



Pan American STEPS Survey Noncommunicable Diseases and Risk Factors

Guyana 2016



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Suggested citation. *Pan American STEPS Risk Factor Surveillance Survey Guyana 2016 Report.*

Guyana.: PAHO, Ministry of Public Health of Guyana, and the Bureau of Statistics, Guyana 2019.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://iris.paho.org>.

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Message from the Minister of Public Health, Guyana

Guyana is a country of unique diversification which makes it stand out from among most countries within the region. Land of many waters; six rich ethnic cultures under the motto of One people, One nation, One destiny, only English speaking country in South America; these are but a few of the characteristics that set Guyana apart from all others. However, its health profile has made it not so unique, as we continue to share the same issues and challenges as those around us.

In this regard, our main disease burden is the formidable gamut of noncommunicable diseases solely responsible for most of our deaths for as long as we can remember. Sadly, the figures continue to rise despite our many efforts to control the growing epidemic. Tobacco smoke, abuse of alcohol, lack of physical activity and unhealthy diets have been the main contributing factors to the onset of the noncommunicable diseases groups; sad to say, these very same factors are avoidable and can over time reduce the complications and deaths arising from the myriad of conditions namely cancers, heart diseases, diabetes and chronic lung diseases.

Regrettably, Guyana has fallen into the same health profile as other countries for precisely the same reasons; people are walking and exercising less, cooking less, are more stressed mentally and have more disposable income to indulge in unhealthy lifestyles. The increased carbon footprints have brought about more pollution which has added to the already unhealthy environment, and it is quite clear that in order for the desired outcomes to be achieved, intense changes in behavior and lifestyles must occur.

The Government has and continues to do its part in ensuring that there is a halt to the growing incidence of noncommunicable diseases. An investment in the much-needed Stepwise Approach to Chronic Diseases Risk Factor Surveillance was undertaken. The STEPS Survey has provided the country with the baseline figures related to the risk factors and vulnerable groups linked to noncommunicable diseases. We are in a much better position, with this data, to develop and implement appropriate responses to the surging epidemic.

This report is a commitment from the Government in ensuring that the optimum quality of health care is provided at every level to the People of Guyana. The guarantee of providing essential health services and medications is resonant, and it is my hope that the report brings to the table those burning issues which MUST be urgently addressed. Further, the need for a multi-sectoral approach cannot be overstated, for this is the only way forward in finding the right solutions for the challenges that are contained within this report.

The STEPS report is an important document, for which the country remains grateful. Sincerest gratitude is extended to all those who played a part, regardless of how small, and I wish to appeal to all stakeholders to continue to work in close collaboration, with the earnest resolve of impacting effectively on noncommunicable diseases, as we seek to address the country's health in the most sustainable and equitable manner. Our peoples' health and well-being are pivotal to the development and progress of our beloved country.

Hon. Volda Ann Lawrence, M.P.

Minister of Public Health

Message from PAHO

Noncommunicable diseases (NCDs) are a complex public health matter and economic development challenge, which requires different interventions from the health sector, as well as sectors outside of health. The adoption of the Port of Spain Declaration in 2007 by Member States of the Caribbean Community (CARICOM), which focused on countries uniting to stop the epidemic of NCDs, and later the United Nations High Level meeting in 2011, represented a global struggle against NCDs. For the first time, Heads of States acknowledged that NCDs presented a major challenge to socioeconomic development.

The 2030 Agenda for Sustainable Development adopted at the United Nations Summit on Sustainable Development in September 2015, recognized NCDs as a major challenge for sustainable development. Countries have committed to develop national responses to the overall implementation of the Agenda, including the following goals related to NCDs:

- Reduce by one third premature mortality from NCDs
- Strengthen responses to reduce the harmful use of alcohol
- Achieve universal health coverage (UHC)
- Strengthen the implementation of the WHO Framework Convention on Tobacco Control (FCTC)
- Support the research and development of vaccines and medicines for NCDs that primarily affect developing countries
- Provide access to affordable essential medicines and vaccines for NCDs

Notwithstanding the implementation of interventions to reduce the growing global and regional burden, NCDs continue to be the leading cause of preventable and premature death and illness in Guyana.

The Pan American Health Organization/World Health Organization (PAHO/WHO) was pleased to provide the technical guidance for the first nationally representative Pan American STEPS Survey on Noncommunicable Diseases and Risk Factors. This survey was conducted in partnership with the Ministry of Public Health, and the Bureau of Statistics, Guyana. Support for the conduct of training for the data collectors, was provided by the Caribbean Public Health Agency and the final report was prepared with support from the University of Newcastle, Australia.

The results of the survey provide baseline information on NCDs and their risk factors in the population. PAHO/WHO is happy to report that the survey was conducted using an electronic device, instead of using printed materials; this made the data cleansing and primary analysis easier and less time consuming. This highlights the commitment of the Ministry of Public Health and the Bureau of Statistics to integrate modern IT technologies into its processes and interventions.

PAHO/WHO is confident that the findings from the survey will provide critical information to develop and guide evidence-driven interventions that address the growing burden of NCDs in Guyana. PAHO congratulates the Ministry of Public Health and its collaborating partners on the development of the Pan American STEPS Survey on Noncommunicable Diseases and Risk Factors

and looks forward to providing sustained support for the implementation of interventions at the country and regional levels to reduce the growing burden of these diseases in Guyana.

Acknowledgements

Thanks to all who have contributed to the successful execution of this very important survey for the people of Guyana. The finalization and publication of this report would not have been possible without the contribution of many stakeholders and partners. We would especially like to acknowledge the work of the Agencies and individuals listed below:

Dr. Kavita Singh, Coordinator, Noncommunicable Diseases Unit, Dr. Troy Sagon, Technical Officer, NCDs Unit and the Ministry of Public Health for coordinating the survey and providing the financial support for field work training and data collection for this survey.

Dr. William Adu-Krow, PAHO/WHO Guyana Representative, Ms. Karen Roberts, Specialist, NCDs and Family Health, Ms. Melanie Thomas, Project Coordinator, Department of Foreign Affairs, Trade and Development, Canada, and Dr Roberta Caixeta, Advisor, NCDs Surveillance, Prevention and Control and Ms. Dolores Ondarsuhu, Specialist, NCDs Monitoring and Surveillance, from PAHO/WHO Regional Office for providing the technical guidance for the development of survey implementation plan, training, data collection, quality assurance, and preparation of the final report. Meredith Kruse for the valuable contribution during the review and report writing process.

Ms. Sarah Quesnel-Crooks and Dr. Glennis Andall-Brereton, Caribbean Public Health Agency (CARPHA), for the technical support for the conduct of training and the data analyses for this survey.

Mr. Ian Manifold and the Guyana Bureau of Statistics for conducting the data collection, supporting the process for the data analyses and guiding the preparation of the methodology section of this report.

The University of Newcastle, Australia, for conducting the quality assurance process and for supporting the development of the country report.

Sincerest gratitude is expressed to Ms. Volda Lawrence, Minister of Public Health, Ms. Collette Adams, Permanent Secretary and Dr Shamdeo Persaud, Chief Medical officer for their unwavering support throughout the conduct of the survey and to all stakeholders who contributed to the successful conduct of the survey and the development of the final report.

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Abbreviations

BMI	Body Mass Index
CARICOM	Caribbean Community
CI	Confidence Interval
cm	Centimeters
DALY	Disability-Adjusted Life Year
DBP	Diastolic Blood Pressure
ED	Enumeration District
g	Grams
GMF	Global Monitoring Framework
GYD	Guyanese Dollar
GYTS	Global Youth Tobacco Survey
HDL	High Density Lipoprotein
HPV	Human Papillomavirus
LDL	Low Density Lipoprotein
LMIC	Low and Middle-Income Country
mg/dl	Milligrams per Deciliter
mmHG	Millimetres of Mercury
mmol/L	Millimoles per Litre
NCD	Noncommunicable Disease
NCD CCS	NCD Country Capacity Survey
Pap	Papanicolaou test
PSU	Primary Sampling Unit
SBP	Systolic Blood Pressure
UHC	Universal Health Coverage
UMIC	Upper Middle-Income Country
UNHLM	United Nations High Level Meeting
USD	United States of America Dollar
VIA	Visual Inspection with Acetic Acid
WHO FCTC	World Health Organization Framework Convention on Tobacco Control

Executive Summary

Noncommunicable diseases (NCDs) and their risk factors are the leading cause of death worldwide. In Guyana, 68% of deaths in 2016 were attributed to NCDs, specifically, cardiovascular disease (34%), cancers (8%), diabetes (8%), and chronic respiratory diseases (3%). The risk of premature death (between the ages of 30-70 years) from NCDs is 31% in Guyana, which has negative impacts on the economic productivity and health care expenditures of the country(1).

The Pan American STEPS survey is version of the WHO STEPS wise approach methodology for the region of the Americas. In order to produce national estimates for the burden of NCDs and their risk factors and assess changes over time within a representative sample of the population, the World Health Organization (WHO) and Pan American Health Organization (PAHO) developed the Pan American STEPS Survey Noncommunicable Diseases and Risk Factors instrument. This Pan American STEPS Survey includes three different levels of data collection. Step 1 is a household questionnaire that gathers demographic and behavioral information; Step 2 collects physical measurements; and Step 3 collects blood and urine samples for biochemical analysis. In Guyana, Step 2 data collection included body weight, height, waist circumference, and blood pressure measurements. Wet blood samples (venous blood samples) were used for Step 3 that measured blood glucose, lipid profiles, and presence of hemoglobinopathies, such as sickle cell anemia and Thalassemia¹.

Guyana conducted the Pan American STEPS Survey version 3.1 from September 28 to October 26, 2016 using digital tablets. The Survey was implemented as a population-based survey of adults aged 18-69 years old. The sample size and allocation were based upon the 2012 census frame and included 288 enumeration districts from both the coastal and inland regions; 12 households were randomly selected within each enumeration district. A total of 3,456 households were selected for participation in Step 1 and 50% of this sample was randomly selected for participation in Step 3. Mapping and relisting of the 288 enumeration districts was conducted in July 2016 since the 2012 census was outdated.

The total sample size was 3,456 adults and the overall response rate was 77% for Steps 1 and 2. For Step 3, the total sample size was 1,728 and the overall response rate was 40%. The sampling methodology and weighting of the data in analysis facilitated the representativeness of the results for the population in Guyana. The use of STEPS as a standardized and validated tool also ensured the comparability of the results.

Of the 2,662 respondents, 40.1% (1,068) were males and 59.9% (1,594) were females. A majority (60.1%) of both males and females represented the younger age bracket, ages 18-44.

Tobacco control

Overall prevalence of current tobacco smoking was 15.4% (12.3-18.4) for both males and females across all age groups. Males were much more likely to be current smokers than females (26.6%, 21.2-32.0 and 3.3%, 2.3-4.4, respectively). Likewise, the pattern of consumption demonstrates

¹ Data on hemoglobinopathies, such as sickle cell anemia and Thalassemia is reported elsewhere.

more daily smokers than occasional smokers within the adult population (10.8% and 4.6%, respectively). Older males aged 45-69 reported higher current daily smoking (24.6%, 19.3-30.0), yet also represented the largest group of former smokers (30.4%, 23.6-37.1). Excluding “other,” manufactured cigarettes were the most common type of tobacco smoked among current smokers, followed by cigars, cheroots, cigarillos, and hand-rolled cigarettes (95.3%, 92.4-98.2; 7.0%, 2.4-11.6; and 7.0%, 3.2-10.8, respectively).

Nearly one third of adults (29.4%, 26.7-32.1) reported that they saw advertisements promoting cigarettes in stores within the last 30 days. Among current smokers, 85.9% (79.8-91.9) reported noticing health warnings on cigarette packages and of these, 63.5% (54.0-73.0) thought about quitting because of the warning labels. It is important to acknowledge that the 2016 Pan American STEPS Survey was conducted prior to the introduction of the Tobacco Control Act 2017, as such, there were no tobacco control policy in place at the time.

Alcohol

Alcohol consumption was more common among males than females with more than half of all males reporting drinking in the past 30 days (59.3%, 54.9-63.8 and 21.4%, 18.9-24.0, respectively). Heavy episodic drinking, defined as consuming at least 60 grams or more of pure alcohol on at least one occasion in the past 30 days, was also more common among males, particularly those 18-44 years old (38.4%, 32.7-44.2). This demonstrates patterns of alcohol use that may lead to acute consequences, such as violence and injuries.

Healthy diet and lifestyle

Consumption of the recommended five servings of fruits and vegetables per day was met by only 6.4% (5.0-7.8) of adults 18-69. Vegetables were consumed more frequently than fruits (4.8 days, 4.7-5.0 and 3.3 days, 3.2-3.4, respectively).

Information was also collected regarding self-reported salt consumption. Lowering salt in diet was acknowledged as very important (70.9%, 67.5-74.3); though less than half reported reading salt or sodium content on food labels and buying low sodium alternatives (40.2%, 37.0-43.4 and 35.8%, 32.7-38.9, respectively). This dichotomy suggests a gap between knowledge and practice in lowering salt intake.

Physical activity was also inadequate with 29.3% (26.9-31.8) not meeting the WHO recommendations. Both males and females reported physical activity from work and for transport, with less activity during leisure time (53.9%, 51.1-56.6; 33.9%, 31.2-36.6; and 12.3%, 10.7-13.8, respectively). Physical inactivity levels were reflected in prevalence of overweight and obesity. Half of adults were considered overweight (50.3%, 24.6-28.9) or obese (23.6%, 21.3-25.9). Physical inactivity was lower among females, as such, females were more likely to have a BMI higher than or equal to 25 kg/m² than males (61.8%, 58.6-65.0 and 39.8%, 34.6-44.9, respectively).

Health system response to NCDs and risk factors

Approximately one in four adults in Guyana have not had their blood pressure measured (24.1%, 21.0-27.2) and most adults have never had their blood sugar or total cholesterol measured

(52.4%, 49.9-54.9 and 72.1%, 69.8-74.3, respectively). However, one in every four (26.4%) adults had raised blood pressure (SBP \geq 140 and/or DBP \geq 90 mmHg or higher) or were currently on medication for raised blood pressure. Among those diagnosed with raised blood pressure, nearly half (45.5%) were unaware of their condition, suggesting there may be a large proportion of hypertension not yet diagnosed within the population. Less than one in every five (17.1%) adults aged 18-69 had controlled their raised blood pressure. Likewise, one in every ten (11.5%, 8.5-14.4) had high blood sugar or were on medication for diabetes and nearly half of all adults (50.1%, 45.7-54.5) had high cholesterol or were on medication for high cholesterol.

Females and those in the 45-69 age group were most likely to receive lifestyle advice from a doctor when compared to males aged 18-44. The most frequent lifestyle advice offered was related to diet and maintaining a healthy body weight, which may reflect the responsiveness of the health system to stem the overweight and obesity epidemic.

Health screenings are also important tools that when standardized can lead to early detection and prevention of disease. However, in Guyana, a majority of females have never had a screening test for cervical cancer, mammogram, or breast exam (77%, 73.9-80.1; 89.9%, 88.0-91.9; and 70.9%, 67.8-74.1, respectively); likewise, a majority of men never have had a prostate exam (6.7%, 5.2-8.3 have had an exam).

Finally, the Pan American STEPS Survey shows a majority (66.8%, 64.8-68.8) of adults in Guyana demonstrated 1-2 risk factors and nearly 75% (73.1-77.4) of those aged 18-44 years old fell into this category, suggesting the likelihood of developing chronic diseases is occurring at younger ages. Nearly one in every three adults (31.9%, 29.9-33.8) had 3 or more risk factors. This risk assessment considered current daily smoking habits, insufficient fruit and vegetable consumption, physical inactivity, obesity, and the existence of raised blood pressure.

Recommendations

The results of the Pan American STEPS Survey reinforce the need for continued focus and implementation of Guyana's Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Diseases and their Risk Factors, 2013-2020. As such, the following recommendations are presented to reduce the burden of NCDs and risk factors in Guyana and are based upon the respective priority actions of the WHO Global Action Plan for NCDs 2013:

Priority Action 1: Reigniting the political commitment

- NCDs should remain as a priority issue for attention and resources as outlined in Guyana's National Health Vision 2020 and adequate resources allocated for the sustained implementation of the Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Diseases and their Risk Factors, 2013-2020.

Priority Action 2 - Implement multisectoral NCDs plans of action

- Guyana should continue to work to build the capacity of the National NCDs Commission.
- Efforts to collate data on NCDs and related risk factors in the country from other health sectors should be defined.

- The country should also strengthen efforts to undertake health economic studies on NCDs to generate evidence on cost of NCDs and their impact in the country and the region to guide NCDs policies and plans.
- Guyana should continue to use the WHO Tools for developing, implementing and monitoring the implementation of the National Multisectoral Action Plan for NCDs.
- Efforts should be made to strengthen partnerships and collaboration with academic institutions, civil society organizations, and UN agencies, including PAHO, in an effort to harmonize and intensify efforts for NCDs prevention and control within the country.

Priority Action 3 – Implement regulatory policies on risk factors

- Guyana should strengthen efforts to support region-wide initiatives, to develop where necessary, and implement common regulations and legislations for tobacco control, alcohol, ultra -processed foods and sugar sweetened beverages as part of CARICOM's responsibility.
- There should be sustained advocacy and action for the inclusion of taxes in the country's national tobacco legislation in keeping with the benchmark of 70%.
- There should be finalization of the National Alcohol Policy and more aggressive efforts to develop and/or adopt policies to promote physical activity

Priority Action 4 - Work towards universal health coverage and universal access to health

- Guyana should continue to work aggressively towards the achievement of universal health coverage and universal access to health.
- The country should endeavor to utilize the PAHO strategic fund to improve access to quality NCDs medication at lower prices for greater investment in health at the primary health care level and implement human resources for health training in order to increase skills and competencies of personnel in NCDs prevention, screening and early detection, and NCDs management.
- The country should continue to work to strengthen the delivery of health services at the regional levels and foster better collaboration with other sectors outside of health, particularly the Ministry of Communities.

Priority Action 5 - Strengthen surveillance and data collection

- The country should focus to strengthen at least 4 of the key sources of information that are relevant for NCDs: mortality information system, population-based surveys collection data on youth and adult, cancer registry and primary health care information system.
- Guyana should strengthen their capacity to monitor its progress on the implementation of policies and measure the 25 indicators and 9 targets established at the Global Monitoring Framework on NCDs.
- Pan American STEPS Survey should be integrated at the national survey system established by the Guyana Bureau of Statistics to be implemented every 4 to 5 years with funds being planned and allocated for this activity as part of the national calendar.
- NCDs and their Risk Factors should be included in the national surveillance system response normative along with the communicable disease, violence and injuries.

Introduction

Commitments to Control and Prevent NCDs

In response to the growing burden of NCDs, global and regional commitments have been made over the past 15 years to raise the profile of NCDs and their risk factors in health, social protection, and economic development agendas.

The landmark 2007 Port of Spain Declaration of the Caribbean Community (CARICOM) was a crucial step towards the United Nations High Level Meeting on NCDs (UNHLM) and its political declaration adopted in 2011 (2, 3). The 2011 Political Declaration led to efforts to respond to the burden of NCDs, including the development and endorsement of the Global (2013-2020) and Regional (2013-2019) Action Plans for the Prevention and Control of NCDs (4, 5). In addition to establishing objectives and lines of work, the Global Action Plan provides two important tools: a menu of policy options and cost-effective interventions that address the key NCDs and risk factors known as “NCDs Best Buys” and a Global Monitoring Framework (GMF) that is comprised of 9 voluntary targets and 25 indicators (6, 7).

During the second UNHLM on NCDs held in 2014, an outcome document was presented establishing the need to monitor progress in the implementation of the “NCDs Best Buys” (8). Then in 2015, world leaders formally adopted the 2030 Agenda for Sustainable Development at the United Nations, in which NCDs were included and developed 10 progress indicators to be used by the World Health Organization (WHO) to demonstrate progress achieved in the implementation of commitments included in the 2011 UN Political Declaration and 2014 UN Outcome Document on NCDs (9, 10). Most recently in 2018, the third UNHLM on NCDs was held calling for an acceleration of response to NCDs (11).

In Guyana, the Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Diseases and their Risk Factors, 2013-2020, aligns with Global and Regional action plan for the prevention and control of NCD (8, 12). This plan includes a framework of action that addresses the need for multisectoral policies and partnerships, NCD risk factors and protective factors, health system response, surveillance, and research.

To track progress toward achievements, Guyana’s Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Diseases and their Risk Factors, 2013-2020 includes the 9 voluntary targets from the GMF (12). The timely measurement and reporting of these monitoring frameworks require a surveillance system that can produce and analyze data in a systematic, periodic, standardized, and sustainable manner. These data should be used to guide decision-making processes. Guyana’s successful completion of this first Pan American STEPS Survey represents its commitment to produce a baseline to monitor NCDs and strengthen national surveillance capacity.

Overview of the burden of NCDs

NCDs are by far the major cause of deaths globally and in the Americas. In 2016, 81% of all deaths were due to NCDs. Among these deaths, 39% were between the ages of 30 to 70 years old. Cardiovascular diseases (34.9%), cancer (24.3%), diabetes (6.2%) and respiratory chronic

diseases (8.9%), are the four leading causes of NCD premature deaths (30-70 years old) in the Region. In 2016, a 30-year-old individual leaving in the Americas had a 15.1% chance of dying from any of the four major NCDs before reaching the age of 70. (13).

These four main NCDs share four modifiable risk factors: tobacco use, harmful use of alcohol, unhealthy diet, and physical inactivity. These in turn lead to other key metabolic/physiological changes, such as overweight and obesity, raised blood pressure, raised blood glucose, and higher cholesterol levels (7, 14). Comparisons of the prevalence of risk factors across the six WHO regions highlight the worrying state of health in the Americas.

The worldwide prevalence of overweight (BMI \geq 25 kg/m²) is 38.9% (15). However, in the Region of the Americas, 62.5% of persons are overweight (15). Likewise, the prevalence of obesity (BMI \geq 30 kg/m²) in the world is 13.1%, while in the Americas the prevalence is more than double that of the global average (28.6%) (15). This makes the Americas the most obese region in the world (16). Among school-age children and adolescents, overweight prevalence rates are steadily surging and are reaching, on average, one in four children (16).

Following a similar pattern, the Region ranks first among WHO Regions with the highest prevalence of insufficient physical activity (39.1%) and second in alcohol consumption per capita (8.2 grams of pure alcohol), exceeded only by the European region (17, 18). A decline in current tobacco smoking prevalence among adults has been recorded, changing from 22.1% in 2007 to 16.9% in 2016, mainly because countries have made progress implementing the WHO FCTC demand reduction measures (19).

The Americas are not among the top 3 WHO Regions with the highest prevalence of raised blood pressure and raised blood glucose, but it is a concern based on the current status of other key modifiable risk factors (20, 21). A strong response from the health care sector is required to prevent and control NCDs.

An assessment to identify countries' progress towards the implementation of the "Best Buys" was completed in 2015, prior to the implementation of the Pan American STEPS Survey in Guyana. The results of this assessment are presented through a set of indicators called the "10 progress indicators" reported in the Noncommunicable Diseases Progress Monitor (22, 23). These indicators provide an overview on the implementation status of the WHO "Best Buys," national surveillance capacity, and response from the health care system in the country and across the region of the Americas. The results of the progress indicators show that even though two countries in the Region (Costa Rica and Brazil) rank among the top 10 countries in the world for progress, this is not enough (23). Guyana fully achieved 3 indicators in 2015 and since implementing the Pan American STEPS Survey, fully achieved 4 indicators in 2017; however, more work needs to be done (22, 23).

There is an urgent need for countries to accelerate the implementation of the cost-effective "Best Buy" policies, especially among the Caribbean Countries. Of the 12 Non-Latin Caribbean countries assessed in the Noncommunicable Diseases Progress Monitor 2015, the majority have only fully achieved 3 or fewer of the progress indicators with Jamaica and Suriname achieving 9 and 7, respectively (22). Since then, the 2017 assessment was conducted and no significant improvements were made in Guyana or the Caribbean (23). This progress is inadequate and without immediate action, reaffirmed political commitment, and significant investment, Global and Regional targets to reduce the burden of NCDs and their risk factors will not be met.

The results of the Pan American STEPS Survey presents the status of NCDs and their risk factors and highlights the need for Guyana to accelerate the implementation of NCD policies. Significant progress toward fully achieving the progress indicators is expected from Guyana in the next Noncommunicable Diseases Progress Monitor assessment in 2021.

Survey Objectives

The implementation of Guyana's Pan American STEPS Survey allows countries to strengthen national surveillance capacity to monitor and report on NCDs and their risk factors.

The main objective of implementing the Pan American STEPS Survey is to produce nationally representative data for NCDs and their risk factors (modifiable and biological), to support the assessment and implementation of policies and programmes.

The following objectives are to be met through the conduction of this Pan American STEPS Survey:

- To produce current national estimates for NCDs and their risk factors by applying a gold standard protocol, especially on physical and biological measurements, and report on the global, regional and national NCDs monitoring framework; and
- To assess changes over time on the status of the NCDs and its modifiable and biological risk factors in a representative sample of the population, while exploring demographic and socioeconomic characteristics of this population.

Survey Methods

Scope

The Pan American STEPS Survey 3.1 was used to collect data on NCDs and their risk factors from September 28 to October 26, 2016. The Survey collects data and measures behavioral and biological risk factors across the population through 3 distinct “steps.” In Guyana, the process was as follows:

- Step 1** Collect demographic and behavioral information through face-to-face interview in household setting;
- Step 2** Collect physical measurements in household setting;
- Step 3** Collect blood samples in household setting.

Within each step, there are three levels of data collection which include core, expanded, and optional questions. The Guyana Survey included all three steps. Step 1 provides information from responses to the survey questionnaire about health history and behavior related to NCD risk factors. Step 2 provides information from non-invasive physical measurements, such as body weight, height, waist circumference, and blood pressure. Step 3 provides biochemical information from urine or blood tests; venous blood samples were used in Guyana. Optional modules on dietary salt, nutrition intake, mental health, and violence and injury were also implemented in Guyana.

Collected data includes:

- Demographic information (age; sex; years and level of education; ethnicity; marital status; employment status; household income)
- Behavioral (tobacco and alcohol use; diet, including salt intake and fruit and vegetable consumption; and physical activity)
- Physical measurements (blood pressure; height; weight; waist circumference; heart rate)
- Metabolic risk factors (blood glucose, lipid profiles, and presence of hemoglobinopathies, such as sickle cell anemia and Thalassemia)
- Lifestyle advice
- Cancer screening
- Health screening
- Violence and injury²
- Mental health/Suicide²

Target Population

All adults aged 18 to 69 residing in Guyana during the period of data collection.

² This data will be presented at a later date in a separate report.

Sample size and sample allocation

The STEPS sample was prepared by the Guyana Bureau of Statistics following the recommended STEPS sample methodology.

Guyana is divided into 10 administrative regions (table 1) and each region is further divided into enumeration districts (EDs). Urban centers are located in regions 2, 4, 6, 7 and 10. The 2012 census frame was used for the selection of the EDs. A total of 288 EDs, which was determined to be adequate for the Survey, were allotted to each stratum proportional to its population size. Thereafter, within each stratum, the specified number of census EDs/Primary Sampling Units (PSUs) were selected systematically with probability proportional to size.

Table 1 . STEPS Listing by Regions

Regions	No. of EDs	No. of Listers by Region
Coastal regions		
Region 2	18	2
Region 3	42	6
Region 4	118	16
Region 5	20	3
Region 6	43	6
Region 7	8	4
Region 10	15	2
Inland regions		
Region 1	11	4
Region 8	4	4
Region 9	9	4
Total	288	51

For each of the 288 selected EDS, 12 households were identified for enumeration by simple random selection. Most of the household selection was done in the office with the use of the computer, while simple random tables were used in the field by the team supervisors for some remote areas. These were areas for which the ED population count could not have been communicated to the office for the selection to be done. This provides a total of 3,456 households selected for the survey from the 288 EDs.

For Step 3, which collects biochemical information, 50% of the sample was randomly selected for participation. The total sample size was 1,728.

The sample size was calculated using the following parameters:

$$n = \frac{t^2 * [p * (1 - p)]}{MOE^2 * r} * Deff * AgeGrp$$

Where

- t describes the level of uncertainty in the sample mean or prevalence as an estimate of the population mean or prevalence. Recommended value: 1.96 (for 95% confidence level)
- p is the estimated prevalence of the risk factors within the target population. Values closest to 50% are the most conservative. Recommended value: 0.5 if no previous data on population, else value closest to 0.5 from previous data
- Deff is the design effect which describes the loss of sampling efficiency due to using a complex sample design. Recommended value for sampling strategies that involve cluster sampling: 1.5
- AgeGrp is the number of age-sex groups for which estimates will be calculated. Two age groups [18-44 and 45-69 years] for both males and females were used for the Guyana Survey.
- MOE is the margin of error which is the expected half-width of the confidence interval. The smaller the margin of error, the larger the sample size needed. Recommended value: 0.05 (for small baseline levels, e.g. <.10, a smaller MOE of 0.02 or 0.01 is appropriate)
- r is the expected response rate. Recommended value: enter response rate from previous national/subnational household surveys, else use 0.8 as an estimate

With t = 1.96, p = 0.5 (due to limited availability of representative baseline data, a baseline level of 50% was selected to ensure the most appropriate sample), Deff = 1.5, AgeGrp = 4, MOE = 0.05, and r = 0.6668 (a response rate of 66.68% was selected based on the experience and response rates of other surveys over the years such as the recent Demographic Health Survey of 2009):

$$n = \frac{t^2 * [p * (1 - p)]}{MOE^2 * r} * Deff * AgeGrp$$

$$n = \frac{1.96^2 * [0.5 * (1 - 0.5)]}{0.05^2 * 0.6668} * 1.5 * 4 = 3,456$$

The distribution of the sample across urban and rural enumeration districts is shown below:

Table 2. Distribution of STEPS Sample by rural and urban areas

2012 Census			
Stratum	Population by EDs	Sample EDs	Sample households
RURAL areas			
1 Barima – Waini	27,643	11	132
2 Pomeroon - Supenaam (rural)	35,514	14	168
3 West Dem - Essequibo Islands	107,785	42	504
4 Demerara-Mahaica (rural)	187,067	71	852
5 Mahaica - Rosignol	49,820	20	240
6 Berbice (rural)	78,869	31	372
7 Cuyuni - Mazaruni	9,479	4	48
8 Potaro - Siparuni	11,077	4	48
9 Upper Takatu - UpperEssequibo	24,238	9	108
10 Upper Demerara (rural)	10,622	4	48
URBAN areas			
11 Anna Regina	11,296	4	48
12 City of Georgetown	25,763	10	120
13 Suburbs - Georgetown	98,733	37	444
14 Corriverton and Rose Hall	15,143	6	72
15 New Amsterdam	15,640	6	72
16 Linden	29,370	11	132
17 Bartica	8,896	4	48
Guyana	746,955	288	3,456
Rural total		210	2,250
Urban total		76	936

Listing activities

The mapping and listing exercise was carried out on the coast from July 14-28, 2016, prior to the commencement of the field work. In the interior this exercise was carried out from September 29 to the October 25, 2016 during the actual field work activities. Unlike on the coast, where generally the listing was done and the sample was drawn in office, in the interior the listing was carried out by the data collection teams and most of the sample households were drawn in the field, prior to conducting interviews in those areas where it was difficult to relay the listing information to the office. There were fifty-one persons involved in the listing process with region four accounting for the largest number. Table 2 provides information by coastal and inland regions.

Relisting of the 288 EDs for the Pan American STEPS Survey was necessary since it was felt that the 2012 census list needed updating based on the dynamics of the Guyanese population with the many new emerging housing schemes.

The listing and mapping exercise utilized teams consisting of two persons in each team: one listed and the other mapped the cluster. All the teams were supervised by checkers. The main responsibilities of the checkers were to:

- Obtain base maps for all EDs selected for the survey;
- Identify the boundaries of each of the assigned ED;
- Ensure that all listing materials (Manual for Mapping and Household Listing, mapping and listing forms) were obtained before going to the field;
- Plan and organize fieldwork logistics (e.g. arranging for transport, identifying and contacting local officials and village elders in each ED to inform them about the listing operation and to obtain their cooperation); and
- Monitor and verify that the quality of work is acceptable.

Data Collection

Data was collected by 16 teams of 6 persons, including 1 supervisor, 1 technician, and 4 interviewers. Trained interviewers administered the Pan American STEPS Survey version 3.1 questionnaire face-to-face using digital tablets. Interviewers took physical measurements for Step 2, while trained health care workers administered the biochemical tests for Step 3 using wet blood samples.

For Step 3, the participant was notified of their selection to participate in Step 3 by the interviewer. Written informed consent was read to the participant. This was completed three times to ensure comprehension. The participant then provided informed consent to participate with a signature or a thumb print, which was affixed to the consent form.

Once informed consent was completed, the participant was informed of the requirement for fasting 8 hours prior to blood draw. The participant confirmed an appointment date and time for the phlebotomist to return to the house to draw blood samples. The appointment date was recorded on an appointment schedule that included a barcode unique to the participant. This barcode was used for linking results from Steps 1, 2, and 3 in analysis.

The phlebotomist returned to the household on the scheduled appointment date. The appointment schedule with the unique barcode was scanned by electronic tablet to confirm identity. Blood samples were drawn and the date, time, and participant's unique identifier were recorded on the sample test tube.

Samples were appropriately packaged, stored, and transported in a cooling chamber to the central laboratory in Georgetown. Samples were transported daily and tested immediately upon receipt. Results of the blood sample were shared every 2 to 3 days to the Office of the Coordinator.

Approaches to Data Analysis

The data were analyzed using Epi-Info. A separate quality assurance process with an independent analysis was undertaken using STATA. This separate analysis concurred with the first analysis.

Results

Demographics

The total sample size was 3,456 adults, aged 18-69. The overall response rate was 77% for Steps 1 and 2 and 40% for Step 3. The following section describes the demographic characteristics of the sample population³.

Table 3. Distribution of respondents by sex and age groups

Age Group (years)	Males		Females		Both Sexes	
	N	%	N	%	N	%
18-44	601	22.6	1000	37.6	1601	60.1
45-69	467	17.5	594	22.3	1061	39.9
18-69	1068	40.1	1594	59.9	2662	100

Of the 2,662 respondents, 40.1% (1,068) were males and 59.9% (1,594) were females. A majority (60.1%) of both males and females represented the younger age bracket, ages 18-44.

Table 4. Mean number of years of education, by sex and age groups

Age Group (years)	Males		Females		Both Sexes	
	N	Mean	N	Mean	N	Mean
18-44	597	9.9	996	9.9	1593	9.9
45-69	461	9.1	584	8.6	1045	8.9
18-69	1058	9.6	1580	9.4	2638	9.5

The overall mean number of years of education reported for both sexes combined was 9.5 years, with only a small difference between males and females (9.6 years and 9.4 years, respectively). The mean number of years of education for both sexes combined was higher in the 18-44 years age group than in the 45-69 age group (9.9 years and 8.9 years, respectively). Furthermore, the difference in years of education was higher among younger females aged 18-44 (9.9 years) compared to females aged 45-69 (8.6 years), representing a difference of 1.3 years. This scenario is not seen among males.

³ The results presented in the Demographics section are unweighted.

Table 5. Highest level of education (%), both sexes by age groups

Age Group (years)	N	No formal schooling	Less than primary school	Primary school completed	Secondary school completed	Tertiary/ Technical completed	University completed	Post graduate degree completed
18-44	1601	2.2	5.4	40.0	38.2	10.7	3.1	0.4
45-69	1059	2.1	11.2	51.5	23.9	7.5	3.0	0.8
18-69	2660	2.2	7.7	44.5	32.5	9.4	3.0	0.6

Overall, the younger population had higher rates of secondary (38.2%) than tertiary and technical completed years of education (10.7%) compared with the older group (23.9% and 7.5% respectively). Conversely, higher proportions of the older population reported having only completed up to primary schooling.

Table 6. Ethnic group (%), both sexes by age groups

Age Group (years)	N	East Indian	African/Black	Amerindian	Chinese	Portuguese	Mixed	White
18-44	1600	36.6	28.2	13.8	0.1	0.3	20.7	0.3
45-69	1061	43.5	27.9	12.5	0	0.2	15.6	0.2
18-69	2661	39.4	28.1	13.3	0.1	0.3	18.7	0.2

Table 6 shows the distribution by ethnic group among the respondents to the survey. Those identified as *East Indian* accounted for more than one third of respondents (39.4%), followed by *African/Black* (28.1%), *Amerindian* (13.3%) and *mixed* (18.7%) and small numbers of *Portuguese* (0.3%), *White* (0.2%), and *Chinese* (0.1%) respondents. There were no differences in self-reported ethnic group between the two age groups.

Table 7. Marital status (%), both sexes by age groups

Age Group (years)	N	Never married	Currently married	Separated	Divorced	Widowed	Cohabiting/ Common-Law
18-44	1598	36.7	29.2	3.1	1.6	0.9	28.5
45-69	1060	18.8	44.7	7.1	4.9	11.1	13.4
18-69	2658	29.6	35.4	4.7	2.9	5.0	22.5

Of the respondents aged 18-69 years, 29.6% had never been married, 35.4% were currently married, 22.5% reported being in cohabitation/common law relationships, 5.0% were widowed, 4.7% were separated and 2.9% were divorced. No differences were seen in marital status between male and female respondents.

Table 8. Employment status (%), by sex and age groups

Age Group (years)	N	Government employee	Non-Government employee	Self-employed	Unpaid
Males					
18-44	600	16.2	31.3	43.8	8.7
45-69	467	13.7	19.7	43.0	23.6
18-69	1067	15.1	26.2	43.5	15.2
Females					
18-44	999	12.2	15.2	21.1	51.5
45-69	593	8.1	8.8	25.1	58.0
18-69	1592	10.7	12.8	22.6	53.9
Both Sexes					
18-44	1599	13.7	21.3	29.6	35.4
45-69	1060	10.6	13.6	33.0	42.8
18-69	2659	12.4	18.2	31.0	38.4

Of the survey respondents aged 18-69 years, 38.4% were unpaid, with more females reporting being unpaid (53.9%) than males (15.2%). Males reported being self-employed at about twice the percentage as females (43.5% for males as compared to 22.6% for females). This was also true for employment in the non-government sector where 26.2% of males were employed, as compared to 12.8% of females. Differences were smaller in the percentage of employment in the government sector (15.1% for males and 10.7% for females).

In terms of respondent income, 1,948 reported a mean annual per capita income of \$428,354.2 in Guyanese dollars (approximately \$2,056 USD).

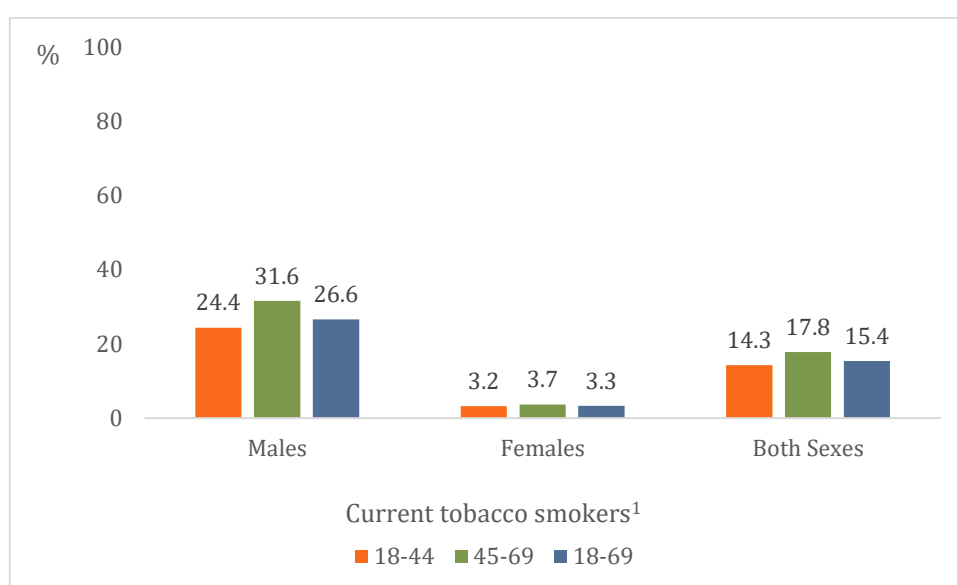
NCDs and their risk factors

The information presented in the following sections were collected through face-to-face interviews. The results are weighted to create generalizable data representative of the entire population of Guyana.

Tobacco use

Information collected in this section provides a clear understanding of the patterns of consumption and the types of products used within the population of Guyana.

Figure 1. Percentage of adults 18-69 years old who currently smoke tobacco, by sex and age groups



¹ Current tobacco smokers are defined as those who reported smoking either daily or less than daily

The prevalence of current tobacco smoking was 15.4% (12.3-18.4) for both males and females across all age groups. Nearly one third (31.6%, 24.1-39.2) of males aged 45-69 were current smokers, while less than one quarter (24.4%, 18.6-30.2) of males aged 18-44 reported current smoking.

Males were much more likely to be current smokers than females, as the responses reported by females for current smoking was very small and should be considered when interpreting the results presented.

Table 9. Percentage of adults 18-69 years old, by smoking status, sex, and age groups

Age Group (years)	Daily		Occasional		Former		Never	
<i>Percentage (95% CI)</i>								
Males								
18-44	16.3	(11.3-21.4)	8.1	(5.5-10.6)	18.7	(14.6-22.8)	56.9	(51.7-62.2)
45-69	24.6	(19.3-30.0)	7.0	(3.2-10.8)	30.4	(23.6-37.1)	38.0	(31.3-44.7)
18-69	18.8	(14.6-23.0)	7.8	(5.6-9.9)	22.2	(18.4-26.0)	51.3	(46.7-55.8)
Females								
18-44	1.6	(0.7-2.6)	1.5	(0.4-2.6)	8.2	(6.0-10.4)	88.6	(86.1-91.1)
45-69	3.4	(1.8-5.0)	0.3	(0.0-0.7)	8.3	(4.7-12.0)	88.0	(83.9-92.1)
18-69	2.2	(1.4-3.0)	1.1	(0.4-1.9)	8.3	(6.4-10.1)	88.4	(86.4-90.5)
Both Sexes								
18-44	9.3	(6.6-12.1)	4.9	(3.5-6.3)	13.7	(11.2-16.1)	72.1	(69.0-75.1)
45-69	14.1	(11.2-17.1)	3.7	(1.7-5.7)	19.5	(15.9-23.0)	62.7	(57.7-67.7)
18-69	10.8	(8.5-13.1)	4.6	(3.4-5.8)	15.5	(13.5-17.4)	69.2	(66.3-72.0)

In Guyana, the pattern of consumption demonstrates more daily smokers than occasional smokers within the adult population (10.8% and 4.6%, respectively). Among current smokers, 70.8% (64.8-76.9) of males and 65.8% (50.3-81.3) of females are daily smokers.

Among adults aged 18-69, older males aged 45-69 reported higher current daily smoking (24.6%), yet also represented the largest group of former smokers (30.4%). This was similarly seen among older females in terms of daily smoking (3.4%); however, the proportion of former smoking for females was nearly the same for both age groups.

Table 10. Mean age of tobacco smoking initiation among current smokers, by sex and age groups

Age Group (years)	Males	Females
18-44	16.0	23.2
45-69	19.7	20.5
18-69	17.5	21.9

Current smokers are defined as those who reported smoking either daily or less than daily.

The mean age of smoking initiation among current male smokers aged 18-44 was 16.0 years, nearly four years younger than the older group (19.7 years). The opposite was true for females. The mean age of smoking initiation among current female smokers aged 18-44 was 23.2 years compared to 20.5 years for females aged 45-69 years.

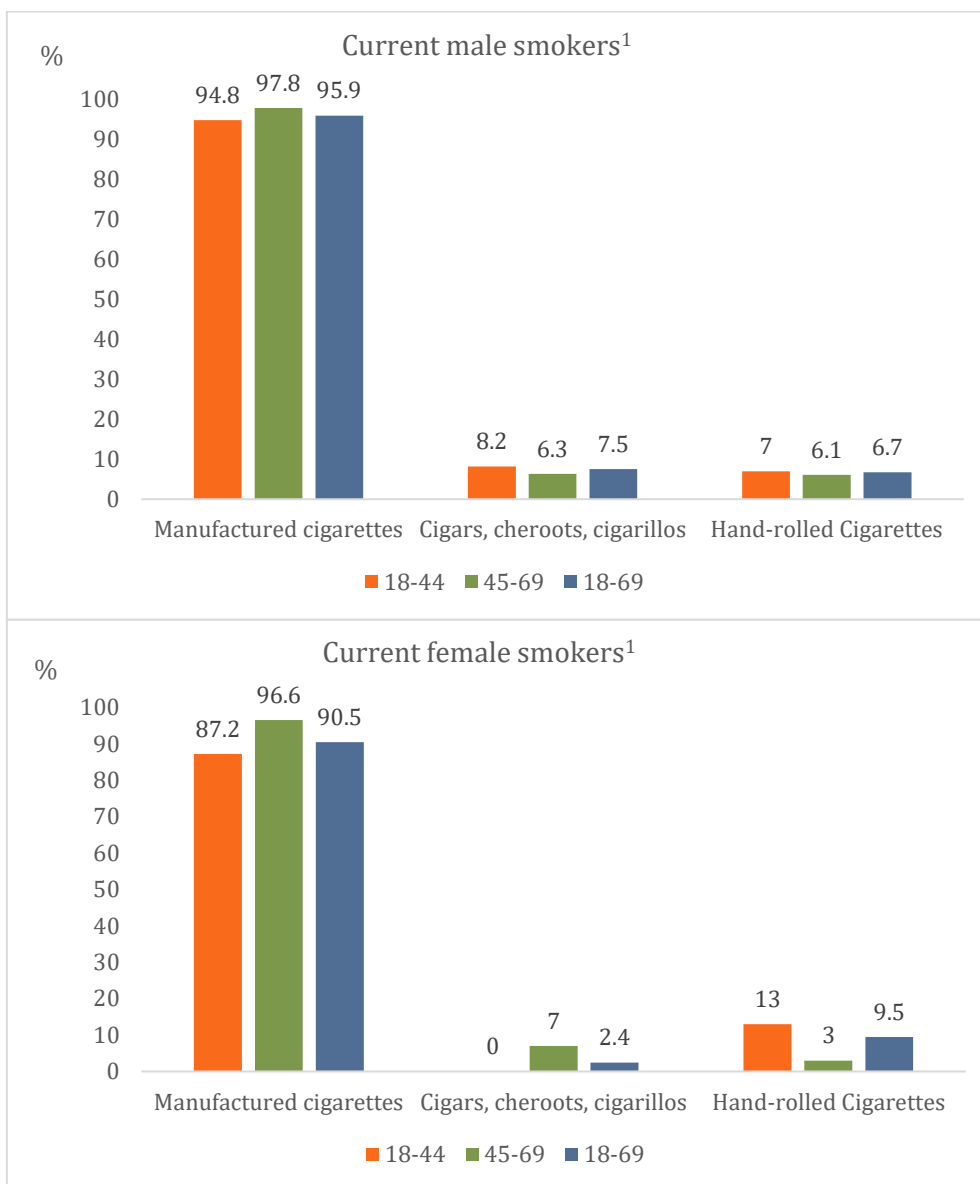
Table 11. Percentage of adults 18-69 years old who are current and daily tobacco smokers and current and daily cigarette smokers, by sex and age groups

Age Group (years)	Tobacco Smokers				Cigarette Smokers			
	Current ¹		Daily		Current ¹		Daily	
<i>Percentage (95% CI)</i>								
Males								
18-44	24.4	(18.6-30.2)	16.3	(11.3-21.4)	23.3	(17.4-29.2)	15.6	(10.6-20.7)
45-69	31.6	(24.1-39.2)	24.6	(19.3-30.0)	30.4	(22.9-37.9)	23.7	(18.3-29.0)
18-69	26.6	(21.6-32.0)	18.8	(14.6-23.0)	25.4	(19.9-30.9)	18.0	(13.8-22.2)
Females								
18-44	3.2	(1.8-4.5)	1.6	(0.7-2.6)	2.8	(1.4-4.1)	1.6	(0.7-2.6)
45-69	3.7	(2.0-5.3)	3.4	(1.8-5.0)	3.1	(1.6-4.7)	3.0	(1.4-4.5)
18-69	3.3	(2.3-4.4)	2.2	(1.4-3.0)	2.9	(1.9-3.9)	2.1	(1.2-2.9)
Both Sexes								
18-44	14.3	(11.0-17.5)	9.3	(6.6-12.1)	13.5	(10.2-16.8)	8.9	(6.2-11.7)
45-69	17.8	(13.7-22.0)	14.1	(11.2-17.1)	16.9	(12.6-21.0)	13.4	(10.5-16.4)
18-69	15.4	(12.3-18.4)	10.8	(8.5-13.1)	14.5	(11.4-17.6)	10.3	(8.0-12.6)

¹Current smokers are defined as those who reported smoking either daily or less than daily.

Daily tobacco smokers are most likely to be daily cigarette smokers; there was little difference between the proportion of those who smoked tobacco and those who smoked cigarettes among daily smokers (10.8% and 10.3%).

Figure 2. Percentage of adults 18-69 years old who are current smokers of various smoked tobacco products, by sex and age groups



¹ Current tobacco smokers are defined as those who reported smoking either daily or less than daily

Manufactured cigarettes were the most common type of tobacco product smoked among male and female current smokers of all ages (95.9%, 92.9-98.8 and 90.5%, 82.3-98.7, respectively). In addition to manufactured cigarettes, current male smokers reported use of cigars, cheroots, and cigarillos, as well as hand-rolled cigarettes. Preference varied by age with the younger male age group using cigars, cheroots, and cigarillos (8.2%, 0.6-15.8) and other tobacco products not listed (8.2%, 3.5-12.9), more than the hand-rolled cigarettes (7.0%, 2.0-12.0). While the older males reported using cigars, cheroots, and cigarillos (6.3%, 0.9-11.8) in addition to hand-rolled cigarettes (6.1%, 1.7-10.6), more than other tobacco products (6.0%, 0.9-11.1).

Similar product preferences were seen among females, though greater variation in consumption patterns by age was demonstrated. In addition to manufactured cigarettes, the younger females reported use of hand-rolled cigarettes (13%, 0.0-34.3) and other tobacco products (12.3%, 0.0-

26.2), but not cigars, cheroots, or cigarillos (0%). Among the older females, cigars, cheroots, and cigarillos (7%, 4.6-9.4) were preferred to other tobacco products (3.5%, 0.0-10.6) and hand-rolled cigarettes (3%, 0.0-9.0).

Table 12. Mean number of manufactured or hand-rolled cigarettes smoked per day among daily smokers 18-69 years old, by sex and age groups

Age Group (years)	Mean number of manufactured or hand-rolled cigarettes smoked per day among daily cigarette smokers									
	< 5		5-9		10-14		15-24		≥ 25	
	<i>Percentage (95% CI)</i>									
Males										
18-44	32.3	(6.8-57.7)	13.8	(4.8-22.7)	32.5	(17.9-47.1)	18.5	(8.3-28.7)	3.0	(0.0-6.3)
45-69	25.0	(10.4-39.6)	23.7	(12.4-34.9)	25.3	(14.4-36.2)	22.2	(13.1-31.2)	3.8	(0.0-7.8)
18-69	29.4	(8.9-49.9)	17.6	(9.7-25.6)	29.7	(18.6-40.8)	20.0	(12.0-27.9)	3.3	(0.8-5.9)
Females										
18-44	29.4	(0.0-60.9)	40.5	(8.4-72.6)	11.5	(0.0-25.6)	15.4	(0.0-37.2)	3.2	(0.0-10.0)
45-69	8.0	(0.0-20.1)	14.6	(0.0-35.7)	41.1	(13.7-68.5)	32.1	(8.6-55.7)	4.2	(0.0-12.9)
18-69	19.7	(0.0-39.5)	28.8	(7.9-49.7)	24.9	(8.5-41.3)	22.9	(6.7-39.1)	3.6	(0.0-9.2)
Both Sexes										
18-44	32.0	(8.5-55.5)	16.1	(6.9-25.3)	30.6	(17.0-44.3)	18.2	(8.7-27.8)	3.0	(0.0-6.1)
45-69	23.1	(9.8-36.4)	22.7	(12.4-33.0)	27.1	(17.0-37.2)	23.3	(14.6-31.9)	3.9	(0.3-7.5)
18-69	28.5	(9.6-47.3)	18.7	(11.1-26.4)	29.2	(18.9-39.6)	20.3	(12.8-27.7)	3.3	(1.0-5.7)

On average, daily male smokers were more likely to report an average of 10-14 cigarettes smoked per day (29.7%), as opposed to females who were most likely to report an average of 5-9 cigarettes per day (28.8%).

Among daily smokers, males on average smoked 9.5 manufactured cigarettes per day with little variance between age groups. Females, however, reported a higher number of daily manufactured cigarettes within the older population (11.8) compared to the younger one (7.5). Cigars, cheerots, and cigarillos were popular among both sexes aged 45-69 reporting approximately 0.8 per day, while the 18-44 age bracket reported little to no use among males and females (0.2 and 0, respectively). Hand-rolled cigarettes were more popular among females aged 18-44 (0.6) than males of the same age (0.3).

Table 13. Percentage of current smokers 18-69 years old who attempted to quit smoking in the past 12 months, by sex and age groups

Age Group (years)	Attempted to quit	
	<i>Percentage (95% CI)</i>	
Males		
18-44	57.4	(48.3-66.5)
45-69	61.0	(47.9-74.0)
18-69	58.7	(51.9-65.4)
Females		
18-44	75.4	(59.0-91.8)
45-69	54.9	(32.6-77.1)
18-69	68.3	(54.4-82.2)
Both Sexes		
18-44	59.3	(51.1-67.5)
45-69	60.3	(48.4-72.3)
18-69	59.7	(53.6-65.7)

A majority of male and female current smokers reported attempts to stop smoking in the 12 months prior to the survey date (58.7% and 68.3%, respectively). Among the younger age group, males were slightly less likely to report an attempt to stop smoking compared to the older age group (57.4% and 61%, respectively). In contrast, among females aged 18-44 approximately 3 out of every 4 (75.4%) reported an attempt to stop smoking, while only slightly more than half (54.9%) of women aged 45-69 reported the same.

Table 14. Percentage of current smokers 18-69 years old who have been advised to quit smoking by a healthcare provider in the past 12 months, by sex and age groups

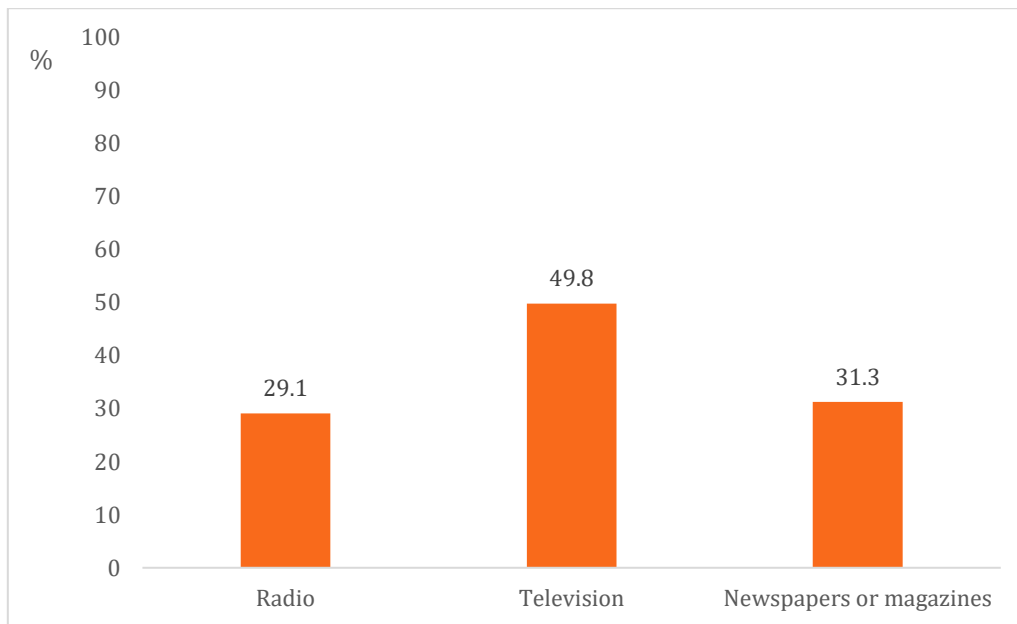
Age Group (years)	Advised to quit	
	<i>Percentage (95% CI)</i>	
Males		
18-44	32.5	(19.0-45.9)
45-69	41.9	(22.6-61.2)
18-69	36.1	(22.0-50.2)
Females		
18-44	23.0	(1.2-44.9)
45-69	22.9	(1.7-44.2)
18-69	23.0	(6.4-39.5)
Both Sexes		
18-44	31.4	(19.0-43.8)
45-69	40.1	(22.2-57.9)
18-69	34.7	(21.6-47.7)

Among male current smokers who had visited a doctor or other health worker in the past 12 months, a little more than one third (36.1%) reported being advised by a doctor to stop smoking. In contrast, less than one quarter (23%) of female smokers who visited a doctor reported being advised to quit.

Tobacco control policy

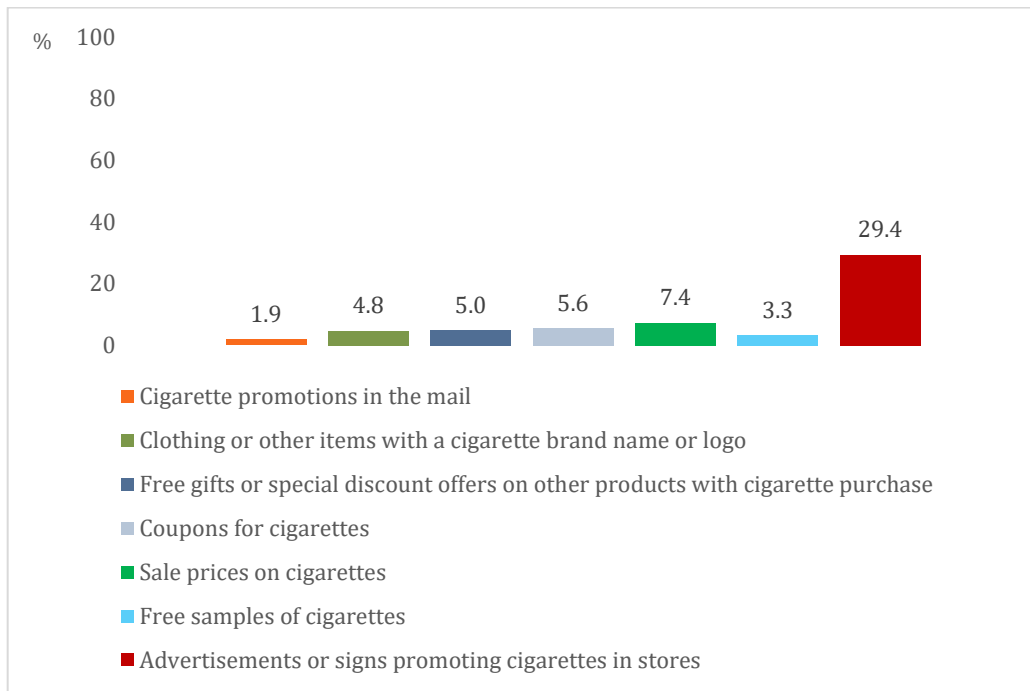
To assess tobacco policies, information was collected about awareness of anti-cigarette information in various media platforms, cigarette advertising within stores, and other cigarette promotions within the last 30 days. Among current smokers, information was collected regarding the awareness of health warnings on cigarette packages and the impact of these messages on the smokers' decision making.

Figure 3. Percentage of adults 18-69 years old who noticed anti-cigarette smoking information during the last 30 days in the media



More adults (49.8%, 46.6-53.0) reporting seeing information on television about the dangers of smoking or that encourages quitting during than last 30 days than similar information on radio or newspaper/magazine outlets (29.1%, 5.8-32.3 and 31.3%, 28.3-34.4, respectively). There were no differences based on sex or age groups.

Figure 4. Percentage of adults 18-69 years old who noticed cigarette advertisement and promotion during the last 30 days in various places



Nearly one third of adults (29.4%, 26.7-32.1) reported that they saw advertisements promoting cigarettes in stores within the last 30 days. Sale prices on cigarettes (7.4%, 6.0-8.8) was the second most frequently reported type of promotion. Younger females were slightly more likely to have noticed promotion of tobacco products, such as advertisements or signs in stores, free samples, sale prices, and coupons than did older females (31.0%, 27.0-35.0 and 22.9%, 18.3-27.4; 3.2%, 2.0-4.4 and 2.4%, 1.3-3.6; 8.3%, 5.9-10.8 and 5.0%, 3.0-7.0; 5.3%, 3.0-7.6 and 4.1%, 2.2-6.0, respectively). However, overall there was little variance in awareness of these promotions based on sex and age groups.

Table 15. Percentage of current smokers 18-69 years old who noticed health warning on cigarette packages and considered quitting because of the warning labels during the last 30 days, by sex and age groups

Age Group (years)	Current smokers ¹ who...			
	Noticed health warnings on cigarette package		Thought about quitting because of warning label	
<i>Percentage (95% CI)</i>				
Males				
18-44	86.6	(79.0-94.2)	66.7	(56.4-77.0)
45-69	88.7	(82.3-95.2)	55.9	(39.5-72.4)
18-69	87.4	(81.5-93.2)	62.8	(52.5-73.2)
Females				
18-44	71.4	(47.5-95.3)	79.9	(60.6-99.1)
45-69	72.5	(52.8-92.2)	56.8	(32.4-81.1)
18-69	71.8	(55.0-88.6)	70.7	(56.3-85.0)
Both Sexes				
18-44	85.2	(77.3-93.1)	67.7	(58.1-77.3)
45-69	87.0	(80.7-93.3)	56.0	(40.9-71.2)
18-69	85.9	(79.8-91.9)	63.5	(54.0-73.0)

¹ Current tobacco smokers are defined as those who reported smoking either daily or less than daily

Among current male smokers, 87.4% reported noticing health warnings on cigarette packaging with little variance based on age. Of these males, the younger group (66.7%) was more likely to consider quitting smoking after seeing the warning label, while only a little more than half (55.9%) of the older group experienced the same. Among females, 71.8% noticed the warning label and of these, 70.7% thought about quitting as a result with similar variances as seen among males between the younger and older groups (79.9% and 56.8%, respectively), suggesting the warning labels have a greater impact on smoking cessation efforts of younger generations, especially younger females. However, it must be reiterated that the results represent a small sample size of reporting female current smokers.

The average cigarette expenditure for 20 manufactured cigarettes was 430.6 GYD, approximately 2.07 USD. There were slight variances between age groups with males and females aged 18-44 purchasing at a lower price than those 45-69 years old (428.1 GYD or 2.05 USD and 436.1 GYD or 2.09 USD, respectively), which may be the result of purchasing the manufactured cigarettes individually. However, overall, there were no differences in the price reported by either age or sex.

Alcohol consumption

Another risk factor for NCDs is alcohol consumption. A series of questions were asked to assess the volume of alcohol consumed and patterns of drinking, such as the frequency of drinking and amount consumed per drinking occasion.

Table 16. Percentage of adults 18-69 years old, by alcohol consumption status, sex, and age groups

Age Group (years)	Current drinkers ¹		Not current drinkers ²		Abstainers ³		Lifetime abstainers ⁴	
<i>Percentage (95% CI)</i>								
Males								
18-44	63.8	(58.5-69.1)	13.6	(9.9-17.2)	10.2	(4.9-15.5)	12.4	(8.8-16.0)
45-69	48.9	(42.6-55.2)	14.6	(10.3-18.8)	19.1	(14.8-23.5)	17.4	(12.6-22.2)
18-69	59.3	(54.9-63.8)	13.9	(10.8-17.0)	12.9	(8.4-17.3)	13.9	(10.7-17.1)
Females								
18-44	25.3	(22.0-28.5)	21.7	(18.4-25.0)	16.3	(13.3-19.4)	36.7	(32.5-40.9)
45-69	13.1	(9.9-16.3)	11.8	(8.5-15.1)	24.7	(19.5-29.9)	50.4	(45.1-55.8)
18-69	21.4	(18.9-24.0)	18.6	(16.2-21.0)	19.0	(16.3-21.6)	41.0	(37.4-44.6)
Both Sexes								
18-44	45.4	(41.9-48.9)	17.5	(15.0-19.9)	13.1	(10.0-16.2)	24.0	(20.7-27.3)
45-69	31.2	(27.3-35.1)	13.2	(10.3-16.1)	21.9	(17.9-25.8)	33.7	(29.7-37.7)
18-69	41.0	(38.1-44.0)	16.2	(14.2-18.1)	15.8	(12.9-18.8)	27.0	(24.1-29.9)

¹Current drinkers are those who report drinking in the past 30 days

²Not current drinkers are those who report drinking in the past 12 months

³Abstainers are those who report abstaining from alcohol in the past 12 months

⁴Lifetime abstainers are those who report not drinking

More than half of all males reported drinking in the past 30 days. Nearly six in every ten males (63.8%) between 18-44 years old reported drinking alcohol in the 30 days prior compared to nearly five in every ten males (48.9%) in the 45-69 age group. Females were less likely to report drinking alcohol (21.4%). Twice as many of the females in the younger age bracket (25.3%) compared to those 45-69 years old (13.1%) reported consuming alcohol in the past 30 days.

Table 17. Percentage of former drinkers 18-69 years old who stopped drinking due to health reasons, by sex and age groups

Age Group (years)	Stopped drinking	
	<i>Percentage (95% CI)</i>	
Males		
18-44	30.9	8.0-53.7
45-69	31.3	14.7-48.0
18-69	31.1	20.8-41.3
Females		
18-44	17.9	10.4-25.4
45-69	12.3	5.5-19.0
18-69	15.6	10.1-21.1
Both Sexes		
18-44	23.2	13.8-32.5
45-69	20.7	13.0-28.4
18-69	22.1	17.1-27.1

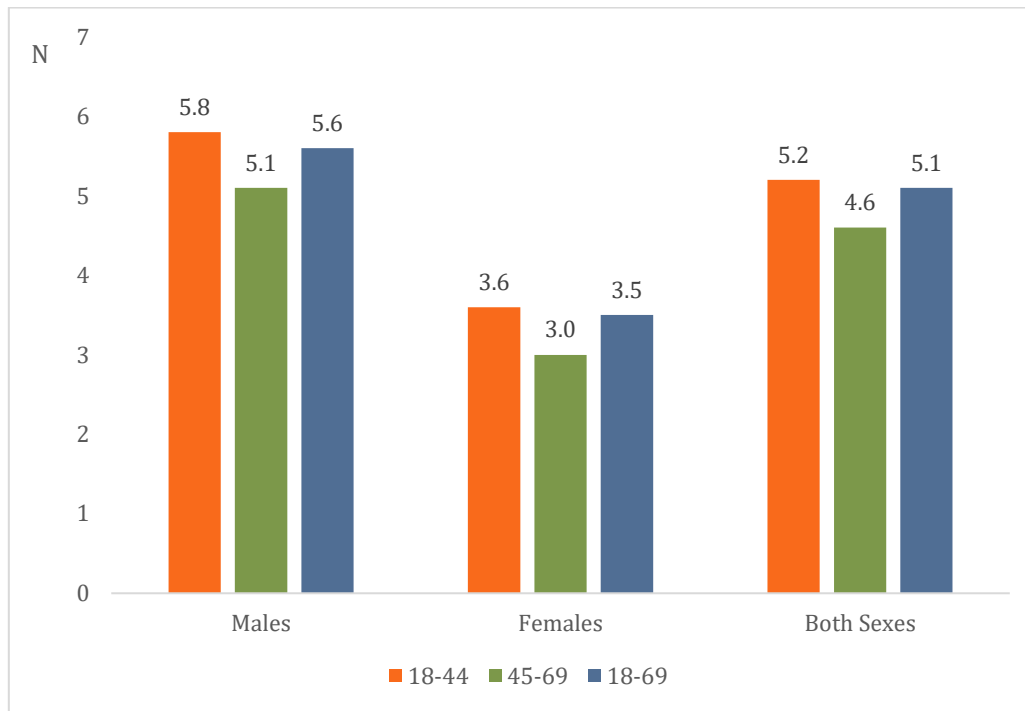
Of the former drinkers, those who report not drinking in the past 12 months, approximately one third (31.3%) of males responded they had stopped drinking for health reasons, such as a negative impact of drinking of their health or as per advice of a doctor or other health worker. Females were less likely than males to have stopped drinking for health reasons.

Table 18. Percentage of adults 18-69 years old who drank in the last 12 months, by alcohol consumption frequency, sex, and age groups

Age Group (years)	Daily	5-6 days/week	3-4 days/week	1-2 days/week	1-3 days/month	< once a month
<i>Percentage (95% CI)</i>						
Males						
18-44	2.3 (1.3-3.4)	3.3 (1.8-4.8)	2.7 (0.9-4.4)	5.1 (2.7-7.4)	21.8 (17.7-25.9)	30.8 (27.1-34.5)
45-69	3.5 (1.6-5.4)	4.6 (2.1-7.2)	4.9 (1.8-7.9)	5.5 (2.0-9.0)	19.1 (13.3-24.9)	21.9 (16.9-26.9)
18-69	2.6 (1.7-3.6)	3.6 (2.3-5.0)	3.2 (1.8-4.7)	5.2 (3.2-7.1)	21.2 (18.0-24.4)	28.7 (25.7-31.7)
Females						
18-44	0.6 (0.0-1.3)	0.4 (0.0-1.3)	1.5 (0.5-2.6)	8.6 (5.3-12.0)	25.1 (20.5-29.6)	63.7 (57.8-69.7)
45-69	0.5 (0.0-1.3)	1.7 (0.0-3.9)	1.5 (0.0-3.1)	6.7 (2.4-11.0)	17.3 (9.4-25.2)	73.3 (63.8-80.8)
18-69	0.6 (0.1-1.2)	0.7 (0.0-1.5)	1.5 (0.6-2.4)	8.3 (5.5-11.0)	23.5 (19.6-27.5)	65.4 (60.1-70.6)
Both Sexes						
18-44	2.3 (1.3-3.4)	1.9 (0.7-3.0)	3.8 (2.2-5.4)	21.8 (17.7-25.9)	30.8 (27.1-34.5)	39.4 (35.4-43.4)
45-69	3.5 (1.6-5.4)	4.0 (1.7-6.3)	4.4 (1.8-7.0)	19.1 (13.3-24.9)	21.9 (16.9-26.9)	47.1 (40.4-53.9)
18-69	2.6 (1.7-3.6)	2.4 (1.4-3.4)	3.9 (2.6-5.3)	21.2 (18.0-24.4)	28.7 (25.7-31.7)	41.2 (37.9-44.6)

Of those who reported drinking in the last 12 months, males were more likely to report drinking alcohol more frequently than females. A total of 9.4% of males of all ages reported drinking daily to at least 3-4 days every week compared to 2.8% of all females. Frequency of alcohol consumption also varied by age. Males and females aged 18-44 were less likely to drink daily, 5-6, or 3-4 times a week than those aged 45-69 (2.3% and 3.5%; 1.9% and 4%; 3.8% and 4.4%, respectively). This pattern of frequency of alcohol consumption continued among those 18-44 years old with 21.8% reporting consumption 1-2 days per week and 30.8% 1-3 days per month compared to that of males and females aged 45-69 reporting 19.1% and 21.9%, respectively.

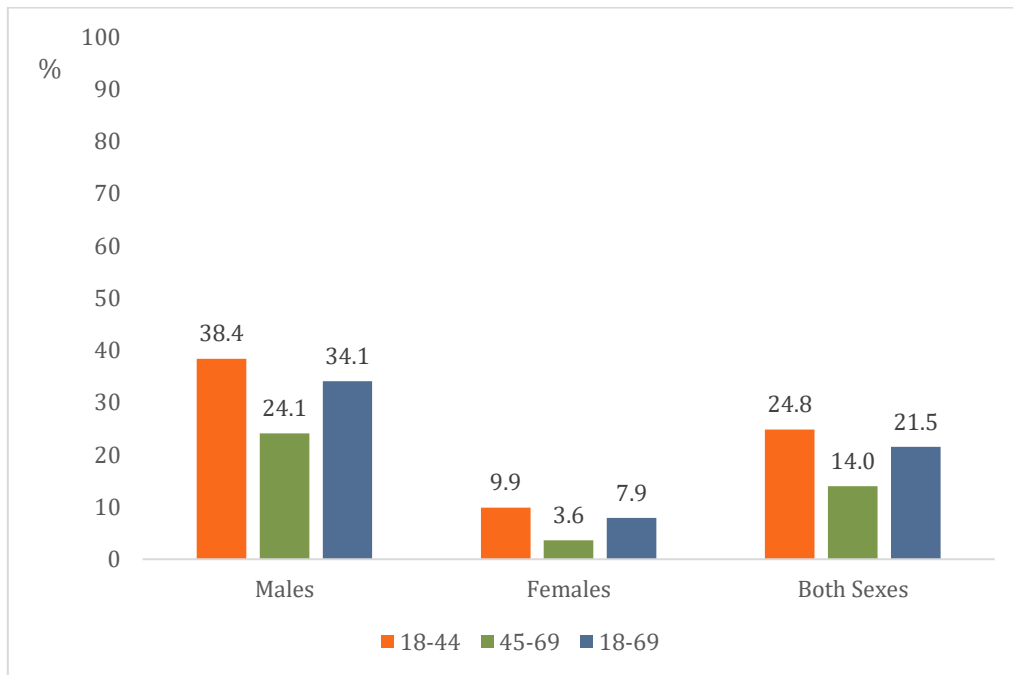
Figure 5. Mean number of standard drinks¹ consumed per drinking occasion among current drinkers 18-69 years old, by sex and age groups



¹A standard drink contains approximately 10g of pure alcohol.

In terms of the amount of alcohol consumed, the mean number of standard drinks per drinking occasion for males aged 18-69 was 5.6 (5.0-6.2). The average number for females aged 18-69 was 3.5 (3.1-3.9). Although both sexes in the younger group reported drinking slightly more than those in the older groups, there was no difference in the average number of drinks between the younger and older drinkers.

Figure 6. Percentage of adults 18-69 years old who consumed six or more drinks on a single occasion at least once during the past 30 days, by sex and age groups

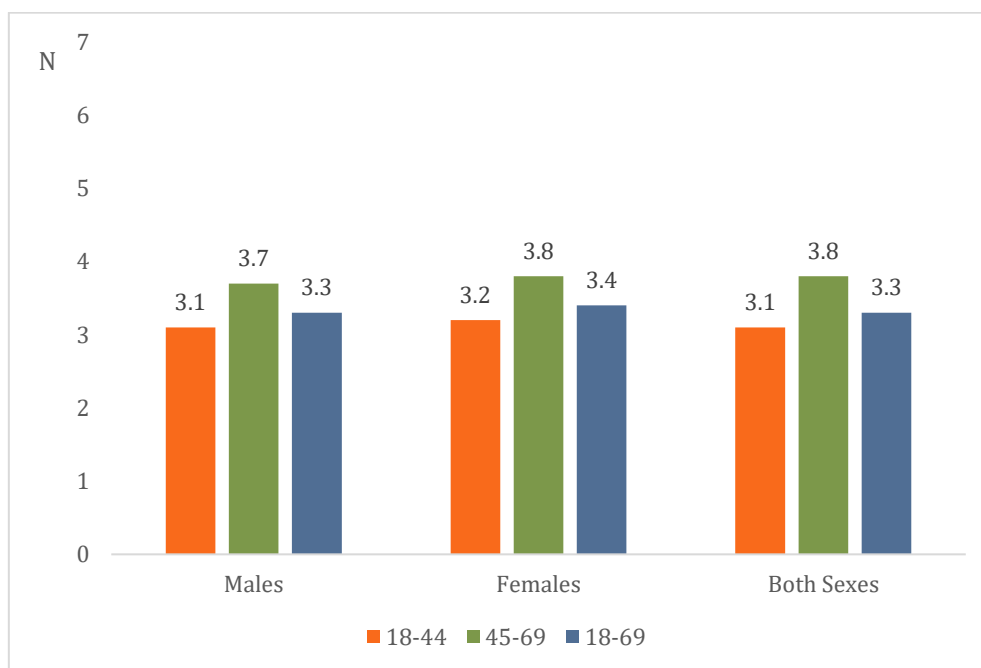


Heavy episodic drinking measures the consumption of at least 60 grams or more of pure alcohol on at least one occasion in the past 30 days. This indicator identifies patterns of alcohol use that may lead to acute consequences, such as injuries. Over one third (34.1%, 29.5-38.8) of all males reported having ≥ 6 drinks on a single drinking occasion during the past 30 days with higher reported frequency among males aged 18-44 than those 45-69 (38.4%, 32.7-44.2 and 24.1%, 18.7-29.4, respectively). Among females, 7.9% (6.3-9.5) reported having ≥ 6 drinks on a single drinking occasion, with a similar variances by age as seen among males.

Fruit and vegetable consumption

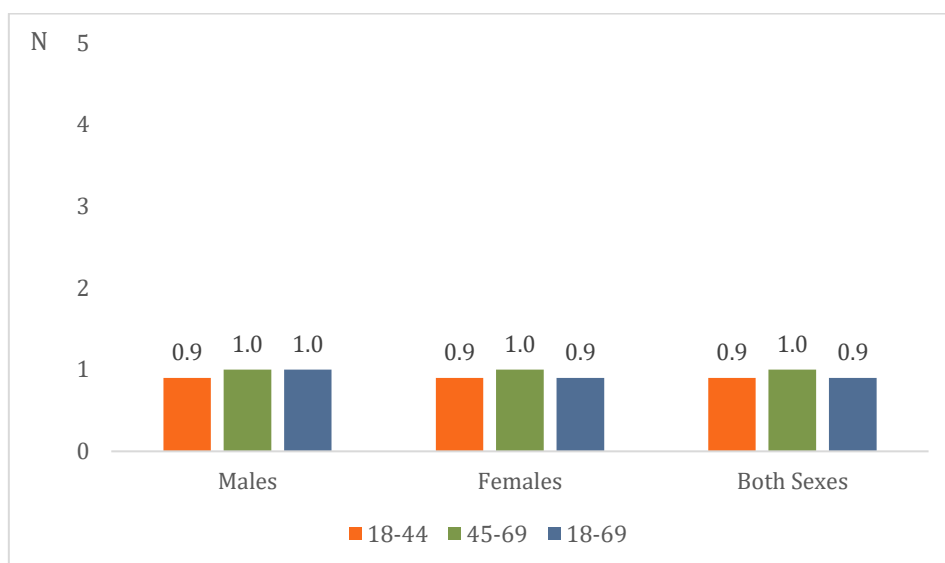
Fruit and vegetable consumption is a key indicator for healthy behaviors that can contribute to the prevention of NCDs. The WHO recommends no less than 400g per day of fruits and vegetables, equivalent to approximately 5 servings per day (24). Questions were asked regarding frequency and quantity of consumption on a daily and weekly basis.

Figure 7. Mean number of days per week of fruit consumption among adults 18-69 years old, by sex and age groups



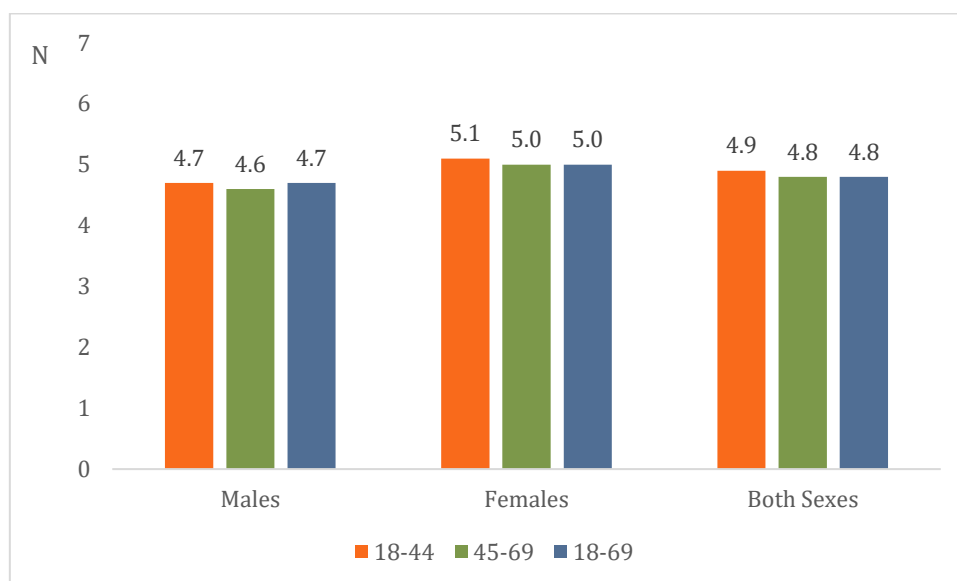
On average, males and females of all ages reported consuming fruit 3.3 (3.2-3.4) days per week. There was little difference between males and females (3.3 days, 3.1-3.5 and 3.4 days, 3.2-3.5, respectively) and only a slight variance between 18-44 and 45-69 age groups (3.1 days, 3.0-3.3 and 3.8 days, 3.6-4.0, respectively). Frequency of fruit consumption did not meet the WHO daily recommendation.

Figure 8. Mean number of fruit servings consumed per day among adults 18-69 years old, by sex and age groups



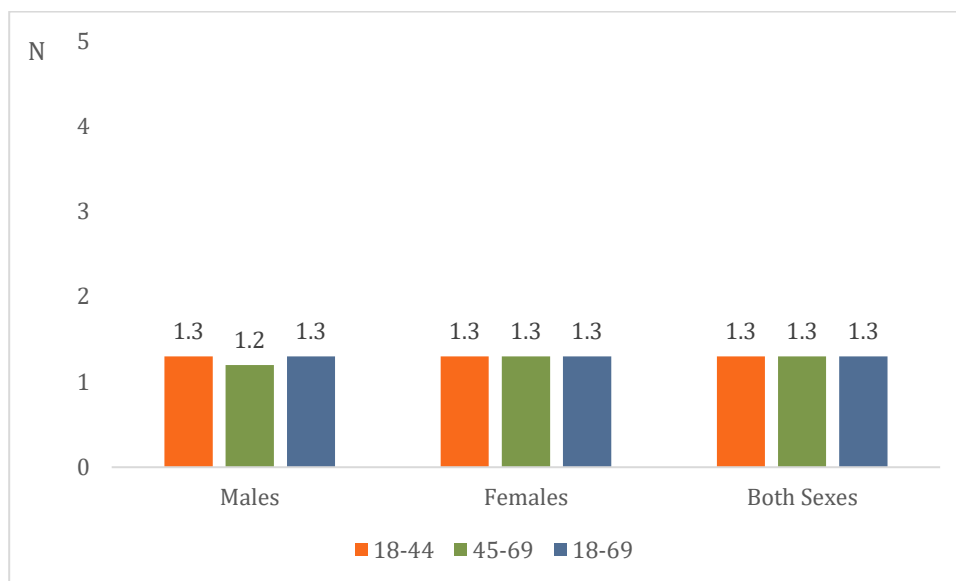
Of the days when fruit was consumed, males and females of all ages consumed approximately one serving (0.9, 0.9-1.0) of fruit, much less than the WHO recommendation. There was little variance by sex or age.

Figure 9. Mean number of days per week of vegetable consumption among adults 18-69 years old, by sex and age groups



Males and females reported an increased number of days per week that vegetables were consumed compared to the number of days that fruits were consumed (4.8 days, 4.7-5.0 and 3.3 days, 3.2-3.4, respectively); nevertheless, frequency of vegetable consumption again did not meet the WHO daily recommendation. Females consumed vegetables more frequently than males (5.0 days, 4.9-5.2 and 4.7 days, 4.5-4.8, respectively). There was little variance in frequency of consumption by age.

Figure 10. Mean number of vegetable servings consumed per day among adults 18-69 years old, by sex and age groups



Of the days when vegetables were consumed, males and females of all ages consumed approximately one serving (1.3, 1.2-1.4) of vegetables, a slightly higher quantity than the average daily fruit consumption, though still much less than the WHO recommendation. There was little variance by sex or age.

Table 19. Percentage of adults 18-69 years old who consumed daily servings of fruit or vegetables, by consumption frequency, sex, and age groups

Age Group (years)	No fruit and/or vegetables		1-2 servings ¹		3-4 servings		≥5 servings	
<i>Percentage (95% CI)</i>								
Males								
18-44	19.3	(15.0-23.7)	54.9	(48.7-61.1)	18.5	(13.6-23.3)	7.3	(3.6-11.0)
45-69	15.5	(11.2-19.8)	60.3	(55.0-65.6)	17.7	(13.2-22.2)	6.5	(4.0-9.0)
18-69	18.2	(14.6-21.8)	56.6	(51.8-61.3)	18.2	(14.1-22.4)	7.0	(4.5-9.6)
Females								
18-44	17.0	(14.0-19.9)	61.1	(57.2-65.1)	16.7	(13.6-19.8)	5.2	(3.5-7.0)
45-69	13.6	(9.4-17.8)	58.3	(52.6-64.0)	21.1	(16.4-25.8)	7.0	(4.4-9.6)
18-69	15.9	(13.6-18.2)	60.2	(57.0-63.4)	18.1	(15.3-20.9)	5.8	(4.3-7.3)
Both Sexes								
18-44	18.2	(15.6-20.8)	57.9	(54.1-61.7)	17.6	(14.3-20.9)	6.3	(4.3-8.3)
45-69	14.6	(11.2-18.0)	59.3	(55.3-63.3)	19.4	(15.6-23.2)	6.7	(4.8-8.6)
18-69	17.1	(14.9-19.3)	58.3	(55.2-61.5)	18.2	(15.1-21.2)	6.4	(5.0-7.8)

¹ One serving is defined as approximately 80g of fruit or vegetable

While vegetable consumption was higher in frequency and quantity across both sexes and age groups, overall reported consumption of fruits and vegetables was much lower than WHO recommendations of 400g (or approximately 5 servings of 80g) of daily fruit and vegetable consumption (24). Only 6.4% of males and females aged 18-69 met the guidelines of at least 5 servings of fruit and/or vegetables per day, while 93.6% (92.2-95.0) did not and 17.1% reported zero daily consumption of fruits and/or vegetables. There were limited variances among sex or age groups.

Salt consumption

High levels of daily sodium intake are risk factors associated with high blood pressure that can contribute to coronary heart disease and stroke. Information was collected on consumption behavior related to the addition of salt to foods and consumption of processed foods, as well as self-reported quantities of salt consumed, awareness of the impacts of salt on health outcomes, and actions taken to reduce salt intake.

Table 20. Percentage of adults 18-69 years old by self-reported frequency of salt consumption, sex and age groups

Age Group (years)	Add salt <i>always or often</i> before eating		Add salt <i>always or often</i> when preparing food at home		<i>Always or often</i> consume processed food high in salt	
	Percentage (95% CI)					
Males						
18-44	11.9	(9.2-14.6)	72.6	(67.6-77.6)	16.4	(12.2-20.6)
45-69	9.9	(6.2-13.5)	69.2	(64.0-74.3)	7.1	(4.1-10.2)
18-69	11.3	(9.2-13.4)	71.5	(67.5-75.6)	13.6	(10.5-16.7)
Females						
18-44	12.4	(9.9-14.9)	75.2	(71.8-78.7)	12.5	(9.7-15.3)
45-69	10.5	(6.2-14.8)	67.3	(62.2-72.5)	6.6	(4.2-9.1)
18-69	11.8	(9.6-14.0)	72.8	(69.8-75.7)	10.7	(8.6-12.7)
Both Sexes						
18-44	12.2	(10.2-14.1)	73.9	(70.6-77.1)	14.5	(12.0-17.0)
45-69	10.2	(7.8-12.6)	68.3	(64.6-71.9)	6.9	(4.9-8.8)
18-69	11.5	(10.0-13.1)	72.1	(69.4-74.9)	12.2	(10.4-14.0)

Questions about adding salt to food or consuming foods high in salt, received relatively similar responses across both sex and age groups. Reported addition of salt before eating and consumption of processed food high in salt was similar (11.5% and 12.2%, respectively), with higher reported use among males and females in the 18-44 age group who were twice as likely to *always or often* consume processed food high in salt compared to those in the older age group (14.5% to 6.9%, respectively). A much larger proportion (72.1%) indicated they *always or often* added salt when cooking or preparing foods at home.

Table 21. Percentage of adults 18-69 years old who think lowering salt in their diet is very, somewhat, or not at all important, by sex and age groups

Age Group (years)	Very important		Somewhat important		Not at all important	
	<i>Percentage (95% CI)</i>					
Males						
18-44	64.3	(57.7-70.9)	19.1	(14.9-23.3)	16.6	(12.1-21.1)
45-69	74.3	(69.1-79.5)	14.8	(11.4-18.2)	10.9	(6.1-15.8)
18-69	67.3	(61.8-72.8)	17.8	(14.8-20.8)	14.9	(10.9-18.9)
Females						
18-44	71	(66.8-75.3)	17.5	(14.1-20.9)	11.5	(8.5-14.5)
45-69	82	(77.5-86.6)	12.6	(8.4-16.8)	5.4	(3.1-7.6)
18-69	74.6	(71.5-77.6)	15.9	(13.1-18.7)	9.5	(7.4-11.7)
Both Sexes						
18-44	67.6	(63.7-71.4)	18.3	(15.6-21.0)	14.1	(11.4-16.8)
45-69	78.2	(74.1-82.2)	13.7	(11.2-16.2)	8.1	(5.4-10.8)
18-69	70.9	(67.5-74.3)	16.9	(14.7-19.1)	12.2	(10.0-14.5)

A majority (79.9%, 77.9-81.8) of males and females of both age groups reported that they thought they generally consumed the right amount of salt. Only 9.1% reported consuming too much or far too much (6.9%, 5.6-8.3 and 2.2%, 1.5-3.0, respectively). However, most (70.9%) thought lowering salt in their diet was very important and 88% (85.7-90.3) thought consuming too much salt could cause serious health problems.

Table 22. Percentage of adults 18-69 years old who take specific action on a regular basis to control salt intake, by sex and age groups

Age Group (years)	Limit consumption of processed foods		Read salt or sodium content on food labels		Buy low salt/sodium alternatives		Use spices other than salt when cooking		Avoid eating foods prepared outside of home	
	<i>Percentage (95% CI)</i>									
Males										
18-44	58.6	(53.4-63.8)	32.4	(26.5-38.3)	29.0	(23.7-34.4)	60.1	(54.9-65.3)	49.4	(44.4-54.4)
45-69	63.9	(56.6-71.2)	40.1	(33.8-46.4)	38.4	(32.0-44.7)	57.4	(51.7-63.1)	62.4	(55.2-69.6)
18-69	60.2	(55.2-65.1)	34.7	(29.8-39.7)	31.8	(27.1-36.5)	59.3	(55.3-63.2)	53.3	(49.2-57.3)
Females										
18-44	65.1	(61.2-69.1)	43.7	(39.7-47.7)	37.6	(33.6-41.6)	68.1	(64.7-71.6)	61.4	(56.8-66.0)
45-69	71.5	(66.7-76.4)	51.3	(46.1-56.6)	45.1	(39.8-50.4)	65.6	(60.3-70.9)	72.6	(68.1-77.1)
18-69	67.1	(63.8-70.5)	46.1	(43.1-49.1)	40.0	(36.8-43.2)	67.3	(64.3-70.4)	64.9	(61.5-68.3)
Both Sexes										
18-44	61.7	(58.6-64.8)	37.8	(34.0-41.6)	33.1	(29.7-36.6)	63.9	(60.8-67.1)	55.1	(51.6-58.6)
45-69	67.7	(63.5-71.8)	45.6	(41.1-50.2)	41.7	(37.0-46.4)	61.4	(57.4-65.5)	67.4	(63.2-71.7)
18-69	63.5	(60.8-66.3)	40.2	(37.0-43.4)	35.8	(32.7-38.9)	63.2	(60.7-65.6)	58.9	(56.3-61.5)

Females of all ages were more likely to take specific actions to lower salt intake in their diet. Overall, males and females aged 45-69 were more likely to report taking specific actions on a regular basis to control salt intake than the younger group.

Physical activity

When analyzing physical activity data, both continuous and categorical indicators are used. To calculate the categorical indicator according to the WHO recommended amount of physical activity, the total time spent in physical activity during a typical week and the intensity of the physical activity are considered. At a minimum, adults should meet the following weekly requirements, which may include activity during work, transport, and leisure time (25):

- 150 minutes of moderate-intensity physical activity; OR
- 75 minutes of vigorous-intensity physical activity; OR
- An equivalent combination of moderate- and vigorous-intensity physical activity achieving at least 600 metabolic equivalent (MET) minutes.

For comparison, three levels of physical activity used in former recommendations on physical activity were used to classify activity levels as low, moderate, and high. Details on these criteria are shown in the data book.

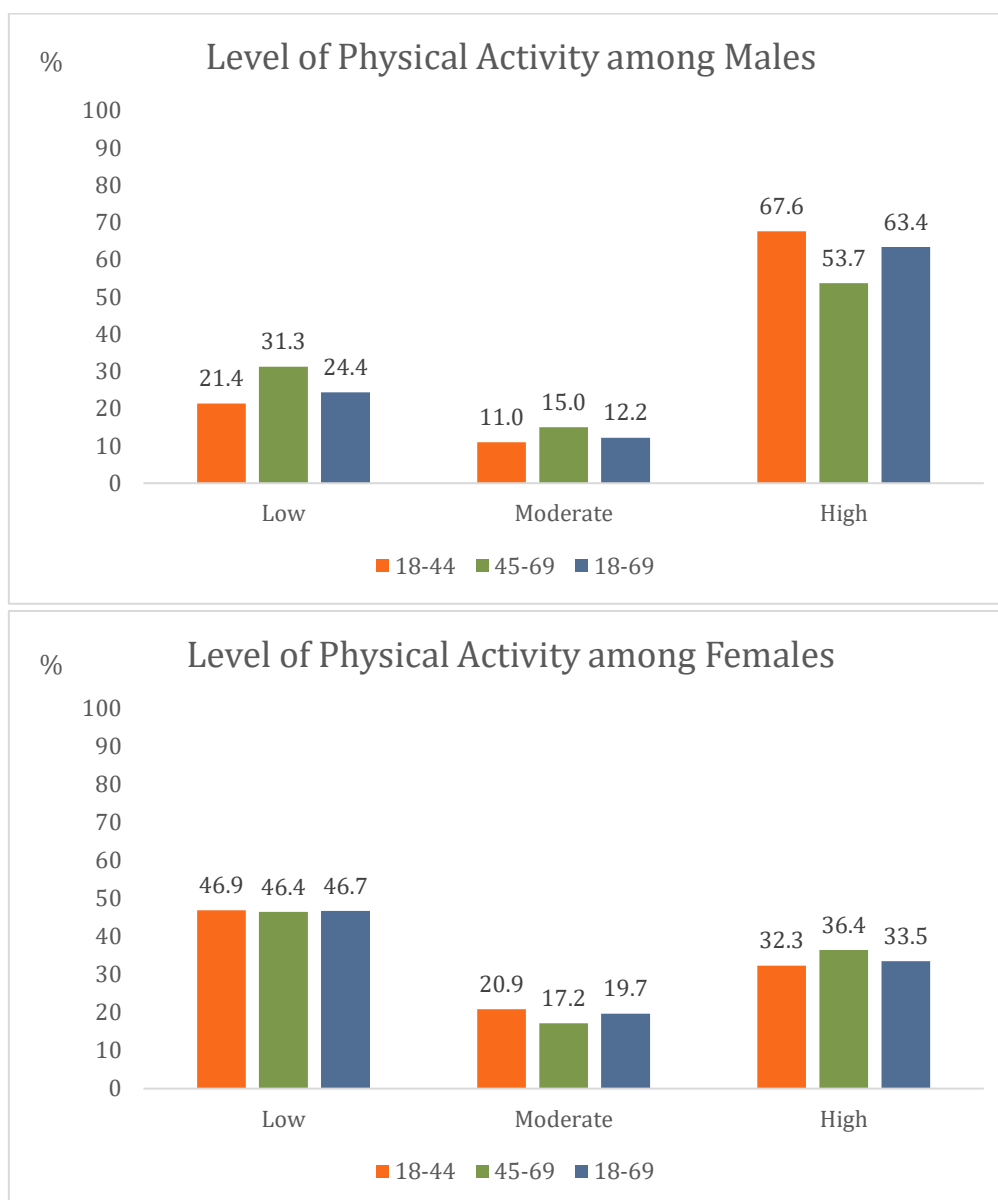
Table 23. Percentage of adults 18-69 years old who do not meet WHO recommendations on physical activity for health, by sex and age groups

Age Group (years)	Do not meet WHO recommendation	
	<i>Percentage (95% CI)</i>	
Males		
18-44	16.4	(12.4-20.4)
45-69	24.4	(18.5-30.3)
18-69	18.9	(15.3-22.4)
Females		
18-44	39.6	(35.7-43.6)
45-69	42.3	(37.0-47.6)
18-69	40.5	(37.4-43.5)
Both Sexes		
18-44	27.6	(24.5-30.6)
45-69	33.2	(29.3-37.2)
18-69	29.3	(26.9-31.8)

About twice as many females as compared to males did not meet the WHO recommendations on physical activity (40.5% and 18.9%, respectively). While there was little difference among age groups for females, males aged 45-69 were less likely to meet the WHO recommendation than males aged 18-44.

The mean minutes of total physical activity on average per day was 215.3 minutes (202.2–228.4 minutes) and the median minutes of total physical activity on average per day was 106.4 minutes (inter-quartile range 12.9 – 342.9 minutes). This varied by sex with males, especially those aged 18-44 years old, reporting longer periods of daily physical activity than females.

Figure 11. Percentage of adults 18-69 years old who meet low, moderate, and high levels of physical activity, by sex and age groups



High – a person reaching any of the following criteria is classified in this category:

- Vigorous-intensity activity on at least 3 days achieving a minimum of at least 1,500 MET-minutes/week; OR
- 7 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 3,000 MET-minutes per week.

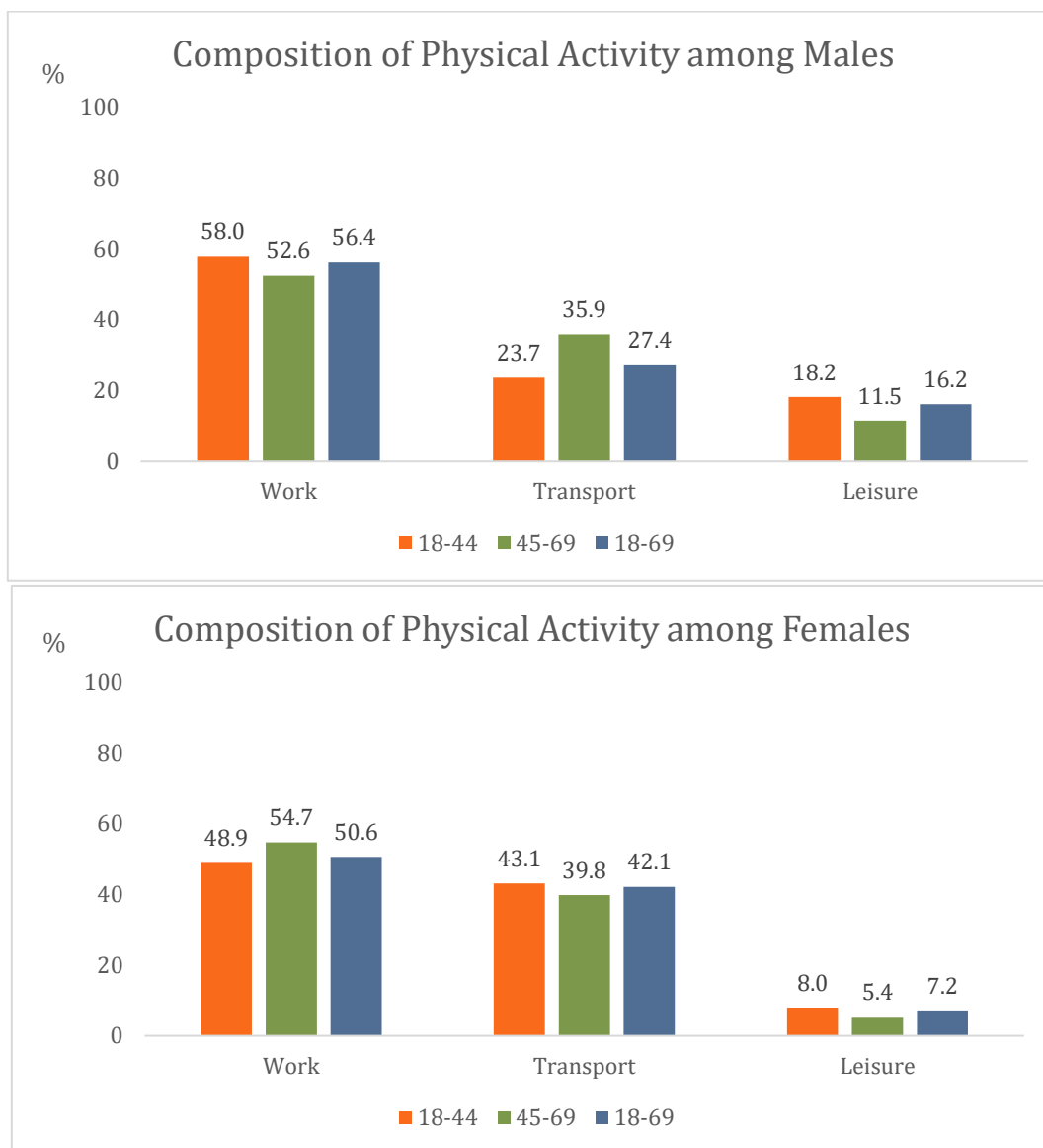
Moderate – a person not meeting the criteria for the "high" category, but meeting any of the following criteria is classified in this category:

- 3 or more days of vigorous-intensity activity of at least 20 minutes per day; OR
- 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day; OR
- 5 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 600 MET-minutes per week.

Low – a person not meeting any of the above-mentioned criteria falls in this category.

Differences in levels of physical activity between males and females were seen, with the majority (63.4%, 59.6-67.1) of males in all age groups reporting a high level of physical activity. In contrast, nearly half (46.7%, 43.5-50.0) of females of all ages reported low levels of physical activity. About twice as many females of all ages reported no vigorous physical activity than males (85%, 82.3-87.6 and 44.2%, 40.4-47.9, respectively).

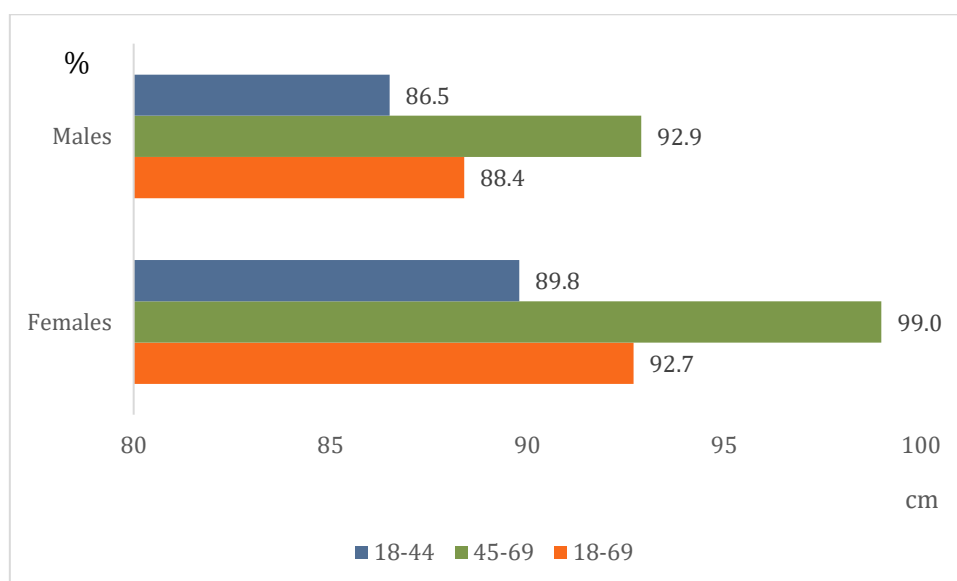
Figure 12. Percentage of work, transport, and leisure activity that contribute to total activity among adults 18-69 years old, by sex and age groups



Both males and females reported a majority of their physical activity took place during work and transportation. Males of all ages were more likely to participate in leisure time physical activity than were females (16.2%, 13.9-18.5 and 7.2%, 5.6-8.8, respectively).

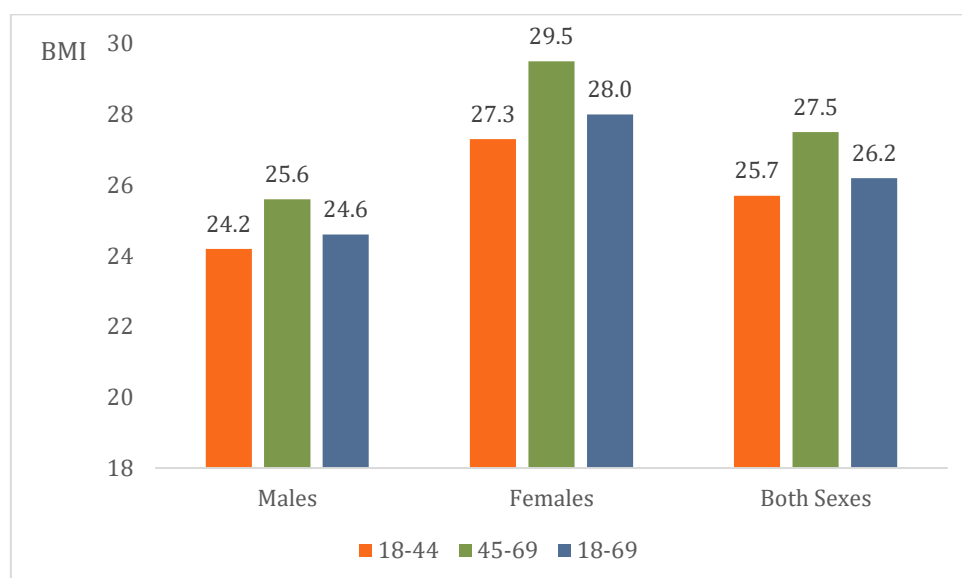
Levels of physical inactivity were reflected in body weight measurements. Maintaining a healthy body weight to prevent overweight and obesity is another risk factor for NCDs. Weight measurements were taken of all adults aged 18-69, excluding pregnant women.

Figure 13. Mean waist circumference (cm) of adults 18-69 years old, by sex and age groups



The average waist circumference for males was 88.4 cm (85.9-91.0 cm) and 92.7 cm for females (91.3-94.0 cm). Among both sexes, waist circumference increased with age, which was more evident in females (89.8 cm, 88.0-91.5 cm among 18-44 and 99.0 cm, 97.2-100.7 cm among 45-69).

Figure 14. Mean Body Mass Index (kg/m²) of adults 18-69 years old, by sex and age groups



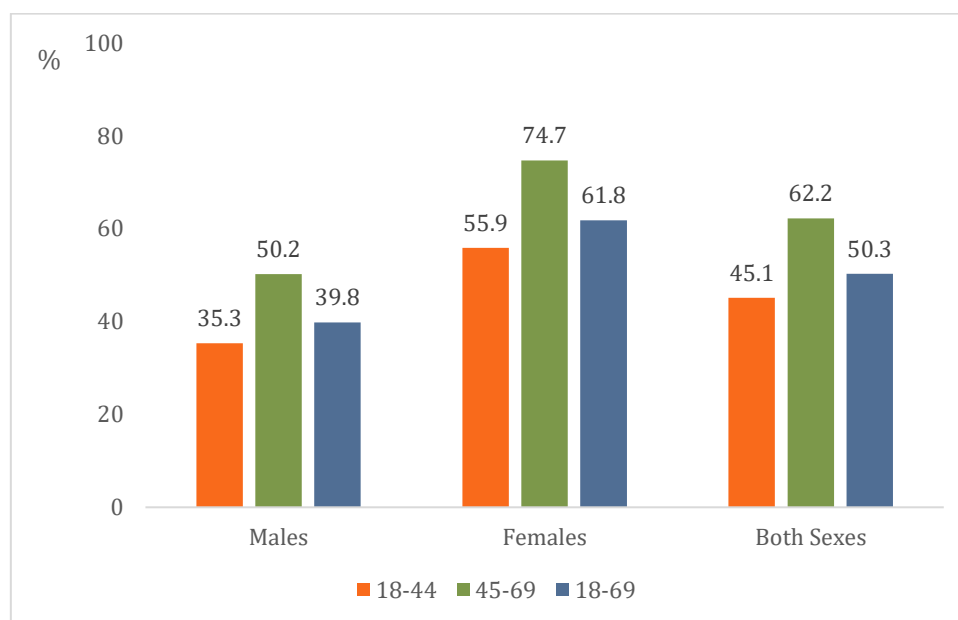
There was little difference in mean body mass index (BMI) between age groups within each sex. However, females had higher BMI than males (28.0 kg/m², 27.5-28.5 kg/m² and 24.6 kg/m², 24.0-25.3 kg/m², respectively).

Table 24. Percentage of adults 18-69 who are underweight, normal weight, overweight, and obese based on BMI, by sex and age groups

Age Group (years)	Under-weight BMI < 18.5		Normal weight BMI 18.5 - 24.9		Overweight BMI 25.0 - 29.9		Obese BMI ≥ 30.0	
	<i>Percentage (95% CI)</i>							
Males								
18-44	10.4	(6.8-14.0)	54.3	(49.9-58.7)	22.3	(17.9-26.7)	13.0	(9.6-16.5)
45-69	6.4	(2.4-10.5)	43.4	(37.0-49.8)	34.0	(27.8-40.2)	16.2	(12.0-20.4)
18-69	9.2	(5.8-12.6)	51.0	(47.2-54.8)	25.8	(21.8-29.8)	14.0	(11.1-16.8)
Females								
18-44	6.7	(4.6-8.9)	37.4	(33.5-41.2)	26.1	(22.3-30.0)	29.8	(26.0-33.6)
45-69	2.4	(0.9-3.8)	22.9	(18.7-27.2)	31.4	(26.9-35.8)	43.3	(38.1-48.6)
18-69	5.4	(3.8-6.9)	32.8	(29.8-35.9)	27.8	(25.1-30.5)	34.0	(31.1-37.0)
Both Sexes								
18-44	8.7	(6.6-10.8)	46.3	(43.2-49.3)	24.1	(21.5-26.7)	21.0	(18.0-23.9)
45-69	4.4	(2.3-6.6)	33.3	(29.4-37.3)	32.7	(29.0-36.5)	29.5	(26.1-32.9)
18-69	7.4	(5.5-9.2)	42.3	(39.7-44.9)	26.7	(24.6-28.9)	23.6	(21.3-25.9)

Males were more likely to be underweight or normal weight compared to females (60.2% and 38.2%, respectively). Likewise, females were more likely to be considered obese than males (34% and 14%, respectively). The likelihood of having a high BMI increased with age for both sexes.

Figure 15. Percentage of adults 18-69 years old classified as overweight and obesity (BMI ≥ 25), by sex and age groups



Half of adults were considered overweight (50.3%, 24.6-28.9). Females were more likely to have a BMI higher than or equal to 25 kg/m² than males (61.8%, 58.6-65.0 and 39.8%, 34.6-44.9, respectively).

History of raised blood pressure

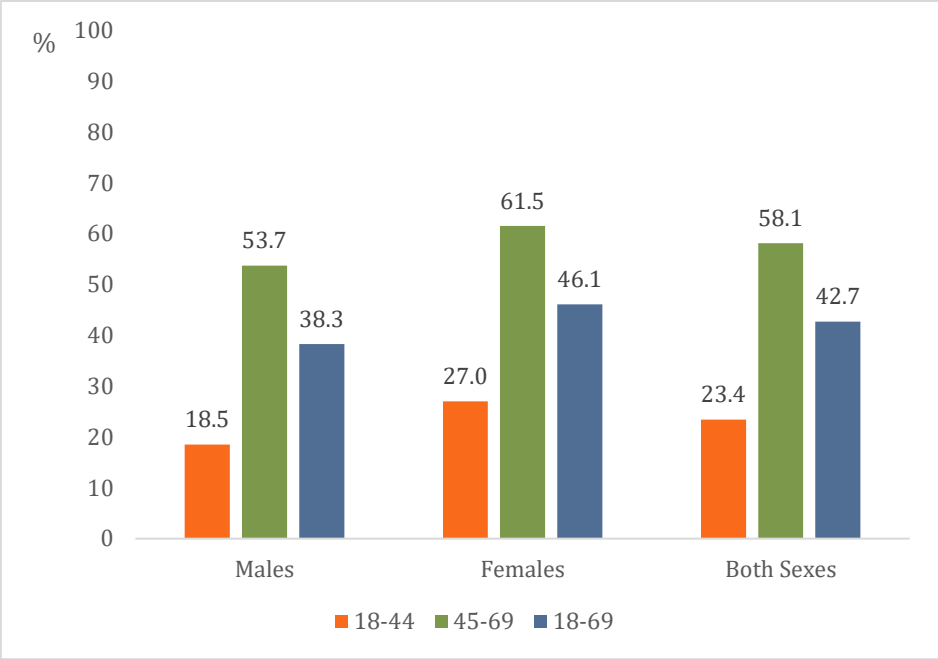
High blood pressure is a common risk factor for NCDs. Information was self-reported regarding history of blood pressure measurements and steps taken to reduce high blood pressure. Physical measurements were also taken among those currently using and not using medication for raised blood pressure.

Table 25. Percentage of adults 18-69 years old who have had blood pressure measured by a health worker and received a diagnosis, by sex and age groups

Age Group (years)	Never measured		Measured, not diagnosed		Diagnosed, not within past 12 months		Diagnosed within past 12 months	
	<i>Percentage (95% CI)</i>							
Males								
18-44	43.2	(35.7-50.7)	45.0	(38.3-51.8)	3.5	(1.5-5.5)	8.3	(5.6-10.9)
45-69	11.8	(8.4-15.3)	52.7	(47.1-58.3)	9.7	(6.4-13.0)	25.8	(20.7-30.9)
18-69	33.8	(28.5-39.1)	47.3	(42.2-52.4)	5.3	(3.6-7.1)	13.5	(11.1-16.0)
Females								
18-44	17.0	(14.4-19.6)	65.9	(62.3-69.5)	5.7	(3.8-7.7)	11.3	(8.9-13.8)
45-69	6.7	(4.4-9.0)	46.9	(41.6-52.2)	10.8	(7.4-14.2)	35.6	(30.5-40.6)
18-69	13.8	(11.9-15.7)	60.0	(57.0-62.9)	7.3	(5.6-9.0)	19.0	(16.5-21.4)
Both Sexes								
18-44	30.7	(26.2-35.1)	55.0	(51.0-59.0)	4.6	(3.2-5.9)	9.8	(7.8-11.7)
45-69	9.3	(7.3-11.3)	49.8	(46.0-53.7)	10.2	(7.8-12.6)	30.6	(26.9-34.3)
18-69	24.1	(21.0-27.2)	53.4	(50.3-56.5)	6.3	(5.0-7.6)	16.2	(14.4-17.9)

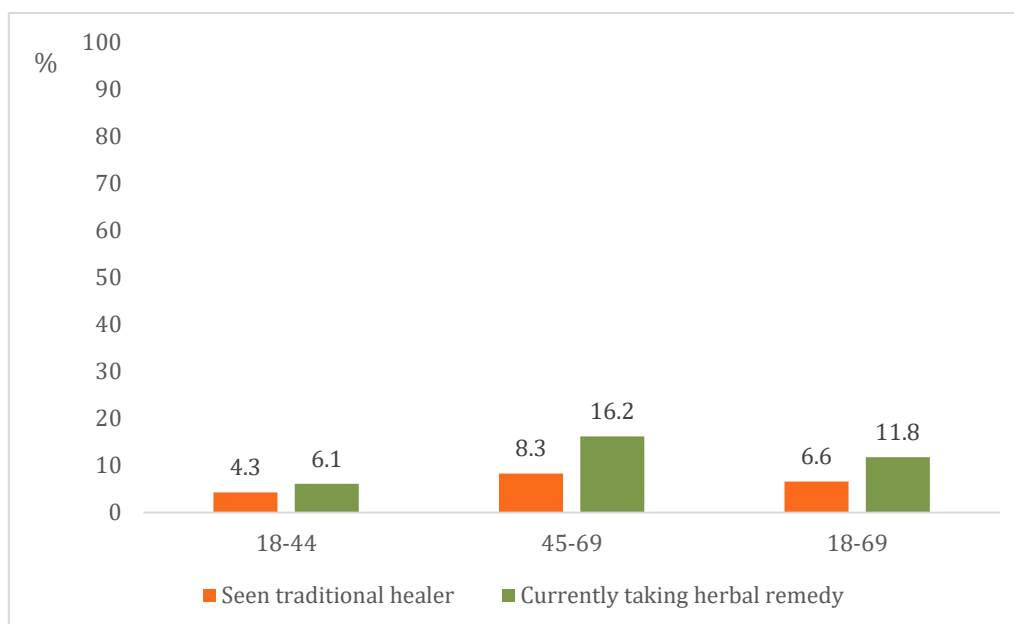
Overall, males were less likely to have had their blood pressure measured. Almost a third (33.8%) of all males reported never having their blood pressure measured compared with females (13.8%). Both males and females aged 18-44 were less likely to have had their blood pressure measured, compared to those 45-69 years old (30.7% and 9.3%, respectively). Among females, 60% reported having their blood pressure measured and received a diagnosis of no high blood pressure, while 47.3% of all males reported the same. Overall, 18.8% of males and 26.3% of females reported being diagnosed with high blood pressure.

Figure 16. Percentage of adults 18-69 years old diagnosed with high blood pressure currently taking drugs (medication) for raised blood pressure or hypertension prescribed by a doctor or health worker, by sex and age groups



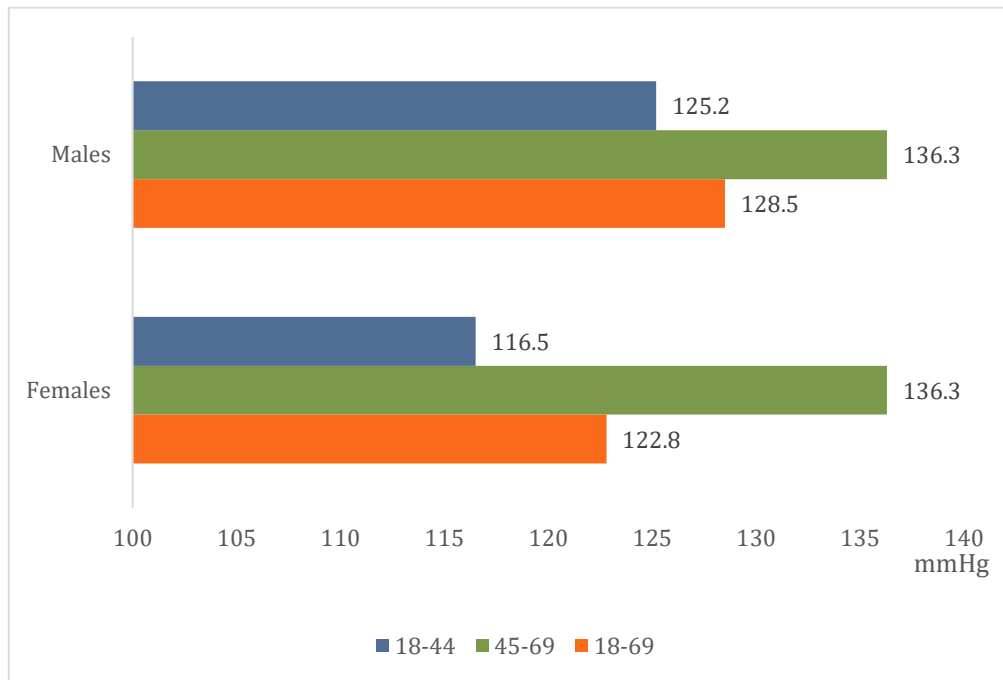
Among those diagnosed with high blood pressure, approximately one half of all females (46.1%, 40.4-51.8) and one third of males (38.3%, 29.9-46.8) reported taking medication for their raised blood pressure. Variances by age are evident with those aged 45-69 more likely to take medications compared to those 18-44 years old (58.1%, 52.4-63.8 and 23.4%, 17.3-29.5, respectively).

Figure 17. Percentage of adults 18-69 years old diagnosed with high blood pressure who have sought advice or received treatment from a traditional healer for raised blood pressure, both sexes by age groups



Persons with raised blood pressure who reported seeing a traditional healer for their ailment was generally low among both sexes and age groups (6.6%, 3.7-9.4). The most common group was males aged 45-69 years, of which 12.5% (95% CI, 2.2-22.7) indicated seeing a traditional healer. More males and females (11.8%, 8.3-15.3) reported taking herbal or traditional remedies for raised blood pressure, with again the highest likelihood among males aged 45-69 (17.7%, 6.6-28.8).

Figure 18. Mean systolic blood pressure (mmHg) of adults 18-69 years old, by sex and age groups



Blood pressure measurements were taken for all adults aged 18-69. The mean systolic blood pressure for both sexes and age groups, including those currently on medication for raised blood pressure, was 125.8/77.7 mmHg (124.8-126.7 and 77.0-78.4), which is only slightly higher than the optimal level of 120/80mmHg or lower. Mean systolic blood pressure was higher among males than females in the younger age group (125.2, 123.6-126.9 and 116.5, 115.3-117.8, respectively). It also increased with age for both sexes (121.1, 120.1-122.1 and 136.3, 134.2-138.4, respectively).

Table 26. Percentage of adults 18-69 years old with raised blood pressure (SBP \geq 140 and/or DBP \geq 90 mmHg or higher) or on medication for raised blood pressure, by sex and age groups

Age Group (years)	SBP \geq 140 and/or DBP \geq 90 mmHg or on medication	
	<i>Percentage (95% CI)</i>	
Males		
18-44	18.2	(14.0-22.4)
45-69	45.7	(40.3-51.1)
18-69	26.4	(22.9-29.9)
Females		
18-44	13.5	(10.6-16.3)
45-69	54.8	(49.4-60.2)
18-69	26.2	(23.4-29.0)
Both Sexes		
18-44	15.9	(13.5-18.4)
45-69	50.2	(46.6-53.7)
18-69	26.3	(24.3-28.3)

One in every four (26.4%) adults aged 18-69 had raised blood pressure (SBP \geq 140 and/or DBP \geq 90 mmHg or higher) or were currently on medication for raised blood pressure. Males aged 18-44 were more likely than females of the same age group to have raised blood pressure (18.2% and 13.5%, respectively); while the converse was seen among the older age group with males less likely than females aged 45-69 to have raised blood pressure (45.7% and 54.8%, respectively). Overall, the likelihood of raised blood pressure increased with age.

Table 27. Percentage of adults 18-69 years old with raised blood pressure (SBP \geq 140 and/or DBP \geq 90 mmHg or higher or on medication), by awareness, treatment and control status, sex, and age groups.

Age Group (years)	Not aware ¹		Aware, not treated		Aware, treated, not controlled		Aware, treated, controlled	
<i>Percentage (95% CI)</i>								
Males								
18-44	76.8	(68.4-85.2)	10.3	(4.6-16.0)	10.3	(4.2-16.4)	2.6	(0.0-5.3)
45-69	40.8	(32.2-49.4)	13.9	(8.1-19.6)	27.5	(18.0-36.9)	17.8	(11.6-24.1)
18-69	58.2	(51.2-65.1)	12.1	(8.3-16.0)	19.2	(13.0-25.4)	10.5	(6.8-14.1)
Females								
18-44	40.9	(30.5-51.4)	21.3	(12.7-30.0)	10.6	(4.8-16.4)	27.1	(17.2-37.0)
45-69	26.9	(19.6-34.1)	17.8	(10.8-24.8)	32.6	(26.0-39.3)	22.7	(16.9-28.5)
18-69	31.8	(25.6-38.0)	19.1	(13.6-24.6)	24.9	(19.6-30.1)	24.3	(19.1-29.4)
Both Sexes								
18-44	62.3	(54.7-69.9)	14.8	(9.7-19.8)	10.4	(6.2-14.7)	12.5	(8.0-17.0)
45-69	33.3	(27.3-39.3)	16.0	(11.6-20.4)	30.2	(24.9-35.6)	20.4	(16.1-24.8)
18-69	45.5	(40.2-50.7)	15.5	(12.1-18.8)	21.9	(18.0-25.8)	17.1	(13.8-20.4)

¹ Not aware is defined as population that reported having received a diagnosis of raised blood pressure/hypertension by a health worker.

Among those with raised blood pressure (SBP \geq 140 and/or DBP \geq 90 mmHg or currently on medication), nearly half (45.5%) were unaware of their condition, which was more common among males than females (58.2% and 31.8%, respectively). As follows, females were more likely than males to have controlled their raised blood pressure (24.3% and 10.5%, respectively), though less than one in every five (17.1%) adults aged 18-69 had done so.

History of diabetes

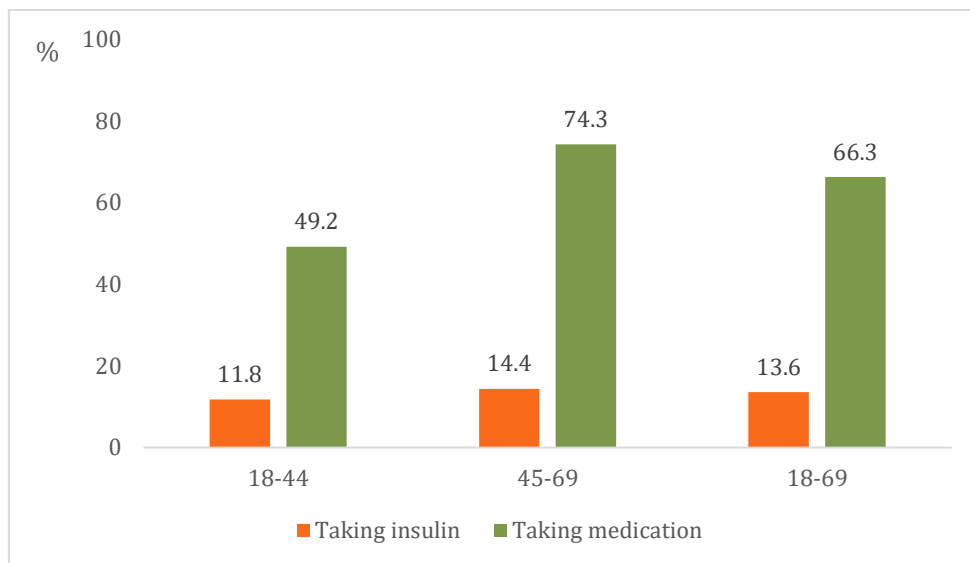
Diabetes or history of diabetes is another common risk factor for NCDs. Information was self-reported regarding history of blood sugar measurements and use of medication prescribed for diabetes. Physical measurements were also taken for fasting blood glucose levels.

Table 28. Percentage of adults 18-69 years old who have had blood glucose measured by a health worker and received a diagnosis, by sex and age groups

Age Group (years)	Never measured		Measured, not diagnosed		Diagnosed, not within past 12 months		Diagnosed within past 12 months	
<i>Percentage (95% CI)</i>								
Males								
18-44	70.0	(65.9-74.0)	26.7	(22.6-30.9)	2.2	(0.8-3.5)	1.1	(0.3-2.0)
45-69	35.1	(28.9-41.3)	50.0	(43.0-56.9)	2.7	(1.3-4.1)	12.3	(8.5-16.1)
18-69	59.5	(56.1-62.9)	33.7	(30.1-37.3)	2.3	(1.3-3.4)	4.5	(3.0-5.9)
Females								
18-44	53.2	(49.1-57.2)	41.4	(37.6-45.2)	1.4	(0.6-2.2)	4.0	(2.5-5.6)
45-69	26.1	(21.2-31.0)	46.2	(41.5-50.9)	3.8	(1.8-5.9)	23.8	(19.1-28.5)
18-69	44.7	(41.3-48.0)	42.9	(40.0-45.8)	2.2	(1.2-3.1)	10.2	(8.1-12.3)
Both Sexes								
18-44	62.0	(59.0-64.9)	33.7	(30.7-36.7)	1.8	(1.0-2.6)	2.5	(1.7-3.3)
45-69	30.7	(26.5-34.8)	48.1	(44.1-52.1)	3.2	(2.0-4.5)	18.0	(15.3-20.7)
18-69	52.4	(49.9-54.9)	38.1	(35.8-40.5)	2.3	(1.5-3.0)	7.3	(6.2-8.4)

Overall, males of all ages were more likely than females to never have had their blood glucose measured (59.5% and 44.7%, respectively). However, both males and females in the younger 18-44 age group were twice as likely to never have had the test compared to those in the 45-69 age group (62% and 30.7%, respectively). A large proportion of both males and females reported having their blood glucose measured, but not receiving a diagnosis of raised blood sugar or diabetes (33.7% and 42.9%, respectively). About twice as many males aged 45-69 years than those aged 18-44 reported having the test but not being diagnosed (50.0% and 26.7%, respectively). This age variance was not seen among females. A small proportion of both males and females reported having a diagnosis of high blood glucose, but not within the past 12 months (2.3%). A larger proportion (7.3%) reported receiving a diagnosis within the past 12 months; this was especially seen among those aged 45-69, with females twice as likely as males to have received a recent diagnosis (23.8% and 12.3%, respectively).

Figure 19. Percentage of adults 18-69 years old diagnosed with raised blood glucose or diabetes currently taking insulin or medication for diabetes prescribed by a doctor or health worker, both sexes by age groups

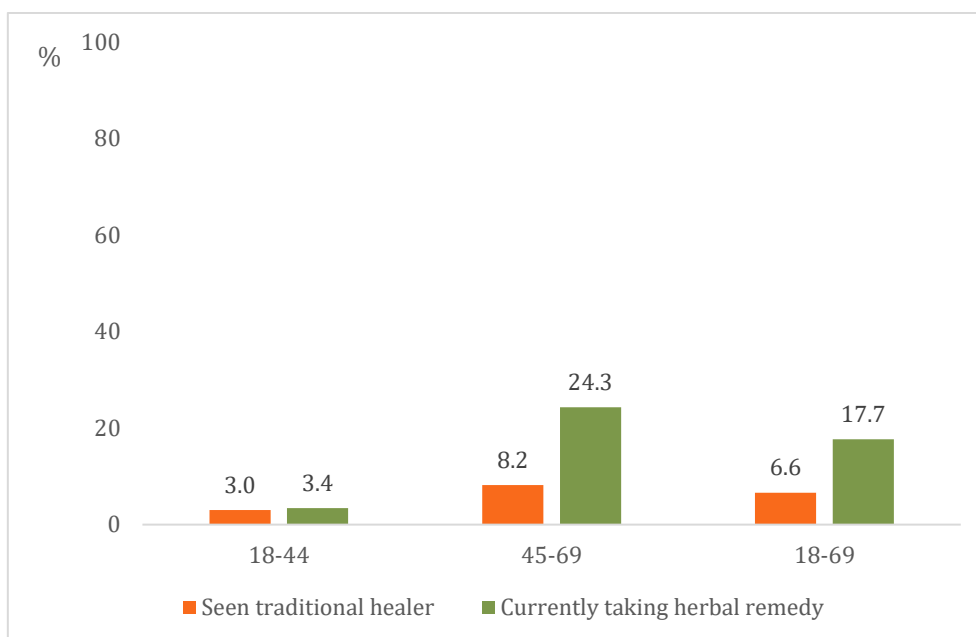


Overall, adults 18-69 with a diagnosis of raised blood glucose or diabetes were more far more likely to take medication as opposed to insulin to control the disease (66.3%, 59.8-72.9 and 13.6%, 8.3-18.9, respectively). Use of medication verses insulin was more evident among those in the 45-69 age group than those 18-44 years old (74.3%, 65.7-82.8 and 49.2%, 35.7-62.6, respectively).

There was not a lot of variance between sexes in terms of medication use. Of those diagnosed with raised blood glucose or diabetes, 60.7% (49.0-72.5) of males and 69.6% (61.6-77.6) of females reported taking medication for diabetes. Females aged 45-69 reported the highest use of medication (75.8%, 64.7-86.8) to treat diabetes among those diagnosed, with similar presentation in males of the same age group (71.5%, 57.5-85.5).

While medication to treat raised blood glucose or diabetes was more common, 16.0% (5.8-26.2) of males and 12.2% (6.4-18.0) of females reported they were prescribed insulin for this purpose. There was no variation in use of insulin between sexes, though this was seen between age groups. More males in the 18-44 age group reported taking insulin than did males in the older age group (21.4%, 0.0-43.0 and 13.2%, 4.7-21.7, respectively). The opposite was true for females; those aged 45-69 years were three times more likely to be taking insulin than those aged 18-44 (15.1%, 7.9-22.3 and 5.4%, 0.0-11.7, respectively).

Figure 20. Percentage of adults 18-69 years old diagnosed with raised blood glucose or diabetes who have sought advice or received treatment from a traditional healer for diabetes, both sexes by age groups



As previously seen for raised blood pressure, those who have a diagnosis of raised blood glucose or diabetes were more likely to take an herbal remedy for treatment of their condition than to seek advice from a traditional healer (17.7%, 11.7-23.8 and 6.6%, 3.6-9.6, respectively). Males aged 45-69 in particular were most likely of all groups to have seen a traditional healer or taken herbal treatment for diabetes (12.5%, 4.4-20.5 and 34%, 18.5-49.5, respectively).

Table 29. Percentage of adults 18-69 years old with impaired fasting glycaemia, raised blood glucose, or current on medication for diabetes, by sex and age

Age Group (years)	Impaired Fasting Glycaemia ¹		Raised blood glucose ² or currently on medication for diabetes		Currently on medication for diabetes	
			<i>Percentage (95% CI)</i>			
Males						
18-44	3.0	(0.0-6.0)	4.0	(0.0-8.1)	1.8	(0.0-3.7)
45-69	8.8	(0.2-17.4)	15.0	(6.4-23.7)	12.5	(7.0-18.1)
18-69	4.7	(1.5-8.0)	7.3	(3.3-11.3)	5.0	(2.8-7.2)
Females						
18-44	3.6	(0.5-6.6)	9.7	(4.6-14.9)	3.0	(0.7-5.3)
45-69	10.5	(4.2-16.9)	27.7	(18.7-36.7)	24.4	(17.7-31.1)
18-69	5.8	(2.9-8.8)	15.6	(11.1-20.2)	9.5	(6.7-12.2)
Both Sexes						
18-44	3.3	(1.0-5.6)	6.8	(3.7-10.0)	2.4	(0.9-3.9)
45-69	9.7	(4.4-15.0)	21.7	(14.8-28.5)	18.5	(14.0-22.9)
18-69	5.3	(3.0-7.6)	11.5	(8.5-14.4)	7.2	(5.4-9.0)

¹ Impaired fasting glycaemia is defined as capillary whole blood value: ≥ 5.6 mmol/L (100 mg/dl) and < 6.1 mmol/L (110 mg/dl)

² Raised blood glucose is defined as capillary whole blood value: ≥ 6.1 mmol/L (110 mg/dl)

Blood glucose measurements were taken for all adults aged 18-69. One in every ten adults had high blood sugar or were on medication for diabetes (11.5%, 8.5-14.4). Higher levels of impaired fasting glycaemia and raised blood glucose were seen among those aged 45-69 (9.7% and 21.7%, respectively). As such, this older age group was also more likely to currently be on medication for diabetes, which was even more prominent among women aged 45-69 (18.5% and 24.4%, respectively).

History of raised total cholesterol

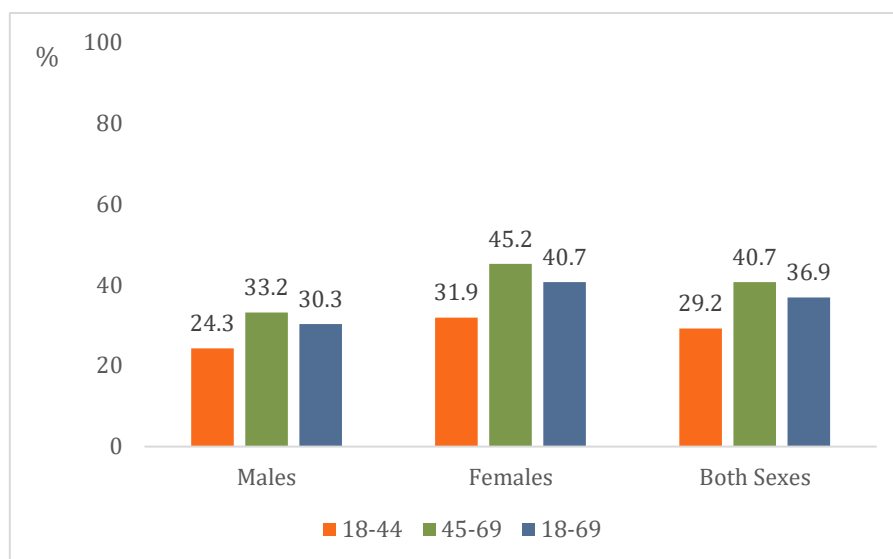
A risk factor for NCDs is a history of raised total cholesterol, which can lead to an increased risk of cardiovascular disease. Information was self-reported regarding history of total cholesterol measurements and use of medication prescribed for raised total cholesterol. Physical measurements were also taken for total cholesterol and high-density lipoprotein (HDL) cholesterol.

Table 30. Percentage of adults 18-69 years old who have had cholesterol measured by a health worker and received a diagnosis, by sex and age groups

Age Group (years)	Never measured		Measured, not diagnosed		Diagnosed, not within past 12 months		Diagnosed within past 12 months	
	<i>Percentage (95% CI)</i>							
Males								
18-44	86.2	(83.0-89.4)	10.1	(7.3-12.9)	1.5	(0.4-2.6)	2.2	(1.0-3.4)
45-69	54.8	(49.0-60.7)	27.1	(22.2-32.1)	9.2	(5.8-12.6)	8.9	(5.9-11.8)
18-69	76.8	(74.0-79.6)	15.2	(13.0-17.4)	3.8	(2.4-5.1)	4.2	(2.9-5.5)
Females								
18-44	77.2	(74.0-80.5)	15.4	(12.7-18.1)	3.4	(2.0-4.9)	3.9	(2.5-5.3)
45-69	44.6	(39.1-50.0)	24.6	(20.2-29.0)	10.5	(7.3-13.7)	20.3	(15.7-24.9)
18-69	67.0	(64.0-70.0)	18.3	(15.8-20.8)	5.6	(4.2-7.1)	9.1	(7.3-10.8)
Both Sexes								
18-44	81.9	(79.3-84.5)	12.7	(10.5-14.9)	2.4	(1.5-3.3)	3.0	(2.0-4.0)
45-69	49.8	(45.6-53.9)	25.9	(22.7-29.1)	9.8	(7.6-12.1)	14.5	(12.0-17.0)
18-69	72.1	(69.8-74.3)	16.7	(14.9-18.5)	4.7	(3.7-5.7)	6.5	(5.4-7.6)

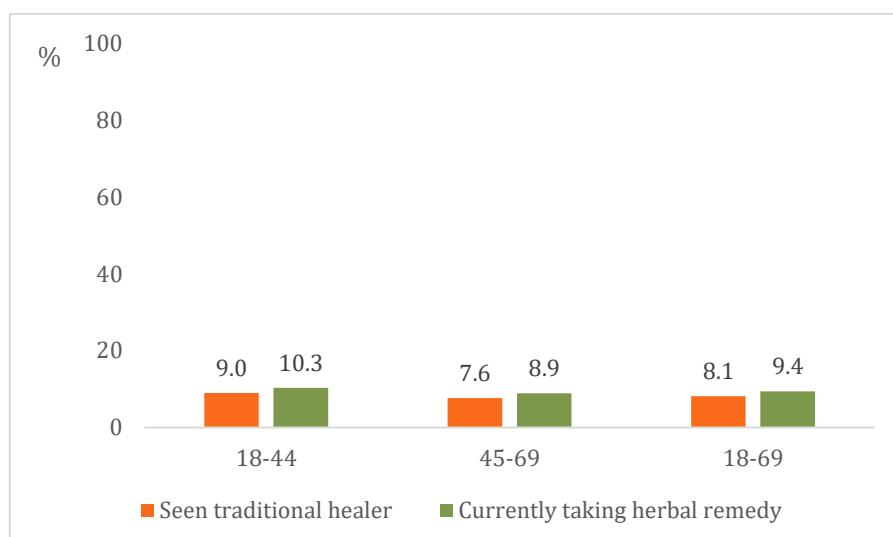
The majority (72.1%) of adults aged 18-69 have never had a blood cholesterol test, especially among males who were less likely to have been tested (76.8%) than females (67.0%). Those 18-44 years old represented the largest proportion untested (81.9%). As such, those 45-69 were more likely to have been tested; 50.2% of the older age group had their cholesterol tested compared to 18.1% in the younger group. Of those tested, females aged 45-69 were most likely to have received a diagnosis of raised cholesterol (30.8%).

Figure 21. Percentage of adults 18-69 years old diagnosed with raised total cholesterol currently taking oral treatment (medication) for raised total cholesterol prescribed by a doctor or health worker, by sex and age groups



Less than half (36.9%, 30.3-43.4) of those with diagnosed high blood cholesterol reported taking prescribed medicine for their condition. More females (40.7%, 33.4-47.9) reported taking prescribed medication than males (30.3%, 19.4-41.3). The proportion of those taking medication increased with age among both sexes.

Figure 22. Percentage of adults 18-69 years old diagnosed with raised cholesterol who have sought advice or received treatment from a traditional healer for raised cholesterol, both sexes by age groups



Seeing a traditional healer or taking herbal treatment was less common for raised cholesterol than what was reported for raised blood pressure and diabetes (8.1%, 4.0-12.2 and 9.4%, 4.7-14.0, respectively). Only 7.8% (4.6-10.9) of females and 8.6% (2.3-14.9) of males with diagnosed high blood cholesterol reported seeking a traditional healer for treatment. The proportion of those taking traditional herbs or remedies for their raised cholesterol was also not very high with only 6.4% (0.9-11.9) of males and 11.1% (6.3-15.9) of females reported receiving traditional treatment.

Table 31. Percentage of adults 18-69 years old with total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl, ≥ 6.2 mmol/L or ≥ 240 mg/dl, or currently on medication for raised cholesterol, by sex and age groups

Age Group (years)	Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl ¹		Total cholesterol ≥ 6.2 mmol/L or ≥ 240 mg/dl ¹	
	<i>Percentage (95% CI)</i>			
Males				
18-44	38.8	(30.7-46.9)	10.5	(5.4-15.5)
45-69	65.0	(54.2-75.9)	22.1	(13.3-30.9)
18-69	46.8	(40.1-53.5)	14.0	(9.6-18.4)
Females				
18-44	44.4	(38.0-50.8)	8.6	(4.8-12.4)
45-69	73.2	(65.5-80.9)	33.5	(25.9-41.0)
18-69	53.4	(48.2-58.6)	16.4	(12.7-20.0)
Both Sexes				
18-44	41.6	(36.2-47.0)	9.5	(6.2-12.8)
45-69	69.2	(62.2-76.2)	27.9	(22.1-33.8)
18-69	50.1	(45.7-54.5)	15.2	(12.3-18.1)

¹ Or are currently on medication for raised cholesterol

Blood tests were conducted to measure total cholesterol. Nearly half of all adults (50.1%) had high cholesterol or were on medication for high cholesterol. Among both males and females, those aged 45-69 were more likely to have elevated blood cholesterol levels (69.2% and 27.9%). Results showed approximately one in five males (22.1%) and one in three females (33.5%) aged 44-69 had total cholesterol ≥ 6.2 mmol/L or ≥ 240 mg/dl or were currently on medication for raised cholesterol.

Table 32. Percentage of adults 18-69 years old with HDL < 1.03 mmol/L or < 40 mg/dl or HDL < 1.03 mmol/L or < 40 mg/dl, by sex and age groups

Age Group (years)	HDL < 1.03 mmol/L or < 40 mg/dl	
	<i>Percentage (95% CI)</i>	
Males		
18-44	26.6	(18.7-34.6)
45-69	44.9	(33.4-56.4)
18-69	32.2	(25.8-38.6)
HDL < 1.29 mmol/L or < 50 mg/dl		
Females		
18-44	60.2	(53.6-66.8)
45-69	43.8	(35.8-51.8)
18-69	55.1	(49.4-60.8)

Blood tests were also conducted to measure high density lipoprotein (HDL). Older males were more likely to have lower HDL levels, which lead to an increased risk of cardiovascular disease, than were younger males (44.9% and 26.6%, respectively). However, the converse was seen among females with those aged 18-44 more likely to have lower HDL levels than those 45-69 years old (60.2% and 43.8%, respectively).

History of cardiovascular disease

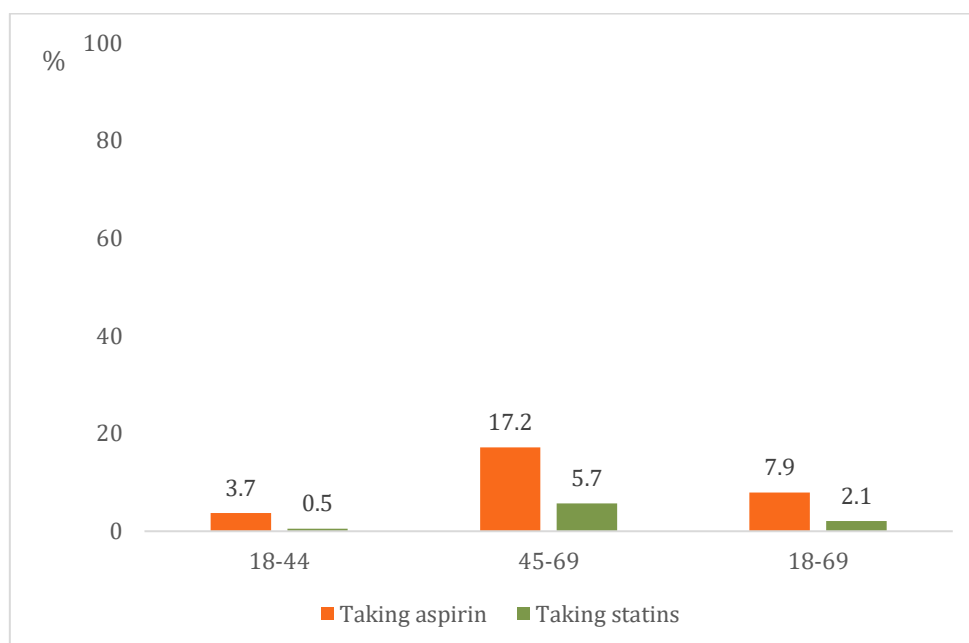
Cardiovascular disease (CVD) is one of the four most common NCDs. As such, information was collected regarding the self-reported history of CVD and what practices are done regularly to prevent or treat heart disease.

Table 33. Percentage of adults 18-69 years old who report having a heart attack or chest pain from heart disease or a stroke, by sex and age groups

Age Group (years)	History of CVD	
	<i>Percentage (95% CI)</i>	
Males		
18-44	7.1	(3.8-10.4)
45-69	11.1	(7.0-15.2)
18-69	8.3	(5.2-11.4)
Females		
18-44	6.2	(4.3-8.1)
45-69	14.2	(10.0-18.5)
18-69	8.7	(6.7-10.7)
Both Sexes		
18-44	6.7	(4.5-8.8)
45-69	12.6	(9.1-16.1)
18-69	8.5	(6.2-10.7)

Overall, slightly more females (8.7%) than males (8.3%) reported ever having heart disease or a stroke. Those adults in the older age group were more likely to report having had an incident compared with those in the younger age group (12.6% and 6.7%, respectively).

Figure 23. Percentage of adults 18-69 years old regularly taking aspirin or statins to prevent or treat heart disease, both sexes by age groups

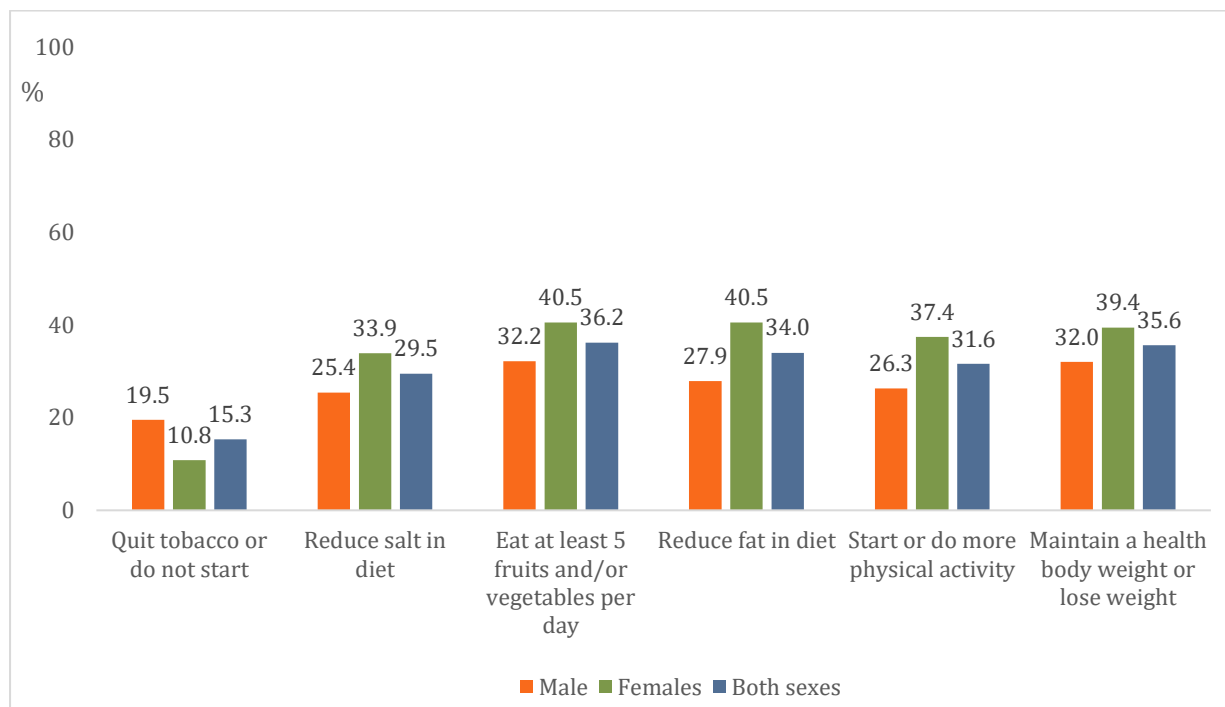


Regular use of aspirin to prevent or treat heart disease was more common than use of statins (7.9%, 5.7-10.0 and 2.1%, 1.5-2.8, respectively). There was little variance in use between the sexes; however, use did vary by age. Males and females 45-69 were more likely to use aspirin than their younger counterparts (17.2%, 13.5-20.9 and 3.7%, 1.8-5.6, respectively). This was also seen among use of statins with less than 1% (0.5%, 0.2-0.9) of adults 18-44 who reported use and 5.7% (3.9-7.6) of those aged 45-69.

Lifestyle advice given by a doctor or health worker

Information was collected regarding whether adults 18-69 received lifestyle advice from a doctor or health worker within the past three years.

Figure 24. Percentage of adults 18-69 years old who received lifestyle advice from their doctor or health worker within the past 3 years, by sex

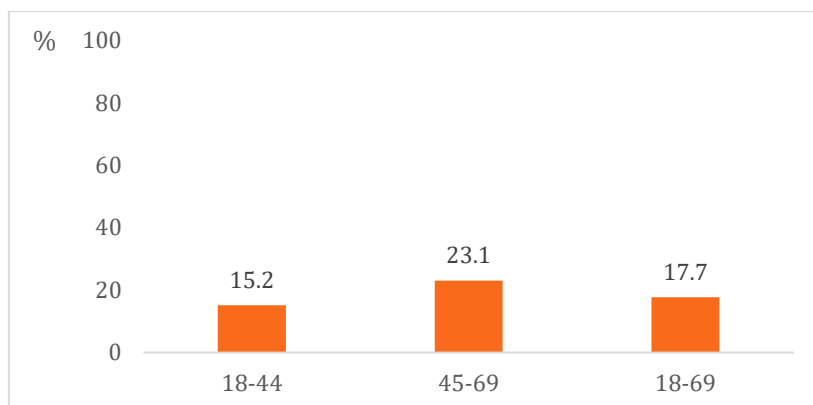


Females and those in the 45-69 age group were most likely to receive lifestyle advice from a doctor when compared to males aged 18-44. The most frequent lifestyle advice offered was related to diet and maintaining a healthy body weight. About one in five males (19.5%, 85% CI, 16.5-22.6) received advice from their doctor to quit using tobacco or not to start, with little variance between age groups.

Health Screening

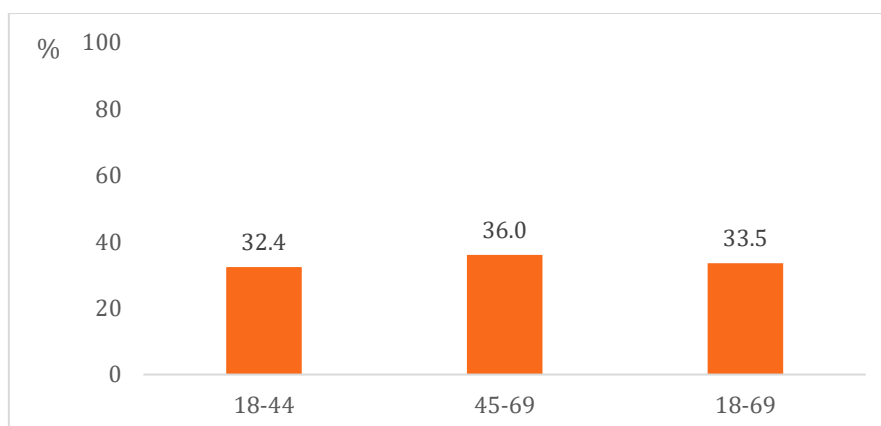
Regular health screenings are an effective measure for preventing disease. Questions were asked regarding preventative cervical, breast, and prostate cancer screenings. Physical measurements were taken for body weight and BMI calculations.

Figure 25. Percentage of females 18-69 years old who have ever been screened for cervical cancer, by age groups



Females were asked if they had ever been screened for cervical cancer using visual inspection with acetic acid (VIA) or had a Papanicolaou (pap) test and Human Papillomavirus (HPV) test. About one in five females (17.7%, 15.3-20.0) aged 18-69 and one in four (23%, 19.2-26.8) females aged 30-49 reported ever having a cervical cancer test. The WHO recommends screening for all females to begin at age 30.

Figure 26. Percentage of females 18-69 years old who have been shown to do a breast self-examination, by age groups



Females aged 18-69 were also asked if they have been shown how to conduct a breast self-exam. Approximately one in three (33.5%, 30.5-36.5) had been shown how to do this exam.

Table 34. Percentage of females 18-69 years old who have had a cytological test, breast exam, or mammogram, by age groups

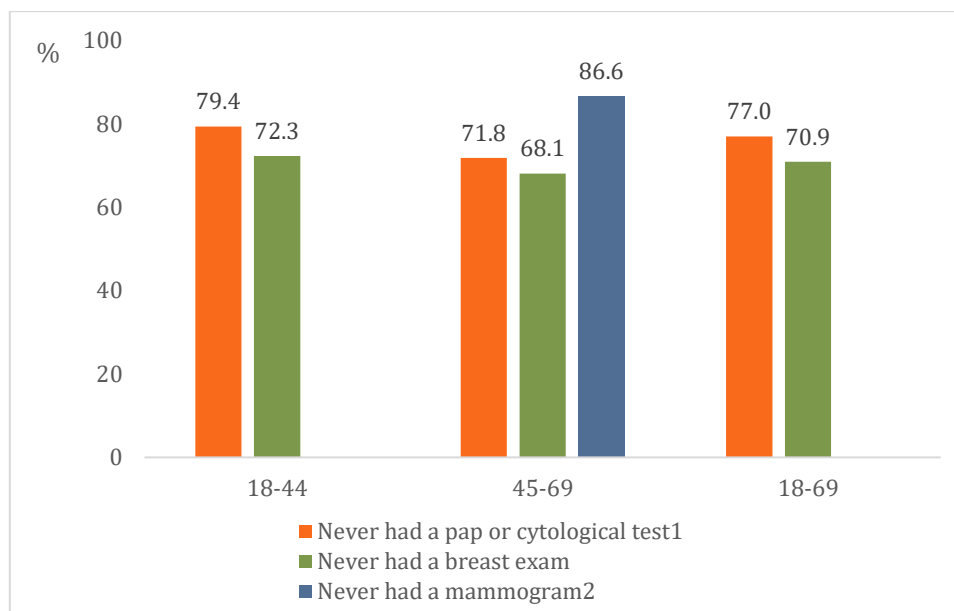
Age Group (years)	≤ 1 year ago		> 1 and ≤ 2 years ago		> 2 years ago	
	<i>Percentage (95% CI)</i>					
Last pap or cytological test¹						
18-44	6.3	(4.1-8.4)	5.0	(3.1-6.9)	9.3	(7.2-11.4)
45-69	5.3	(3.2-7.4)	3.4	(1.5-5.3)	19.5	(14.6-24.4)
18-69	6.0	(4.4-7.5)	4.5	(3.2-5.9)	12.5	(10.4-14.7)
Last breast exam						
18-44	11.9	(9.4-14.5)	5.2	(3.5-6.8)	10.6	(8.3-13.0)
45-69	17.4	(13.6-21.3)	1.9	(0.8-2.9)	12.7	(9.6-15.7)
18-69	13.7	(11.5-15.9)	4.1	(2.9-5.3)	11.3	(9.3-13.3)
Last mammogram²						
18-44	2.9	(0.9-4.9)	0.9	(0.2-1.6)	4.7	(3.1-6.4)
45-69	4.7	(2.6-6.7)	2.8	(1.0-4.5)	6.0	(3.9-8.0)
18-69	3.5	(2.0-4.9)	1.5	(0.7-2.2)	5.1	(3.8-6.5)

¹ WHO recommends pap tests or other cervical cancer screenings for women beginning at age 30

² WHO recommends organized population-based mammography screening programs for women aged 50-69 years, every 2 years

Very low coverage rates were reported for pap or other cytological tests, breast exams, and mammograms to prevent cervical and breast cancers. For breast cancer prevention, breast exams were more common than mammograms, though still extremely low.

Figure 27. Percentage of females 18-69 years old who have never had a cytological test, breast exam, or mammogram, by age groups

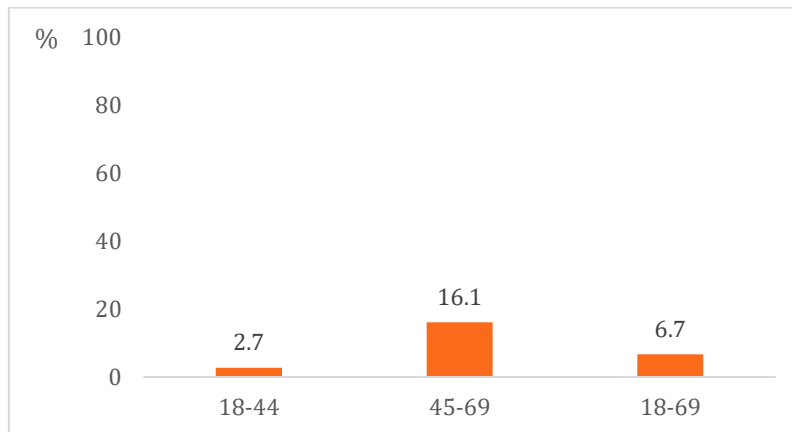


¹ WHO recommends pap tests or other cervical cancer screenings for women beginning at age 30

² WHO recommends organized population-based mammography screening programs for women aged 50-69 years, every 2 years; therefore, coverage is not represented in the 18-44 and 18-69 age groups

As follows females aged 18-69 who reported never having a pap or other cytological tests, breast exam, and/or mammogram was very high. These cervical and breast screenings are essential for effective cancer control and prevention.

Figure 28. Percentage of males 18-69 years old who have ever had a prostate exam, by age groups



Only 16.1% (11.8-20.5) of males aged 45-69, the target screening age, reported ever having a prostate exam. These preventative exams are used to detect prostate cancer.

Table 35. Percentage of adults 18-69 years old who have ever had feces examined for hidden blood or a colonoscopy, by sex and age groups

Age Group (years)	Feces checked for hidden blood		Colonoscopy	
	<i>Percentage (95% CI)</i>			
Males				
18-44	10.9	(7.8-13.9)	1.2	(0.2-2.3)
45-69	17.3	(12.6-22.0)	5.5	(3.2-7.8)
18-69	12.8	(10.4-15.2)	2.5	(1.5-3.5)
Females				
18-44	13.6	(11.2-16.1)	1.3	(0.5-2.1)
45-69	13.9	(9.8-17.9)	1.6	(0.6-2.5)
18-69	13.7	(11.9-15.5)	1.4	(0.8-2.0)
Both Sexes				
18-44	12.2	(10.1-14.3)	1.3	(0.6-1.9)
45-69	15.6	(11.9-19.3)	3.6	(2.3-4.8)
18-69	13.2	(11.7-14.8)	2.0	(1.4-2.6)

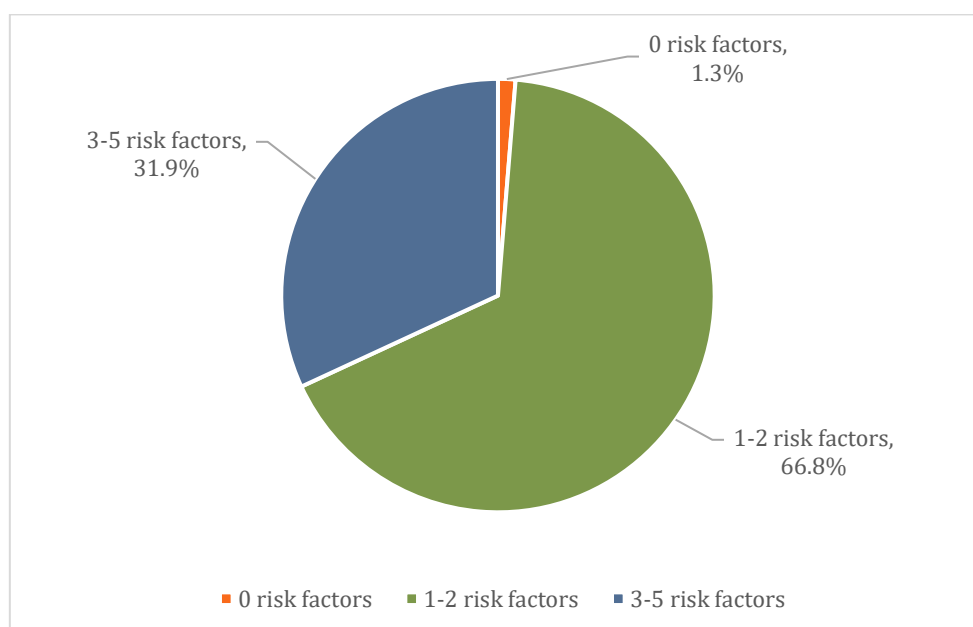
Of males and females aged 18-69, 13.2% reported ever having fecal examination for hidden blood, while only around 2% indicated that they had ever had a colonoscopy. There was little variance by age or sex with only slight increases for both tests among males, 45-69 years old (17.3% and 5.5%, respectively). Tests that check for hidden blood in feces and colonoscopy are used for colorectal screening.

Summary of combined risk factors

The following risk factors were used to assess combined risk for NCDs:

- Current daily smoking
- Eating less than five servings of fruit and/or vegetables per day
- Not meeting WHO recommendations on physical activity for health (150 minutes of moderate-intensity physical activity per week or 75 minutes of vigorous-intensity physical activity per week or an equivalent combination of moderate- and vigorous-intensity physical activity)
- Overweight or obese (BMI ≥ 25 kg/m²)
- Raised BP (SBP ≥ 140 mmHg and/or DBP ≥ 90 mmHg or currently on medication for raised BP)

Figure 29. Percentage of adults 18-69 with risk factors for NCDs, both sexes and age groups



Very few adults aged 18-69 demonstrate 0 risk factors for NCDs (1.3%, 0.7-1.9). The majority (66.8%, 64.8-68.8) of all adults had 1-2 risk factors and those in the 18-44 age group were more likely to be in this category than those 45-69 years old (75.3%, 73.1-77.4 and 47.9%, 43.9-51.9, respectively). Likewise, those aged 45-69 were more likely to have 3-5 risk factors than the younger group (50.8%, 46.8-54.9 and 23.4%, 21.3-25.5, respectively).

Discussion

In 2016, the population of Guyana was 773,000 inhabitants. A total of 6,600 deaths occurred, of which, 68% were attributed to noncommunicable diseases (NCDs), specifically, cardiovascular disease (34%), cancers (8%), diabetes (8%), and chronic respiratory diseases (3%). The risk of premature death (between the ages of 30-70 years) from NCDs is 31% in Guyana, largely the result of preventable diseases that are caused by key risk factors, such as smoking prevalence, harmful use of alcohol, physical inactivity, and unhealthy diet. The effects of these risk factors are seen through raised blood pressure, which affects males more than females, and raised blood glucose or diabetes and obesity, both of which are higher among females in Guyana. According to Guyana's WHO Noncommunicable Diseases Country Profile 2018, raised blood pressure estimates demonstrate a decrease among males but an increase among females and both sexes project an increase in obesity over the next few years; these risk factor trends are far from reaching the recognized global targets to prevent NCDs. (1).

As of 2016, Guyana had established national targets for premature mortality from NCDs, harmful use of alcohol, physical inactivity, salt/sodium intake, and tobacco use; yet had not set targets for raised blood pressure, diabetes, or obesity (1). The 2016 Pan American STEPS Survey results quantify the prevalence of these risk factors within the population and demonstrate an urgent need for action in Guyana to reduce the burden of NCDs and meet global and regional commitments. If steps are not taken now, preventable deaths from NCDs will increase, economic development will decline, and the financial burden on health systems will continue.

To change this scenario, the WHO "Best Buys," which include cost-effective interventions and policy actions, must be prioritized. From the Pan American STEPS Survey results, use of tobacco and alcohol was seen predominately among males, unhealthy diets in terms of fruit and vegetable consumption and use of salt/sodium were common among all, females were likely to report insufficient physical exercise, and both males and females reported limited preventative screenings for NCDs. These risk factors can all be addressed through adopting the WHO "Best Buys," and as such, an estimated 6,000 lives can be saved by 2025 in Guyana (1).

It is important to recognize that significant progress has been made since the completion of the 2016 Pan American STEPS Survey, most notably Guyana's passage of a new Tobacco Control Act in July 2017, and these achievements are acknowledged appropriately.

Tobacco control

As a Party to the WHO Framework Convention on Tobacco Control (FCTC), Guyana has committed to fully implementing the FCTC measures and guidelines, through which specific demand-reduction measures are monitored. These include: increase excise taxes in tobacco products, establish smoke free policies in line with FCTC Guidelines, adopt large and clear health warnings on tobacco product packaging, and ban advertising, promotion and sponsorship by the tobacco industry. However, as of 2015, Guyana's smoke free policies only included health centers, schools, and universities; health warnings did not use images or specify size; and there were no bans on advertising, promotion, and sponsorship by the tobacco industry (26). As such, the 2016 Pan American STEPS Survey was conducted within this context.

STEPS results show the general prevalence of current tobacco smoking among adults 18-69 in Guyana is 15.4%, which is lower than the average prevalence of 16.9% among those 15 and older in the Region of the Americas (27). Smoking in Guyana is far more prevalent among males, with very few females reporting current or daily smoking habits. This contrasts with recent trends in the Americas that suggest a “feminization“ of tobacco use with similar male and female current smoking prevalence (26). Guyana has yet to conduct a survey of smoking prevalence among those 15 and older; however, of the five non-Latin Caribbean countries who did report in 2016, Guyana would presumably rank among the highest with Saint Kitts and Nevis (8.0%) and Barbados (8.2%) the lowest, followed by the Bahamas (11.8%), and Jamaica (17.0%) (27). Similar to trends in the Americas, manufactured cigarettes were the primary type of tobacco smoked, though questions regarding use of smokeless tobacco were not included in this survey round and should be included in the future to better quantify smoking prevalence in Guyana.

Guyana’s STEPS results demonstrate a need for two strategies: one to accelerate reduction in tobacco use among males and another to protect the relatively low rate of female smoking. As such, comprehensive population-based interventions considered in the MPOWER package are needed to monitor tobacco use and prevention policies; protect people from exposure to tobacco smoke; offer help to quit tobacco use; warn about the dangers of tobacco; enforce bans on tobacco advertising, promotion, and sponsorship; and raise tobacco taxes.

The STEPS results suggest the health warnings used on cigarette packages in Guyana were both noticed and effective, as nearly 86% of all current smokers noted the health warnings and of those, almost 64% considered quitting smoking as a result. This is noteworthy, as at the time, Guyana had not yet implemented legislation that mandated health warnings to be displayed on 60% of tobacco product packaging.

Since the completion of the 2016 Pan American STEPS Survey, Guyana passed their Tobacco Control Act 2017, which includes protections from exposure to second-hand smoke; limitations to tobacco advertising, promotion, and sponsorship; incorporation of health warnings on labelling and packaging regulations; enhanced sales requirements; and additional regulation, monitoring, and reporting of the tobacco industry (28). As such, it is expected that Guyana implementation and enforcement of the tobacco control policies related with the MPOWER will cause an impact on the health of the population.

However, more work needs to be done. Two key indicators measured within the Noncommunicable Diseases Progress Monitor include the reduction of affordability through the increase of excise taxes and prices on tobacco products and the implementation of effective mass media campaigns to raise public awareness about the harms of smoking/tobacco use and secondhand smoke (22). These two actions would not only directly reduce the purchase of tobacco, especially among men who are the majority of smokers in Guyana, but would also deter target populations from initiating, thus protecting the low rate of female smoking.

With the introduction of the Tobacco Control Act 2017 and recommended next steps of targeting tobacco affordability and launching educational mass media campaigns, Guyana is expected to see a reduction in the burden of tobacco use within the population if policies are enforced. In addition, because the Pan American STEPS Survey was completed prior to implementation of the

Tobacco Control Act 2017, impact measurements of these policies on smoking rates will be feasible through conduct of subsequent STEPS Surveys and/or use of the STEPS tobacco modules in other nationally representative health surveys.

Alcohol

In Guyana, the total alcohol consumption per capita of those aged 15 and above was 6.3 litres of pure alcohol in 2016, which was 4th lowest among the 12 other reporting Caribbean countries and slightly lower than the worldwide total consumption of 6.4 litres (18). The STEPS results demonstrate patterns of more frequent and higher quantities of alcohol consumption among males and those aged 18-44. As follows, the proportion of alcohol abstainers is predominately female, a trend also seen in results of STEPS surveys from other Caribbean countries. While frequency of alcohol consumption among current drinkers in Guyana is predominately 3 or fewer days per month for both sexes, the amount of consumption varies by sex and reveals patterns of heavy episodic drinking among males. Approximately one in three males (34.1%) in Guyana report consuming six or more alcoholic drinks in one setting within the past 30 days for an overall prevalence of 21.5% among both sexes. This prevalence of heavy episodic drinking is higher than that reported in the Region of the Americas (13.7%) and by other Caribbean countries, such as St. Vincent & the Grenadines in 2014 (9.0%), Bermuda in 2014 (13.5%), and Anguilla in 2016 (18.0%) (29-32).

The results of the Pan American STEPS Survey should be used to inform and support the the implementation of alcohol strategies that focus on high risk populations, particularly men and those aged 18-44. Currently, the Guyana NCD Strategic Plan 2013-2020 includes the following priority actions for alcohol control: enact and enforce legislation establishing the minimum age limit for the consumption and purchase of alcoholic beverages; regulate or ban alcohol advertising and promotion, especially those ads aimed at children and young people; and establish and enforce blood alcohol level limits in drivers (12).

With these activities, Guyana still is falling short of achieving the Noncommunicable Diseases Progress Monitor indicators, which include three measures from the WHO Global Strategy to Reduce the Harmful Use of Alcohol: enact and enforce restrictions on the physical availability of retailed alcohol (via reduced hours of sale); enact and enforce bans or comprehensive restrictions on exposure to alcohol advertising; and increase excise taxes on alcoholic beverages (22). To reduce the trends of heavy episodic drinking among key populations in Guyana, it is recommended that additional focus be placed on these three areas, all of which should be incorporated into the National Alcohol Policy currently in draft that requires sustained support for finalization and implementation.

Healthy diet and lifestyle

Similar to trends seen in other Caribbean countries, inadequate fruit and vegetable consumption, unhealthy use of salt/sodium, and physical inactivity are all areas for targeted behavior modifications in Guyana.

Consumption of fruits and vegetables is insufficient with less than one in ten adults 18-69 years of age reporting consumption of the recommended five servings. The average number of days of

fruit consumption was among the lowest (3.3 days per week) compared to St. Vincent & the Grenadines (3.3 days), Trinidad and Tobago (3.4 days), Saint Lucia (4.3 days), Anguilla (4.4 days), Grenada (4.5 days), Cayman Islands (4.7 days), and Bermuda (4.9 days); though average number of days of vegetable consumption was among the highest (29-31, 33-36). On average, adults 18-69 in Guyana reported 4.8 days of consuming vegetables per week; Cayman Islands reported the highest (5.1 days) and St. Lucia reported the lowest (1.1 days) (34, 36). These dietary habits are likely related to the “nutrition transition” and preferences for trans-fats, salt, and sugar, instead of fruits and vegetables (12). While economic development is normally accompanied by improvements in a country’s food supply, facilitating healthier nutritional status of the country’s population, this is often accompanied by changes in the production, processing, distribution, and marketing of food.

Use of additional salt in food was also common in Guyana, though a majority (79.9%) reported their individual salt consumption was just right. The importance of reducing salt in diet was acknowledged and “too much” consumption of salt was recognized as something that could cause serious health problems. This is an important finding for public education aimed at reducing salt consumption. Campaigns that seek to modify this behavior may benefit from existing public awareness about the importance of lowering salt consumption and instead focus messaging on practical applications, such as cooking demonstrations that include low-sodium options.

Physical inactivity is another risk factor that can contribute to the prevention of NCDs, specifically ischemic heart disease, stroke, diabetes, and breast and colon cancer. In Guyana, nearly one third (29.3%) of adults aged 18-69 did not meet the WHO recommendations on physical activity for health. This is a trend seen within the Region of the Americas where the age-standardized prevalence estimate for 2010 in adults over 18 years of age show the Americas with the highest prevalence of insufficient physical activity (32%) within WHO Regions; this is likewise seen among other Caribbean countries, as well, with Anguilla reporting 25.9% of adults met the WHO recommendation, Bermuda 27.1%, and St. Vincent 24.4% (29-32). Guyana reported the highest median minutes of total physical activity on average per day compared to the other Caribbean countries (106.4 minutes). This, however, reflects a longer duration of physical activity among males, as females only reported a median of 38.6 minutes per day, which was a similar duration of time seen among females elsewhere in the Caribbean. As such, many females (40.5%) in Guyana did not meet the WHO recommendations on physical activity for health. Higher levels of physical activity among males and lower levels among females may be the result of increasingly sedentary workplace and lifestyle, accessibility of public transport, and perhaps limited access to recreational activities.

The impact of physical inactivity was demonstrated through body weight measurements. Within Guyana, the population is predominately overweight with a mean BMI of 26.2 kg/m². While nearly half of all adults in Guyana are overweight or obese, this is relatively lower than what is seen in other Caribbean countries. However, without lifestyle modifications, such as increased consumption of fruits and vegetables and physical activity, overweight and obesity rates will increase.

To combat unhealthy diets, the Ministry of Health introduced the Guyana Food and Nutrition Security Strategy, which seeks to facilitate availability and accessibility to food; promote consumption of health foods for increased nutrition; and improve food and nutrition security

(37). To address the need for more physical activity, the Ministry of Culture Youth and Sport developed a strategic plan to increase participation in sports and physical activity (12).

These two documents are referenced in Guyana's Strategic Plan for the Integrated Prevention and Control of Chronic Non-Communicable Diseases and their Risk Factors 2013-2020; however, additional targeted policies are required. Specific indicators in the Noncommunicable Diseases Progress Monitor include the adoption of national policies to reduce population salt/sodium consumption; adoption of national policies that limited saturated fatty acids and virtually eliminate industrially produced trans fatty acids in the food supply; incorporation of WHO recommendations on marketing of foods and non-alcoholic beverages to children; and implementation of a national public awareness and motivational communication for physical activity (22). These measures are also reflected in the Declaration of CARICOM (2). While efforts have been made to educate communities, especially school aged children, about the importance of healthy eating and lifestyle, access to fruits, vegetables, and a trans-fat free food supply is still limited. It is recommended that Guyana establish policies to limit sodium intake and consumption of saturated fats through the standardization of food labelling. In addition, focus has been placed on increasing knowledge about the importance of physical activity and developing accessible community grounds for public use; however, policy interventions supported by CARICOM that require physical activity in schools is also recommended.

Health system response to NCDs and risk factors

A combined risk approach was used to assess the likelihood of developing an NCD. This risk assessment considered current daily smoking habits, insufficient fruit and vegetable consumption, physical inactivity, obesity, and the existence of raised blood pressure. A majority (66.8%) of adults in Guyana demonstrated 1-2 risk factors and nearly 75% of those aged 18-44 years old fell into this category, suggesting the likelihood of developing chronic diseases is occurring at younger ages. Nearly one in every three adults (31.9%) had 3 or more risk factors.

Other risk factors, such as high blood sugar, cholesterol, and blood pressure contribute to cardiovascular disease and other NCDs, as well. Most adults in Guyana have never had their blood sugar or total cholesterol measured (52.4% and 72.1%, respectively). Biochemical measurement results from STEPS show few adults (5.3%) were pre-diabetic with impaired fasting glycaemia, while 11.5% had raised blood glucose or were currently on medication for diabetes and only 7.2% were diagnosed as diabetic. This is lower than the overall prevalence of raised blood glucose in the Americas from 2014 (8.5%) (32). Likewise, just over one in ten adults (15.2%) had borderline high cholesterol. Approximately one in four have not had their blood pressure measured (24.1%), though the average blood pressure measurements indicate pre-hypertension (125.7/77.7) within the population. Without lifestyle changes, these risk factors will continue to increase and potentially lead to higher rates of diabetes and cardiovascular disease.

Medication use varied and use of traditional medicine was low, aside from older males who used herbal treatment for diabetes (24.3%). Very few (8.5%) self-reported ever having a heart attack or chest pain from heart disease or a stroke, though use of statins to prevent or treat heart disease was not common either (2.1%). Aspirin, however, was used among the older age group for preventative and treatment purposes (17.2%).

Similarly, less than half of adults receive advice as to how to reduce risk factors from their doctor. When advice is offered, it is mainly about ensuring a healthy diet through increased fruit and vegetable consumption and reduced fat consumption and maintaining a healthy body weight (36.2%; 34%; and 35.6%, respectively).

In addition to routine blood sugar, cholesterol, and blood pressure tests, preventative screenings are critical for early cancer detection and diagnosis. A majority of females have never had a screening test for cervical cancer, mammogram, or breast exam (77%, 89.9%, and 70.9%, respectively); likewise, a majority of men never have had a prostate exam (6.7% have had an exam).

Guyana's Strategic Plan for the Integrated Prevention and Control of Chronic Non-Communicable Diseases and their Risk Factors 2013-2020 includes indicators and activities aimed at reducing the number of adults who present with high risk factors of hypertension, diabetes, high cholesterol, and obesity (12). It also seeks to increase HPV vaccine immunization coverage and access to VIA screening (Visual Inspection with Acetic Acid) among high risk populations for the prevention of cervical cancer (12).

However, to effectively manage the prevention and treatment of NCDs, the public health system in Guyana needs to be strengthened with an emphasis on primary care and the scaling up of NCD prevention and control services through a model of integrated management, which is a chronic care model with evidence-based guidelines, clinical information system, self-care, community support, and multidisciplinary team-based care. These services must also include provisions for drug therapy and counselling for high risk populations, such as increasing the lifestyle advice offered by doctors and health care professionals emphasizing the importance of risk factor reduction, which is a demonstrated gap in services from the STEPS results. In addition, protocols that facilitate the routinization of prevention tests and exams is critical as results from the Pan American STEPS Survey demonstrate that many adults have not received basic NCD screening tests; as such, there is additional need for these services. These steps are vital to the management of NCDs and are prioritized as NCD progress indicators (22).

In July 2016, Guyana transitioned from a lower middle-income country to an upper middle-income country classification by the World Bank as a result of an anticipated economic impact from the discovery of new oil reserves. This new classification brings both positives and negatives. The opportunity is for a portion of this new economic windfall to be earmarked for Universal Health Coverage (UHC), which would include greater access to and implementation of "WHO Best-Buys" services for NCDs. The converse is that economic development may be accompanied by increased importation, marketing, and consumption of unhealthy foods, sugary drinks, and alcohol.

Surveillance

Surveillance is a critical component of an effective NCD control and prevention strategy. Without surveillance, it is difficult to quantify and conceptualize the burden of disease in a country, which in turn informs national strategies and policies. The Noncommunicable Disease Progress Monitor incorporates surveillance strategies into four unique progress indicators that aims to set time-bound national targets, establish a system to generate mortality data, conduct a STEPS or

comprehensive health examination survey every five years, and encourages countries to develop a national multisectoral national strategy that integrates the major NCDs and their shared risk factors and (22).

The 2016 Pan American STEPS Survey report provides the first nationally representative survey results on NCDs and their risk factors in Guyana. With this information, targets established in Guyana's Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Diseases and their Risk Factors, 2013-2020 can be reinforced and extended beyond 2020 (12). As such, these results provide a significant opportunity for the Government of Guyana to review trends and advocate for accelerated progress on specific areas.

Information gained from the Guyana Pan American STEPS Survey can be best maximized when used concurrently with other available information systems, which include health outcome data from mortality and morbidity data systems or policy level information, such as tobacco use policy or cervical cancer monitoring information systems (23).

Likewise, the conduct of the Pan American STEPS Survey or other health surveys must be continued every five years to facilitate measurement of trends in NCD prevalence and risk factors in the adult population. Guyana has made progress on this indicator by not only conducting the Pan American STEPS Survey in 2016, but also the Global Youth Tobacco Survey in 2015 and the Global Adult Tobacco Survey in 2016.

Finally, Guyana has developed their Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Disease and their Risk Factors 2013-2020, which includes national targets for prevention and control of NCDs. The findings in this report are particularly relevant to any actions which Guyana may undertake to inform and strengthen national and subnational policies, actions, and strategies for NCD prevention and control. The Ministry of Health should consider timely and effective ways to disseminate fact sheets and key findings to engage multiple sectors that can play key roles in addressing specific NCD risk factors through coordinated actions, such as the implementation of the WHO "Best Buys" for reducing NCDs and their risk factors.

Therefore, while Guyana has made great strides in the conduct of surveillance for the prevention and control of NCDs and their risk factors, including the invaluable completion of the Pan American STEPS Survey in 2016 and development of the Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Disease and their Risk Factors 2013-2020 paired with the Tobacco Control Act 2017, continued focus on conducting routine surveillance is required.

Conclusion

As the first nationwide comprehensive health survey, the conduct of the 2016 Pan American STEPS Survey represents significant national commitment toward the management of NCDs and their risk factors. The results serve as a baseline for monitoring and evaluation and demonstrate the need for continued implementation and integration of Guyana's Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Disease and their Risk Factors 2013-2020. The following are key findings from the survey that can be used to guide future policies and strategies to reduce the health and economic burden of NCDs:

- Tobacco use is more prevalent among males than females and patterns of consumption demonstrate more daily than occasional smokers;
- Heavy episodic drinking is common and predominately seen among males 18-44;
- Adults 18-69 do not consume the recommended five servings of fruits and vegetables per day;
- A majority of adults believe they consume just the right amount of salt, but recognize the importance of lowering salt in their diet;
- Females are more likely than males to not meet the WHO recommendations on physical activity for health;
- Preventative screenings for cervical and breast cancers are insufficient and not widely or consistently conducted;
- Few adults have impaired fasting glycaemia, but one in ten have borderline high cholesterol;
- One in every four had raised blood pressure or were currently on medication for raised blood pressure and of those diagnosed with raised blood pressure, nearly half were unaware of their condition; less than one in every five had controlled their raised blood pressure; and
- More than half of adults 18-69 are overweight or obese.

Recommendations

The recommendations based on the findings of this survey are presented according to the respective priority actions of the WHO Global Action Plan for NCDs 2013 which aims to reduce the number of premature deaths from NCDs by 25% by 2025 through six priority actions.

Priority Action 1: Reigniting the political commitment

- There is need for sustained political commitment for the prevention and control of NCDs, as resources are needed to tackle the response on the health system and surveillance. NCDs should remain as a priority issue for attention and resources as outlined in Guyana's National Health Vision 2020 and adequate resources allocated for the sustained implementation of the Strategic Plan for the Integrated Prevention and Control of Chronic Noncommunicable Diseases and their Risk Factors, 2013-2020.

Priority Action 2 - Implement multisectoral NCDs plans of action

- Guyana should continue to work to build the capacity of the National NCDs Commission to effectively carry out its mandate within the country. Guyana's National NCDs Commission was launched in September 2014. The country is currently in the process of reviewing the leadership and composition of the Commission with a view to including additional members from other sectors, as well as reducing the role of the Ministry of Public Health in the coordination of the activities of the Commission.
- Efforts to collate data on NCDs and related risk factors in the country from other health sectors should be defined.
- The country should continue to use the WHO Tools for developing, implementing and monitoring the implementation of the National Multisectoral Action Plan for NCDs.
- Efforts should be made to strengthen partnerships and collaboration with academic institutions, civil society organizations, and UN agencies, including PAHO, in an effort to harmonize and intensify efforts for NCDs prevention and control within the country.

Priority Action 3 - Implement regulatory policies on risk factors

- Guyana should strengthen efforts to support region-wide initiatives, to develop where necessary, and implement common regulations and legislations for tobacco control, alcohol, ultra -processed foods and sugar sweetened beverages as part of CARICOM's responsibility.
- Guyana passed its National Tobacco Bill in 2017. There should be sustained advocacy for the inclusion of taxes in the country's national tobacco legislation in keeping with the benchmark of 70%.
- There should also be sustained support for the finalization of the National Alcohol Policy which is currently being drafted and there should be aggressive efforts to develop and/or adopt policies to promote physical activity, including school programmes, creating bike paths and closing streets for physical activity considering that the country is still to develop a formal policy for physical activity and limit salt content in foods.

Priority Action 4 - Work towards universal health coverage and universal access to health

- Guyana should continue to work aggressively towards the achievement of universal health coverage and universal access to health. In an effort to achieve this goal, the country should continue to use PAHO's universal access to health and universal health coverage page as a guide to developing national plan for universal access to health and universal health coverage. Even though the country has been working towards the full implementation of its Package of Essential Health Care Services in the quest to achieve universal health coverage guided by the findings from a Service Availability and Readiness Assessment tool, there are still existing gaps in the health care delivery system.
- The country should endeavor to utilize the PAHO strategic fund to improve access to quality NCDs medication at lower prices for greater investment in health at the primary health care level and implement human resources for health training in order to increase skills and competencies of personnel in NCDs prevention, screening and early detection, and NCDs management. The Government has been investing in training of skilled human resources with capacity building for health care staff through the allocation of fellowships and the creation of opportunities for post graduate studies, but these interventions should be strengthened and guided by a comprehensive human resources for health strategy.
- The country should continue to work to strengthen the delivery of health services at the regional levels and foster better collaboration with other sectors outside of health, particularly the Ministry of Communities. An assessment of the effectiveness of the Berbice Regional Health Authority was conducted and it is anticipated that the findings of this assessment will guide efforts to strengthen health care delivery at the regional level, thus improving access and coverage.

Priority Action 5 - Strengthen surveillance and data collection

- The country should focus to strengthen at least 4 of the key sources of information that are relevant for NCDs: mortality information system, population-based surveys collection data on youth and adult, cancer registry and primary health care information system.
- Guyana should strengthen their capacity to monitor its progress on the implementation of policies and measure the 25 indicators and 9 targets established at the Global Monitoring Framework on NCDs.
- Pan American STEPS Survey should be integrated at the national survey system established by the Guyana Bureau of Statistics to be implemented every 4 to 5 years with funds being planned and allocated for this activity as part of the national calendar.
- NCDs and their Risk Factors should be included in the national surveillance system response normative along with the communicable disease, violence and injuries.

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Annexes

Annex 1 : 2015 Progress Indicator Status

Annex 2: STEPS Factsheet

Annex 3: Tobacco Control Policies Factsheet

Annex 4 : Questionnaire

Annex 5: STEPS data book

Annex 1 : 2015 Progress Indicator Status

Guyana

Total population: 795 000

Income group: Lower middle

Percentage of deaths from NCDs: 67%

Total number of NCD deaths: 4 000

Probability of premature mortality from NCDs: 37%

1	National NCD targets and indicators	○
2	Mortality data	●
3	Risk factor surveys	○
4	National integrated NCD policy/strategy/action plan	●
5	Tobacco demand-reduction measures:	
	a. taxation	○
	b. smoke-free policies	●
	c. health warnings	○
	d. advertising bans	○
6	Harmful use of alcohol reduction measures:	
	a. availability regulations	●
	b. advertising and promotion bans	●
	c. pricing policies	●
7	Unhealthy diet reduction measures:	
	a. salt/sodium policies	○
	b. saturated fatty acids and trans-fats policies	○
	c. marketing to children restrictions	○
	d. marketing of breast-milk substitutes restrictions	●
8	Public awareness on diet and/or physical activity	●
9	Guidelines for the management of major NCDs	○
10	Drug therapy/counselling for high risk persons	○

○ = not achieved ● = partially achieved ● = fully achieved — = documentation not available

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Annex 2: STEPS Factsheet

Annex 3: Tobacco Control Policies Factsheet

Annex 4 : Questionnaire

Annex 5: STEPS data book