Go to Q5.18) 1. 1 time
2. 2 times 3. 3–5 times
4. 6 or more times
88. Don't know (Go to Q5.18.) 99. No response (Go to Q5.18)

5. **11** How many live births have you had? |__|__|

0. None (Go to Q5.18) 1. One
2. Two 3. Three to five
4. 6 or more
88. Don't know (Go to Q5.18) 99. No response (Go to Q5.18)

So all together you had total of_____live births

5.12 How old were you when you had your first child ______yrs |__|__|

5.13 Did you have high blood pressure during any pregnancy? |__|__|

0. No 1. Yes
88. Don't know 99. No response

5.14 Did you have diabetes mellitus (sugar) during any pregnancy? |__|__|

0. No 1. Yes
88. Don't know 99. No response

5.15 Are you breastfeeding now? |__|__|

0. No (Go to Q5.17) 1. Yes
88. Don't know (Go to Q5.17) 99. No response (Go to Q5.17)

5.16 How old is this child?

5.16.1 Age in weeks ______ |__|__|
5.16.2 Age in months ___
5.16.3 Age in years _______

5.17 How long did you breastfeed your last child? *(Note to interviewer, this refers to the child before the one being currently breast fed if applicable)* |__|__|

0. Never 1. Length in months_______ 88. Don't know 99. No response

5.18 Have you ever been treated for acne as an adult? |__|__|

0. No 1. Yes
88. Don’t know 99. No response

5.19 Do you have a tendency to have dark coarse hair on the face, above the lips, the neck or upper chest? |__||

0. No 1. Yes
88. Don’t know 99. No response

END OF WOMEN’S HEALTH SECTION, SKIP TO SECTION 7

SECTION 6
MENS HEALTH

The next set of questions is about men's health including urinary and prostate problems. The prostate is a gland located just below the bladder.

In the past month:	**Not at All**	**Less than 1 in 5 Times**	**Less than Half the Time**	**About Half the Time**	**More than Half the Time**	**Almost Always**
6.1.1. How often have you had the sensation of not emptying your bladder**?**	**0**	**1**	**2**	**3**	**4**	**5**
6.1.2. How often have you had to urinate more frequently than every two hours	**0**	**1**	**2**	**3**	**4**	**5**
6.1.3 When passing urine, how often is your urine flow interrupted?	**0**	**1**	**2**	**3**	**4**	**5**
6.1.4 How often have you found it difficult to hold your urine?	**0**	**1**	**2**	**3**	**4**	**5**
6.1.5 How often have you had a weak urinary stream?	**0**	**1**	**2**	**3**	**4**	**5**
6.1.6. How often have you had to strain to start urination?	**0**	**1**	**2**	**3**	**4**	**5**
	None	**1 Time**	**2 Times**	**3 Times**	**4 Times**	**5 Times**
6.1.7. How many times do you typically get up at night to urinate?	**0**	**1**	**2**	**3**	**4**	**5**

6.2 About how long has it been since you had a rectal exam? (*Circle only one*) |__|__|
0. Never 1. Less than 1 year ago
2. 1–2 years ago 3. 3 or more years ago
88. Don't know 99. No response

6.3 Have you ever been told by a doctor or a health professional that you had an enlarged prostate?
0. No (Go to Q6.9) 1.Yes |__|__|
88. Don't know (Go to Q6.9) 99.No response (Go to Q6.9)

6.4 Was it benign?
0. No (Go to 6.6) 1.Yes |__|__|
88. Don't know (Go to 6.9) 99.No response (Go to 6.9)

6.5 How old were you when you were first told that you had benign enlargement of the prostate? |__|__|
_____________years (Go to 6.7)

6.6 Was the enlargement due to cancer? |__|__|
0. No 1.Yes
88. Don't know 99.No response

6.7 Do you take medication for your enlarged prostate? |__|__|
0. No (Go to Q6.9) 1. Yes
88. Don't know (Go to Q6.9) 99. No response (Go to Q6.9)

6.8 When you don't take your medication for enlarged prostate, what is the reason? |__|__|
0. Don't take medication 1. Cannot afford to pay for it
2. I am feeling better 3. I get side effects
4. I hear there are side effects 5. I forget
6. I run out before my next doctor's/clinic appointment 7. Other reason ___________
77. Not applicable/always take medication 88. Don't know
99. No response

6.9 How often do you have full morning erections? |__|__
0. Never (Go to Q6.11) 1. Less than once per month 2. Once per month
3. Two to three times per month 4. More than three times per month
88. Don't know (Go to Q6.11) 99. No response (Go to Q6.11)

6.10 Are erections sufficiently hard for intercourse? |__|__|
0. Never 1. Sometimes 2. Usually 3. Always
88. Don't know 99. No response

6.11 How often do you have the occurrence of sexual thoughts? |__|__|
0. Never 1. Less than 2 times in the past month
2. Two to three times in the past month 3. Once a week or more
88. Don't know 99. No response

END OF MEN'S HEALTH SECTION

SECTION 7

HEALTH SEEKING BEHAVIOUR

7.1 Where do you ***usually*** go for medical care? (Select a single response.) |__|__|
0. Nowhere 1. Public clinic *(health centre)*
2. Hospital 3. Private doctor
4. Traditional healer/herbalist/bush doctor/obeahman 6. Alternative Medicine Practitioner
7. Other________ 88 Don't know. 99. No response

7.2 Have you ever been to any person other than a doctor or nurse when you have been sick? |__||
0. No (Go to Q7.4) 1. Yes
88. Don't know (Go to Q7.4) 99. No response (Go to Q7.4)

7.3 Who was that other person/s who treated you? Multiple Responses Allowed
1. Bush doctor 2. Community healer |__|__|
3. Massage therapist 4. Iridologist |__|__|
6. Herbalist 6. Balm yard |__|__|
8. Obeah man 8. Acupuncturist
9. Reflexologist 11. Chiropractor
12. Distributors of herbal products/ alternative medicine 13. Other______________________(specify)
88. Don't know 99. No response

7.4 Approximately how often do you usually see a doctor? |__|__|

0. Never 1. Less than once per year
2. One to two times/year 3. Three to four times /year
4. More than four times/year 5. Only when sick
88. Don't know 99. No response

7.5 During the past three years, has a doctor or other health worker advised you to do any of the following? (Check all that apply)

7.5.0 Have not seen to a doctor/health worker in the past three years. (Go to Q7.6)

Advice	0.No	1.Yes	88. Don't Know	99. No response
7.5.1 Quit using tobacco or don't start				
7.5.2 Reduce salt in your diet				
7.5.3 Eat at least five servings of fruit and/or vegetables each day				
7.5.4 Reduce fat in your diet				
7.5.5 Start or do more physical activity				
7.5.6 Maintain a healthy body weight or lose weight				
7.5.7 Reduce alcohol intake				

7.6 Have you been sick in the last 12 months? |__|__|
0. No (Go to Q7.8) 1. Yes
88. Don't know/can't recall (go to Q7.8) 99. No response (Go to Q7.8)

7.7 In the last 12 months whenever you have been sick, have you ever administered your own treatment/ medication? |__|__|
0. No 1. Yes
88. Don't know 99. No response

7.8 Have you ever been hospitalized for any illness? *(not including pregnancy)* |__|__|
0. Never been hospitalized 1. Yes, in last 3 mths 2. Yes, More than 3 months ago
88. Don't know 99. No response

7.9 When did you last……?

NOTE TO INTERVIEWER, CIRCLE THE NUMBER OF THE RESPONSE INDICATED

		Never	Over 2 yrs ago	1–2 yrs ago	Within the last yr	Don't know	No response
7.9.1	Have a check up	0	1	2	3	88	99
7.9.2.	Have your hearing checked	0	1	2	3	88	99
7.9.3	Have your eyes checked	0	1	2	3	88	99
79.4	See a dentist	0	1	2	3	88	99
7.9.5	Access counselling/ mental health services	0	1	2	3	88	99
7.9.6	Access family planning health services	0	1	2	3	88	99

7.10 Are you taking any vitamin/Iron supplements? |__|__|
0. No (Go to Q7.11) 1. Yes
88. Don't know (Go to Q7.11) 99. No response (Go to Q7.11)

7.10.1 What brand/s________________________________88. Don't know 99. No response

7.11 Do you have any decayed, missing or filled teeth?
0. No 1. Yes
88. Don't know 99. No response

7.12 Have you seen a dentist or other dental health worker in the last year?
0. No (Go to Q7.14) 1. Yes
88. Don't know (Go to Q7.14) 99. No response (Go to Q7.14)

7.13 Have you had any extractions in the past year?
0. No (Go to Q7.14) 1. Yes
88. Don't know (Go to Q7.14) 99. No response (Go to Q7.14)
If yes, how many ___________

7. **14** When you brush or floss your teeth do you ever notice that your gums bleed? |__|__|
0. No 1. Yes, infrequently 1. Yes, usually
77. Don't brush/floss 88. Don't know 99. No response

HEALTH INSURANCE

7. 15 Do you have private health insurance? E.g. Medecus, Sagicor |__|__|
1. No (Go to Q7.17) 2.Yes
88. Don't know (Go to Q7.17) 99.No response (Go to Q7.17)

7.15a If yes, Are you enrolled through***: (Multiple responses allowed)***
1. Workplace 2. Spouse' workplace 3. Credit Union 4. Individual 5. Other

7. 16 Are you the: - |__|__|

(a)	Subscriber	0. No	1. Yes	88. Don't know	99. No response
(b)	Dependent	0. No	1. Yes	88. Don't know	99. No response
(c)	Both	0. No	1. Yes	88. Don't know	99. No response

7.17 Are you enrolled for Government of Jamaica Health card? |__|__|
0. No 1. Yes (Go to Q7.19)
88. Don't Know 99. No response

7.18 What are the reasons for not enrolling for a GOJ Health CARD? *(Multiple responses allowed)* |__|__|
0. I do not have any of the health conditions 1. I did not know there was such a health card
2. Subsidies too low 3. Other reason _____________
88. Don't know 99. No response

7.19 Are you enrolled for a NHF card? |__|__|
0. No 1. Yes, utilizing card
2. Yes, not utilizing card
88. Don't Know 99. No response

7.20 Are you enrolled for a JADEP card? |__|__|
0. No 1. Yes, utilizing card 2. Yes, but not utilizing card
77. Not applicable 88. Don't Know 99. No response

SECTION 8

INJURIES AND VIOLENCE

Accidents and violence have claimed a lot of lives in recent times, and it is important for us to understand how people have been affected by this, so I am going to ask you some questions about this.

8.1 In the past 30 days, how often did you use a seatbelt when driving and/or as a passenger in a private car? (Circle only one in each category) ASK BOTH QUESTIONS – PROMPT

A. As the Driver |__|__|	**B. As the front seat Passenger** |__|__|	**C. As back Passenger** |__|__|
0. Never	0. Never	0. Never
1. Always	1. Always	1. Always
2. Most times	2. Most times	2. Most times
3. Sometimes	3. Sometimes	3. Sometimes
4. Hardly/rarely ever	4. Hardly/rarely ever	4. Hardly/rarely ever
77. Never drives a car		
88. Don't know	88. Don't know	88. Don't know
99. No response	99. No response	99. No response

8.2 In the past 30 days, how often did you wear a helmet when riding a bicycle/motorcycle and as a pillion rider? (Circle only one in each category) ASK BOTH QUESTIONS- PROMPT

A. As Rider	**B. As Pillion rider**	
0. Never uses a helmet	0. Never uses a helmet	
1. Always	1. Always	Rider |__|__|
2. Most times	2. Most times	
3. Sometimes	3. Sometimes	Pillion |__|__|
4. Hardly ever	4. Hardly ever	
77. Never rides a motorcycle/bicycle	77. Never rides on a motorcycle/bicycle	
88. Don't know	88. Don't know	
99. No response	99. No response	

8.3 In the past 12 months did you have any injuries from a road traffic crash which required medical attention? (Circle only one)

0. No   1. Yes |__|__|
88. Don't know   99. No response

8.4 In the past 30 days, how many times have you driven a motorized vehicle when you have had 2 or more alcoholic drinks? (Circle only one) |_|__|

0. Don't drive   1. Number of times |__|__|
88. Don't know   99. No response

8.5 In the past 30 days, how many times have you ridden in a motorized vehicle where the driver has had 2 or more alcoholic drinks? (Circle only one) |__|__|

1. Number of times |__|__|
88. Don't know   99. No response

8.6 In the past 12 months, other than a road traffic crash, were you injured accidentally and required medical attention?

0. No (Go to Q8.9)   1. Yes
88. Don't know (Go to Q8.9)   99. No response (Go to Q8.9)

8.6.1 Please indicate which of the following the cause of this injury:

1. Fall   2.Burn   3. Poisoning   4. Cut   5. Near-drowning
7. Animal bite   8. Other (specify)____________________
88. Don't know   99. No response (Go to Q8.9)

8.6.2 Where were you when you had this injury?
1. Home 2. School 3. Workplace 4 Road/Street/Highway 7. Farm
7. Sports/athletic area 7 .Other (specify) ______________________
88. Don't know 99. No response (Go to Q8.9)

8.7 Were you admitted to the hospital because of this injury? |__|__|
0. No 1. Yes
88. Don't know 99. No response

8.8 Where did you seek medical attention because of this injury? |__|__|
0. Did not go anywhere (home remedy)
1. Hospital 2.Health centre
3. Private doctor 4. Other (specify)________
88. Don't know 99. No response

8.9 In the past twelve months, how many times were you in a violent incident in which you were injured and required medical attention? |__|__|
0. Never 1. Rarely (1–2 times)
2.Sometimes (3–5 times) 3. Often (6 or more times)
88. Don't know 99. No response

8.10 In the past 12 months, which of the following caused your most serious injury? |__|__|
0. No serious injury in the past year (Go to Q8.11) 1. Being shot with a firearm (gun)
2.A weapon (other than a firearm)
3. Being injured without any weapon (slapped, pushed, shoved) 4. Fractures or broken bones
5.Burns 6. Concussion (severe head injury)
88. Don't know 99. No response

8.10.1 How did this injury occur? |__|__|
1. I hurt myself on purpose (Go to Q8.11) 2. I hurt myself by accident (Go to Q8.11)
3. Someone else hurt me on purpose 4. Someone else hurt me by accident
88. Don't know 99. No response
8.10.2 What is the relationship between your and the person(s) who caused your injury?
1. Intimate partner 2. Parent 3. Child/brother/sister/other relative
4. Friend or acquaintance 5. Caregiver (not relative) 6.Stranger 7. Official or legal authority
8. Other (specify) ______________________
88. Don't know 99. No response

8.11 In the past month, have you witnessed a violent act? |__|__|
0. No (skip to Q8.15) 1. Yes
88. Don't know (skip to Q8.15) 99. No response (skip to Q8.15)

8.12 How many times? |__|__|
0. None (Go to Q8.15) 1. Number of times____
88. Don't know (Go to Q8.15) 99. No response (Go to Q8.15)

8.13 What were these violent acts? (Tick all that apply) |__|__| |__|__|
1. Shooting incident 2. Stabbing Incident
3. Domestic dispute 4. Rape
5. Other______________(specify)
88. Don't know 99. No response

8.14 Where were these violent acts? (Tick all that apply) |__|__|
1. At school/work 2. In your neighbourhood 3. At a store
4. At a health facility 5. In a public area where children are
6. Other Specify__________________
88.Don't know 99. No response

8.15 Do you regularly carry any object to protect yourself? |__|__|
0. No (Go 8.17)
1.Yes
88. Don't know (Go to 8.17)
99. No response (Go to 8.17)

8.16 What do you usually/ most often carry for protection? |__|__|
1. Pepper Spray
2. Sharp instrument, e.g., knife, machete
3. Acid
4. Blunt instrument, e.g., bat, board
5. Gun
6. Other________________(specify)
88. Don't know
99. No response

Interpersonal Violence

I will now be asking some questions on violence which are of a more sensitive nature. Please answer as honestly and frankly as possible. The information you give will be treated confidential.

8.17 Looking back on your childhood did a parent or adult in the household ever push, grab, shove, slap, kick, hit, burn or throw something at you? |__|__|
0. Never
1. Very rarely
2.Once a month
3. Once a week
4. Almost daily
88. Don't know
99. No response

8.18 In their lives, persons experience different forms of violence from partners, relatives, other people that they know, or strangers. If you don't mind, I would like to briefly ask you about some of these situations. At anytime in your life, did anyone ever force you to have sexual intercourse (with penetration) against your will?

0. No (Go to Section 9)
1. Yes |__|__|
88. Don't remember (Go to Section 9)
99. No response (Go to Section 9)

8.18.1 How old were you the first time this ever happened to you? Age |__|__| |__|__|
1.Not sure, more than 12
88. Don't remember
99. No response

8.18.2 At that time, what was your relationship with the person(s) who forced you to have sexual intercourse against your will? |__|__|
1. Intimate Partner
2. Ex-partner
3. Father/Step-father
4. Mother/Step-mother
5. Other relative
6. Teacher
7. Neighbour/Friend/Acquaintance
8. Stranger
9.Other (specify) ______________________
88. Don't know
99. No response

SECTION 9
NEIGHBOURHOOD CHARACTERISTICS

Crime and Safety **9.1** How worried are you about the following things in your neighbourhood:	Never	A little	Sometimes	Most times	Always	Don' t Know	No Response
9.1.1 Drug Dealers or users hanging around	1	2	3	4	5	88	99
9.1.2 Having property stolen	1	2	3	4	5	88	99
9.1.3 Walking alone during the day	1	2	3	4	5	88	99
9.1.4 Letting children go outside during the day	1	2	3	4	5	88	99
9.1.5 Letting children go outside during the night	1	2	3	4	5	88	99
9.1.6 Being robbed	1	2	3	4	5	88	99
9.1.7 Being murdered	1	2	3	4	5	88	99
Physical Disorder **9.2** How often are these things a problem or are found in your neighbourhood?	Never	A Little	Sometimes	Most times	Always	Don' t Know	No Response
9.2.1 Litter or trash on the sidewalks or street	1	2	3	4	5	88	99
9.2.2 Graffiti on buildings and walls	1	2	3	4	5	88	99
9.2.3 Abandoned cars	1	2	3	4	5	88	99
9.2.4 Vacant, abandoned or boarded up buildings	1	2	3	4	5	88	99
9.2.5 Houses and yards not kept up	1	2	3	4	5	88	99
Social Disorder **9.3** How often these things are a problem or are found in your neighbourhood?	Rarely	A Little	Sometimes	Most times	Frequently	Don' t Know	No Response
9.3.1 Drunks hanging around	1	2	3	4	5	88	99
9.3.2 Unemployed youth hanging around	1	2	3	4	5	88	99
9.3.3 Young adults hanging around	1	2	3	4	5	88	99
9.3.4 Gang Activity	1	2	3	4	5	88	99

9.4 For each of these statements, please tell me whether you strongly agree, agree, disagree or strongly disagree.	Strongly Disagree	Disagree	Agree	Strongly Agree	Don ' t	No Response
9. 4.1 This is a close-knit neighbourhood.	1	2	4	5	88	99
9.4.2 People around here are willing to help their neighbours.	1	2	4	5	88	99
9.4.3 People in this neighbourhood generally don't get along with each other.	1	2	4	5	88	99
9.4.4 People in this neighbourhood do not share the same values.	1	2	4	5	88	99
9.4.5 People in this neighbourhood can be trusted.	1	2	4	5	88	99

9.5 For each of the following, please tell me if it is very likely, likely, unlikely or very unlikely that people in your neighbourhood would act in the following manner.	Very Unlikely	Unlikely	Likely	Very Likely	Don't	No Response
9.5.1 If a group of neighbourhood children were skipping school and hanging out on a street corner, how likely is it that your neighbours would do something about it?	1	2	4	5	88	99
9.5.2 If some children were spray-painting graffiti/slogans on a local building, how likely is it that your neighbours would do something about it?	1	2	4	5	88	99
9.5.3 If a child was showing disrespect to an adult, how likely is it that people in your neighbourhood would scold that child?	1	2	4	5	88	99
9.5.4 If there was a fight in front of your house and someone was being beaten or threatened, how likely is it that your neighbours would break it up?	1	2	4	5	88	99
9.5.5 Suppose that because of budget cuts the post office/school closest to your home was going to be closed down. How likely is it that neighbourhood residents would organize to try to do something to keep it open?	1	2	4	5	88	99

SECTION 10
LIFESTYLE

Now I am going to ask you some questions about your lifestyle. Remember anything you tell me will be held in confidence.

10.1 In general, how satisfied are you with your life? Would you say you are…? (Circle only one) PROMPT |__|__|
0. Not satisfied
1. Very satisfied
2. Satisfied
3. Somewhat satisfied
4. Very dissatisfied
88. Don't know
99. No response

10.2 Have you done anything for relaxation in the past week? PROBE |__|__|
0. No (Go to Q10.4)
1. Yes
88. Don't know (Go to Q10.4)
99. No response (Go to Q10.4)

10.3 What do you do for relaxation? (Multiple responses allowed) |__|__||__|__|
0. Nothing
1. Watch television/movies at home
2. Rest
3. Go out to the movies, social functions
4. Go to church
5. Smoke
6. Drink alcohol
8. Impulsive Sex
8. Other__________________(specify)
88. Don't know
99. No response.

10.4 What time do you usually go to sleep? ___H___M____(AM/PM) |__|__|

10.5 What time do you usually wake up? ___H___M____(AM/ PM) |__|__|

10.6 Do you wake up several times during your sleep? |__|__|
0. No
1. Yes
88. Don't know
99. No response

10.7 Do you snore loudly (louder than talking or loud enough to be heard through closed doors)? |__||
0. No 1. Yes
88. Don't know 99. No response

10.8 Has anyone observed you not breathing during sleep? |__|_|
0. No 1. Yes
88. Don't know 99. No response

10.9 Do you often feel tired, fatigued, or sleepy during the day? |__|_|
0. No 1. Yes
88. Don't know 99. No response

10.10 In general, would you say your health is? |__|__|
1. Excellent 2.Very Good
3. Good 4. Fair
5. Poor 88. Don't know 99. No response

10.11 Without assistance are you able:
a. Dress 0. No 1, Yes 88. Don't Know 99 No response
b. Feed yourself 0. No 1, Yes 88. Don't Know 99 No response
c. Prepare meals 0. No 1, Yes 88. Don't Know 99 No response
d. Walk independently 0. No 1, Yes 88. Don't Know 99 No response
e. Go to the toilet 0. No 1, Yes 88. Don't Know 99 No response
f. Do own hygiene? 0. No 1, Yes 88. Don't Know 99 No response

10.12 Do you currently smoke any form of tobacco (cigarettes, cigars, beady, etc.)? |__|__|
0. Never smoked (Go to Q10.18) 1. No, Former, smoker
2. Yes, not every day 3. Yes, daily
88. Don't know (Go to Q10.18) 99. No response (Go to Q10.18)

10.13 About how old were you when you first started smoking tobacco products (cigarettes, beady, etc)? |__||
Age in years _______
88. Don't know/don't remember 99. No response

10.14 Have you tried to stop smoking tobacco products?
0. No (Go to Q 10.18) 1. Yes, no longer smoke
2. Yes, still smoke (Go to Q10.18)
88. Don't know (Go to Q 10.18) 99. No response (Go to Q 10.18)

10.15 When did you stop smoking tobacco products? (Number of months/years) PROMPT |__|__|
1. Less than 1 month ago 2. 1–5 months ago
3. 6–11 months ago 4. 1–3 years ago
9. 4–5 years ago 9. More than 5 years ago
88. Don't know 99. No response

10.16 On average how many of the following tobacco products do you smoke and how frequently?

Product	**0. Never Smokes**	**1. Daily**	**2. Weekly**	**3. Monthly**	**88. Don't Know**	**99. No response**
Manufactured Cigarettes						
Hand-rolled Cigarettes/Beady						
Pipes						
Cigars						
Shisha/Hooka						
E-cigarettes						
Other, specify________						

10.17 Have you smoked at least 100 cigarettes in your life? |__|__|
0. No 1. Yes
88. Don't know 99. No response

10.18 During the past thirty (30) days on how many days did someone in your home smoke when you were present?__________________days |__|__|

10.19 During the past thirty (30) days on how many days did someone smoke in closed areas in your workplace (*in the building, in a work area or a specific office*) when you were present?________________days|__|__|

10.20 Have you ever smoked ganja/marijuana? (Circle only one) |__|__|
0. No (Go to Q10.23) 1. Yes
88. Don't know (Go to Q10.23) 99. No response (Go to Q10.23)

10.21 Do you smoke ganja now? |__|__|
0. No (Go to Q10.23) 1.Yes
88. Don't know (Go to Q10.23) 99. No response (Go to Q10.23)

10.22 How often do you currently smoke ganja? (Circle only one) PROMPT |__|__|
1. Less than once per week 2. One to three times per week
3. Four to six times per week 4. Daily
88. Don't know 99. No Response

10.23 Do you use ganja in any other form? |__|__|
0. No (Go to Q10.26) 1. Yes
88. Don't know (Go to Q10.26) 99. No response (Go to Q10.26)

10.24 In what other form/s do you use it? PROMPT MULITPLE RESPONSES ALLOWED |__|__||__|
1. Tea 2. Used in cooking
3. Seasoned spliff 4. Baked products
5. Other____________________(specify)
88. Don't know 99. No response

10.25 Have you experienced any of the following effects after ganja use? |__|__|
0. None 1. Panic attacks
2. Memory impairment 3. Hearing voices
4. Seeing objects that are not really there 5.Paranoia /Mistrusting everyone
6. Other_______________(please specify)
88. Don't know 99. No response

10.26 Have you ever used crack or cocaine? |__|__|
0. No 1. Yes
88. Don't know 99. No response

10.27 Do you use any other kind of recreational drugs? E.g., ecstasy, |__|__|
0. No 1. Yes
88. Don't know 99. No response

10.28 Do you ever drink alcohol? (Including home-made wines and liqueurs) |__|__|
0. No (Go to Q 10.36) 1.Yes (Go to Q 10.31)
2. Yes, but Stopped drinking
88. Don't know (Go to Q10.36) 99. No response (Go to Q10.36)

10.29 How long ago did you stop? ________________________ |__|__|
88. Don't know 99. No response

10.30 What was the main reason you stopped drinking? Reason_______________________(Go to Q10.36)
88. Don't know 99. No response

10.31 When was the last time you had any alcohol: beer, wine, liquor or home-made wines, liqueurs, etc.?
(*Circle only one)* |_|_|
0. More than one year ago (Go to Q10.36) 1. In the past year
2. In the month
88. Don't know 99. No response

10.32 When you do drink?? |__|__|
1. Daily 2. Mainly on weekends
3. Other ________________________________
88. Don't know 99. No response

10.33 (Tick each response)	0	1	2	3	4	88	99
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2–4 times amonth	2–3 times a week	4 or more times a week		
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more		
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily		
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily		
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily		
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily		
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily		
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily		
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year		
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking	No		Yes, but not in the last year		Yes, during the last year		

10.34 During the past thirty (30) days what was the largest number of standard drinks that you had in a single drinking occasion?
_________drinks |__|__|

10.35 During the past thirty (30) days how many times did you have four (Females) /five (Males) or more drinks in a single drinking occasion?
_________days |__|__|

Now I am going to ask you about another common Jamaican behaviour

10.36 Have you ever bleached your skin?
0. No (Go to Section 11) 1. Yes, in the past
2. Yes, last 2 wks
88. Don't know (Go to Section 11) 99. No response (Go to Section 11)

10.37 Which products do you use to bleach your skin? ________________________________

SECTION 11

EMOTIONS AND MENTAL HEALTH

*The following two questions are about activities you might do during a typical day. Does YOUR HEALTH NOW LIMIT YOU in these activities? **If so, how much?***

11. 1 MODERATE ACTIVITIES, such as moving a table, pushing a vacuum cleaner, playing cricket, or walking
0. No, Not Limited at All 1.Yes Limited a Lot 2. Yes, Limited a Little |__|__|
88. Don't know 99. No response

11. 2 Climbing SEVERAL flights of stairs: |__|__|
0. No, Not Limited at all 1. Yes, Limited a Lot
2. Yes Limited a Little 88. Don't know 99. No response

During the PAST 4 WEEKS
Have you had any of the following problems with your work or other regular activities AS A RESULT OF YOUR PHYSICAL HEALTH?

11. 3 ACCOMPLISHED LESS than you would like: |__|__|
0. No 1. Yes
88. Don't know 99. No response

11.4 Were limited in the KIND of work or other activities: |__|__|
0. No 1. Yes
88. Don't know 99. No response

Were you limited in the kind of work you do or other regular activities AS A RESULT OF ANY EMOTIONAL PROBLEMS (such as feeling depressed or anxious)?

11.5 ACCOMPLISHED LESS than you would like: |__|__|
0. No 1. Yes
88. Don't know 99. No response

11.6 Didn't do work or other activities as CAREFULLY as usual: |__|__|
0. No 1.Yes
88. Don't know 99. No response

11.7 How much did ***PAIN*** interfere with your normal work (including both work outside the home and housework)? |_|_|
0. Not At All 1. A Little Bit
2. Moderately 3.Quite A Bit
4. Extremely 88. Don't know 99. No response

For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the PAST 4 WEEKS –

11.8 Have you felt calm and peaceful? |__|__|
0. None of the Time 1.All of the Time
2. Most of the Time 3.A Good Bit of the Time
4. Some of the Time 5.A Little of the Time
88. Don't know 99. No response

11.9 Did you have a lot of energy? |__|__|
0 .None of the Time 1. All of the Time
2 .Most of the Time 3. A Good Bit of the Time
4 .Some of the Time 5. A Little of the Time
88. Don't know 99. No response

11.10 Have you felt downhearted and blue? |__|__|

0. None of the Time	1.All of the Time
2. Most of the Time	3.A Good Bit of the Time
4. Some of the Time	5.A Little of the Time
88. Don't know	99. No response

11.11 How much of the time has your PHYSICAL HEALTH OR EMOTIONAL PROBLEMS interfered with your social activities (like visiting with friends, relatives, etc.)? |__|__|

0. None of the Time	1.All of the Time
2.Most of the Time	3. A Good Bit of the Time
4. Some of the Time	5. A Little of the Time
88. Don't know	99. No response

11. 12 During the past month have you been

Bothered a lot by:	0.No	1.Yes	88.DK	99. No Response
a. Little interest or pleasure in doing things	☐	☐	☐	☐
b. Feeling down, depressed or hopeless	☐	☐	☐	☐
c. Feeling sad or lonely	☐	☐	☐	☐
d. Feeling guilty or worthless	☐	☐	☐	☐
e. Change in appetite	☐	☐	☐	☐
f. Change in sleeping patterns	☐	☐	☐	☐

11.13 Have you ever seriously considered suicide? |__|__|

0. No (Go to Section 12)	1. Yes
88. Don't know (Go to Section 12)	99. No response (Go to Section 12)

11.14 How recently did you consider suicide? |__|__|

0. Never (Go to Section12)	1. Less than six months ago
2. Six months to a year ago.	3. One to two years ago
4. Two to five years ago	5. More than five years ago.
88. Don't know	99. No response

11. 15 Have you ever made a plan to commit suicide? |__|__|

0. No	1. Yes
88. Don't know	99. No response

11.16 Have you ever attempted suicide? |__|__|

0. No	1. Yes
88. Don't know	99. No response

SECTION 12

PHYSICAL ACTIVITY LEVELS

Now I am going to ask you some questions about your level of physical activity.

12.1 When you consider your body weight, do you consider yourself to be - PROMPT |__|__|

1. The right weight
2. A little overweight
3. A lot overweight
4. Under weight

88. Don't know
99. No response

12.2. What is your main leisure time activity? (Circle only one) PROMPT |__|__|

1. Read, watch television and do things that do not require physical activity.
2. Walk, ride a bicycle or other physical activity for at least 4 hours a week. *(E.g., walking, fishing andhunting, light garden work, etc.)*
3. Physical activities to maintain fitness, *(e.g., running, gymnastics, dancing, swimming, ball games or doingheavy garden work or its equivalent).*
4. Regular training, several days a week, for competitions (*e.g., running, ball games or other physically heavysports)*

88. Don't know
99. No response

12.3 How many times a week are you engaged in the activities you mentioned? INTERVIEWER WILL REMIND PARTICIPANT OF LEISURE TIME ACTIVITY MENTIONED |__|__|

0. Never
1. Less than once per week
2. 1–3 times a week
3. 4–6 times a week, Daily

88. Don't know
99. No response

12.4 How many minutes a day do you spend walking, cycling or in any other physical activity on your way to work? (Include both the time spent going to and coming from work*) **PROMPT*** |__|__|

0. I don't work or get physical activity on the way to work
1. Less than 15 minutes a day
2. 15–29 minutes a day
3. 30–44 minutes a day
4. 45–59 minutes a day

11. One hour or more a day
88. Don't know
99. No response

12.5 When was the last time you tried to increase your physical activity? PROMPT |__|__|

0. Never
1. More than 6 months ago
2. 1–6 months ago
3. During the last month

88. Don't know
99. No response

12.6 What would motivate you to become physically active? (*Multiple responses allowed*) |__|__| |__|__|

1. I think I do enough physical activity
2. Adequate space/facility in my community
3. Facilities at my workplace
4. The benefits to my health
5. Having someone to physical activity with
6. Having the proper gear

11. Other (Please state) ____
88. Don't Know
99. No response

12.7 Here are a number of reasons why people find it difficult to exercise. Which, if any, are most important to you? ***(Mark ALL that apply)*** |__|__| |__|__| |__|__|

Reason	0.No	1.Yes	88.Dont know	99.No Response
1.Lack of time due to other commitments				
2.Ill health, injury or disability				
3. Surroundings not safe to do physical activity				
4. I feel too fat/overweight				
5. I do not enjoy exercise				
6. Lack of suitable local facilities				
7. I am too old				
8. Lack of money				
9. Lack of transport				
10. I have nobody to go with				
11. Traffic, road safety or environment puts me off				
12. The weather puts me off				
13. I don't have the skills or confidence to do it				
14. Other, specify				

Think about all the Vigorous activities that you did in the last 7 days. Vigorous activities refer to activities that take extra physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

12.8 During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, running, basketball, football, tennis, or fast bicycling? |__|__|

(a) 0. [___] No vigorous physical activities (Go to Q12.9) 1.____**days per week**

(b) How much time did you usually spend doing **vigorous** physical activities on one of those days? |__|_|

___**Hours per day** _______ **minutes per day**

88. Don't know/Not sure 99. No response

Think about all the moderate activities that you did in the last 7 days. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

12.9 During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, doubles tennis? Do not include walking. |__|__|

(a) 0. No moderate physical activities (Go to Q12.10) 1. ____ **Days per week**

(b) How much time did you usually spend doing **moderate** physical activities on one of those days? |__|_|

____ **Hours per day** ____ ____ **minutes per day**

88. Don't know/Not sure 99. No response

Think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

12.10 During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time? |__||

(a) 0. No walking ____ **days per week**

88. Don't know/Not sure 99. No response

(b) How much time did you usually spend **walking** on one of those days? |__||

____ **Hours per day** ____ **minutes per day**

88. Don't know/Not sure 99. No response

The last question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

12. **11** During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

____ **Hours per day_____ minutes per day**

88. Don't know/Not sure 99. No response

SECTION 13

DIETARY HABITS

Now I am going to ask you some questions about your dietary habits.

I'm going to read two statements that people have made about their food situation. For these statements, please tell me whether the statement was <u>often</u> true, <u>sometimes</u> true, or <u>never</u> true for (you/your household) in the last 12 months.

13.1 The first statement is,"The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that <u>often</u>, <u>sometimes</u>, or <u>never</u> true for (you/your household) in the last 12 months? |___||

0. Never true
1. Often true
2. Sometimes true
88. Don't know
99. No Response

13.2 "(I/we) couldn't afford to eat healthy/balanced meals." Was that <u>often</u>, <u>sometimes</u>, or <u>never</u> true for (you/your household) in the last 12 months? |__|__|

0. Never true
1. Often true
2. Sometimes true
88. Don't know
99. No Response

13.3 In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever reduce the size of your meals or skip meals because there wasn't enough money for food? |___|_|

0. No
1. Yes
88 Don't know
99 No response

13.4 In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

0. No
1. Yes |__|__|
88 Don't know
99 No response

13.5 In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

0. No
1. Yes |__|__|
88 Don't know
99 No response

These next questions are about the fruits and vegetables ***you*** *ate or drank during the past 30 days. Please think about all forms of fruits and vegetables, including cooked or raw, fresh, frozen or canned. Please think about all meals, snacks, and food consumed at home and away from home.*

13.6 During the past month, how many times per day, week, or month did you drink 100% PURE fruit juices? Do not include fruit-flavoured drinks with added sugar or fruit juice you made at home and added sugar to. Only include 100% juice.

0. Never
1. |__|__| per day
2.|__|__| per week
3. |__|__| per month
88. Don't know
99. No response

13.7 During the past month, not counting juice, how many times per day, week, or month did you eat fruit? Count fresh or canned fruit.

0. Never — 1. |___|___| per day
2. |___|___| per week — 3. |___|___| per month
88. Don't know — 99. No response

13.8 During the past month, how many times per day, week, or month did you eat cooked or canned beans, such as baked, black, broad, gungo peas, beans in soup, soybeans, red peas, tofu, or lentils. Do NOT include stringbeans

0. Never — 1. |___|___| per day
2. |___|___| per week — 3. |___|___| per month
88. Don't know — 99. No response

13.9 During the past month, how many times per day, week, or month did you eat dark green vegetables for example broccoli or dark leafy greens, including callaloo, pakchoi, collard greens, or spinach?

0. Never — 1. |___|___| per day
2. |___|___| per week — 3. |___|___| per month
88. Don't know — 99. No response

13.10 During the past month, how many times per day, week, or month did you eat orange-coloured vegetables for example carrots, pumpkin?

0. Never — 1. |___|___| per day
2. |___|___| per week — 3. |___|___| per month
88. Don't know — 99. No response

13.11 During the past month, how many times per day, week, or month did you eat other vegetables, for example, lettuce, okra, and cabbage?

0. Never — 1. |___|___| per day
2. |___|___| per week — 3. |___|___| per month
88. Don't know — 99. No response

13.12 During the past month, how many times per day, week, or month did you eat fish, for example, mackerel, sardine, whole fish, and sliced-fish?

0. Never — 1. |___|___| per day
2. |___|___| per week — 3. |___|___| per month
88. Don't know — 99. No response

13.13 During the past month, how many times per day, week, or month did you consume dairy or dairy products (not to include condensed milk) for example, milk, cheese, flavoured milk, and powdered milk?

0. Never — 1. |___|___| per day
2. |___|___| per week — 3. |___|___| per month
88. Don't know — 99. No response

13.14 During the past month, how often did you drink regular soda or sugar-sweetened fruits drinks (such as box/bag "juice," lemonade and Kool-Aid) do not include diet beverages?

0. Never — 1. |___|___| per day
2. |___|___| per week — 3. |___|___| per month
88. Don't know — 99. No response

13.15 Do you usually add salt/salty sauce to your meals at the table?

0. No (Go to Q13.17) — 1. Yes
88 Don't know (Go to Q13.17) — 99 No response (Go to Q13.17)

13.16 How often is salt/salty sauce/seasonings added in cooking or preparing foods in your household?

0. Never 1. Rarely 2. Sometimes 3 Often 4. Always
88 Don't know 99 No response

13.17 How often do you eat processed foods high in salt, e.g., banana chips, canned mixed vegetables, frankfurters?

0. Never 1. Rarely 2. Sometimes 3 Often 4. Always
88 Don't know 99 No response

13.18 Has a doctor or other health professional ever advised you to reduce sodium or salt intake? |__|_|
0. No 1. Yes
88 Don't know 99 No response

13.19 In the last 2 weeks, have you tried reducing your fat intake (such as oil, butter or margarine, mayonnaise, skinand visible fat on meat)? |__|__|
0. No 1. Yes
88 Don't know 99 No response

13.20 What is your main method of meat preparation when you cook at home? |__||
0. Do not eat meat (Go to Q13.22) 1. Frying 2. Stewing
3. Steaming/Broiling 4. Baked/grilled/jerk/roast
88 Don't know 99 No response

13.21 What is the main method of meat preparation when you eat outside the home? |_|__|
1. Frying 1. Stewing
3. Steaming/Broiling 4. Baked/grilled/jerk/roast
88 Don't know 99 No response

13.22 Are you on any special diet (weight loss, vegetarian, diabetes, low salt, and gluten free)? |__|_|
0. No 1 Yes (vegetarian) specify Protein source.________________
2. Yes (specify special diet)
Specify_____________________________
88. Don't know 99. No response

13.23 During a usual week, do you eat at fast food places such as Burger King, KFC, Tastee, Juici Patties, Mother's, Pizza Hut, Dominos', Wendy's, and Island Grill? |__|__|
0. No 1. |__|__| Day(s)
2. |__|__| Week(s
88. Don't know 99. No response

13.24 Are you aware of the Jamaican Food Groups? |__|__|
0. No 1. Yes (specify those you know)
Specify_______________________________________
88. Don't know 99. No response

13.25 When buying groceries or ready to eat pre-packaged foods (e.g., donuts, biscuits/cookies, chips) and eating out at restaurants or fast-food places do you: (if No to any question below go to Q13.27) **PROBE**

	0. No	1. Yes	88. Don't Know	99. No response
a. read the ingredient list on packages				
b. pay attention to nutrition claims (such as "low fat" or "No cholesterol")				
c. read the nutrition facts section (e.g., number of servings or sodium content)				

13.26 Having read the information on the food package or container; my decision to purchase the item(s) is influenced by?

	0. No	1. Yes	88. Don't Know	99. No response
a. the ingredient list on packages				
b. nutrition claims (such as "low fat" or "No cholesterol")				
c. the nutrition facts section (e.g. number of servings or sodium content)				

13.27 Are you aware of the Food Based Dietary Guidelines for Jamaica? |__|__|
0. No 1. Yes
88. Don't know 99. No response

SECTION 14
SEXUAL PRACTICES

NOTE TO INTERVIEWER: AIM TO INTERVIEW PARTICIPANTS IN PRIVACY

PLEASE OMIT THIS SECTION IF NO PARENTAL CONSENT OBTAINED TO ANSWER QUESTIONS ON SEXUAL PRACTICES.

Now I am going to ask you some important questions about your health. Although it is private, we hope that you will share some information with us so we can better understand some of the things that affect people's lives and their health.

14.1 Have you ever had sex? (i.e., having sexual intercourse) |__|__|

0. No (Go to Section 15) 1. Yes
88. Don't know (Go to Section 15) 99. No response (Go to Section 15)

14.2 How old were you when you had your first sexual intercourse**?______________*years*** |__|__|

14.3 Have you been sexually active (sexual intercourse) within the past year? |__|__|

0. No (Go to Q14.8) 1. Yes
88. Don't know (Go to Q14.8) 99. No response (Go to Q14.8)

14.4 How often do you usually have sex? (Circle only one) PROMPT |__|__|

1. More than 3 times/week 2. 1–3 times/week
3. 1–3 times/month 4. Less than once per month
88. Don't know 99. No response

14.5 Which of the following birth control /family planning methods do you use during sexual intercourse?
(Tick all that apply) |__|__| |__|__|

Birth Control Methods	Last	Usual
1. None		
2. Withdrawal		
3. Condom		
4. Injection (Depo Provera)		
13. Regular birth control pill		
13. Morning after pill		
13. Sponge, cream or diaphragm		
13. IUD		
13. Implants		
13. Some other method____________________*(specify)*		
88. Don't know		
99. Non-response		

14.6 About how many different persons have you had sexual intercourse with in the past year? (Ask respondent to estimate the number if necessary) Circle only one |__|__|

1. One (1) person 2. Two (2) persons
3. Three (3) – five (5) persons 4. Six (6) – ten (10) persons
13. More than ten (10) persons
88. Don't know 99. No response

14.7 ***If you have more than one sexual partner***, do you use a condom with your main partner or other partner, how often do you use a condom?

	Frequency				
Partner	**0.Never**	**1. Sometimes**	**2.Always**	**Don't know/don't remember**	**99. No response**
Main Partner					
Other Partner					
Both					

14.8 Have you ever had a sexually transmitted infection or VD? (e.g., discharge, sore) (Circle only one) |__|__|

0. No (Go to Section 15) 1. Yes
88. Don't know (go to Section 15) 99. No response (Go to Section 15)
If yes, when did it occur ___________

SECTION 15
SOURCES OF INFORMATION

15.1 If you needed to get information on health, where would you go first

Interviewers please fill in as follows 1– yes, 77 – NA

	General health	Dental Care	Physical Activity	Nutrition	Smoking	Mental Health	Disease
Television							
Radio							
Library/ Books							
Internet							
Brochures, Pamphlets, etc.							
Newspaper							
Doctor/Nurse							
Other Health Workers							
Family/Parent							
Friend/Co-worker							
NGO							
H. Edu. Sess. (School)							
H. Edu. Sess. (Community)							
Health Fairs							
Exercise Specialist							
Fitness Trainer							
Other							

15.2. How often do you have someone help you read medical health brochures? |__|__|

0. Never 1. Occasionally 2. Sometimes 3. Often 4. Always
88. Don't know 99.No response

15.3 How confident are you in filling out medical forms by yourself? |__|__|

0. Not at all 1. Little 2. Somewhat 3. Quite 4. Extremely
88. Don't know 99.No response

15.4 How often do you have problems learning about your medical condition because of difficulty understanding written information? |__|__|

0. Never 1. Occasionally 2. Sometimes 3. Often 4. Always
88. Don't know 99.No response

15.5 Would you be willing to participate in another survey like this, by:

a. Telephone interview 0 .No 1. Yes 88. Don't know 99.No response |__|__|
b. Face-to-face Interview 0. No 1. Yes 88. Don't know 99. No response |__|__|

THANK YOU FOR PARTICIPATING IN THE JAMAICAN HEALTHY LIFESTYLE SURVEY

END OF QUESTIONNAIRE

Interviewers: Kindly check questionnaire before leaving household to ensure that it is complete.
Kindly make the necessary arrangements with study participant to return to perform blood pressure, fasting blood glucose and cholesterol tests, and body measurements.

How would you assess the following factors?

Community	Excellent	Good	Fair	Poor
Condition of homes in area				
Amount of noise in area (less is better)				
Air quality				
Condition of Streets				
Condition of yards and sidewalks				
Overall rating of the community				
House	Excellent	Good	Fair	Poor
Physical condition of the home				
Internal cleanliness of the home				
Physical condition of the furnishings				
External appearance of the home				
Overall rating of the home				

JAMAICA HEALTH AND LIFESTYLE SURVEY III
2016

FORM 1: PULSE AND BLOOD PRESSURE MEASUREMENT

QUESTIONNAIRE ID NO.	I.D. OF INTERVIEWER |___|___|
DATE OF EXAM______/_____/______ DD MM YY	

Now I will explain the procedure for measuring your pulse and blood pressure. It is important that you remain relaxed and seated for the measurement which will take about 15 minutes. Please do not cross your feet or legs during the measurements. I will wrap the blood pressure cuff around your arm, take your pulse and then inflate the cuff. You will feel a sensation of pressure on your arm when the cuff is inflated. I will be inflating the cuff a maximum of 5 times. While I am measuring your blood pressure, it is best if we do not talk. If you have any questions, I will be happy to answer them for you before or after the measurement is taken. I will tell you the results of the measurements afterward.

1. Have you had any food, alcohol, coffee or cigarettes within the last 30 minutes?	Food: 0 [ ] N 1 [ ] Y Alcohol: 0 [ ] N 1 [ ] Y Coffee: 0 [ ] N 1 [ ] Y Cigarettes: 0 [ ] N 1 [ ] Y
2. Arm circumference:	[____|____|____| . |____|
3. Cuff size selected:	0 [ ] Small adult 9 (18–25 cm) 1 [ ] Adult (25–35 cm) 2 [ ] Large (33–47 cm) 3 [ ] Thigh (>47 cm)
4. Arm selected:	0 [ ] Right 1 [ ] Left ______________________ Reason
5. First blood pressure measurement: 0 [ ] BP refused – Reason : ______________ 1 [ ] BP not done – Reason: ______________	|____|____|____| / |____|____|____| SBP DBP
5. Pulse rate:	|____|____|____|
6. Second blood pressure measurement:	|____|____|____| / |____|____|____| SBP DBP
6. Pulse rate for 30 seconds:	|____|____|____|
7. Third blood pressure measurement:	|____|____|____| / |____|____|____| SBP DBP
7. Pulse rate for 30 seconds:	|____|____|____|

JAMAICA HEALTH & LIFESTYLE SURVEY III 2016

FORM 2: BODY MEASUREMENTS AND PHYSICAL ACTIVITY

QUESTIONNAIRE ID NO.	I.D. OF INTERVIEWER |___|___|
DATE OF EXAM______/_____/______ DD MM YY	

Now I am going to measure your height, weight, and waist and hip measurements. I will explain each one as we do it. WEIGHT RECORD SCALE IDENTIFICATION NUMBER	|____|____|____| . |____| kg |____|____|
HEIGHT	|____|____|____| . |____| cm |____|____|____| . |____| cm
WAIST CIRCUMFERENCE What clothing was the measurement taken over?	1. |____|____|____| . |___| cm 2. |____|____|____| . |___| cm 3. |____|____|____| . |___| cm 0 [ ] No clothing: skin 1 [ ] Shirt or dress 2 [ ] Trousers only 3 [ ] Shirt & trousers
BUTTOCKS (HIP) CIRCUMFERENCE What clothing was the measurement taken over?	1. |____|____|____| . |___| cm 2. |____|____|____| . |___| cm 3. |____|____|____| . |___| cm 0 [ ] No clothing: skin 1 [ ] Shirt or dress 2 [ ] Trousers only 3 [ ] Shirt & trousers
Thickness of upper body covering:	0 [ ] None 1 [ ] Thin 2 [ ] Thick
Thickness of lower body covering:	0 [ ] None 1 [ ] Thin 2 [ ] Thick

AXIMETRY DATA

Device Number ______________________________

What hand does the participant usually use [ ] RIGHT HAND [ ] LEFT HAND

Date the DEVICE DISTRIBUTED: DATE:______/_____/______ Time 0 [ ] AM
1 [ ] PM
DD MMM YY

Date the DEVICE RETURNED: DATE:______/_____/______ Time: 0 [ ] AM
DD MMM YY 1 [ ] PM

FIELD STAFF ID \|___\|___\|

JAMAICA HEALTH & LIFESTYLE SURVEY III

FORM 3: BIOMEDICAL MEASURES

QUESTIONNAIRE ID NO.	I.D. OF INTERVIEWER |___|___|
DATE OF EXAM______/_____/______ DD MMM YY	

1. What time and date did you last eat? TIME: |___|____| : |____|____| 0 [ ] AM
1 [ ] PM
DATE:______/_____/______
DD MMM YY

2. What time and date did you last have something other than water to drink? TIME: |____|____| : |____|____| 0 [ ] AM
1 [ ] PM
DATE:______/_____/______
DD MMM YY

3. What time and date did you last smoke? TIME: |____|____| : |____|____| 0 [ ] AM
1 [ ] PM
DATE:______/_____/______
DD MMM YY

Time of fasting sample: |____|____| : |____|____| 0 [ ] AM
1 [ ] PM

Fasting glucose level: |____|____|. |___| mmol/L

Total Cholesterol levels: |____|____|. |____|____|| mmol/L

HDL Cholesterol levels: |____|____|. |____|____|| mmol/L

Triglyceride levels: |____|____|. |____|____|| mmol/L

Glyco Hb Result |__|__|.|__| %

COMMENTS: _ Indicate POC or blood draw for measures

Blood draw
Date the SAMPLE WAS TAKEN: DATE:______/_____/______ Time:
DD MMM YY

Samples collected:- **Check if collected**
Grey Top (1 tube-2cc) |____|____|
Red Top (2 tubes 3-6 cc) |____|____|
Purple Top (2 tubes with 3cc in one and 4cc in other (storage) |____|____|

If blood sample was not collected via any means please state why: COMMENTS: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

URINE SAMPLE Check if collected |____|

Date SAMPLE TAKEN DATE:______/_____/______ Time:
DD MMM YY

Appendix 2: Laboratory Analysis Methods

Hemoglobin Electrophoresis Method: Iso-electric Focus (IEF)

Principle of Assay

The Resolve Haemoglobin kit was used to carry out haemoglobin electrophoresis on the lifestyle survey samples. The kit is designed to separate whole blood, cord blood, or dried blood spot specimen for detection of normal and variant haemoglobins by isoelectric focusing. This assay is intended for use as an aid in the diagnosis of neonatal and adult haemoglobinopathies. This technique uses Agarose IEF Gel, Anode Solution, Cathode Solution, and HB Elution Solution (stored at +2-+8 °C)

The instrument used for IEF is the Multiphor 11-unit IEF Chamber by PerkinElmer. It also consists of a Polyscience water bath and a BIO RAD power supply.

Specimen Collection and Storage

Sample collected in EDTA tube and whole blood stored at -80 °C, the sample stored at -80 degrees is stable for years upon years, thus storage time at that temperate doesn't affect results.

Prior electrophoresis, frozen sample is thawed between 1 and 6 °C.

Haemolysate is made up using HB Elution Solution and 10 µL of whole blood.

Quality Control

The extendSURE Haemoglobin FASC control is used in this assay is a stabilized lyophilized control containing human haemoglobin FASC. This haemoglobin FASC control is used as a position marker monitor for haemoglobin variant analysis methods and assesses assay reproducibility in iso-electric focusing.

Sensitivity

This assay can detect as little as 0.4 *µg of haemoglobin per focused band.*

Urine Sodium and Potassium Levels:

1. 9180 Electrolyte Analyzer: uses the ion selective electrode (ISE) measurement principle to precisely determine electrolyte values. A two-point calibration is carried out every four hours and a one-point calibration with each test, ensuring precision and conformity to even the most stringent regulatory requirements.
2. Normal Ranges for Spot Urine Sodium: For a one-time urine sample, the normal urine sodium value is around 20 mEq/L:

   https://www.webmd.com/a-to-z-guides/what-is-a-urine-sodium-test.

Normal Ranges for Spot Urine Potassium: spot urine potassium less than 15 mEq/L may indicate nonrenal losses:

https://www.sciencedirect.com/topics/nursing-and-health.../potassium-urine-level.

3. Urine samples were stored at -80^{0}C prior to analysis. ______________________________

Blood Urea Nitrogen, Creatinine (Serum and Urine), Total Cholesterol, HDL Cholesterol, Triglycerides, hs-CRP, HbA1C Levels:

1. Cobas c111 analyzer (software version 4.2): uses absorption photometry for determining the amount of absorbance in a fluid. The absorbance is used to calculate the concentration in the solution.
2. Normal Ranges (UWI-Chemical pathology): BUN 2.5–6.7 mmol/L; Normal random urine creatinine concentrations range: 40–300 mg/dL in males and 37–250 mg/ dL in females. [Creatinine (Spot Urine) production and excretion is directly related to muscle mass and is sex and age dependent.]

   https://www.redwoodtoxicology.com/docs/resources/creatine_interpretation.pdf

   Creatinine (Serum) 9–124 umol/L ;Total Chol <5.2 mmol/L ;HDL-Chol >1.0 mmol/L; Triglycerides <1.70 mmol/L; HbA1C 4.4–6.4 %
   hs CRP 0–10mg/L (Please see https://emedicine.medscape.com/article/2094831-overview)
3. Samples were stored at -80C prior to analysis

Ferritin:

1. ELISA Ferritin Assay The reaction is based on the indirect enzyme immuno assay (ELISA) method – Sensitivity: 5 ng/mL
2. Normal Ranges (UWI-Chemical Pathology)

   Males: 18–30 years 18–323 ng/ml
   31–60 years 16–294 ng/ml

   Females: (Adult)
   Premenopausal 7–282 ng/ml
   Postmenopausal 14–233 ng/ml
3. Samples were stored at -80C prior to analysis

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Elecsys Testosterone II

cobas®

REF	Σ	SYSTEM
05200067 190	100	MODULAR ANALYTICS E170 **cobas e** 411 **cobas e** 601 **cobas e** 602

English

System information

For **cobas e** 411 analyzer: test number 111
For MODULAR ANALYTICS E170, **cobas e** 601 and **cobas e** 602 analyzers: Application Code Number 216

Intended use

Immunoassay for the in vitro quantitative determination of testosterone in human serum and plasma.

The **e**lectro**c**hemi**l**uminescence **i**mmuno**a**ssay "ECLIA" is intended for use on Elecsys and **cobas e** immunoassay analyzers.

Summary

References[1,2,3,4,5,6]

The androgen testosterone (17β-hydroxyandrostenone) has a molecular weight of 288 daltons. In men, testosterone is synthesized almost exclusively by the Leydig cells of the testes. The secretion of testosterone is regulated by luteinizing hormone (LH), and is subject to negative feedback via the pituitary and hypothalamus.

Testosterone promotes the development of the secondary sex characteristics in men and serves to maintain the function of the prostate and seminal vesicles.

Most of the circulating testosterone is bound to carrier proteins (SHBG = sex hormone-binding globulin).

In women, small quantities of testosterone are formed in the ovaries. In physiological concentrations, androgens have no specific effects in women. Increased production of testosterone in women can cause virilization (depending on the increase).

The determination of testosterone in women is helpful in the diagnosis of androgenic syndrome (AGS), polycystic ovaries (Stein-Leventhal syndrome) and when an ovarian tumor, adrenal tumor, adrenal hyperplasia or ovarian insufficiency is suspected.

Testosterone is determined in men when reduced testosterone production is suspected, e.g. in hypogonadism, estrogen therapy, chromosome aberrations (as in the Klinefelter's syndrome) and liver cirrhosis.

The Elecsys Testosterone II assay is based on a competitive test principle using a high affinity monoclonal antibody (sheep) specifically directed against testosterone. Endogenous testosterone released from the sample by 2-bromoestradiol competes with the added testosterone derivative labeled with a ruthenium complex[a] for the binding sites on the biotinylated antibody.

The Elecsys Testosterone II assay shows an improved performance if compared to Isotope Dilution - Gas Chromatography/Mass Spectrometry (ID-GC/MS) reference method in the female concentration range.

a) Tris(2,2'-bipyridyl)ruthenium(II)-complex ($Ru(bpy)_3^{2+}$)

Test principle

Competition principle. Total duration of assay: 18 minutes.

- 1st incubation: 20 µL of sample are incubated with a biotinylated monoclonal testosterone-specific antibody. The binding sites of the labeled antibody become occupied by the sample analyte (depending on its concentration).
- 2nd incubation: After addition of streptavidin-coated microparticles and a testosterone derivate labeled with a ruthenium complex, the complex becomes bound to the solid phase via interaction of biotin and streptavidin.
- The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed with ProCell/ProCell M. Application of a voltage to the electrode then induces chemiluminescent emission which is measured by a photomultiplier.
- Results are determined via a calibration curve which is instrument-specifically generated by 2-point calibration and a master curve provided via the reagent barcode or e-barcode.

Reagents - working solutions

The reagent rackpack is labeled as TESTO II.

M Streptavidin-coated microparticles (transparent cap), 1 bottle, 6.5 mL:
Streptavidin-coated microparticles 0.72 mg/mL, preservative.

R1 Anti-testosterone-Ab~biotin (gray cap), 1 bottle, 10 mL:
Biotinylated monoclonal anti-testosterone antibody (sheep) 40 ng/mL; releasing reagent 2-bromoestradiol; MES buffer 50 mmol/L, pH 6.0; preservative.

R2 Testosterone-peptide~$Ru(bpy)_3^{2+}$ (black cap), 1 bottle, 9 mL:
Testosterone derivative, labeled with ruthenium complex 1.5 ng/mL; MES buffer 50 mmol/L, pH 6.0; preservative.

Precautions and warnings

For in vitro diagnostic use.
Exercise the normal precautions required for handling all laboratory reagents.
Disposal of all waste material should be in accordance with local guidelines.
Safety data sheet available for professional user on request.

Avoid foam formation in all reagents and sample types (specimens, calibrators and controls).

Reagent handling

The reagents in the kit have been assembled into a ready-for-use unit that cannot be separated.

All information required for correct operation is read in from the respective reagent barcodes.

Storage and stability

Store at 2-8 °C.

Do not freeze.

Store the Elecsys reagent kit **upright** in order to ensure complete availability of the microparticles during automatic mixing prior to use.

Stability:	
unopened at 2-8 °C	up to the stated expiration date
after opening at 2-8 °C	12 weeks
on the analyzers	8 weeks

Specimen collection and preparation

Only the specimens listed below were tested and found acceptable.

Serum collected using standard sampling tubes or tubes containing separating gel.

Li-heparin, K_2- and K_3-EDTA plasma.

Criterion: Recovery within 80-120 % of serum value > 1 ng/mL, recovery of ± 0.2 ng/mL of serum value ≤ 1 ng/mL and slope 0.9-1.1 + intercept 0.05 ng/mL + coefficient of correlation > 0.95.

Stable for 1 week at 2-8 °C, 6 months at -20 °C (± 5 °C). Freeze only once.[7]

The sample types listed were tested with a selection of sample collection tubes that were commercially available at the time of testing, i.e. not all available tubes of all manufacturers were tested. Sample collection systems from various manufacturers may contain differing materials which could affect the test results in some cases. When processing samples in primary tubes (sample collection systems), follow the instructions of the tube manufacturer.

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Centrifuge samples containing precipitates before performing the assay.

Do not use heat-inactivated samples.

Do not use samples and controls stabilized with azide.

Ensure the samples, calibrators and controls are at 20-25 °C prior to measurement.

Due to possible evaporation effects, samples, calibrators and controls on the analyzers should be analyzed/measured within 2 hours.

Materials provided

See "Reagents – working solutions" section for reagents.

Materials required (but not provided)

- REF 05202230190, Testosterone II CalSet II, for 4 x 1 mL
- REF 11731416190, PreciControl Universal, for 4 x 3 mL
- General laboratory equipment
- MODULAR ANALYTICS E170 or **cobas e** analyzer

Accessories for **cobas e** 411 analyzer:

- REF 11662988122, ProCell, 6 x 380 mL system buffer
- REF 11662970122, CleanCell, 6 x 380 mL measuring cell cleaning solution
- REF 11930346122, Elecsys SysWash, 1 x 500 mL washwater additive
- REF 11933159001, Adapter for SysClean
- REF 11706802001, AssayCup, 60 x 60 reaction cups
- REF 11706799001, AssayTip, 30 x 120 pipette tips
- REF 11800507001, Clean-Liner

Accessories for MODULAR ANALYTICS E170, **cobas e** 601 and **cobas e** 602 analyzers:

- REF 04880340190, ProCell M, 2 x 2 L system buffer
- REF 04880293190, CleanCell M, 2 x 2 L measuring cell cleaning solution
- REF 03023141001, PC/CC-Cups, 12 cups to prewarm ProCell M and CleanCell M before use
- REF 03005712190, ProbeWash M, 12 x 70 mL cleaning solution for run finalization and rinsing during reagent change
- REF 03004899190, PreClean M, 5 x 600 mL detection cleaning solution
- REF 12102137001, AssayTip/AssayCup, 48 magazines x 84 reaction cups or pipette tips, waste bags
- REF 03023150001, WasteLiner, waste bags
- REF 03027651001, SysClean Adapter M

Accessories for all analyzers:

- REF 11298500316, ISE Cleaning Solution/Elecsys SysClean, 5 x 100 mL system cleaning solution

Assay

For optimum performance of the assay follow the directions given in this document for the analyzer concerned. Refer to the appropriate operator's manual for analyzer-specific assay instructions.

Resuspension of the microparticles takes place automatically prior to use. Read in the test-specific parameters via the reagent barcode. If in exceptional cases the barcode cannot be read, enter the 15-digit sequence of numbers (except for the **cobas e** 602 analyzer).

MODULAR ANALYTICS E170, **cobas e** 601 and **cobas e** 602 analyzers: PreClean M solution is necessary.

Bring the cooled reagents to approximately 20 °C and place on the reagent disk (20 °C) of the analyzer. Avoid foam formation. The system automatically regulates the temperature of the reagents and the opening/closing of the bottles.

Calibration

Traceability: This method has been standardized via ID-GC/MS ("Isotope Dilution - Gas Chromatography/Mass Spectrometry").[8,9]

Every Elecsys reagent set has a barcoded label containing specific information for calibration of the particular reagent lot. The predefined master curve is adapted to the analyzer using the relevant CalSet.

Calibration frequency: Calibration must be performed once per reagent lot using fresh reagent (i.e. not more than 24 hours since the reagent kit was registered on the analyzer).

Calibration interval may be extended based on acceptable verification of calibration by the laboratory.

Renewed calibration is recommended as follows:

- after 1 month (28 days) when using the same reagent lot
- after 7 days (when using the same reagent kit on the analyzer)
- as required: e.g. quality control findings outside the defined limits

Quality control

For quality control, use PreciControl Universal.

In addition, other suitable control material can be used.

Controls for the various concentration ranges should be run individually at least once every 24 hours when the test is in use, once per reagent kit, and following each calibration.

The control intervals and limits should be adapted to each laboratory's individual requirements. Values obtained should fall within the defined limits. Each laboratory should establish corrective measures to be taken if values fall outside the defined limits.

If necessary, repeat the measurement of the samples concerned.

Follow the applicable government regulations and local guidelines for quality control.

Calculation

The analyzer automatically calculates the analyte concentration of each sample (either in ng/mL, ng/dL or nmol/L).

Conversion factors:	ng/mL x 3.47 = nmol/L
	ng/mL x 100 = ng/dL
	nmol/L x 0.288 = ng/mL

Limitations - interference

The assay is unaffected by icterus (bilirubin < 513 µmol/L or < 30 mg/dL), hemolysis (Hb < 0.372 mmol/L or < 0.600 g/dL), lipemia (Intralipid < 1000 mg/dL) and biotin (< 123 nmol/L or < 30 ng/mL).

Criterion: Recovery within ± 10 % of initial value (concentration range > 1-15 ng/mL), recovery within ± 15 % of initial value (concentration range > 0.5-1 ng/mL) and recovery of ± 0.075 ng/mL (concentration range of 0.150-0.500 ng/mL).

Samples should not be taken from patients receiving therapy with high biotin doses (i.e. > 5 mg/day) until at least 8 hours following the last biotin administration.

No interference was observed from rheumatoid factors up to a concentration of 1000 IU/mL.

In vitro tests were performed on 18 commonly used pharmaceuticals. No interference with the assay was found.

Two special drugs were additionally tested. A strong interaction with Nandrolone (INN international nonproprietary name, WHO) was found. Do not use samples from patients under Nandrolone treatment.

In isolated cases, elevated testosterone levels can be seen in samples from female patients with end stage renal disease (ESRD).

Implausible elevated testosterone values in women should be verified by an extraction method or a validated LC-MS/MS tandem method.[5]

In rare cases, interference due to extremely high titers of antibodies to analyte-specific antibodies, streptavidin or ruthenium can occur. These effects are minimized by suitable test design.

For diagnostic purposes, the results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.

Limits and ranges

Measuring range

0.025-15.0 ng/mL or 0.087-52.0 nmol/L (defined by the Limit of Detection and the maximum of the master curve). Values below the Limit of Detection are reported as < 0.025 ng/mL or < 0.087 nmol/L. Values above the measuring range are reported as > 15.0 ng/mL or > 52.0 nmol/L.

Lower limits of measurement

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Elecsys Testosterone II

Limit of Blank, Limit of Detection and Limit of Quantitation

Limit of Blank = 0.012 ng/mL or 0.042 nmol/L

Limit of Detection = 0.025 ng/mL or 0.087 nmol/L

Limit of Quantitation = 0.120 ng/mL or 0.416 nmol/L

The Limit of Blank and Limit of Detection were determined in accordance with the CLSI (Clinical and Laboratory Standards Institute) EP17-A requirements.

The Limit of Quantitation was determined using the result of functional sensitivity testing.

The Limit of Blank is the 95th percentile value from n ≥ 60 measurements of analyte-free samples over several independent series. The Limit of Blank corresponds to the concentration below which analyte-free samples are found with a probability of 95 %.

The Limit of Detection is determined based on the Limit of Blank and the standard deviation of low concentration samples. The Limit of Detection corresponds to the lowest analyte concentration which can be detected (value above the Limit of Blank with a probability of 95 %).

The Limit of Quantitation (functional sensitivity) is the lowest analyte concentration that can be reproducibly measured with an intermediate precision CV of ≤ 20 %. It has been determined using low concentration testosterone samples.

Dilution

Not necessary due to the broad measuring range.

Expected values

The following tables show the results obtained using the Elecsys Testosterone II assay in a reference population of 95 males (7-18 years) and 100 females (8-18 years), who were in good endocrinological health. Subjects were clinically characterized according to their Tanner Stage. Tanner Stage was characterized according to the method of Marshall and Tanner.[10,11]

Reference values for males (7-18 years) characterized by Tanner Stage

Tanner Stage	N	Median	5-95th percentiles (ng/mL)
1	26	< 0.025	< 0.025
2	18	0.597	< 0.025-4.32
3	15	2.45	0.649-7.78
4	16	3.44	1.80-7.63
5	20	4.46	1.88-8.82

Reference values for females (8-18 years) characterized by Tanner Stage

Tanner Stage	N	Median	5-95th percentiles (ng/mL)
1	37	< 0.025	< 0.025-0.061
2	12	< 0.025	< 0.025-0.104
3	12	0.079	< 0.025-0.237
4	12	0.122	< 0.025-0.268
5	27	0.197	0.046-0.383

The following table shows the results obtained with the Elecsys Testosterone II assay in an apparently healthy group of 214 males and 160 females without intake of contraceptiva and prescription drugs (study number CIM 000669). Blood samples were taken between 6.30 am and 1.00 pm. This clinical study with focus on the Elecsys Testosterone II assay included measurements in parallel with the Elecsys SHBG assay. The results were evaluated for the Elecsys Testosterone II and Elecsys SHBG assays and commonly used parameters derived from different calculation procedures, including albumin as an important parameter involved.[12]

- Free testosterone index (% FTI) or free androgen index (% FAI) as calculated on a molar/molar basis:

  FTI (%) = (testosterone in nmol/L divided by SHBG in nmol/L) x 100
- Free testosterone calculated (FTc) in nmol/L and %
- Bioavailable testosterone calculated (BATc) in nmol/L and %

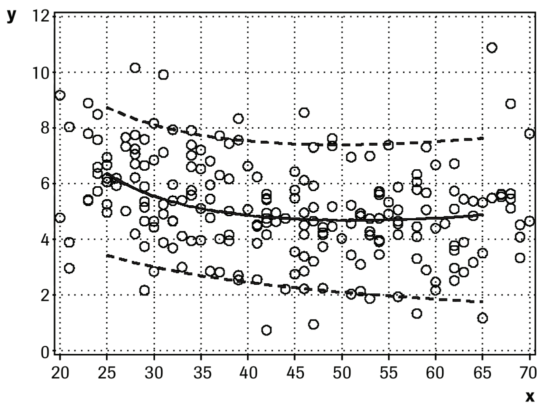
FTc and BATc were calculated by means of individual concentrations for total testosterone, SHBG, and albumin and via the association constant of albumin to testosterone. A detailed description of the calculation procedure is available on request. Refer also to the homepage of www.issam.ch/freetesto.htm.

The following results were obtained:

Testosterone

Test subjects	Percentiles				
	N	Median	5-95th	Median	5-95th
		ng/mL		nmol/L	
Males 20-49 years	136	5.36	2.49-8.36	18.6	8.64-29.0
Males ≥ 50 years	78	4.76	1.93-7.40	16.5	6.68-25.7
Females 20-49 years	89	0.271	0.084-0.481	0.941	0.290-1.67
Females ≥ 50 years	71	0.162	0.029-0.408	0.563	0.101-1.42

Distribution of testosterone values in the apparently healthy male group based on age (n = 214). Solid line: 50 % percentile, upper line: 95 % percentile, lower line: 5 % percentile.



x: Age (years)

y: Testosterone (ng/mL) - male group

Distribution of testosterone values in the apparently healthy female group based on age (n = 160). Solid line: 50 % percentile, upper line: 95 % percentile, lower line: 5 % percentile.

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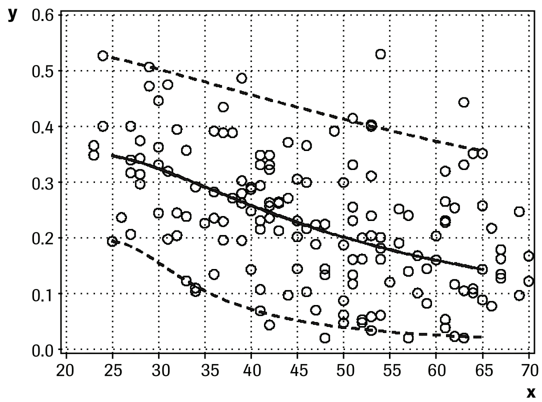

x: Age (years)

y: Testosterone (ng/mL) - female group

SHBG

Test subjects	N	Median	5-95th percentiles
		nmol/L	
Males 20-49 years	136	33.5	16.5-55.9
Males ≥ 50 years	78	40.8	19.3-76.4
Females 20-49 years	89	64.3	24.6-122
Females ≥ 50 years	71	57.4	17.3-125

Free testosterone index or free androgen index

Test subjects	N	Median	5-95th percentiles
		FTI or FAI (%)	
Males 20-49 years	136	57.2	35.0-92.6
Males ≥ 50 years	78	38.2	24.3-72.1
Females 20-49 years	89	1.53	0.297-5.62
Females ≥ 50 years	71	1.15	0.187-3.63

Free testosterone, calculated

Test subjects	N	Percentiles			
		Median	5-95th percentiles	Median	5-95th percentiles
		FTc (nmol/L)		FTc (%)	
Males 20-49 years	136	0.379	0.198-0.619	2.10	1.53-2.88
Males ≥ 50 years	78	0.304	0.163-0.473	1.91	1.23-2.59
Females 20-49 years	89	0.011	0.003-0.033	1.19	0.701-2.19
Females ≥ 50 years	71	0.008	0.001-0.020	1.26	0.685-2.64

Bioavailable testosterone, calculated

Test subjects	N	Percentiles			
		Median	5-95th percentiles	Median	5-95th percentiles
		BATc (nmol/L)		BATc (%)	
Males 20-49 years	136	9.10	4.36-14.3	49.8	35.0-66.3
Males ≥ 50 years	78	6.63	3.59-11.0	42.1	27.5-60.7
Females 20-49 years	89	0.246	0.059-0.756	25.7	15.3-47.7
Females ≥ 50 years	71	0.168	0.030-0.430	28.0	15.1-55.2

Each laboratory should investigate the transferability of the expected values to its own patient population and if necessary determine its own reference ranges.

Specific performance data

Representative performance data on the analyzers are given below. Results obtained in individual laboratories may differ.

Precision

Precision was determined using Elecsys reagents, samples and controls in a protocol (EP5-A2) of the CLSI (Clinical and Laboratory Standards Institute): 2 runs per day in duplicate each for 21 days (n = 84). The following results were obtained:

cobas e 411 analyzer					
			Repeatability		
Sample	Mean		SD		CV
	ng/mL	nmol/L	ng/mL	nmol/L	%
Human serum 1	0.095	0.330	0.004	0.014	4.7
Human serum 2	0.691	2.40	0.014	0.048	2.1
Human serum 3	2.16	7.50	0.042	0.146	1.9
Human serum 4	8.67	30.1	0.229	0.795	2.6
Human serum 5	13.0	45.1	0.158	0.548	1.2
PreciControl U[b)]1	6.30	21.9	0.088	0.305	1.4
PreciControl U2	2.65	9.20	0.047	0.163	1.8

b) U = Universal

cobas e 411 analyzer					
			Intermediate precision		
Sample	Mean		SD		CV
	ng/mL	nmol/L	ng/mL	nmol/L	%
Human serum 1	0.095	0.330	0.008	0.028	8.4
Human serum 2	0.691	2.40	0.022	0.076	3.2
Human serum 3	2.16	7.50	0.060	0.208	2.8
Human serum 4	8.67	30.1	0.243	0.843	2.8
Human serum 5	13.0	45.1	0.440	1.53	3.4
PreciControl U1	6.30	21.9	0.182	0.632	2.9
PreciControl U2	2.65	9.20	0.097	0.337	3.7

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Elecsys Testosterone II

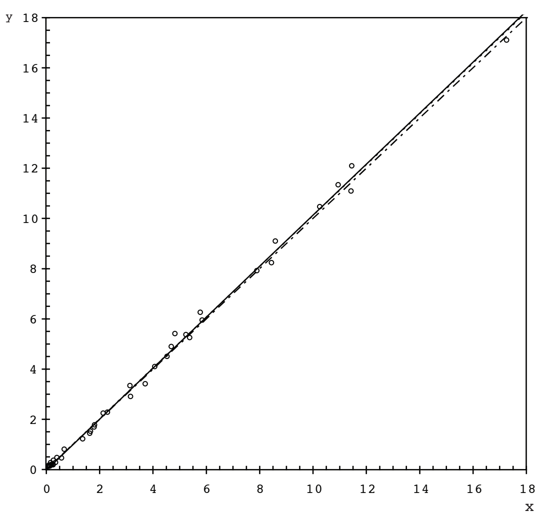
MODULAR ANALYTICS E170, **cobas e** 601 and **cobas e** 602 analyzers					
			Repeatability		
Sample	Mean		SD		CV
	ng/mL	nmol/L	ng/mL	nmol/L	%
Human serum 1	0.091	0.316	0.014	0.049	14.8
Human serum 2	0.696	2.42	0.029	0.097	4.1
Human serum 3	2.13	7.39	0.059	0.205	2.8
Human serum 4	8.79	30.5	0.236	0.833	2.7
Human serum 5	13.1	45.8	0.281	0.975	2.1
PreciControl U1	6.08	21.1	0.179	0.625	2.9
PreciControl U2	2.56	8.88	0.067	0.229	2.6

MODULAR ANALYTICS E170, **cobas e** 601 and **cobas e** 602 analyzers					
			Intermediate precision		
Sample	Mean		SD		CV
	ng/mL	nmol/L	ng/mL	nmol/L	%
Human serum 1	0.091	0.316	0.017	0.059	18.1
Human serum 2	0.696	2.42	0.030	0.104	4.4
Human serum 3	2.13	7.39	0.067	0.232	3.2
Human serum 4	8.79	30.5	0.292	1.01	3.3
Human serum 5	13.1	45.8	0.331	1.15	2.5
PreciControl U1	6.08	21.1	0.190	0.659	3.1
PreciControl U2	2.56	8.88	0.093	0.323	3.6

Method comparison

a) A method comparison of the Elecsys Testosterone II assay (y) with the ID-GC/MS method (x) using 39 serum samples gave the following correlations (ng/mL):

Samples from males and females (n = 39):



x: ID-GC/MS (ng/mL)

y: Elecsys Testosterone II assay (ng/mL)

°	Points	– - – -	x = y
—	Passing/Bablok	- - - -	Linear regression

Passing/Bablok[13] Linear regression

y = 1.02x - 0.027 y = 1.01x - 0.003

τ = 0.928 r = 0.999

The sample concentrations were between 0.173 and 17.3 ng/mL (0.600 and 60.0 nmol/L).

Samples from females (n = 20):

Passing/Bablok[13] Linear regression

y = 0.959x + 0.005 y = 0.969x + 0.007

τ = 0.780 r = 0.992

The sample concentrations were between 0.173 and 2.29 ng/mL (0.600 and 7.95 nmol/L).

b) A comparison of the Elecsys Testosterone II assay (y) with the Elecsys Testosterone assay (x) using clinical samples gave the following correlations (ng/mL):

Number of samples measured: 239 males, 149 females

Results from external multicenter study (study number CIM 000669).

Samples from males (n = 239):

Passing/Bablok[13] Linear regression

y = 0.977x + 0.032 y = 0.957x + 0.155

τ = 0.870 r = 0.985

The sample concentrations were between 0.063 and 14.0 ng/mL (0.219 and 48.5 nmol/L).

Samples from females (n = 149):

Passing/Bablok[13] Linear regression

y = 0.715x + 0.023 y = 0.957x - 0.061

τ = 0.697 r = 0.972

The sample concentrations were between 0.023 and 9.26 ng/mL (0.080 and 32.1 nmol/L) with two highly elevated samples of 4.16 ng/mL (14.44 nmol/L) and 9.26 ng/mL (32.1 nmol/L), respectively.

Analytical specificity

For the antibody derivative used, the following cross-reactivities were found (in %):

	Concentration (ng/mL)	Cross-reactivity (%)
Androstendione	100	≤ 2.50
Cortisol	1000	≤ 0.01
Cortisone	2000	n.d.[c)]
Danazol	1000	≤ 0.500
Dexamethasone	2000	n.d.
DHEA	1000	≤ 0.016
DHEA-S	50000	≤ 0.003
D-5-Androstene-3β,17β-diol	1000	≤ 0.290
Estradiol	1000	≤ 0.160
Estrone	1000	≤ 0.004
Ethisterone	1000	≤ 2.40
Norgestrel	1000	≤ 0.910
Testosterone propionate	100	≤ 2.46
5-α-Androstane-3β,17β-diol	1000	≤ 2.11
5-α-Dihydro-testosterone	500	≤ 0.860
11-β-Hydroxy-testosterone	100	≤ 18.0
11-Keto-testosterone	1000	≤ 3.22
19-Norethisterone	40	≤ 6.00
Prednisone	1000	n.d.

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Elecsys Testosterone II

cobas®

	Concentration (ng/mL)	Cross-reactivity (%)
Prednisolone	1000	≤ 0.002
Progesterone	1000	n.d.

c) n.d. = not detectable

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For further information, please refer to the appropriate operator's manual for the analyzer concerned, the respective application sheets, the product information and the Method Sheets of all necessary components (if available in your country).

A point (period/stop) is always used in this Method Sheet as the decimal separator to mark the border between the integral and the fractional parts of a decimal numeral. Separators for thousands are not used.

Symbols

Roche Diagnostics uses the following symbols and signs in addition to those listed in the ISO 15223-1 standard (for USA: see https://usdiagnostics.roche.com for definition of symbols used):

CONTENT	Contents of kit
SYSTEM	Analyzers/Instruments on which reagents can be used
REAGENT	Reagent
CALIBRATOR	Calibrator
→	Volume after reconstitution or mixing
GTIN	Global Trade Item Number

CE

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Roche

National Institute of Diabetes and Digestive and Kidney Diseases

Estimating Glomerular Filtration Rate[3]

The normal serum creatinine reference interval does not necessarily reflect a normal GFR for a patient. Because mild and moderate kidney injury is poorly inferred from serum creatinine alone, NIDDK strongly encourages clinical laboratories to routinely estimate glomerular filtration rate (GFR) and report the value when serum creatinine is measured for patients 18 and older, when appropriate and feasible. An estimated GFR (eGFR) calculated from serum creatinine using an isotope dilution mass spectrometry (IDMS) traceable equation is a simple and effective way in which laboratories can help health care providers detect CKD among those with risk factors—diabetes, hypertension, cardiovascular disease, or family history of kidney disease. Assessment of kidney function through eGFR is essential once albuminuria is discovered. Providers also may use eGFR to monitor patients already diagnosed with CKD.

IDMS Traceable Equations

> Laboratories should program their information systems to use an IDMS traceable creatinine-based equation to automatically estimate and report GFR for patients ages 18 and older, when appropriate and feasible.

To reduce interlaboratory variation in creatinine assay calibration and enable more accurate eGFR results, all major manufacturers have calibrated their serum creatinine measurement procedures to be traceable to IDMS. Because creatinine results that are calibrated to IDMS may differ by 5 to 30% compared to uncalibrated results,[1] use of a non-IDMS traceable equation with IDMS calibrated results will yield an inaccurate eGFR. Therefore, all laboratories should use an IDMS traceable equation when estimating and reporting GFR.

Read more about creatinine standardization.

Selecting an Equation

The Modification of Diet in Renal Disease (MDRD) Study equation and the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation are the most widely used IDMS traceable equations for estimating GFR in patients age 18 and over. For estimating GFR from serum creatinine in patients under age 18 (including infants, toddlers, children, and teens), the Bedside Schwartz equation should be used.

Both the MDRD Study and CKD-EPI equations include variables for age, gender, and race, which may allow providers to observe that CKD is present despite a serum creatinine concentration that appears to fall within or just above the normal reference interval. Direct comparison of the MDRD and CKD-EPI equations to other equations such as Cockcroft-Gault[2, 3] and to creatinine clearance measured from 24-hour urine collections has demonstrated this superiority.[4]

Note that creatinine clearance should be considered for assessing kidney function when the patient's basal creatinine production is very abnormal. This may be the case with patients of extreme body size or muscle mass (e.g., obese, severely malnourished, amputees, paraplegics, or other muscle-wasting diseases), or with unusual dietary intake (e.g., vegetarian, creatine supplements).

The MDRD Equation

The following is the IDMS-traceable MDRD Study equation (for creatinine methods calibrated to an IDMS reference method)

$$\text{GFR (mL/min/1.73 m}^2) = 175 \times (S_{cr})^{-1.154} \times (\text{Age})^{-0.203} \times (0.742 \text{ if female}) \times (1.212 \text{ if African American})$$

The equation does not require weight or height variables because the results are reported normalized to 1.73 m^2 body surface area, which is an accepted average adult surface area.

The equation has been validated extensively in Caucasian and African American populations between the ages of 18 and 70* with impaired kidney function (eGFR < 60 mL/min/1.73 m^2) and has shown good performance for patients with all common causes of kidney disease.[2]

3. Downloaded from https://www.niddk.nih.gov/health-information/professionals/clinical-tools-patient-management/kidney-disease/laboratory-evaluation/glomerular-filtration-rate/estimating

**The equation has not been validated in patients older than 70, but an MDRD-derived eGFR may still be a useful tool for providers caring for patients older than 70.*

The CKD-EPI Equation

The CKD-EPI equation uses a 2-slope "spline" to model the relationship between GFR and serum creatinine, age, sex, and race. The equation is given in the following table for creatinine in mg/dL (see Table 2 in this Appendix (Appendix 2) for creatinine in µmol/L). The equation can be expressed in a single equation (see table legend) or as a series of equations for different race, sex and creatinine conditions (see table rows).

Table 1: CKD EPI Equation for Estimating GFR Expressed for Specified Race, Sex and Serum Creatinine in mg/dL (From *Ann Intern Med* 2009;150:604–612, used with permission)

Race	Sex	Serum Creatinine, S_{cr} (mg/dL)	Equation (age in years for ≥ 18)
Black	Female	≤ 0.7	$GFR = 166 \times (S_{cr}/0.7)^{-0.329} \times (0.993)^{Age}$
Black	Female	> 0.7	$GFR = 166 \times (S_{cr}/0.7)^{-1.209} \times (0.993)^{Age}$
Black	Male	≤ 0.9	$GFR = 163 \times (S_{cr}/0.9)^{-0.411} \times (0.993)^{Age}$
Black	Male	> 0.9	$GFR = 163 \times (S_{cr}/0.9)^{-1.209} \times (0.993)^{Age}$
White or other	Female	≤ 0.7	$GFR = 144 \times (S_{cr}/0.7)^{-0.329} \times (0.993)^{Age}$
White or other	Female	> 0.7	$GFR = 144 \times (S_{cr}/0.7)^{-1.209} \times (0.993)^{Age}$
White or other	Male	≤ 0.9	$GFR = 141 \times (S_{cr}/0.9)^{-0.411} \times (0.993)^{Age}$
White or other	Male	> 0.9	$GFR = 141 \times (S_{cr}/0.9)^{-1.209} \times (0.993)^{Age}$

CKD-EPI equation expressed as a single equation:

$$GFR = 141 \times \min(S_{cr}/\kappa, 1)^{\alpha} \times \max(S_{cr}/\kappa, 1)^{-1.209} \times 0.993^{Age} \times 1.018\ [\text{if female}] \times 1.159\ [\text{if black}]$$

where:
S_{cr} is serum creatinine in mg/dL,
κ is 0.7 for females and 0.9 for males,
α is -0.329 for females and -0.411 for males,
min indicates the minimum of S_{cr}/κ or 1, and
max indicates the maximum of S_{cr}/κ or 1.

A laboratory that reports eGFR numeric values > 60 mL/min/1.73 m^2 should use the CKD-EPI equation, because the CKD-EPI equation is more accurate for values > 60 mL/min/1.73 m^2 than is the MDRD Study equation. However, the influence of imprecision of creatinine assays on the uncertainty of an eGFR value is greater at higher eGFR values and should be considered when determining the highest eGFR value to report.

MDRD and CKD-EPI Equation Performance

As shown in the figure below, the CKD-EPI equation and the MDRD Study equation were equally accurate in a subgroup with estimated GFR (eGFR) less than 60 mL/min/1.73 m^2. However, the CKD-EPI equation was more accurate in a subgroup with eGFR between 60 and 120 mL/min/1.73 m^2. The receiver operator curves (ROC) for detecting GFR categories less than 90, 75, 60, 45, 30 and 15 mL/min per 1.73 m^2 did not differ between the CKD-EPI and MDRD Study equations.[1, 2]

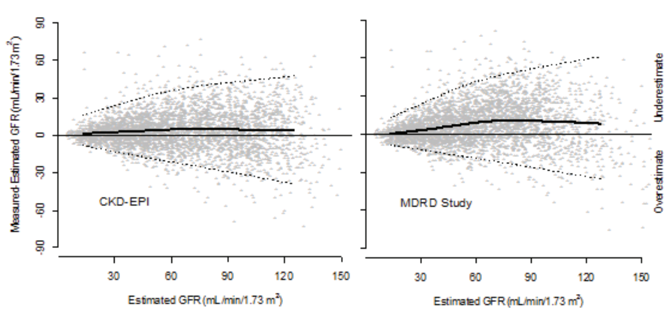

Figure 1. Accuracy of the CKD-EPI and MDRD equations to estimate GFR for the validation data set (N=3896). Both panels show the difference between measured and estimated (y-axis) vs. estimated GFR (x-axis). A smoothed regression line is shown with the 95% CI for the distribution of results, using quantile regression, excluding the lowest and highest 2.5% of estimated GFR. From *Ann Intern Med* 2009;150:604-612, used with permission.

Reduce Rounding Errors

NIDDK recommends using serum creatinine values in mg/dL to two decimal places (e.g., 0.95 mg/dL) OR values in µmol/L to the nearest whole number (e.g., 84 µmol/L) when calculating eGFR using the MDRD Study or CKD-EPI equation. This practice will reduce rounding errors that may contribute to imprecision in the eGFR value.

When Not to Use Creatinine-based Estimating Equations

Creatinine-based estimating equations may not be suitable for all populations. Creatinine-based estimates of kidney function are only useful when renal function is stable; serum creatinine values obtained while kidney function is changing will not provide accurate estimates of kidney function.

Creatinine-based estimating equations are not recommended for use with:

- Individuals with unstable creatinine concentrations. This includes pregnant women; patients with serious co-morbid conditions; and hospitalized patients, particularly those with acute renal failure. Creatinine-based estimating equations should be used only for patients with stable creatinine concentrations.
- Persons with extremes in muscle mass and diet. This includes, but is not limited to, individuals who are amputees, paraplegics, bodybuilders, or obese; patients who have a muscle-wasting disease or a neuromuscular disorder; and those suffering from malnutrition, eating a vegetarian or low-meat diet, or taking creatine dietary supplements.

Application of the equation to these patient groups may lead to errors in GFR estimation.[5] GFR estimating equations have poorer agreement with measured GFR for ill hospitalized patients[6] than for community-dwelling patients.

As noted above, providers should exercise judgment regarding clinical status when presented with an MDRD Study- or CKD-EPI-derived eGFR for a patient with an unstable creatinine level or other condition for which the equation is not suitable. Providers may not understand that estimating equations like the MDRD and CKD-EPI are derived from large populations of patients and provide the best estimate of mean GFR for a group of people of a certain age, race, gender, and serum creatinine value. Thus, the reported eGFR is the best estimate of a patient's GFR; it is not the patient's actual GFR.

Limitations of the CKD-EPI and MDRD Equations

- Limitations using creatinine as a filtration marker: both the MDRD study and CKD-EPI equations are based on serum creatinine. Despite modest reduction in bias with the CKD-EPI equation, estimates remain imprecise, with some people showing large differences between the measured and estimated GFR. Like all other creatinine-based estimation equations, they suffer from physiologic limitations of creatinine as a filtration marker.[4, 7] The terms for age, sex, and race in both equations only capture some of the non-GFR determinants of creatinine concentration in blood plasma, and the coefficients represent average effects observed in the population used to develop the equations.

  All estimates of GFR based on serum creatinine will be less accurate for patients at the extremes of muscle mass (including frail elderly, critically ill, or cancer patients), those with unusual diets, and those with conditions associated with reduced secretion or extra-renal elimination of creatinine. Confirmatory tests with exogenous measured GFR or measured creatinine clearance should be performed for people in whom estimates based on serum/plasma/blood creatinine alone may be inaccurate.
- Populations not well represented in the development or validation cohorts: Elderly people and blacks with higher levels of GFR, racial and ethnic minorities other than blacks.
- The influence of creatinine measurement imprecision at low creatinine concentrations (high eGFR) has not been carefully studied but has likely contributed to the variability at higher eGFR values.

Table 2: CKD EPI Equation for Estimating GFR Expressed for Specified Race, Sex and Serum Creatinine in µmol/L (Adapted from *Ann Intern Med* 2009;150:604-612, used with permission)

Race	Sex	Serum Creatinine, S_{cr} µmol/L	Equation (age in years for ≥ 18)
Black	Female	≤ 61.9	$GFR = 166 \times (S_{cr}/61.9)^{-0.329} \times (0.993)^{Age}$
Black	Female	> 61.9	$GFR = 166 \times (S_{cr}/61.9)^{-1.209} \times (0.993)^{Age}$
Black	Male	≤ 79.6	$GFR = 163 \times (S_{cr}/79.6)^{-0.411} \times (0.993)^{Age}$
Black	Male	> 79.6	$GFR = 163 \times (S_{cr}/79.6)^{-1.209} \times (0.993)^{Age}$
White or other	Female	≤ 61.9	$GFR = 144 \times (S_{cr}/61.9)^{-0.329} \times (0.993)^{Age}$
White or other	Female	> 61.9	$GFR = 144 \times (S_{cr}/61.9)^{-1.209} \times (0.993)^{Age}$
White or other	Male	≤ 79.6	$GFR = 141 \times (S_{cr}/79.6)^{-0.411} \times (0.993)^{Age}$
White or other	Male	> 79.6	$GFR = 141 \times (S_{cr}/79.6)^{-1.209} \times (0.993)^{Age}$

$GFR = 141 \times \min(S_{cr}/\kappa, 1)^{\alpha} \times \max(S_{cr}/\kappa, 1)^{-1.209} \times 0.993^{Age} \times 1.018$ [if female] $\times 1.159$ [if black]

where:

S_{cr} *is serum creatinine in µmol/L,*

κ *is 61.9 for females and 79.6 for males,*

α *is -0.329 for females and -0.411 for males,*

min indicates the minimum of S_{cr}/κ *or 1,*

and max indicates the maximum of S_{cr}/κ *or 1.*

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Appendix 3: JHLS III Field Staff

Data Collectors

1. Patricia Campbell
2. Julia Fisher
3. Teslana Davis
4. Donna Levy-Lindsey
5. Jennifer Taggan
6. Brian Kelly
7. Norma Surgeon
8. Orleen Harris
9. Effy Nembhard
10. Makeda Grant
11. Michael Ferguson
12. Yanaco Brown
13. Kadene Brown
14. Tanisha Gordon
15. Dillon Beadle
16. Andrea Stewart
17. Solay Fearon
18. Annmarie Hutchinson
19. Nerissa Nathan
20. Shanique Powell
21. Tameka Dixon
22. KerryAnn Shaw
23. Devon Lindsey
24. Marcia Anderson-Johnson
25. Natassia Campbell
26. Charmaine Baker
27. Cassandra Evans
28. ShelliAnn Dawkins
29. Christien Wright-Gayle
30. Khadene Thomas
31. George Alexander
32. Cheryl Walters
33. Sharon Patten
34. Jody-Ann Dawson-Beckford
35. Tashna Findlaytor
36. Margaret Griffiths
37. Dorothy Frazer
38. Jane Clarke
39. Narissa Adams-Ledgister
40. Karen Whyne
41. Christine Reid
42. Dion Green
43. Karene Forrester
44. Keisha Brooks
45. Vanessa Valentine
46. Dezrine Nelson
47. Andrea Graham
48. Gillian Higgin
49. Ahawn Allen
50. Wendy Williams
51. Stacy Todd
52. David McLaren
53. Karen Lawrence
54. Joanne Walker
55. Alwayne Brown
56. Marcia Wheatley
57. Sharon Bailey
58. Claudette Bernard
59. Diana Henry
60. Paulette Reid
61. TerryAnn Ross
62. Doreen Hall-Millwood
63. Janice Bent-Carr
64. Gracelin Muirhead
65. Myrtle Lewis
66. Carey Renford

Data Entry Staff

1. Kimberley Allen
2. Danielle Riley
3. Francine McCalla
4. Akil Coore
5. Kerri-Ann Stedford
6. Chantelle White
7. Shelby Spencer

Phlebotomists

1. Sheldon Kelly
2. Deidre Gordon
3. Arlene Galloway
4. Chudian Brooks
5. Joy Evans
6. Shauna Holness-Sellars
7. Pauline James
8. Shellian Samuels
9. Victor Taylor
10. Jessica Williams
11. Andrea Richards
12. Crystal Samuels
13. Brandon Coleman
14. Jahmar Anderson
15. Mervia Kerr
16. Claydette Taylor-Gayle
17. Charmaine Richards

Appendix 4: Socio-demographic Variables

Table A4.1: Listing of Socio-demographic Variables Created: The Definitions and the Questionnaire Item Numbers Used in Their Creation

Variable Labels	Definition of Variable	Questionnaire Item Number
Five-Year Age Groups	Age in years categorized as 15–19, 20–24, 25–29, ..., 70–74, 75 years and older	Item 1.4
Ten-Year Age Groups	Age in years categorized as 15–24, 25–34, ..., 65–74, 75 years and older	Item 1.4
(Interviewer) Observed Race	Race categorised as 'Black' or 'Other.' (The 'Other' group includes those of 'Mixed,' 'Indian,' 'Caucasian,' or 'Other' unspecified races.)	Item 1.0
Union Status	Union status classified as 'Single' (not in a union), 'Married/Common-law'(in a married or unmarried union), 'Divorced/Separated'(temporarily or permanently removed from a married partner), 'Visiting'(in a union but both parties do not live together in the same dwelling)	Item 1.5
Highest Educational Level	'Basic School or lower,' 'Primary (All Age/Jr. High),' 'Secondary,' 'Tertiary,' 'Other'	Item 1.6
Highest Examination Passed (Giving Entry to)	'Nothing,' 'Secondary Education,' 'Tertiary Education,' a 'Vocation,' a 'Profession,' 'Other' unspecified categories.	Item 1.8
Employment Categories	'Full-time employment,' 'Part-time employment,' 'Seasonal employment,' 'Unemployed – seeking,' 'Unemployed – not seeking'	Item 1.9
(Primary) Occupation Categories	'Professionals and Managers,' 'Highly Skilled,' 'Skilled, ' 'Unskilled.'	Item 1.10
Self-employment (S-E) Status	'S-E in primary occupation,' 'S-E in secondary occupation,' 'S-E both occupations,' 'Unemployed/Student,' 'Retired/Not self-employed'	Items 1.11 and 1.14
Number of Household Possessions	Number of possessions excluding the gas stove (owned by 91.3%) and land line or cell telephone (owned by 91.1%) which were each 'owned' by more than 90% of the participants and categorized as tertiles – '0–5,' '6–9,' '10–20' items	Item 1.21
Indoor Toilet Facilities	'No water closet,' 'Water closet'	Item 1.22
Sources of Water	'Open sources,' 'Piped outside House ,' 'Piped inside House/Bottled'	Item 1.23
Crowding Index	Values equal number of persons residing in home divided by number of rooms in the home excluding kitchen and bathroom.	Items 1.24 and 1.25
Weekly Household Income	'<6,200,' '6,200–23,000,' '23,001–60,000,' '≥60,001,' 'Do not know No response'	Item 1.30

Appendix 5: Non-communicable Diseases and Their Risk Factors

Blood Pressure Variable Definitions[1]

Dichotomous Variables

Hypertension

For JNC–7 Hypertension is

1. Answer to Question 3.9 a *"because of your high blood pressure have you ever done any of the following in the – taken prescribed medication is either*
   a. 1 – yes, in the past or 2, yes currently

      Or

2. Measured blood pressure systolic ≥ 140mmHg or diastolic ≥90

For ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA 2017 criteria

1. Answer to Question 3.9 a "because of your high blood pressure have you ever done any of the following in the – taken prescribed medication is either
   a. 1 – yes, in the past or 2, yes currently

      Or

2. Measured blood pressure systolic ≥ 130mmHg or diastolic ≥80mmHg

Abnormal Blood Pressure

JNC–7 Pre-hypertension

Systolic – 120–39mmHg or diastolic 80–89mmHg

New 2017 ACC/AHA/AAPA/ABC/ACPM/AGS elevated blood pressure

Systolic 120–29mmHg and diastolic <80mmHg

1. Systolic blood pressure readings less than 70mmHg and diastolic blood pressure readings greater than 130 mmHg were excluded from data analysis.

High Blood Pressure Cut Points

Table A5.1: WHO (JNC–7) Blood Pressure Categories [1]

	Systolic Blood Pressure (mmHg)		Diastolic Blood Pressure (mmHg)
Normal Blood Pressure	<120	And	<80
Pre-hypertension	120–39	Or	80–89
Stage 1 Hypertension	140–59	Or	90–99
Stage 2 hypertension	≥ 160	Or	≥ 100

Table A5.2: Blood Pressure Categories – ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults [2]

	Systolic Blood Pressure (mmHg)		Diastolic Blood Pressure (mmHg)
Normal Blood Pressure	<120	And	<80
Elevated Blood Pressure	120–29	And	<80
Stage 1 Hypertension	130–39	Or	80–89
Stage 2 Hypertension	≥ 140	Or	≥ 90

Abnormal Blood Glucose Variable Definitions[2]

Dichotomous Variable

Diabetes Mellitus

For American Diabetes Association (Definition used to obtain estimates in Chapter 5 based on JHLS III data)

1. Answer to Question 3.17 a *"because of your diabetes have you ever done any of the following in the – taken prescribed medication is either*
   a. 1 – yes, in the past or 2, yes currently

      Or
2. HbA1c ≥6.5%

      Or
3. FPG ≥ 7.0 mmol/l

For World Health Organization (Definition used to obtain estimates in Chapter 12 based on JHLS III data)

1. Answer to Question 3.17 a *"because of your diabetes have you ever done any of the following in the – taken prescribed medication is either*
   a. 1 – yes, in the past or 2, yes currently

      Or
2. FPG ≥ 7.0 mmol/l

Definition used to obtain estimates based on JHLS II data (WHO 2006 criteria)

1. Participant a diabetic case if (1) s/he indicated is taking medication for diabetes, or (2) s/he is not on diabetic medication but capillary fasting glucose is ≥ 6.5 mmol/L.

Definition used to obtain estimates based on JHLS I data (WHO 1999 criteria)

1. Participant a diabetic case if (1) s/he indicated is taking medication for diabetes, or (2) s/he is not on diabetic medication but capillary fasting glucose is ≥ 6.1 mmol/L.

Impaired Fasting Glucose

For World Health Organization

1. FPG 6.1 to 6.9mmol/l

2. Fasting glucose values less than 2mmol/l or greater than 33mmol/l set to missing.

Blood Glucose Cut Points

Table A5.3: American Diabetes Association Criteria for the Diagnosis of Diabetes [3]

1. A1C ≥6.5%. The test should be performed in a laboratory using a method that is NGSP certified and standardized to the DCCT assay.*
OR
2. FPG ≥ 7.0 mmol/l
OR
3. 2-h plasma glucose ≥200 mg/dl (11.1 mmol/l) during an OGTT. The test should be performed as described by the World Health Organization, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water.
OR
4. In a patient with classic symptoms of hyperglycaemia or hyperglycaemic crisis, a random plasma glucose ≥200 mg/dl (11.1 mmol/l).

Table A5.4: 2006 WHO Recommendations for Diagnostic Criteria for Diabetes and Intermediate Hyperglycaemia [4]

Diabetes	Fasting ≥7.0mmol/l Or 2hr post prandial ≥11.1mmol/l
Impaired Glucose Tolerance	Fasting < 7mmol/l And 2hr Post prandial≥7.8 and ≤ 11.1mmol/l
Impaired Fasting Glucose	Fasting 6.1 to 6.9mmol/l and 2hr post prandial <7.8mmol/l

Currently HbA1c is not considered a suitable diagnostic test for diabetes or intermediate hyperglycaemia

Body Size

Body Mass index Variable Definitions[4]

Table A5.5: Body Mass Index (WHO)[5]

Nutritional Status	BMI (kg/m²)
Underweight	<18.5
Normal Weight	18.5–24.9
Overweight	25.0–29.9
Obesity Class I	30.0–34.9
Obesity Class II	35.0–39.9
Obesity Class III	≥ 40

Waist Circumference and Waist-to-hip Ratio

Table A5.6: WHO Cut-off Points and Risk of Metabolic Complications [5]

	Cut-off Points		
	Male (cm)	Female (cm)	Risk of Metabolic Complications
Waist Circumference	>94	>80	Increased
Waist Circumference	>102	>88	Substantially increased
Waist-hip Ratio	≥ 0.90	≥ 0.85	Substantially increased

Table A5.7: International Diabetes Federation Cut-off Points for Different Ethnic Groups [6]

	Male	Female
Europids	>94 cm	>80 cm
South Asians, Chinese, and Japanese	>90 cm	>80 cm
Sub-Saharan Africans	Use European data until more specific data are available	

4. Body mass index values less than 10kg/m2 or greater than 99kg/m2 were excluded from data analysis. Height measurement values less than 0.9144m or greater than 2.1336m set to missing.
5. https://www.who.int/europe/news-room/fact-sheets/item/a-healthy-lifestyle---who-recommendations

Hypercholesterolemia

Total Cholesterol high if >= 5.2mmol/l or on medication for high cholesterol, optimal if Total Cholesterol < 5.2 mmol/l. Persons with cholesterol levels == 0 to be excluded from the analysis.

(National Cholesterol Education Program Adult Treatment Panel III [ATP III] Criteria [Expert Panel on Detection Evaluation and Treatment of High Blood Cholesterol in Adults, 2001])

Other NCDs

Current Asthma

Indicated being told by a healthcare professional that they have asthma by responding "yes" to questionnaire item 3.1(m) and/or questionnaire item 3.54

AND

responded "yes" to questionnaire item 3.55 (indicating they still have asthma)

AND

Indicated they had done at least one of the following:

- visited hospital/casualty department/the emergency room in the past 12 months because of asthma (questionnaire item 3.59)
- are currently taking any herbal or traditional remedy because of asthma (questionnaire item 3.58)
- are currently taking any medication because of asthma (questionnaire item 3.56).

Cancer

Indicated being told by a health professional that they have cancer by responding "yes" to questionnaire item 3.1(o).

Sickle Cell Disease

Deemed a homozygous sickle cell disease case if homozygous (Hb SS) for the sickle gene based on laboratory testing

Cardiovascular Disease Complications

Heart Attack

Dichotomous (Yes/No)

Indicated being told by a doctor or other healthcare professional that they have suffered a heart attack by responding "yes" to questionnaire item 3.37b.

Stroke

Dichotomous (Yes/No)

Indicated being told by a doctor or other healthcare professional that they have suffered a stroke by responding "yes" to questionnaire item 3.46.

Physical Activity Levels

Definitions for Physical Activity Categories7

Category 3 – High

The two criteria for classification as 'high' are:

a. vigorous-intensity activity on at least 3 days achieving a minimum Total physical activity of at least 1500 MET-minutes/week

OR

b. 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum Total physical activity of at least 3000 MET-minutes/week.

Category 2 – Moderate

The pattern of activity to be classified as 'moderate' is either of the following criteria:

a. 3 or more days of vigorous-intensity activity of at least 20 minutes per day

OR

b. 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day

OR

c. 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum Total physical activity of at least 600 MET-minutes/week.

Individuals meeting at least one of the above criteria would be defined as accumulating a minimum level of activity and therefore be classified as 'moderate'.

Category 1 – Low

This is the lowest level of physical activity. Those individuals who do not meet criteria for categories 2 or 3 are considered to have a 'low' physical activity level.

Outliers Excluded from Data Analysis

Triglycerides: Values less than 1mmol/l or greater than 9mmol/l set to missing. Glycosylated Haemoglobin (HbA1C): Values less than 3 or greater than 18.9 set to missing.

Haemoglobin: Values less than 5.23 or greater than 23.6 set to missing.

Total cholesterol: Values less than 2mmol/l or greater than 11.6mmol/l set to missing. HDL cholesterol: Values less than .6mmol/l or greater than 3.3mmol/ set to missing. Waist circumference: Values less than 30cm or greater than 302cm set to missing.

Hip circumference: Values less than 30cm or greater than 302cm set to missing.

List of References

1. National High Blood Pressure Education Program, *The seventh report of the Joint National Committee (JNC VII) on prevention, detection, evaluation, and treatment of high blood pressure*. 2004.
2. Whelton, P.K., et al., *2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults.* A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines, 2017.
3. *Diagnosis and Classification of Diabetes Mellitus.* Diabetes Care, 2010. **33** (Supplement 1): p. S62–S69.
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6. Alberti, G., et al., *The IDF consensus worldwide definition of the metabolic syndrome.* Brussels: International Diabetes Federation, 2006: p. 1–23.
7. IPAQ Research Committee. *Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ) – Short and Long Forms 2005.* Available from: http://www.ipaq.ki.se/scoring.pdf.

Appendix 6: Definitions for Depression in the JHLS I, II, and III

1. JHLS III questionnaire items 11.12 TO 11.14 Used to define depression

11. 12 During the past month have you been

Bothered a lot by:	0.No	1.Yes	88.DK	99. No Response
a. Little interest or pleasure in doing things	☐	☐	☐	☐
b. Feeling down, depressed or hopeless	☐	☐	☐	☐
c. Feeling sad or lonely	☐	☐	☐	☐
d. Feeling guilty or worthless	☐	☐	☐	☐
e. Change in appetite	☐	☐	☐	☐
f. Change in sleeping patterns	☐	☐	☐	☐

11.13 Have you ever seriously considered suicide? |__|__|

0. No (Go to Section 12)   1. Yes
88. Don't know (Go to Section 12)   99. No response (Go to Section 12)

11.14 How recently did you consider suicide? |__|__|

0. Never (Go to Section12)   1. Less than six months ago
2. Six months to a year ago.   3. One to two years ago
4. Two – five years ago   5. More than five years ago.
88. Don't know   99. No response

A respondent was classified as a depression case if there was a positive response to at least one out of 11.12 items a to b, and at least three positive responses in item 11.12 c to f, OR respondent had seriously considered suicide within the past year.

2. Definition above also used for JHLS II. The corresponding questionnaire items were items 7.19 to 7.21.

3. For JHLS I, the following was used to define depression, yielding the estimates shown in Chapter 12:

a. A respondent was classified as a depression case if, during the previous month, respondent had been frequently bothered by feeling down, depressed, or hopeless and by little interest or pleasure in doing things.

Appendix 7: SCD Subsample vs National Sample

Table A7.1: Sickle Cell Disease Subsample vs National Sample

	Population Represented by	
	Total JHLS III Sample	Total Sample for u SCD Data Analyses
Females	49.5	50.2[47.6, 53.0]
Males	50.5	49.7[47.1, 52.4]
Age		
15–24	25.5	21.4[18.9, 24.0]
25–34	21.0	19.1[17.2, 21.1]
35–44	17.3	16.8[14.8, 19.1]
45–54	15.2	17.4[16.0, 18.9]
55–64	10.0	12.1[10.8, 13.6]
65–74	6.2	7.4[6.7, 8.1]
75+	4.8	5.8[5.0, 6.8]

The three rounds of the Jamaica Health and Lifestyle Survey, executed in 2000-2001, 2007-2008 and 2016-2017, were done through a collaboration between Jamaica's Ministry of Health and Wellness in the respective periods, and the Caribbean Institute for Health Research (CAIHR), formerly the Tropical Medicine Research Institute (TMRI), of the University of the West Indies (UWI). The surveys have yielded estimates of the prevalence of non-communicable diseases (NCDs), including intentional and unintentional injuries, HIV/AIDS and other sexually related conditions, and their risk factors. The first Jamaica Health and Lifestyle Survey (JHLS I) was commissioned by The Health Promotion and Protection Division of the Ministry of Health, Jamaica, and was funded by the Inter-American Development Bank. Estimates obtained using data from the JHLS I guided the creation of the National Health Fund (NHF) in 2003. The second Jamaica Health and Lifestyle Survey (JHLS II) was funded primarily by the NHF. Funding for the third Jamaica Health and Lifestyle Survey (JHLS III) was provided by the NHF and the Ministry of Health and Wellness (MOHW), Jamaica.

Representatives from the MOHW and, specifically, the Epidemiology Research Unit within CAIHR/TMRI comprised the team of investigators for each of the surveys. The JHLS III had two primary investigators, one representing each of the institutions (MOHW and CAIHR), while the JHLS I and the JHLS II each had one principal investigator (PI) who was from the TMRI (UWI). For JHLS I and JHSL II, the writing team for the technical reports were investigators from the TMRI only. In contrast and as an indication of stronger collaboration between the entities, the writing team for the JHLS III Technical Report was comprised of investigators from CAIHR and the MOHW.

Unlike the previous rounds of the survey, the JHLS III sample of respondents included persons 75 years and older. In addition, still in contrast to previous rounds of the JHLS, the third round collected data on risk factors for the vector borne illness caused by the Chikungunya and Zika viruses; venous blood samples for the evaluation of biomarkers; geographic information systems (GIS) data to support the assessment of the relationship between the built environment and the occurrence of health outcomes; data on men's health issues; and qualitative research data via interviews and focus groups.

It is anticipated that findings from this survey will inform policy development in the MOHW as well as enable assessment of the impact of national strategies and policies on the burden of various health outcomes.

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