GHANA STEPS REPORT 2023

NATIONWIDE NON-COMMUNICABLE DISEASES RISK FACTORS ASSESSMENT USING THE WORLD HEALTH ORGANIZATION'S STEPWISE APPROACH IN GHANA

SEPTEMBER, 2024

MINISTRY OF HEALTH
REPUBLIC OF GHANA
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World Health Organization
GHANA STATISTICAL SERVICE
UK International Development
Partnership | Progress | Prosperity
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STEPS

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FOREWORD

The growing burden of NCDs represents a major challenge, not only for developed countries but also, for developing countries. The risk factors underlying major NCDs (heart disease, stroke, diabetes, cancer, and respiratory disease) have been well documented and are well known.

The STEPS survey was conducted because of a number of factors: (i) like many countries globally, Ghana has witnessed an increasing trend in the burden of NCDs; however, current health management information systems are both inadequate and unreliable to provide a robust-evidence base data on NCD risk factors to inform effective policy response; (ii) as a member state of WHO, Ghana has committed to the Global Action Plan, which identifies a number of voluntary targets for NCD prevention and control.

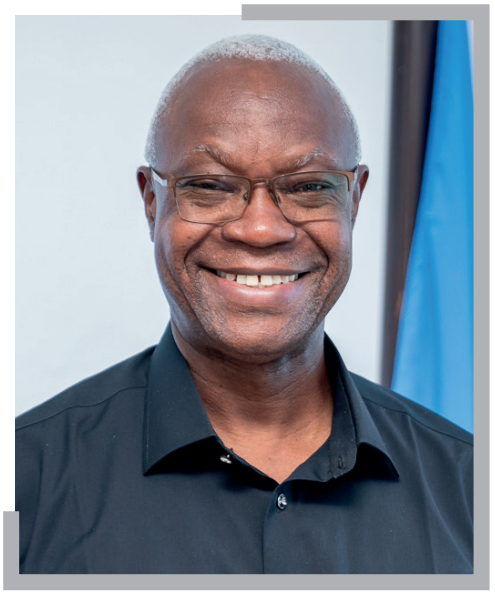
To track national/global progress and understand Ghana's performance vis-à-vis its interventions, the STEPS survey would provide an important baseline data for more effective monitoring and surveillance. Furthermore, as Ghana seeks to advance reforms in social insurance and in human capital development-as evidenced by ongoing policy discourse, better quality data on NCDs and their risk factors will provide critical information for policy design.

I take this opportunity to congratulate all stakeholders who have contributed significantly to achieving this milestone. Special mention is made of the Government of Norway, World Health Organization, (WHO), UK-Foreign Commonwealth Development Organization (UK-FCDO) and Ghana Statistical Service.

The Ministry of Health and Partners are committed to using this evidence generated not only to inform policy but also to serve as a strong advocacy tool for public education and to facilitate resource mobilization at both local and international levels.

Dr. Bernard Okoe-Boye
Minister for Health

FOREWORD



Non-communicable diseases (NCDs) are one of the major health and development challenges of the 21st century, in terms of both the human suffering they cause and the harm they inflict on the socioeconomic fabric of countries, particularly low- and middle-income countries. In this realisation, heads of State and government committed themselves in the UN Political Declaration on NCDs as far back as 2013 to establish and strengthen multi-sectoral national policies and plans for the prevention and control of NCDs and consider the development of national targets and indicators based on national situations.

The outlook for NCDs in West Africa, including Ghana, indicates a significant and rising burden. According to the World Health Organization (WHO), NCDs are responsible for 41 million deaths each year globally, with 85% of these premature deaths occurring in low- and middle-income countries.

In Ghana, the available data shows that NCDs account for approximately 45% of all deaths, with cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes being the major contributors.

Key risk factors for NCDs include unhealthy diets, physical inactivity, tobacco use, and harmful use of alcohol. These factors are exacerbated by urbanization, changing lifestyles, and limited access to healthcare services. Comprehensive strategies addressing these risk factors are crucial for mitigating the NCD burden in Ghana. To do this, quality and timely data on trends in NCDs risk factors is essential; thus, the conduct of the first nationwide Risk Factor Survey using the WHO STEPwise approaches and tools to NCDs Surveillance.

The results of this survey will also be key in evaluating Ghana's 2022-2027 Multisectoral Action Plan for NCDs

I congratulate the Ministry of Health, Ghana Health Service, Ghana Statistical Service and Development Partners for supporting the implementation of the first nationwide STEPS Survey.

I have confidence that the Ministry of Health will fully institutionalize regular conduct of the STEPs Survey and the rich data will be utilized effectively by both health and non-health sectors to really design appropriate intervention which would ultimately reduce the NCDs burden in Ghana.

Dr. Frank John Lule
Officer-In-Charge
WHO, Ghana

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Sponsors

- Funding for the survey was provided by the Norwegian Government and UK Foreign, Commonwealth and Development Office (FCDO) through the World Health Organization.

Technical Working Committee

- Dr. Dennis Odai Laryea, Ghana Health Service, Principal Investigator
- Dr. Philip Teg-Nefaah Tabong, University of Ghana
- Dr. Peter Takyi Peprah, Ghana Statistical Service
- Dr. Emmanuel Parbie Abbeyquaye, 37 Military Hospital
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- Dr. Leveana Gyimah, World Health Organization
- Mrs Priscilla Eshun, World Health Organization
- Dr. Elsie Kodjoe, World Health Organization
- Dr. Abraham Hodgson, Consultant

- *Staff who have contributed to the survey and the report*

Advisory Committee

- Dr. Patrick Kuma-Aboagye, Director General, Ghana Health Service
- Prof. Samuel Kobina Annim, Ghana Statistical Service
- Prof. Francis Kasolo, Former WR, WHO Ghana
- Dr. Frank John Lule, Officer In-Charge, WHO Ghana
- Dr Baffour-Awuah, Special Advisor to the Minister of Health

WHO AFRO and HQ

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- Dr. Cheick Bady Diallo
- Dr. Allal Sidi Louazani
- Dr. Stefan Savin
- Mr. Terence Totah

We also acknowledge the invaluable role played by the late Prof. Jacob Plange-Rhule, the first Principal Investigator and head of the Technical Working Committee for the 2023 Ghana STEPS survey.

Data Collectors

We extend our gratitude to the data collectors. Please See Appendix 8 for the full list.

Staff of GHS

- Dr Franklin Asiedu-Bekoe, Director, Public Health Division
- Non-Communicable Disease Control Programme Staff
- Regional Directors of Health

Staff from WHO

- Dr. Benjamin Demah Nuertey
- Dr. Pascal Kingsley Mwin
- Mr. Dominic Atweam
- Mrs. Cynthia Hagan
- Mr. Samuel Kwabena Hagan
- Mr. Eric Oppong
- Mr. Sylvester Baah
- Mr. Moses Klu

Participants in the survey

We extend special thanks to all participants from the 16 regions of the country who generously gave their time, consented, and provided valuable data for this report. This report would not have been possible without their significant participation.

EXECUTIVE SUMMARY

Background

The emergence of non-communicable diseases (NCDs) as a significant public health concern is substantially influenced by rapid demographic shifts and socioeconomic development. The escalating prevalence of NCDs presents a formidable challenge for both developed and developing nations. While the risk factors associated with major NCDs (cardiovascular diseases, stroke, diabetes, cancer and respiratory diseases) have been extensively documented and are well-established, no comprehensive, nationally representative survey has been conducted in Ghana to assess these risk factors. Consequently, this maiden survey was designed with the primary objective of establishing a baseline for the prevalence of NCD risk factors in Ghana, thereby facilitating more effective monitoring and evaluation efforts.

Methods

A multi-stage sampling technique was employed to select 5,775 participants from 385 enumeration areas (EAs) across all 16 regions in Ghana. Data collection was conducted using computer-assisted personal interviews (eSTEPs) via Android tablets. Blood pressure measurements were obtained using Omron digital sphygmomanometer while fasting blood glucose, total Cholesterol and HDL level were assessed using a Onetouch Select Plus glucometer and CardioChek Plus respectively. A portable weighing scale and stadiometer were used to measure participant's weight and height respectively. Upon completion of the survey, data had been collected from 5,438 participants aged 18 to 69 years from both urban and rural EAs nationwide. The data was analysed using Epi Info version 3.5.4 and Stata version 15, with the results weighted to represent the total national population aged 18 to 69 years. The findings were disaggregated by age, sex, and place of residence (urban/rural) and reported using 95% level of significance.

Key Results

Tobacco use

- Among adults aged 18 to 69 years, 4.8% (CI: 3.8-5.9) currently smoke tobacco, with a statistically significant difference in prevalence between men and women. The prevalence among men is 9.3% (CI: 7.2-11.4), while among women, it is significantly lower at 0.3% (CI: 0.1-0.5). Notably, more than half of current tobacco smokers report smoking on a daily basis.
- Among daily smokers, 73.6% (CI: 61.5-85.8) smoke manufactured cigarettes. On average, these individuals consume three sticks of manufactured cigarettes per day.
- Among daily smokers, younger generations began smoking at an earlier age compared to their older counterparts.

- The proportion of current smokers who smoke shisha is 7.8%, which is more prevalent among age group 18-29 years (12.7%, CI: 2.1-23.2) and highest among women.
- The percentage of the population exposed to second-hand smoke at the workplace is 19.9%.

  Significantly, more men (23.6%, CI: 20.8-26.4) are exposed to second-hand smoke than women (16.2%, CI: 14.2-18.2) at the workplace.

Alcohol Consumption

- The proportion of the population aged 18-69 years who have never consumed alcohol in their lifetime (lifetime abstainers) is 43.9% (CI: 40.9-46.9).
- Past-12-month abstainers constitute 19.8% (CI: 18.2-21.5) of the population, while those who have consumed alcohol in the past 30 days make up 22.6% of the population. Among men, 30.6% (CI: 27.4-33.8) are current drinkers, compared to 14.5% (CI: 12.5-16.4) among women. The difference between the sexes is statistically significant.
- A significant difference is observed between the proportion of current drinkers in urban areas (18.6%, CI: 16.1-21.1) and rural areas (28.4%, CI: 24.9-34.9).
- The proportion of the population engaged in heavy episodic drinking on a single occasion is 2.5% (CI: 2.0-3.0). This group consumed six or more drinks on a single occasion in the past 30 days. Significantly more men (3.6%, CI: 2.7-4.5) engage in heavy episodic drinking compared to women (1.4%, CI: 0.8-1.9).

Diet

- The mean number of days fruits are consumed in a typical week by the population is 2.2, while vegetables are consumed on 6.0 days. The mean number of days of consumption of fruits and vegetables does not differ significantly across different age groups, sexes, or between urban and rural dwellers.
- The consumption of adequate servings of fruits and vegetables is low among the population. On average, individuals consume less than a serving (0.8) of fruits per day and 2.7 servings of vegetables per day. There is no statistically significant difference between various age groups, sexes, or between urban and rural dwellers.
- The majority of the population, 76.0% (CI: 73.8-78.1), consume fewer than 5 servings of fruits and/or vegetables per day on average, and therefore do not meet the WHO recommendation of 5 or more servings.

Salt Intake

- Thirteen percent (13.0%, CI: 11.2-14.7) of adults aged 18-69 years either always or often add salt or salty sauces, such as soy sauce, to their meals before eating or during eating. Additionally, 90.5% (CI: 89.2-91.8) consistently or frequently add salt to their food while cooking or preparing meals at home. Furthermore, 22.8% (CI: 20.9-24.8) regularly consume processed foods high in salt.
- Concerning perceptions of salt intake, 9.1% (CI: 7.9-10.4) believe they consume too much or far too much salt, whereas 18.3% feel they consume too little or far too little salt. These figures indicate a generally high salt intake within the population.

Physical Activity

- Among adults aged 18-69 years, 9.9% (CI: 8.7-11.2) do not meet the WHO recommended physical activity level for health, defined as not less than 150 minutes of moderate-intensity activity per week or its equivalent. This non-compliance is higher in women (14.6%, CI: 12.7-16.5) compared to men (5.5%, CI: 4.0-6.9).

- On average, recreation-related activity per day differs significantly between men and women. Men engage in an average of 323.8 minutes (CI: 308.5-339.1), while women average 223.1 minutes (CI: 211.6-234.6). The younger age group (18-29 years) and the older age group (60-69 years) perform fewer minutes of total physical activity per day compared to the middle age group (30-59 years).
- On average, recreation related activity is only 12.6 minutes per day, which is considered inadequate. This is statistically significantly different between women, who average 4.5 minutes (CI: 3.2-5.8), and men, who average 20.4 minutes (CI: 17.5-23.3).
- Men engage in significantly more work-related physical activity, with a mean of 214.2 minutes per day (CI: 200.8-227.5), compared to women, who average 129.4 minutes per day (CI: 119.9-138.9).
- The mean minutes of transport-related physical activity is 89.2 minutes for both men and women, with no significant difference between the sexes.
- Overall, the composition of total physical activity among the adult population is 45.4% from work-related activities, 46.0% from transport-related activities, and 8.6% from leisure time activities.
- Regarding vigorous physical activity, the majority of the population (71.2%, 95% CI: 68.9-73.4) do not engage in it. This proportion is significantly higher among women (91.2%, 95% CI: 89.6-92.8) compared to men (51.9%, CI: 47.9-55.9). There is no significant difference between urban and rural dwellers in this regard.
- The proportion of adults aged 18-69 years with no work-related physical activity (sedentary) is 37.9% (CI: 35.4-40.4), with a higher prevalence among women (45.4%, CI: 42.3-48.5) compared to men (30.7%, CI: 27.5-33.8).

History of Blood Pressure Measurement, Diagnosis of Elevated Blood Pressure, and Treatment

- Approximately 24.3% (CI: 22.4-26.2) of adults aged 18-69 years have never had their blood pressure measured. There is a statistically significant difference between men (33.8%, CI: 30.7-36.9) and women (14.7%, CI: 12.7-16.6) in this regard.
- 16.7% of the population aged 18-69 years have ever been diagnosed with elevated blood pressure. Currently, 29.1% (CI: 25.5-32.6) of individuals are on medication for elevated blood pressure, as prescribed by a doctor or health worker.
- Among those previously diagnosed with elevated blood pressure, 16.8% (CI: 13.3-20.3) have sought advice from a traditional healer, and 13.4% (CI: 10.1-16.6) are currently using herbal or traditional remedies.

History of Blood Glucose Measurement, Diagnosis of Diabetes, and Treatment

- The majority of adults aged 18-69 years, 70.3% (CI: 68.3-72.4), have never had their blood glucose levels checked. However, 1.9% (CI: 1.5-2.3) of the population have had their blood glucose measured and diagnosed with diabetes within the past 12 months.
- Among those diagnosed with diabetes, 15.4% (CI: 10.2-20.5) are on insulin medication prescribed by a doctor or health worker. Specifically, 9.6% (CI: 1.8-17.5) of men and 18.2% (CI: 11.6-24.8) of women diagnosed with diabetes are receiving insulin treatment. Additionally, 34.6% (CI: 27.4-41.9) of those with diabetes are on other prescribed medications, with 21.7% (CI: 9.6-33.8) among men and 40.9% (CI: 32.0-49.8) among women.

History of Total Cholesterol Measurement, Diagnosis of Elevated Cholesterol, and Treatment

- A substantial majority of adults aged 18-69 years, 90.0% (CI: 88.7-91.3), have never had their blood cholesterol level checked. This includes 91.3% (CI: 89.6-93.0) of men and 88.7% (CI: 87.2-90.4) of women.
- Among those previously diagnosed with elevated total cholesterol, similar proportions of men (17.2%, CI: 4.5-29.8) and women (18.6%, CI: 9.6-27.6) are on prescribed oral medications for their condition.

Physical Measurements

Elevated Blood Pressure

- The prevalence of elevated blood pressure (defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg) among adults aged 18-69 years is 19.6% (CI: 18.1-21.1). This includes 17.3% (CI: 15.3-19.4) of men and 22.0% (CI: 20.3-23.7) of women. The prevalence increases with age.
- Severe elevated blood pressure (defined as systolic blood pressure ≥ 160 mmHg and/or diastolic blood pressure ≥ 100 mmHg) is present in 8.4% (CI: 7.4-9.3) of the population, including 7.3% (CI: 5.9-8.7) of men and 9.5% (CI: 8.2-10.7) of women.

Proportion of Adults with Hypertension

- The proportion of adults aged 18-69 years who have either elevated blood pressure or are currently on medications for elevated blood pressure is 21.7% (CI: 20.2-23.2). This includes 25.3% (CI: 23.4-27.1) of women and 18.2% (CI: 16.1-20.3) of men.
- The proportion of adults living with severe hypertension is 11.8% (CI: 10.7-12.9).

Elevated Blood Pressure Diagnosis, Treatment, and Control

- Among adults with elevated blood pressure, 51.1% (CI: 48.2-54.1) were not previously diagnosed. This includes 60.6% (CI: 55.4-65.9) of men and 44.1% (CI: 40.4-47.8) of women.
- Of those previously diagnosed with elevated blood pressure, 24.6% (CI: 22.0-27.3) are not on medication. This includes 24.2% (CI: 19.6-28.7) of men and 25.0% (CI: 21.7-28.2) of women.
- Among those previously diagnosed and on medication, 14.7% (CI: 12.1-17.4) are not controlled, while 9.5% (CI: 7.7-11.3) have controlled blood pressure.
- For those on medication for elevated blood pressure, 10.4% (CI: 6.8-14.0) of men are not controlled, while 4.8% (CI: 2.6-7.0) have controlled blood pressure. Among women, 18.0% (CI: 4.6-21.3) are not controlled, and 13.0% (CI: 10.4-15.5) have controlled blood pressure.
- The percentage of people with elevated blood pressure (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg or currently on medication) who are not currently on medication is 75.7% for both sexes. This includes 84.8% of men and 69.1% of women.

Body Mass Index (BMI)

- The mean BMI (excluding pregnant women) is significantly higher for women at 26.0 kg/m^2 (CI: 25.7-26.4) compared to men at 22.4 kg/m^2 (CI: 22.2-22.7). The overall mean BMI for both sexes is 24.2 kg/m^2. The mean BMI is also higher among urban residents (24.8 kg/m^2, CI: 24.5-25.2) compared to rural residents (23.1 kg/m^2, CI: 22.8-23.5).
- A majority of men (68.3%, CI: 65.3-71.3) have a normal weight, while less than half of the women aged 18-69 years (43.5%, CI: 40.0-46.2) have a normal weight.
- For the general adult population, 34.3% (CI: 32.2-36.4) are classified as overweight (BMI ≥25 kg/m^2). The urban population has a significantly higher proportion of overweight individuals (40.3%,

CI: 37.1-43.5) compared to the rural population (25.3%, CI: 22.2-28.4). Among men, 19.7% (CI: 17.1-22.2) are overweight, whereas among women, 49.8% (CI: 47.1-52.4) are overweight. Overweight men are predominantly in the 45-59 years age group, while for women, the highest proportion is in the 30-44 years age group.

- Obesity (BMI ≥30) is significantly more prevalent among women (22.8%, CI: 20.5-25.2) compared to men (4.5%, CI: 3.3-5.7). Higher proportions of the obese population are found in the 30-59 years age range for both sexes. Additionally, the proportion of obesity among the urban population (16.9%, CI: 14.8-19.0) is twice that of the rural population (8.2%, CI: 6.7-9.7).
- Overall, 56.3% (CI: 54.1-58.4) of the population have normal weight, 9.5% (CI: 8.1-10.9) are underweight, 20.9% (CI: 19.3-22.5) are overweight (BMI 25 - 29.9 kg/m^2), and 13.4% (CI: 12.1-14.7) are classified as obese (BMI ≥30).

Biochemical Measurements

Impaired Fasting Blood Glucose

- Impaired fasting blood glucose is defined as either plasma venous glucose ≥6.1 mmol/l (110 mg/dl) and <7.0 mmol/l (126 mg/dl) or capillary whole blood glucose ≥5.6 mmol/l (100 mg/dl) and <6.1 mmol/l (110 mg/dl).
- Among the adult population, 10.2% (CI: 9.0-11.3) have impaired blood glucose, with a larger proportion in the 60–69-year age group (16.5%, CI: 12.6-20.4). By sex, 11.9% (CI: 10.1-13.8) of men and 8.3% (CI: 7.2-9.5) of women have impaired fasting blood glucose.

Elevated Fasting Blood Glucose or Current Diabetes Medication

- Elevated blood glucose is defined as either plasma venous glucose level ≥7.0 mmol/l (126 mg/dl) or capillary whole blood glucose value ≥6.1 mmol/l (110 mg/dl).
- There is no statistically significant difference between men (5.0%, CI: 3.6-6.4) and women (5.4%, CI: 4.4-6.4). Overall, 5.2% (CI: 4.3-6.1) of the population have elevated fasting blood glucose. This percentage typically increases with age for both sexes.

Elevated Blood Glucose Diagnosis and Treatment

- 3.7% (CI: 2.9-4.5) of the population have elevated blood glucose without a prior diagnosis: 4.0% (CI: 2.7-5.4) of men and 3.4% (CI: 2.6-4.2) of women.
- Among those with a previous diagnosis of elevated blood glucose, 1.9% (CI: 1.2-2.7) of men and 2.8% (CI: 2.1-3.5) of women are not on medication.
- For the general population, 2.4% (CI: 1.9-2.8) have a prior diagnosis but are not taking medication, while 1.3% (CI: 0.9-1.6) have a prior diagnosis and are taking medication.

Elevated Total Cholesterol

- Women have a significantly higher prevalence of elevated total cholesterol (defined as total cholesterol ≥5.0 mmol/l or ≥190 mg/dl) at 27.4% (CI: 24.8-29.9) compared to men at 16.0% (CI: 13.8-18.2). Total cholesterol levels are higher in women across all age groups.
- The percentage of the population with very elevated total cholesterol (defined as ≥6.2 mmol/l or ≥240 mg/dl) is 9.2% (CI: 7.9-10.4); 6.3% (CI: 5.0-7.6) for men and 12.1% (CI: 10.2-13.9) for women. This percentage increases with age.
- Among those with elevated total cholesterol, 21.8% (CI: 19.8-23.8) are currently on medication prescribed by a doctor or health worker for elevated cholesterol, with 16.1% (CI: 13.9-18.3) of men and 27.6% (CI: 25.1-30.2) of women receiving treatment. For those with very elevated total cholesterol, 9.4% (CI: 8.2-10.7) are on medication, with 6.4% (CI: 5.1-7.8) of men and 12.5% (CI: 10.7-14.3) of women.

Cardiovascular Disease Risk

The percentage of individuals aged 40-69 years with a 10-year cardiovascular disease (CVD) risk of 20% or greater, or with existing CVD, is 11.2% (95% CI: 9.8-12.7). This includes 10.4% (95% CI: 8.4-12.8) for men and 12.0% (95% CI: 10.2-14.2) for women.

Summary of Combined Risk Factors

- Generally, 13.3% (95% CI: 11.2-15.3) of men and 8.8% (95% CI: 7.1-10.6) of women do not exhibit any of the combined risk factors, which include current daily smoking, consuming fewer than five servings of fruit and/or vegetables per day, failing to meet WHO recommendations for physical activity (<150 minutes of moderate activity per week or equivalent), being overweight or obese (BMI ≥ 25 kg/m^2), and having elevated blood pressure (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg, or currently on medication for elevated blood pressure).
- The percentage of men aged 18 to 69 years with three or more of these risk factors is 7.3% (95% CI: 5.9-8.6). This percentage is significantly higher in the 45–69-year age group at 16.0% (95% CI: 12.3-19.6) compared to the 18–44-year age group, which has a percentage of 4.6% (95% CI: 3.3-5.9).
- Among women aged 18-69 years, 17.4% (95% CI: 15.7-19.1) have three or more of the combined risk factors; this includes 11.9% (95% CI: 10.1-13.7) in the 18–44-year age group and 33.8% (95% CI: 29.6-38.0) in the 45–69-year age group. There is a statistically significant higher risk for women in the 45–69-year age group (33.8%, 95% CI: 29.6-38.0) compared with men in the same age group (16.0%, 95% CI: 12.3-19.6).
- The percentage of individuals with three or more combined risk factors is significantly higher in the urban population compared to the rural population for both the 45–69-year age group and the 18–69-year age group.

Cervical Cancer Screening

- Among the female population, 3.6% (95% CI: 2.8-4.5) have ever been screened for cervical cancer using a Pap smear, visual inspection with acetic acid/vinegar, or a human papillomavirus (HPV) DNA test.
- Within the 30–49-year age bracket, 4.3% (95% CI: 2.9-5.7) have ever been screened.
- The proportion of women screened in urban areas is 5.1% (95% CI: 3.1-7.0), compared to 3.0% (95% CI: 1.3-4.6) in rural areas, although this difference is not statistically significant.

Oral Health

Respondents with Natural Teeth

- Nearly all (98.9%, 95% CI: 98.6-99.2) adults aged 18-69 years have 20 or more natural teeth. The proportion of individuals who have lost some natural teeth increases with age.

Proportion of the Population with Oral Pain or Discomfort and Seeing a Dentist

- The proportion of the population experiencing pain or discomfort caused by their teeth or mouth in the last 12 months is 29.0% (95% CI: 27.4-30.6) for both sexes. Despite this, only a small fraction (3.4%, 95% CI: 2.7-4.0) have visited a dentist in the past 12 months.
- A significant number of the adult population (84.9%, 95% CI: 83.4-86.4) have never received dental care.

Cleaning of Teeth at Least Once or Twice a Day

- Almost all women, 99.0% (95% CI: 98.5-99.6), clean their teeth at least once a day, compared to 97.5% (95% CI: 95.7-99.2) of men. Overall, 98.2% (95% CI: 97.3-99.2) of the population clean their teeth at least once a day.

- 54.3% (95% CI: 52.2-56.5) of people clean their teeth at least twice a day, with a significantly higher percentage of women (57.9%, 95% CI: 55.3-60.5) compared to men (50.8%, 95% CI: 47.6-54.0).

Proportion of the Population Using Toothpaste to Clean Their Teeth

- Among adults aged 18-69 years, 94.1% (95% CI: 93.2-95.7) use toothpaste. A significantly higher proportion of those aged 18-44 years use toothpaste compared to the older age group of 45-69 years.

Mental Health

Suicide

- 3.8% (95% CI: 3.0-4.6) of the population reported having considered attempting suicide within the past 12 months, with a slightly higher prevalence among women compared to men.
- A greater number of women than men proceeded to plan how to attempt suicide.
- Women attempted suicide more frequently than men, with the highest proportion of attempts occurring among younger women, whereas for men, the likelihood of attempting suicide increases with age.
- Among those who considered attempting suicide, 9.1% (95% CI: 4.9-13.2) sought professional help. This includes 9.9% (95% CI: 1.1-18.7) of men and 8.5% (95% CI: 4.1-12.9) of women.
- The number of men and women who have had a close family member die by suicide is approximately equal.

Depression

- 8.0% of the population experience various degrees of depression (moderate, moderately severe, or severe), with a higher prevalence among women (9.6%) compared to men (6.4%).

Perceived Causes of Mental Health Conditions and Treatments

- 35.6% (95% CI: 33.4-37.8) of the population perceive mental health conditions as diseases, while 10.4% (95% CI: 8.8-12.0) view them as a spell, and 54.0% (95% CI: 51.5-56.5) attribute them to other factors. Despite this, a higher proportion (86.4%, 95% CI: 84.6-88.1) believe that mental health conditions are treatable.

History of Diagnosis of Mental Health Conditions

- A very low proportion (1.6%, 95% CI: 1.1-2.2) of the population reported having been previously diagnosed with a mental health condition. Although there is a slight difference between men and women, the proportion remains low.
- Depression was the most commonly diagnosed mental health condition, followed by anxiety and psychosis. These conditions were diagnosed across all age groups and sexes.

Conclusion

The 2023 Ghana STEPS survey has highlighted a high prevalence of risk factors for NCDs and has provided valuable data for the development of interventions aimed at preventing and controlling NCDs in the country, as well as for monitoring the impact of these interventions. The survey also includes information on oral and mental health. The key conclusions from the survey are:

- Tobacco smoking remains prevalent among the adult population, with most daily smokers using manufactured cigarettes.
- Exposure to second-hand smoke is common in workplaces despite existing regulations.
- Shisha smoking is occurring and is more prevalent among younger age groups particularly females.
- Harmful alcohol consumption is present among the adult population.

- Fruit and vegetable intake is low.
- Salt intake is high.
- A significant proportion of women do not meet the WHO-recommended levels of physical activity for health.
- There is a low level of vigorous and recreational physical activity among the adult population.
- Overweight and obesity are widespread among adults.
- Hypertension is prevalent in the population.
- There are high levels of impaired blood glucose.
- Elevated total cholesterol levels are common among the population.
- Cardiovascular disease risk is high among adults.
- A substantial number of individuals have three or more of the combined risk factors for cardiovascular diseases.
- Utilisation of dental services is low.
- Issues such as attempted suicide and depression are prevalent within the population.

Recommendations

Tobacco and Alcohol Use

1. Existing regulations on cigarette smoking should be strictly enforced. This includes implementing danger signs and warnings on cigarette packs, banning advertisements in electronic and print media, erecting posters and billboards highlighting the harmful effects of cigarette smoking, restricting smoking to designated areas, and imposing heavy taxes on manufactured cigarettes.
2. Regulations prohibiting smoking in workplaces and public places should be enforced. Public awareness campaigns should be conducted to educate people on the harmful effects of tobacco smoking, smokeless tobacco, shisha, and excessive alcohol consumption. Additionally, cessation services should be implemented for individuals attempting to quit smoking and drinking alcohol.
3. Regulations outlined in the alcohol policy, such as restrictions on alcohol advertisements in both print and electronic media and limitations on the timing of such advertisements, should be enforced.
4. Health education sessions should be organised in schools and workplaces to raise awareness about the harmful effects of tobacco and alcohol use.

Fruit and Vegetable Intake

Education should be provided on the importance of increasing the frequency and quantity of fruit and vegetable consumption per week. This can be achieved through health talks, advertisements, and strategically placed posters.

Salt Intake

Public education should focus on the unhealthy habit of adding salt to food before or during eating and emphasise the need to limit the amount of salt used in cooking. This can be achieved through talks and media discussions.

Physical Activity

Individuals should be encouraged to engage in more recreational, work-related, and transport-related physical activities. The health benefits of activities such as football, tennis, swimming, jogging, and brisk walking should be highlighted in health education programmes.

Blood Pressure, Blood Glucose, and Blood Cholesterol Levels

1. The public should be made aware of the importance of routinely checking their blood pressure, blood glucose, and cholesterol levels.
2. Health campaigns should be organised to screen individuals for hypertension, diabetes, and elevated cholesterol.
3. Education should be provided on the importance of managing NCDs through lifestyle modifications, medication adherence, and regular physical activity.
4. Every opportunity should be used to advise patients on NCDs during health facility visits and outreach programmes. Additional channels such as electronic and print media, social media, billboards, pamphlets, and talks in schools and workplaces should also be utilised.

Oral Health

1. Public oral health education should be enhanced through increased awareness campaigns and school-based programmes.
2. The public should be educated on the importance of routine oral and dental care.
3. Promotion of daily oral hygiene practices, including brushing twice daily, should be encouraged.

Mental Health

1. Stigma reduction campaigns by the Mental Health Authority should be sustained.
2. Public education on the causes of mental health conditions should be intensified.
3. Awareness should be created regarding the de-criminalisation of attempted suicide to encourage more individuals to seek help.

Future Research

1. A 24-hour urine test for salts and creatinine should be conducted to obtain an objective assessment of salt intake.
2. Research should be undertaken to investigate the reasons behind the low intake of fruits and vegetables.
3. Further research is needed to identify the causes of attempted suicide within the population.
4. The STEPS survey in Ghana should be repeated every five years to monitor the progress of interventions.

Roles and Responsibilities of Various Stakeholders

KEY STAKEHOLDERS	ROLES AND RESPONSIBILITIES
Parliamentary Select Committee on Health, Finance and Legislation	■ High level advocacy on NCDs financing ■ Support enactment of laws and legislature on NCD risk factors
Ministry of Health	■ Development of relevant policies ■ High level advocacy ■ Capital investment ■ Inter-sectoral collaborations and partnerships ■ Strengthen regulation of traditional medicines practice
Non-Health Ministries, Departments and Agencies	■ Advocacy for targeted interventions to promote women's health and wellbeing (cervical cancer screening) ■ Promotion of gender mainstreaming, equity and psychoeducation ■ People-centred and rights-based care ■ Creating an enabling environment to promote walking, recreation and other forms of physical activity ■ School curricula should include lessons on prevention of NCDs at an early age.
National Health Insurance Authority	■ Operationalization of NCD early detection programmes under the benefits package
Ghana Health Service	■ High level advocacy for the establishment of a functional national screening program ■ Development of new and review of existing tools and guidelines ■ Alignment of integrated NCD prevention and control to Network of Practice Concept ■ Prioritization of adult health screening for NCDs for the general population ■ Capacity building programmes for health workers on NCD and risk factors ■ Improved data capture, reporting & analytics for decision-making ■ Equitable healthcare worker distribution with appropriate skill mix (Dental and mental health care workers, dieticians etc) ■ Monitoring and evaluation of NCD interventions at national and subnational level
Mental Health Authority	■ Prioritize suicide prevention programs ■ Create awareness on the decriminalization of suicide ■ Strengthen referral pathways for depressive disorders ■ Build the capacity of traditional healers and promote collaboration with orthodox facilities

KEY STAKEHOLDERS	ROLES AND RESPONSIBILITIES
Teaching Hospitals, Quasi Government Institutions, Faith-Based, Private & Public health facilities	■ Train and orient healthcare workers including community-based volunteers for the provision of NCD prevention and control ■ Promote provision of non-judgemental, client-centred and respectful care for NCD patients ■ Integrate routine screening and counselling services for NCD. ■ Strengthen supportive supervision, clinical mentoring, and onsite coaching at subnational levels
Development Partners	■ Advocate for prioritization of domestic resource mobilization for NCDs ■ Advocate for strengthened governance, intersectoral collaboration and partnerships ■ Technical assistance for the improvement of NCD interventions ■ Capacity development programmes to improve NCD prevention and control ■ Support development of training modules ■ Catalytic financial support for the piloting of NCD interventions ■ Promote and support research agenda for NCD
Academic Institutions	■ Include NCD modules into curriculum for medical, nursing, midwifery, and allied health training institutions ■ Prioritize implementation research for NCD ■ School curricula at the lower levels should include lessons on prevention of NCDs
Professional Societies & Associations	■ Organize CPDs on NCD prevention and control for members ■ Awareness creation and public education on NCDs
Media	■ Drive public advocacy agenda on NCDs in the Ghanaian society ■ Lead awareness creation campaign nationwide through print, radio, television, social media, etc ■ Prioritize agenda setting for discussions on NCDs related issues (policy, service delivery, social support systems and structures) in collaboration with relevant stakeholders
Traditional Leaders, Civil Society Organizations and Community-Based Health Groups	■ Advocate for screening services in the community ■ Support advocacy initiatives for awareness creation and stigma reduction ■ Mobilize resources for promotion and provision of NCD

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LIST OF ACRONYMS

Acronyms	Meaning
BMI	Body Mass Index
BP	Blood Pressure
CAPI	Computer-Assisted Personal Interview
CHPS	Community-based Health Planning and Services
CVD	Cardiovascular Disease
DBP	Diastolic Blood Pressure
DNA	Deoxynucleic Acid
EA	Enumeration Area
EAP	Employee Assistance Program
FAO	Food and Agriculture Organization
FBS	Fasting Blood Sugar
FDA	Food and Drug Authority
FCTC	Framework Convention on Tobacco Control
GCP	Good Clinical Practice
GHS	Ghana Health Service
GLSS	Ghana Living Standard Survey
GPS	Global Positioning System
HDL	High Density Lipoprotein
HH	Household
IPC	Infection Prevention and Control

LMIC	Lower Middle-Income Country
MOH	Ministry of Health
NCDs	Non-Communicable Diseases
NHIA	National Health Insurance Authority
PHC	Population and Housing Census
PPE	Personal Protective Equipment
PSU	Primary Sampling Unit
RC	Regional Committee
SBP	Systolic Blood Pressure
SDGs	Sustainable Development Goals
SSA	Sub-Saharan Africa
SWIFT	Survey of Wellbeing via Instant and Frequent Tracking
TWC	Technical Working Committee
VIA	Visual Inspection with Acetic Acid
WHA	World Health Assembly
WHO	World Health Organization
WHO-FCTC	World Health Organization Framework Convention on Tobacco Control

CHAPTER 01

INTRODUCTION

1.1 Country Profile

Ghana, located in West Africa, covers an area of 238,533 square kilometres (92,099 square miles). It shares borders with Togo to the east, Côte d'Ivoire to the west, Burkina Faso to the north, and the Gulf of Guinea to the south. The country is renowned for having one of the most stable democracies on the continent. Politically and administratively, Ghana is divided into 16 regions and 260 districts. With a population of 30,792,608, of which 50.7% are female (*Ghana Statistical Service, 2021*), it is the second most populous country in West Africa. Accra serves as both the capital and the largest city.

The nation's landscape features a range of biomes, from tropical rainforests to savannahs, and it is rich in natural resources, including gold, timber, and cocoa. Ghana is classified as a lower-middle-income country, with 40% of its population employed in agriculture. It is the world's second-largest producer of cocoa and a significant producer and exporter of oil. The Ghanaian cedi (GH₵) is the official currency.

Culturally diverse, Ghana is home to numerous ethnic groups and religious communities that coexist peacefully. While English is the official language, many local languages such as Akan, Dagbani, Ga, and Ewe are also widely spoken.

Ghana has a predominantly young population, with 37.1% under the age of 15, 59.7% aged 16-59, 6.7% aged 60-64, and 3.1% aged 65 and over (Ghana Statistical Service, 2021). The age dependency ratio stands at 67 per 100 of the working-age population. Around 43% of the population reside in rural areas (*Ghana Statistical Service, 2021*), and the national literacy rate is 79% (Ghana Statistical Service, 2021). Life expectancy at birth is 64 years (*Ghana Statistical Service, 2021*).

As a lower-middle-income nation, Ghana has a GDP per capita of US$1,940.68 (World Bank, 2018). Health expenditure accounts for 3.42% of the GDP, with a per capita expenditure on health of US$75.28 (World Bank, 2018).

1.2 Health Governance Structure

Healthcare in Ghana is primarily provided by the government through the Ministry of Health and its agencies, including the Ghana Health Service (GHS), the Health Facilities Regulatory Agency, the National Health Insurance Authority, the Food and Drug Authority, and various collaborative stakeholders such as private healthcare organisations, faith-based healthcare and umbrella organisations, health professional associations/societies, NGOs, and development partners. The Ministry's core responsibilities include mobilising health resources, formulating policy, monitoring and evaluation, and regulating health service delivery. The Ghana Health Service and teaching hospitals are the operational arms of the Ministry, responsible for health promotion, prevention, curative, and rehabilitative care.

The health service delivery system is structured into three levels: primary, secondary, and tertiary. The primary level encompasses community, sub-district, and district levels. Sub-districts are divided into Community-based Health Planning and Services (CHPS) zones, which form the foundation of the service delivery system. Each sub-district is served by a health centre and a sub-district health management team, while districts have district hospitals and district health management teams (Moreno, 2017). A referral system connects the primary healthcare system to regional, teaching, and specialised hospitals, which constitute the secondary and tertiary levels respectively, where more advanced clinical and diagnostic care is provided.

In terms of health infrastructure, the country has experienced steady expansion over the years. As of December 2020, there were 8,827 health facilities, including 7,137 public, 280 private non-profit, 1,331 private self-financing, and 79 quasi-governmental facilities. The facilities are categorised into 1 quaternary facility, 5 teaching hospitals, 7 secondary referral/regional hospitals, 478 primary referral hospitals (both public and private), 992 polyclinics and health centres, 5,876 CHPS zones, and 1,403

maternity homes and clinics. Despite these advancements, there remain gaps in the number of health facilities, logistics, and equipment, which must be addressed to accelerate progress towards the achievement of related Sustainable Development Goals (SDGs), particularly Universal Health Coverage (UHC).

The National Health Insurance Scheme, introduced in 2003, aims to alleviate the financial burden of healthcare on citizens and advance the country's efforts towards universal healthcare. The Scheme has been a significant development in this regard (Kwarteng et al., 2019). It covers the cost of healthcare for subscribers accessing services in public and accredited private facilities and is financed by premiums paid by subscribers, the national health insurance levy, and contributions from the Social Security and National Insurance Trust. The Scheme covers the cost of out-patient, in-patient, eye, dental, reproductive, maternal, and emergency care for 95% of the most common diseases in the country (Kwarteng et al., 2019).

To implement the UHC Roadmap, the Health Sector Medium-Term Development Plan (HSMTDP) (2022-2025) has been developed. The national strategy to reform and strengthen the primary healthcare (PHC) system, addressing gaps in access, quality, and equity, involves the Networks of Practice (NoPs) and Model Health Centres. The NoPs are designed to deliver accessible and high-quality care with a population focus. The overarching goal of the Networks of Practice is to increase access to quality essential health care and population-based services for all by 2030.

The Ghana Universal Health Coverage Roadmap identifies Networks of Practice as a key strategy for achieving Universal Health Coverage in the country. These networks aim to "maximise efficiencies in the use of resources towards improving quality and coverage" by connecting primary care service points around a model health centre. The sub-district networks will include public and private service providers and will be integrated within a district with robust linkages to district hospitals. The Government of Ghana (GoG) has designated health centres—located between first-level hospitals and health posts (community-based health planning and services facilities)—as the "hubs" for the Networks of Practice. This level of care is relatively under-utilised by populations, who often bypass it in favour of higher-level care at hospitals.

1.3 Health Financing and Expenditure

The health sector in Ghana is financed through multiple revenue sources, including general government allocations, social health insurance, internally generated funds (IGF) through out-of-pocket payments, and donor support (both bilateral and multilateral). In 2018, Ghana's health expenditure constituted 4% of GDP, or approximately US$70 per capita.

Overall, government prioritisation of health declined from 12% of the budget, or US$58.4 per capita, in 2011 to 6% in 2018, or approximately US$30 per capita. A significant source of health financing is the National Health Insurance Levy, which is 2.5% of VAT, with 70-80% of this usually allocated to the National Health Insurance Scheme (NHIS). Spending on community-based health services (CHPS) amounted to only about 0.23% of government expenditure in 2019.

There are substantial backlogs in government co-funding for health. The government's proportional budget allocation to the health sector has been declining, from 12% to 6% between 2012 and 2018, and funding from Development Partners has decreased from 25% to 12% between 2015 and 2018. Despite these challenges, primary healthcare (PHC) remains a priority for Ghana. Only 32% of all PHC-related spending in the country is attributable to the Government of Ghana (GoG).

The capacity to raise sufficient revenue to meet the demands of the health sector has been severely constrained by macroeconomic upheavals over the past decade, further exacerbated by the ongoing

COVID-19 pandemic, which was projected to reduce economic growth from 6.5% to 1.5%. Budget execution has been low, with only about half of the budget allocated for goods and services (primarily operational costs of service delivery) being disbursed since 2013. The external funding landscape has also shifted in recent years. As Ghana transitions to a lower-middle-income country and aims for self-reliance, Development Partners are reducing their levels and types of support. They are increasingly focusing on technical assistance at the policy and systems levels, rather than contributing to operational support for service delivery. Health sector budget support has rapidly decreased from 48% in 2004 to 9% in 2020, and Development Assistance for Health as a percentage of total health expenditure is expected to continue declining.

Given the links between poverty and achieving UHC, social protection financing for Ghana's flagship programmes stands at about 0.6% of GDP, significantly lower than the average allocation of 2.1% of GDP in African middle-income countries for non-contributory social assistance. There remain substantial coverage gaps for cash transfer programmes such as the Livelihood Empowerment Against Poverty (LEAP), which currently covers only 60% of the extreme poor. Ensuring that these individuals have access to free health insurance and home-based health services remains a challenge.

1.4 Social and Economic Determinants of Health

The health of individuals and communities is influenced by a combination of factors, including social, economic, environmental, and individual inherent physical characteristics and behaviours. In Ghana, as in many developing countries, morbidity and mortality are significantly affected by social and environmental determinants of health, among other factors. For instance, although access to water has improved, sanitation remains a major challenge. Additionally, diseases resulting from air pollution, the effects of climate change, and violence exacerbate the problem.

The World Health Organization (WHO) acknowledges the critical role that health determinants play and recognises that the populations most adversely affected often have limited control over these factors. It is essential to prioritise a multisectoral approach that involves collaboration between government and society to comprehensively address all health determinants. The WHO's expectation in tackling these determinants is to achieve a healthier population, where the needs of the most deprived and vulnerable are met, and where the associated health, social, and economic benefits are realised.

1.5 National Non-Communicable Diseases Policies and Strategies

To address the increasing burden of NCDs, Ghana has undertaken substantial efforts to develop policies, strategic documents, standards, and norms that provide strategic guidance and oversight for NCD prevention and control. A notable development is the recently launched NCD Policy and Strategic Plan. National documents such as the Universal Health Coverage (UHC) Roadmap, the Health Sector Medium-Term Development Plan, the Health Policy, and the Public Health Act, are strategic documents that clearly outline Ghana's commitment to achieving Sustainable Development Goal 3 and its related links to NCD prevention and control.

The new NCD Policy and Strategic Plan aims to strengthen the health system for NCD prevention and control, reduce exposure to NCD risk factors, enhance multisectoral collaboration, and ensure sustainable funding mechanisms for the management of NCDs.

1.6 Burden of Non-Communicable Diseases

Non-Communicable Diseases (NCDs) are the leading cause of death globally and have reached epidemic proportions. According to the World Health Organization (WHO), NCDs were responsible for 41 million (71%) of the world's 57 million deaths in 2016. Premature and preventable deaths caused by NCDs have a profound negative impact on health economics, with the majority of these deaths

occurring in low- and middle-income countries (LMICs). The four major NCDs, which account for 80% of all premature NCD-related deaths globally, are cardiovascular diseases (17.9 million deaths), cancers (9 million deaths), chronic respiratory diseases (3.9 million deaths), and diabetes (1.6 million deaths) (WHO, 2018).

NCDs, also known as chronic diseases, present significant health and developmental challenges. They often push individuals into poverty, resulting in a loss of productivity and catastrophic expenditure on treatments that many cannot afford. LMICs are projected to incur losses of approximately $7 trillion between 2011 and 2025, with an annual loss of around $500 billion due to NCDs. The cost of interventions to prevent or reduce the burden of NCDs is projected to be $170 billion for the same period (World Economic Forum, 2018). This underscores the economic benefit of adopting strategies for NCD prevention and health promotion to address the challenges posed by these diseases.

1.7 NCD Specific Conditions and Ghana NCD Priorities

The main NCD conditions in Ghana and specific NCD priorities for Ghana are outlined below.

Diabetes Mellitus (DM)

Diabetes Mellitus (DM) is a prevalent condition and a significant cause of mortality in Ghana, as indicated by Ghana Health Service (GHS) annual reports from 2017 to 2019. The Ghana Diabetes Association (GDA) reported in 2016 that approximately 4 million people were living with diabetes in Ghana. Non-population-based studies estimate the prevalence of diabetes to be between 6-9% of the adult population. The World Bank reported in 2019 that the prevalence of DM in Ghana was 2.5% among adults aged 20-79 years. DM is a notable contributor to cardiovascular diseases, including chronic kidney disease (CKD), stroke, heart attacks, peripheral vascular diseases, and amputations.

Cardiovascular Diseases (CVDs)

Cardiovascular diseases are a major public health issue in Ghana, contributing significantly to morbidity and mortality. CVDs are among the leading causes of death in the country, with hypertension being the most prevalent condition. The prevalence of hypertension in the adult population is estimated to be around 28-48%, with higher rates reported in urban areas compared to rural areas. CVDs account for a significant percentage of deaths in Ghana, with the World Health Organization (WHO) estimating that CVDs were responsible for approximately 18% of all deaths in the country. Access to healthcare services for CVDs remains a challenge, particularly in rural areas. Efforts are ongoing to improve the diagnosis, treatment, and management of CVDs through public health campaigns and the enhancement of healthcare infrastructure. The Ghana Health Service and other organisations are working to raise awareness and improve CVD management through campaigns, early detection programmes, and the integration of CVD care into primary healthcare services.

Cervical Cancer

Cervical cancer is the second most common cancer among women in sub-Saharan Africa, accounting for 20.4% of all women's cancers and 12% of all newly diagnosed cancers in both men and women annually. Although cervical cancer is preventable, it remains the leading cause of cancer death among women in the African Region. In sub-Saharan Africa, 34.8 new cases of cervical cancer are diagnosed per 100,000 women annually, and 22.5 per 100,000 die from the disease. This is largely due to the late-stage diagnosis of the disease, which results in poor prognosis.

The WHO recommends a comprehensive approach to cervical cancer prevention and control, including vaccination of young girls against human papillomavirus (HPV), sexual and reproductive health strategies, screening to detect and treat precancerous lesions, diagnosis and treatment of cervical

cancer, and palliative care. Cervical cancer is the second most common female cancer in Ghana, affecting approximately 3,151 women with 2,110 deaths and a crude incidence rate of 18.3 per 100,000 women in 2020. According to the 2022 population census, the total female population stands at 15.65 million, with an estimated 1.5 million women aged 30-59 years and 700,000 girls aged 9-12 years. The primary school completion rate among girls is above 90%.

The WHO Cervical Cancer 2020 Profile for Ghana shows the following morbidity and mortality rates:

- Crude cervical cancer incidence per 100,000 women (2020): 18.3
- Age-standardised cervical cancer incidence per 100,000 women (2020): 27.4
- Cumulative risk of cervical cancer, ages 0-74 (2020): 3%
- Cervical cancer deaths (2019): 2,200
- Cervical cancer mortality-to-incidence ratio (2020): 0.61

Ghana successfully implemented the Gavi-supported Human Papillomavirus (HPV) Demonstration Programme between 2013 and 2014, achieving a 95.8% vaccination rate among targeted girls using a combined school-based and age-based strategy. Objective six of Ghana's Comprehensive Multi-Year Plan (CMYP 2020-2024) aims to vaccinate 90% of the targeted population with new and underused vaccines recommended across the life course. This includes introducing the HPV vaccine for girls before they become sexually active. Gavi supports routine cohort immunisation for HPV through the co-financing mechanism. There is currently high-level advocacy with the Government for evidence review and decision-making regarding the integration of the HPV vaccine into Ghana's routine immunisation programme.

Breast Cancer

Breast cancer is the most commonly diagnosed cancer worldwide, accounting for one in eight cancer diagnoses and representing nearly a quarter of all cancer cases in females. Additionally, 16% or one in six cancer deaths in women is due to breast cancer, with a higher mortality observed in low- and middle-income countries. In 2017, the World Health Assembly passed a resolution on Cancer Prevention and Control in the context of an integrated approach. Recognising the rising burden of breast cancer, the WHO launched the Global Breast Cancer Initiative (GBCI) in 2021 and its implementation framework in 2023.

Breast cancer is the leading female malignancy in Ghana, according to WHO Globocan 2018 estimates. The disease can be devastating to patients, their families, and healthcare workers. Risk factor reduction (e.g., early childbearing, prolonged breastfeeding, avoiding alcohol, and maintaining a healthy body weight) may lower the incidence of the disease, but early detection (secondary prevention) improves treatment outcomes. The disease is potentially curable depending on the stage at presentation and the tumour's characteristics. Unfortunately, 60-70% of patients in Ghana present with advanced disease, leading to poor outcomes. Consequently, palliative care becomes a crucial option to improve the quality of life. Other factors influencing outcomes in developing countries like Ghana include adherence to standardised treatment, availability of treatment facilities, and the cost of care.

Prostate Cancer

Prostate cancer is a leading cause of cancer-related deaths among men in Ghana. Despite its prevalence, awareness and screening rates remain low, contributing to late-stage diagnoses. The government, in collaboration with various stakeholders, is prioritising awareness campaigns and encouraging men over 40 to undergo regular prostate-specific antigen (PSA) testing. Strengthening diagnostic and treatment infrastructure, particularly in rural areas, is also essential to address this growing public health concern.

Mental Disorders

The Global Burden of Disease 2017 estimates the population prevalence for various mental disorders as follows: schizophrenia (0.20%), bipolar disorder (0.51%), major depressive disorder (MDD) (2.56%), epilepsy (0.43%), alcohol use disorders (0.51%), and drug use disorders (0.53%). Ghana exhibits higher prevalence rates than the global average for epilepsy (0.43% vs 0.34%) and MDD (2.56% vs 2.49%). Males in Ghana have a lower prevalence of alcohol use disorder compared to regional data (1.36% for Sub-Saharan Africa vs 0.54% in Ghana). Within Ghana, certain demographic groups show higher prevalence rates for specific conditions. Young adults (aged 20-29) exhibit higher prevalence rates for schizophrenia (0.51%), bipolar disorder (1.59%), MDD (6.34%), epilepsy (0.84%), and drug abuse (2.42%). MDD is more prevalent among females (3.14%), young adults (6.34%), and adults aged 70 and older (7.92%). The suicide rate in Ghana is higher among men (12.1 per 100,000) compared to women (1.3 per 100,000).

1.8 Risk Factors for NCDs

Non-communicable diseases (NCDs) in Ghana, similar to many regions globally, are primarily driven by a combination of behavioural and metabolic (biological) risk factors. These risk factors include tobacco use, harmful alcohol consumption, physical inactivity, unhealthy diets, obesity, high blood pressure, elevated blood glucose, and high cholesterol. They significantly contribute to the onset and progression of NCDs. The World Health Organization (WHO) advocates for a comprehensive approach to preventing and managing these risk factors through policy interventions, public health initiatives, and community engagement.

Globally, the WHO identifies four key behavioural risk factors as major contributors to NCDs: tobacco use, harmful alcohol consumption, physical inactivity, and unhealthy diets. These behaviours are becoming more prevalent in Ghana due to rapid urbanisation and changing lifestyles. Addressing these behaviours requires several interventions, including the implementation of tobacco control policies, taxation on alcohol and unhealthy foods, promotion of physical activity, and public education on healthy diets.

In Ghana, efforts to combat these behavioural risk factors include the Tobacco Control Measures under the Public Health Act of 2012, which aligns with the WHO Framework Convention on Tobacco Control (FCTC). However, challenges persist in enforcing these laws and reducing tobacco use, particularly among youth and vulnerable populations.

Harmful Alcohol Consumption

Harmful alcohol consumption is a significant issue in many countries, including Ghana, contributing to liver disease, cardiovascular conditions, and certain cancers. While moderate alcohol consumption has been associated with reduced cardiovascular incidence and mortality, excessive alcohol consumption is linked to elevated blood pressure and an increased risk of haemorrhagic stroke (Ariesen et al., 2003; Sturgeon et al., 2007). The WHO recommends implementing alcohol control policies such as restrictions on advertising, pricing strategies, and limiting availability. In Ghana, the Mental Health Act of 2012 addresses substance abuse, including alcohol. However, the enforcement of these regulations and public awareness campaigns need strengthening to effectively reduce harmful alcohol use.

Physical Inactivity

Physical inactivity is an increasing public health concern in Ghana, particularly in urban areas where sedentary lifestyles are becoming more common. Physical inactivity is a major risk factor for developing chronic diseases, leading to increased morbidity and mortality (Al-Hazzaa et al., 2011). It significantly affects the occurrence of coronary heart disease, type 2 diabetes, and certain cancers, specifically

breast and colon cancer. The WHO recommends promoting physical activity through urban planning, creating safe spaces for exercise, and encouraging active transportation such as walking and cycling.

Unhealthy Diets

Unhealthy diets, characterised by low intake of fruits and vegetables and high consumption of processed foods, are increasingly contributing to NCDs in Ghana. The WHO advocates for policies that promote healthy eating, such as regulating food labelling, reducing salt and sugar content in foods, and ensuring access to affordable, nutritious food. In Ghana, the National Nutrition Policy aims to improve dietary habits through education and food fortification programmes. Nevertheless, the availability and affordability of healthy foods remain challenges, especially in rural areas.

Metabolic Risk Factors

Metabolic risk factors, including overweight/obesity, high blood pressure, elevated blood glucose levels, and high cholesterol, further complicate the challenge of NCDs in Ghana. Obesity, a major risk factor for cardiovascular diseases, diabetes, and certain cancers, is rising due to poor dietary habits and physical inactivity. Being overweight or obese is a significant risk factor for all four major NCDs: cardiovascular disease, cancer, diabetes, and chronic respiratory diseases. The WHO recommends integrated approaches to managing obesity, including dietary interventions, physical activity promotion, and weight management programmes.

Hypertension, or high blood pressure, is another significant risk factor for NCDs in Ghana. High blood pressure is a major contributor to stroke and coronary heart disease and is closely associated with type 2 diabetes. The WHO emphasises the importance of regular screening, reducing salt intake, and providing affordable medication to manage hypertension. In Ghana, the National Health Insurance Scheme (NHIS) covers some essential medications for hypertension, and public health campaigns have been launched to raise awareness about blood pressure management. However, access to regular screening and medication remains a barrier, particularly in rural areas.

Elevated blood glucose levels, which lead to type 2 diabetes, and high cholesterol levels, a risk factor for cardiovascular diseases, are also increasing in Ghana. Early detection through screening, lifestyle changes, and medication to manage diabetes, as well as dietary modifications, increased physical activity, and statin therapy to manage cholesterol levels, are effective interventions recommended by the WHO to reduce these risk factors.

These factors not only contribute to the onset of NCDs but also exacerbate their progression, placing a significant burden on the health system. In Ghana, these behaviours are increasingly observed due to rapid urbanisation, changing lifestyles, and socioeconomic shifts. Tobacco use remains a significant concern, particularly among men, and is strongly linked to lung cancer, chronic respiratory diseases, and cardiovascular conditions. Alongside smoking, the use of other tobacco products is also contributing to the NCD burden.

Fruits and Vegetable Intake and NCDs

Adequate consumption of fruits and vegetables is essential for a healthy diet and plays a crucial role in preventing NCDs. The WHO recommends a minimum daily intake of five servings of fruits and vegetables to reduce the risk of cardiovascular diseases, certain cancers, and other chronic conditions. Despite these recommendations, many populations, including those in Ghana, do not meet these dietary guidelines.

Globally, inadequate intake of fruits and vegetables is linked to poor health outcomes and an increased risk of NCDs. The WHO estimates that insufficient fruit and vegetable consumption contributes to

approximately 3.9 million deaths each year. In Ghana, dietary patterns have shifted, with traditional diets rich in fruits, vegetables, and whole grains increasingly replaced by diets high in processed foods, sugars, and unhealthy fats. This dietary shift is contributing to the rising burden of NCDs in the country.

The National Nutrition Policy in Ghana aims to improve dietary habits by promoting fruit and vegetable consumption through public health campaigns and education initiatives. Programs such as the "Eat Well, Live Well" campaign, led by the Ghana Health Service (GHS), focus on encouraging healthy eating habits among the population. However, barriers to fruit and vegetable consumption persist, particularly in rural areas where access to fresh produce is limited.

One of the key challenges in Ghana is the affordability and availability of fruits and vegetables, especially in low-income and rural communities. Promoting fruit and vegetable intake also involves public education. The WHO recommends incorporating nutrition education into school curricula and community programmes to foster healthy eating habits from a young age. Furthermore, the WHO suggests that government policies should support the production and marketing of fruits and vegetables, making them more attractive to consumers.

An effective national response to NCDs relies on robust evidence that demonstrates both the disease burden and the prevalence of risk factors across populations. Such information can help inform policy decisions on sectoral reforms and the reorientation of health service delivery. It also guides decision-making on the allocation of scarce national resources. To this end, the Government of Ghana has implemented its first nationally representative NCD risk factor survey. The objective of the survey is to better understand the prevalence of both behavioural (tobacco smoking/use, unhealthy diets, physical inactivity, harmful alcohol consumption) and metabolic (elevated blood pressure, fasting glucose, cholesterol, obesity) risk factors, with the aim of strengthening the quality of national data on NCDs and informing policy reform across relevant sectors.

1.9 Rationale for STEPS Survey in Ghana

Like many low- and middle-income countries, Ghana is facing an increasing burden of NCDs, including NCD-related mortality. Evidence on the burden of NCDs in Ghana is varied and largely not nationally representative. Decision-making, therefore, relies on limited data, making targeted interventions challenging. Some countries have used large-scale cohort studies to generate evidence for decision-making, but such studies are often prohibitively expensive in the Ghanaian context.

The WHO STEPS survey is a cost-effective tool for periodically generating evidence on NCDs and their risk factors. It is designed to collect standardised data on household, behavioural, and metabolic indicators related to NCDs, producing nationally representative estimates of key risk factors. The survey is conducted in sequential stages, beginning with the collection of demographic and household characteristics, followed by lifestyle risk factors through structured interviews. This is succeeded by physical measurements and, lastly, the collection of blood and urine samples for biochemical analysis.

Ghana conducted its first STEPS survey in 2006; however, this was a sub-national survey focusing solely on the Greater Accra Region. Various efforts to conduct a nationwide survey have encountered challenges, and Ghana remains one of the few countries within the WHO AFRO region that has not yet carried out a nationwide STEPS survey.

Moreover, the Ghana Demographic and Health Survey of 2014 included some selected NCD measurements, making it the only nationally representative survey of its kind. However, it covered only a limited range of NCDs and had a restricted age range.

Ghana's NCD Policy (2022-2027) has clear objectives linked directly to the prevalence of NCDs and risk factors. Reliable baseline data is required to effectively monitor policy implementation and progress towards achieving the set targets, ultimately reducing exposure to risk factors that significantly contribute to the NCD burden.

Ghana is committed to achieving Sustainable Development Goal 3, which focuses on health and related global targets on NCDs and risk factors. This underscores the importance of implementing the WHO STEPS survey to track Ghana's progress towards global targets and Universal Health Coverage by 2030.

Furthermore, as Ghana seeks to advance reforms in social insurance and human capital development—as evidenced by ongoing policy discourse—better quality data on NCDs and their risk factors will provide crucial information for policy design.

1.10 Goal of the Survey

The overall goal of the 2023 Ghana STEPS survey was to produce reliable national-level data on the prevalence of NCD risk factors in Ghana.

1.11 Objectives

The 2023 Ghana STEPS survey aimed to assess the magnitude and distribution of lifestyle and metabolic risk factors for major NCDs and related conditions, including oral and mental health, by collecting data from a nationally representative sample. Specifically, the survey was designed to:

1. Determine the prevalence of key behavioural risk factors for NCDs, including tobacco use, alcohol consumption, unhealthy dietary habits, and physical inactivity, as well as mental and oral health.
2. Assess the prevalence of biological and metabolic risk factors, such as overweight, obesity, dyslipidemia, fasting blood glucose levels, and high blood pressure.
3. Describe socio-demographic factors in relation to key risk factors for NCDs.

CHAPTER 02

METHODOLOGY

2.1 Introduction

The WHO STEPS survey methodology is designed to collect standardised data on NCD-related household, behavioural, and metabolic indicators, providing nationally representative estimates for key NCD risk factors. The survey employs a sequential process, beginning with the collection of demographic and household information, followed by the assessment of lifestyle risk factors through structured interviews. This is followed by physical measurements and, finally, the collection of blood and urine samples for biochemical analysis.

For the 2023 Ghana STEPS survey, data was collected from both urban and rural sampled EAs across all sixteen regions of Ghana: Western, Central, Greater Accra, Volta, Eastern, Western North, Ashanti, Bono, Bono East, Oti, Ahafo, Northern, Savannah, North East, Upper East, and Upper West.

2.2 Survey Design

The 2023 Ghana STEPS survey was a nationwide quantitative survey employing a multi-stage cluster sampling method. In this approach, primary sampling units (PSUs) or clusters were first randomly selected based on population size, followed by the selection of households and then survey participants.

STEP 1:

This phase involved individual interviews covering various areas, including demographic and housing information, diet, physical activity, tobacco use, alcohol consumption, history of blood pressure, diabetes, total cholesterol, cardiovascular diseases, lifestyle advice, cervical cancer screening, and mental and oral health (see Table 2.2.1).

In addition to the core, expanded, and optional modules, the survey incorporated a set of specific household and individual questions tailored for Ghana. These questions were intended to facilitate the creation of wealth quintiles, which were used as background characteristics for descriptive and analytical purposes regarding NCD risk factors. The survey utilised the SWIFT approach to include socioeconomic information, annual expenditure levels, and poverty data. This method estimates household expenditures and poverty in sampled areas using a few simple questions (Yoshida et al., 2015). Instead of directly collecting household consumption expenditure data, the SWIFT approach employs expenditure data from national household surveys (GLSS7, 2016/2017) to identify a set of standard questions that predict expenditure levels (GSS, 2017). These questions covered demographics, education, and housing characteristics, with a statistical formula used to estimate household expenditures. As the SWIFT methodology does not gather data on food consumption or other monetary variables, the expenditure estimates reflect a household's socioeconomic profile in the medium term and do not account for short-term variations in consumption patterns. The inclusion of SWIFT was crucial for analysing the impact of socioeconomic factors on the incidence of NCDs, risk behaviours, and treatment patterns. STEP 1 interviews were conducted using computer-assisted personal interviewing (CAPI) on an Android tablet. Written informed consent was obtained from all participants for STEPS 1, 2, and 3.

Table 2.2.1: Components of the 2023 Ghana STEPS Survey

STEP	CORE	EXPANDED	OPTIONAL/OTHER
STEP 1 BEHAVIOURAL (INTERVIEW)	■ Basic demographic information—including age, sex, and literacy ■ Tobacco use ■ Alcohol consumption ■ Diet: Fruits and vegetables, dietary salt consumption ■ Physical activity ■ History of: elevated blood pressure, diabetes, elevated cholesterol, cardiovascular diseases ■ Lifestyle advice ■ For Women: Cervical cancer screening	■ Expanded demographic information, including years at school, ethnicity, marital status, and employment status ■ Smokeless tobacco use ■ Failure to stop drinking alcohol and social problems related to alcohol ■ Knowledge of risks associated with salt consumption, and ways of reducing salt consumption ■ Sedentary behaviour	■ Household characteristics and amenities ■ Mental Health ■ Oral Health
STEP 2 PHYSICAL MEASUREMENTS	Weight and height Waist circumference Blood pressure	Hip Circumference	
STEP 3 BIOCHEMICAL MEASUREMENTS	Fasting blood sugar Total cholesterol Urinary salt and creatinine*	HDL-cholesterol	

**Urine collection for salt and creatinine measurements was suspended after the initial few participants due to logistical and financial challenges.*

STEP 2:

Immediately following the interview (STEP 1), participants underwent physical measurements (STEP 2). Blood pressure and heart rate were first measured three times, with readings taken three minutes apart, using a digital sphygmomanometer. Participants were seated on a chair with their feet firmly on the floor, and all blood pressure measurements were taken from the left arm. The average of the second and third readings was used as the final measurement, as the first reading is often an outlier.

Standing height and weight were measured without shoes and in light clothing, using a portable weighing scale and stadiometer, respectively. These measurements were used to calculate the body mass index (BMI). Waist and hip circumferences were measured with a measuring tape (Figure Finder), and the waist-to-hip ratio was calculated to estimate the participant's abdominal fat.

STEP 3:

After completing Step 2, participants were briefed on STEP 3, which involved a blood test for total cholesterol, high-density lipoprotein (HDL), and fasting blood sugar (FBS). Participants were provided with clear instructions on fasting procedures for the blood test scheduled for the following morning. If a participant had diabetes and was on medication, they were advised to refrain from taking their medication on the morning of the STEP 3 appointment but to resume it after the testing was completed.

For the initial participants, in addition to being briefed about the blood tests, they were also informed about the collection of spot urine samples for salt and creatinine tests. They were given bar-coded, labelled urine sample containers and instructions for collecting a non-fasting urine sample. The spot urine sample was to be collected the evening before the participant began fasting and picked up by the survey team the following morning. Urine samples were not collected if the participant was pregnant, had fasted before sample collection, or if the urine was contaminated with blood.

The collection of urine samples for salt and creatinine measurements was suspended after the initial few samples were collected due to logistical and financial challenges.

A point-of-care analyser, CardioChek Plus, was used to measure total cholesterol and HDL, with results recorded directly on an Android tablet. The CardioChek Plus is a user-friendly device that measures total cholesterol and HDL using a single blood drop on a single test strip. It is recommended by WHO for STEPS surveys in many African countries and has been validated and approved for use by the Food and Drug Authority (FDA). Fasting blood glucose levels were checked using the Onetouch Select Plus.

STEP 3 specimen collections were conducted by laboratory technicians, clinical officers, and nurses assigned to each data collection team. These field staff underwent one week of training on study procedures, including blood collection through finger pricks, the use of CardioChek Plus analysers for total cholesterol and HDL, and the Onetouch Select Plus for fasting blood glucose. The training also covered universal precautions and the disposal of biohazardous materials.

2.3 Study population

The study population comprised participants from urban and rural sampled EAs across all sixteen regions of the country, namely: Western, Central, Greater Accra, Volta, Eastern, Ashanti, Western North, Ahafo, Bono, Bono East, Northern, Oti, Savannah, North East, Upper East, and Upper West.

2.4 Inclusion and Exclusion Criteria

Inclusion Criteria

All randomly selected individuals, both male and female, aged 18 to 69 years, who were permanent residents of the selected households—defined as those having resided in the household for at least six months—were included in the survey.

Exclusion Criteria

The following individuals were excluded from the survey:

- Those aged 18-69 years who were severely ill (as determined by a health professional) or had mental disorders that impaired their ability to respond to the interview at the time of data collection.
- Persons residing in institutional settings, such as hotels, nursing homes, or other institutions.
- Household members who had been away for more than six months or those who had been in the household for less than six months and were not expected to stay longer.
- Pregnant women were excluded from waist, hip, and height measurements, as well as from spot urine testing.

2.5 Sampling

2.5.1 Sample Size

To determine the sample size necessary to obtain the desired population estimate for key risk factors, the WHO recommends using the formula: $n = z^2Dp(1-p)/e^2$, where:

n = Sample size

D = Design effect

p = Estimated proportion or prevalence within the target population at the time of the first survey

z = Level of confidence in the sample mean or prevalence as an estimate of the population mean or prevalence

e = Margin of error

In this study, p represents the nationwide prevalence of any NCD-related risk factors. As this was the first nationally representative survey to provide prevalence data on key risk factors for NCDs in Ghana, WHO recommends assuming that 50% of participants will have at least one risk factor (such as tobacco use, alcohol use, unhealthy diet, or physical inactivity) for the purposes of sample size estimation (WHO, 2017). In cases where p is unknown, it is often assumed to be 50% (Bowling, 2014).

To calculate the minimum sample size (n), the following assumptions were made:

z = 1.96 (corresponding to a 95% confidence level)

D = 1.5 (design effect)

p = 0.5 (or 50%)

e = 0.05 (or 5% margin of error)

Using these parameters, the minimum sample size obtained is 576. This sample size is then adjusted for the number of strata, which in this case is 8 (comprising four age groups: 18-29, 30-44, 45-59, 60-69, and two sex categories: male and female). Additionally, the sample size is adjusted for an expected response rate of 80% (0.8).

The final adjusted sample size for the survey was 5,775, based on the distribution to EAs. Since one participant is selected per household, this number is equivalent to the number of households to be selected. With a fixed number of 15 households per EA, a total of 385 EAs was required to achieve the desired sample size.

2.5.2 Sampling Procedure

The 2023 Ghana STEPS survey employed a multi-stage sampling technique to select the required number of participants, which was 5,775. The sampling frame for the survey was based on the 2021 Population and Housing Census (PHC). To minimise the cluster effect, 15 households were randomly selected from each EA using simple random sampling. Within each selected household, one participant was chosen through computer-generated random sampling. Consequently, a total of 385 EAs was allocated across all 16 regions and urban/rural areas, proportionate to the size of the population.

Using the Ghana Statistical Service's sampling systems, the desired number of EAs was randomly selected from the 2021 census frame, stratified by region and residency (urban/rural). A complete household listing was conducted for each selected EA. Subsequently, 15 households were randomly chosen from each EA. Within each selected household, all eligible participants were listed using the eSTEPS software on Android tablets, which then randomly selected one participant per household.

Table 2.6.1 details the distribution of the 2021 population by region, residence, and the distribution of the STEPS sample EAs by residence and region. A random probability sampling method was used to select the study EAs, households, and participants.

Table 2.5.2.1: Distribution of population of Ghana (Regions), residence (urban/rural), and the distribution of the 2023 STEPS survey sample EAs by region, and residence

2021 Population (PHC)						STEPS survey allocation of EAs			Adjusted No. of EAs			Allocation of HHs		
Region	urban	rural	Total	% of pop-ulation	% Urban	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Western	1,062,865	997,720	2,060,585	0.07	0.52	13	12	26	13	12	25	195	180	**375**
Central	1,654,703	1,205,118	2,859,821	0.09	0.58	21	15	36	21	15	36	315	225	**540**
Greater Accra	5,001,141	454,551	5,455,692	0.18	0.92	62	6	68	35	13	48	525	195	**720**
Volta	698,329	960,711	1,659,040	0.05	0.42	9	12	21	9	12	21	135	180	**315**
Eastern	1,505,820	1,419,833	2,925,653	0.09	0.51	19	18	37	16	20	36	240	300	**540**
Ashanti	3,353,850	2,086,613	5,440,463	0.18	0.62	42	26	68	31	17	48	465	255	**720**
Western North	262,428	618,493	880,921	0.03	0.30	3	8	11	8	12	20	120	180	**300**
Ahafo	274,914	289,754	564,668	0.02	0.49	3	4	7	8	9	17	120	135	**255**
Bono	708,481	500,168	1,208,649	0.04	0.59	9	6	15	9	7	16	135	105	**240**
Bono East	633,255	570,145	1,203,400	0.04	0.53	8	7	15	8	8	16	120	120	**240**
Oti	243,869	503,379	747,248	0.02	0.33	3	6	9	7	9	16	105	135	**240**
Northern	1,095,808	1,215,131	2,310,939	0.07	0.47	14	15	29	10	12	22	150	180	**330**
Savannah	193,579	459,687	653,266	0.02	0.30	2	6	8	7	9	16	105	135	**240**
North East	214,946	444,000	658,946	0.02	0.33	3	6	8	7	9	16	105	135	**240**
Upper East	330,258	970,968	1,301,226	0.04	0.25	4	12	16	8	8	16	120	120	**240**
Upper West	238,282	663,218	901,502	0.03	0.26	3	8	11	7	9	16	105	135	**240**
Ghana	**17,472,528**	**13,359,489**	**30,832,019**	**1.0**	**7.40**	**218**	**167**	**385**	**204**	**181**	**385**	**3060**	**2715**	**5775**

2.6 Survey Implementation

The implementation of the survey involved a coordinating team and a technical working committee. The coordinating team consisted of the Director-General of the Ghana Health Service, the WHO Representative in Ghana, and the Government Statistician.

2.6.1 Implementation structure

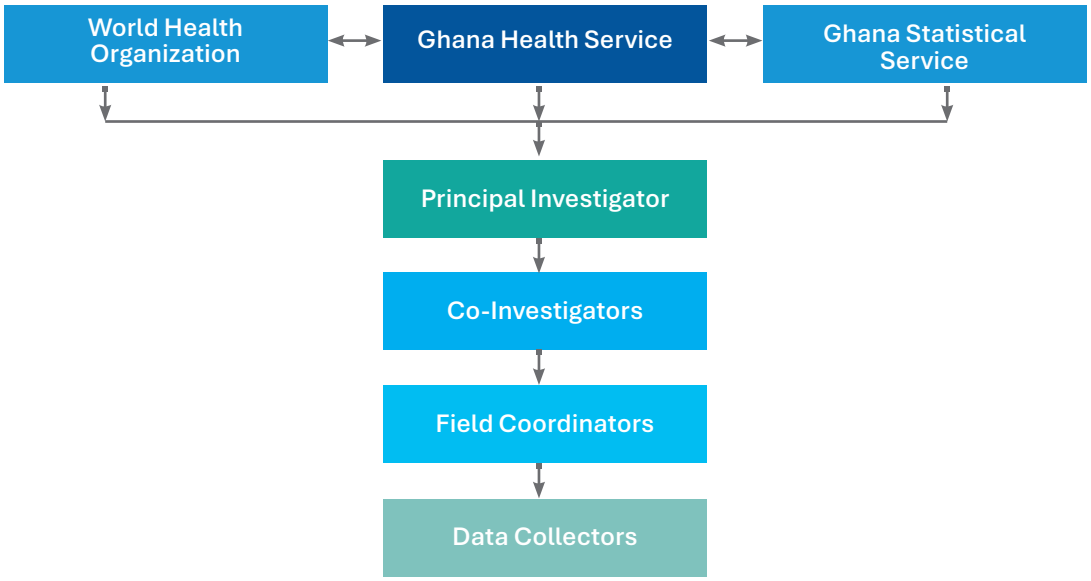

Figure 2.7.1.1: Implementation Structure

The implementation of the survey was overseen by a Technical Working Committee (TWC), which provided strategic and technical guidance on the design and execution of the STEPS survey. The TWC was chaired by Dr. Dennis Odai Laryea, a Public Health Physician with expertise in NCDs and the former Programme Manager for NCDs at the Ghana Health Service. As the team leader, Dr. Laryea brought extensive experience in leading research projects, and he was instrumental in overseeing and coordinating all aspects of the study, including survey design.

The TWC also included other senior and experienced researchers: Dr. Abraham Hodgson, Dr. Joana Ansong, Dr. Mary Efua Commeh, Dr. Yaw Ampem Amoako, Dr. Peter Takyi Peprah, Dr. Emmanuel Parbie Abbeyquaye, Mr. Isaac Obeng Tandoh, and Dr. Philip Teg-Nefaah Tabong. The committee was responsible for managing project implementation, addressing issues that arose, and overseeing contractual relationships.

Appendix 1 provides a summary of the Technical Working Committee members and their designated roles in the survey implementation.

2.7 Training for Data Collection Teams

In May 2023, a five-day training workshop was conducted for the data collection teams, which included specific sessions for STEP 3 and a pilot session on the final two days. The training was facilitated by WHO AFRO and HQ, along with members of the Ghana STEPS Technical Working Committee (TWC).

The training involved practical exercises on STEPS procedures, including a field practice (pilot test of all three steps) conducted in non-selected EAs. The workshop covered the following topics:

- Objectives of the workshop
- Overview of the STEPS survey
- Interview tracking approaches
- Introduction to eSTEPS using Android devices
- Participant selection
- Obtaining informed consent

- Interview skills
- Detailed review of the STEPS instrument (question-by-question)
- Recording information and responses
- Blood pressure measurements
- Height and weight measurements
- STEP 3 procedures (urine sample collection and blood tests)
- Preparation and use of Android devices
- Conducting field practice
- Care and use of Android devices

Additionally, data collectors were trained in Good Clinical Practice (GCP), the use of Personal Protective Equipment (PPE) such as gloves, care of clinical equipment, and disposal of biological samples. Each team was provided with a biosafety box for the temporary disposal of used sharps, which were to be incinerated at the end of the day.

Seventy fieldworkers were trained, including some who served as backups. The fieldworkers were required to have at least tertiary education and experience in participating in nationwide surveys conducted by the Ghana Statistical Service.

2.8 Data Collection

Data collection for the survey took place from June to August 2023 across all sixteen regions of the country. The data was gathered by trained field workers, organised into sixteen four-member teams, with each team including a designated Supervisor. Each team was responsible for data collection within assigned EAs and was provided with a dedicated vehicle and driver.

The teams were composed of social scientists and nurses who conducted STEPS 1 and 2, while laboratory technicians, biomedical scientists, and nurses carried out the procedures for STEP 3. For details on the roles and responsibilities of the fieldworkers, please refer to Appendix 2.

The Ghana-adapted WHO STEPS questionnaire was translated into four key local languages (Twi, Ga, Ewe, and Dagbanli) using a back-to-back translation method and was preloaded onto Android tablets. Fieldworkers were recruited from their respective regions to facilitate language and logistical needs. Data collection involved face-to-face interviews conducted by trained survey interviewers, with responses uploaded either instantly or at a later time to a cloud-based data management system hosted by WHO. For participants who did not understand English or any of the four local languages, interpreters were employed to assist with data collection. This approach was informed by previous nationwide surveys conducted by the Ghana Statistical Service, such as the Ghana Demographic and Health Survey and the Multiple Indicator Cluster Survey (GSS, 2011, 2015).

Team logistics and support were meticulously planned in advance. Prior to field deployment, each team was assigned specific EAs with a complete list of pre-selected households for participant selection. Additionally, teams were provided with maps of the selected EAs, relevant references, and letters of introduction to regional and district authorities. If a member of a selected household declined to participate, this was recorded as a non-response, which had already been factored into the sample size calculation.

2.9 Data Quality Control

The use of Computer-Assisted Personal Interviewing (CAPI) significantly reduced common errors during household interviews and enhanced the quality of the data collected. The CAPI system's GPS capability allowed for the visualisation of the EA where interviews were conducted. Additionally, interviewers

received thorough training and consistent supervision on the use of instruments and interviewing techniques to ensure accuracy and reliability. The eSTEPS system, a variant of CAPI used for this survey, enabled real-time data quality control.

Members of the Technical Working Committee (TWC) conducted frequent supervisory visits to the field to observe interviews and procedures, correcting any deviations as needed. During these visits, TWC members monitored the consenting process, questionnaire administration, data entry, and the collection of biological samples, and provided guidance accordingly. At the end of each day, debriefing sessions were held with the teams to discuss and address any issues and to review progress. Supervisors of each survey team regularly checked equipment and devices to validate readings and arranged for replacements when necessary. Biochemical results were entered directly into the tablets.

To standardise responses, Ghana-adapted WHO show cards (see Appendix 3) were used to guide participants' responses to questions about risk factors such as tobacco and alcohol use, fruit and vegetable consumption, and physical activity.

Entered data was checked remotely for errors, and any inconsistencies or errors were promptly addressed. During the data collation period, only the Data Processing Supervisor and the National Survey Coordinator had access to the data to ensure confidentiality and safety.

2.10 Real Time Data Quality Monitoring Using eSTEPS

The eSTEPS application employed for this survey facilitated real-time data quality control. eSTEPS involves the use of handheld electronic devices for STEPS data collection, interfacing with the STEPS online data management platform. The STEPS Android application served as the primary tool for data collection.

eSTEPS offered several benefits:

- Real-time identification of errors such as inadvertently skipped questions or out-of-range responses.
- Reduced data entry errors
- Reduced material requirements, substituting hundreds of paper instruments with a single tablet.
- No additional data entry required

Data collectors received alerts and guidance at each step of data collection, addressing any inconsistencies, particularly persistent ones. Each survey participant was assigned a unique Personal Identification Number (PID) and QR code, which facilitated the integration of data from STEPS 1, 2, and 3. Upon completion of the survey, the data was cleaned and analysed according to the WHO STEPwise approach to NCD surveillance. All procedures adhered strictly to WHO guidelines to ensure the validity of the study.

The survey coordination team was oriented to enhance coordination and clarify the roles of data managers in the use of QR codes, household and interview databases, and quality assurance mechanisms. They also monitored quality indicators for data collection through the server.

2.11 Training for Data Analysis Team

A five-day data analysis workshop was conducted in May 2024. Data weighting was planned prior to data collection, monitored throughout the collection process, and finalised before the workshop.

The workshop, facilitated by WHO AFRO, covered the following topics:

- **Introduction to Data Management:** Skills in data downloading, checking, and cleaning.
- **Descriptive Statistical Analysis:** Training in developing descriptive statistical analysis skills using Epi Info.
- **Data Weighting:** Technical skills for weighting data to ensure it is representative of the target population.
- **Data Interpretation and Presentation:** Building skills for interpreting data and presenting datasets effectively.
- **Standardised Reporting:** Producing standardised reporting documents, including the STEPS fact sheet and data book.
- **Preparation of Tables:** Creating tables for country reports.

These sessions aimed to equip participants with the necessary skills to manage, analyse, and report on the survey data effectively.

2.12 Data Analysis

Data analysis was conducted using Epi Info version 3.5.4 and STATA 15, employing methods appropriate for the complex sample design of the survey. Prevalence rates and measures of central tendency for NCD risk factors were estimated. Outcome measures, including prevalence and mean variance, were calculated with a 95% confidence interval. The analysis and report writing were undertaken by the Technical Working Committee (TWC) with technical support from WHO.

Data submitted on the online platform was exported as Excel files, which were then imported into Epi Info version 3.5.4 for analysis. Continuous variables, such as age, were categorised into four age groups (18-29, 30-44, 45-59, 60-69). Categorical variables including sex, religion, marital status, and educational attainment were retained in their categorical form during analysis. Participants' residences were classified as rural or urban according to the Ghana Statistical Service (GSS) categorisation (GSS, 2022).

Proportions and percentages were calculated for categorical variables such as sex, occupation, region, tobacco use, alcohol use and patterns, fruit and vegetable consumption, physical inactivity, overweight and obesity, hypertension, diabetes, and elevated cholesterol. Adjustments were made for multiple sampling levels, and data were edited for response errors and inconsistencies. Weighting was applied to reduce bias and provide representative prevalence estimates.

Weighting was used to account for the clustering and stratification applied during respondent sampling. Descriptive statistics were employed to present proportions of background characteristics of respondents at the univariable level. The results of the quantitative data were presented in tables and graphs.

2.13 Ethical Considerations

The survey was conducted with strict adherence to ethical standards, ensuring participants' confidentiality and the voluntary nature of their involvement. Prior to the commencement of fieldwork, a protocol was submitted to and approved by the Ethics Review Committee of the Ghana Health Service (GHS-ERC 032/08/22). Written informed consent was obtained from all participants at the household level. The approval by the Ethics Review Committee served as a robust mechanism to ensure adherence to the highest research ethics standards.

During the training, considerable emphasis was placed on respecting respondents' privacy and confidentiality, and on the necessity of obtaining informed consent. Team members were also trained in security protocols for fieldwork and cultural sensitivity when conducting community-based surveys. All field workers were instructed on the ethical dimensions of their interactions with participants, with a clear understanding that any failure to adhere to ethical guidelines could compromise the integrity and validity of the entire survey.

The training covered the following topics:

- Written informed consent
- Disclosures, privacy, and confidentiality
- Referral services for participants with abnormal test results
- Data management and research records
- Research misconduct
- Biosafety and infection prevention and control (IPC)
- Management of healthcare waste
- Other ethical considerations relevant to the survey

Field workers were trained to avoid coercion, respect participants' responses, and preserve their dignity throughout the research process.

- *The map of Ghana showing the coordinates of sampled enumeration*

CHAPTER 03

RESULTS

3.1 Demographic Characteristics

3.1.1 Sex, Age, and Residency Distribution

The 2023 Ghana STEPS Survey interviewed a total of 5,438 individuals aged between 18 and 69 years across the country. Women constituted 3,416 (62.8%) of the respondents, while men accounted for 2,022 (37.2%). The majority of respondents were aged between 30 and 44 years (38.9%). In terms of residency, 47.4% of the respondents lived in rural areas, and 52.6% in urban areas. The distribution of respondents by age group, sex, and residency is presented in Table 3.1.1.1.

Table 3.1.1.1: Age group, sex and residency distribution of respondents

Age Group (years)	Men		Women		Both Sexes	
	n	%	n	%	n	%
18-29	550	38.7	873	61.3	1423	26.2
30-44	721	34.1	1393	65.9	2114	38.9
45-59	519	39.0	812	61.0	1331	24.5
60-69	232	40.7	338	59.3	570	10.5
Residency						
Rural	1034	40.2	1541	59.8	2575	47.4
Urban	988	34.5	1875	65.5	2863	52.6
Total	**2022**	**37.2**	**3416**	**62.8**	**5438**	**100.0**

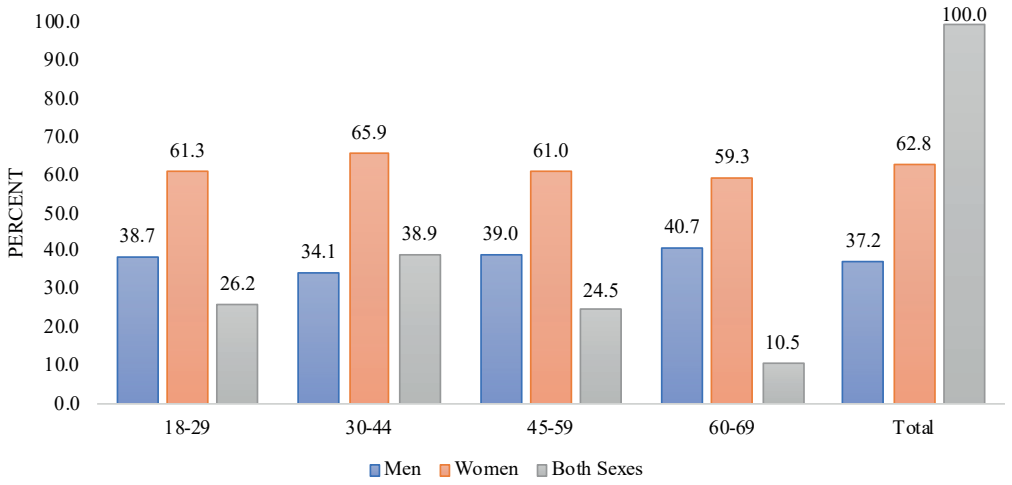

Figure 3.1.1.1: Bar chart showing all respondents by sex and age group

3.1.2 Educational Level of Respondents

Almost a quarter of all respondents, (22.7 %) have no formal education. One in four females (25.0%) lack formal education, compared to 18.7% of males. The youngest age group (18–29 years) reported the lowest proportion of individuals with no formal education (9.1%), compared to older age groups. The average number of years of formal education among respondents was 7.3 years, with males averaging 8.2 years and females 6.7 years. Only 7.6% of adults have attained the highest level of education, with males at 10.8% and females at 5.7%.

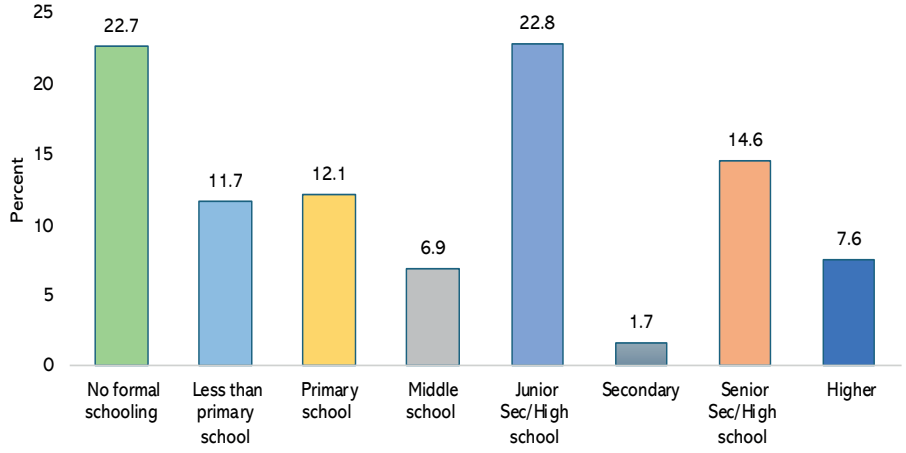

Figure 3.1.2.1: Bar chart showing highest educational level achieved by respondents

3.1.3 Ethnicity of Respondents

The Akan and Mole-Dagbani ethnic groups comprised 40.5% and 18.4% of the respondents, respectively. The proportions of other ethnic groups are illustrated in Figure 3.2.

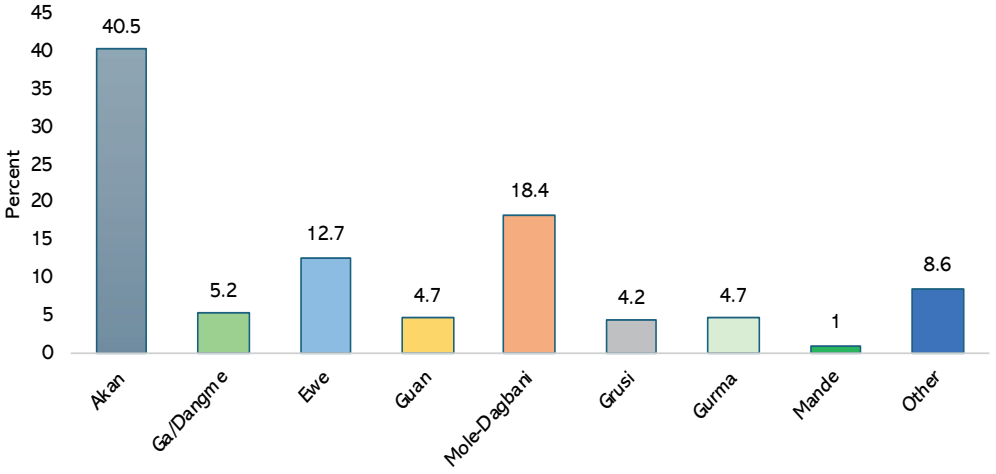

Figure 3.1.3.1: Bar chart showing ethnicity of all respondents

3.1.4 Marital Status of Respondents

23% percent of the respondents have never married, and 54.6% are currently married. A higher percentage of men (57.9%) are married compared to women (52.6%). The percentage of men (29.2%) who have never married is higher than that of women (19.4%). Divorced women constitute 6.0%, compared with 2.5% of men. Similarly, 10.6% of women are widowed compared to 2.2% of men. Table 3.1.4.1 presents information on marital status by age group.

Table 3.1.4.1Marital status of respondents

Age Group (years)	n	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
18-29	1422	62.4	26.4	1.4	0.7	0.3	8.8
30-44	2112	14.3	66.6	2.9	4.5	3.4	8.1
45-59	1331	3.5	66.8	5.9	7.1	13.1	3.8
60-69	570	2.6	51.9	5.8	9.8	27.7	2.1
18-69	**5435**	**23.0**	**54.6**	**3.6**	**4.7**	**7.5**	**6.6**

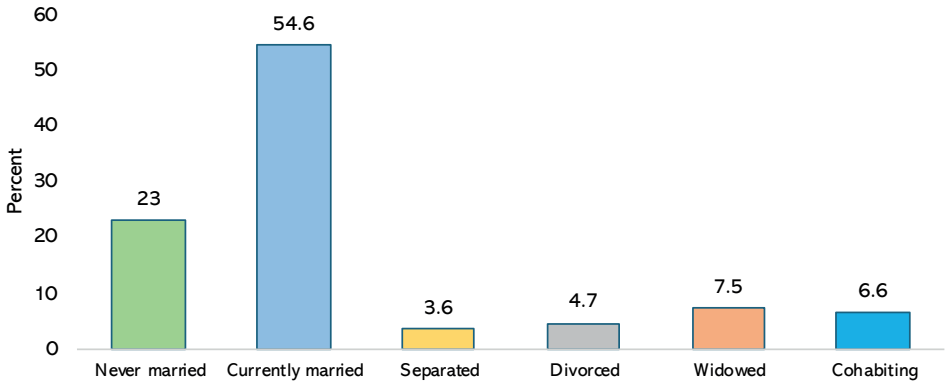

Figure 3.1.4.1: Bar chart of the marital status of all respondents

3.1.5 Employment Status of Respondents

The majority of respondents (67.8%) are self-employed. Unpaid respondents, including students, homemakers, retirees, and the unemployed, account for 20.2%. Government employees constitute only 4.7% of the respondents. (Refer to Table 3.1.5.1.)

Table 3.1.5.1: Employment status of respondents

Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
18-29	1423	2.6	10.3	41.0	46.0
30-44	2114	7.6	7.5	75.8	9.2
45-59	1331	3.8	5.7	82.9	7.6
60-69	570	1.1	3.2	69.5	26.3
18-69	**5438**	**4.7**	**7.3**	**67.8**	**20.2**

The unpaid respondents comprised students (24.3%), unpaid workers (21.2%), homemakers (10.0%), retirees (6.3%), those unemployed but able to work (30.6%), and those unemployed and unable to work (7.6%).

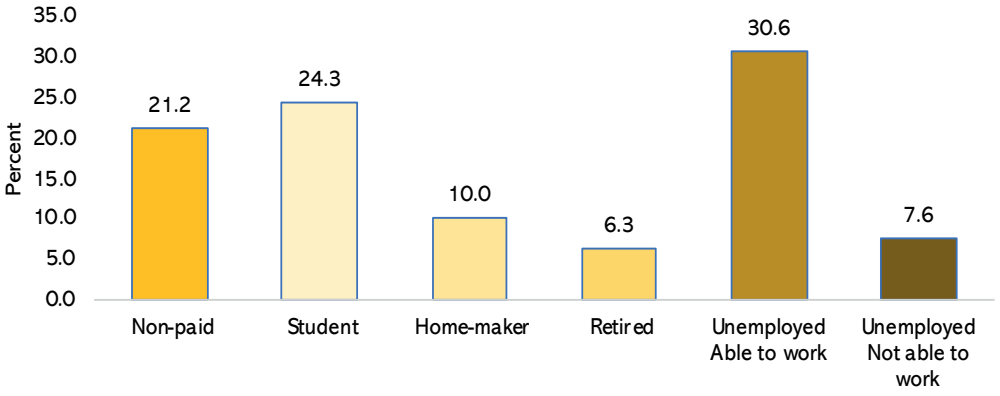

Figure 3.1.5.1: Bar chart of categories of unpaid employment status of respondents

3.2 Tobacco Use

3.2.1 Current Smokers

Among adults aged 18–69 years, 4.8% currently smoke tobacco, with 9.3% (95% CI: 7.2–11.4) of men and 0.3% (95% CI: 0.1–0.5) of women being smokers. There is a significant difference in the proportion of men and women who smoke. Table 3.2.1.1 below presents the age group and sex distribution of current smokers among men and women.

Table 3.2.1.1: Percentage of current smokers among men and women

Age Group (years)	Men			Women			Both Sexes		
	n	% Current smoker	95% CI	n	% Current smoker	95% CI	n	% Current smoker	95% CI
18-29	550	9.6	5.7-13.5	873	0.4	0.0-0.8	1423	5.2	3.1-7.4
30-44	721	7.6	5.4-9.7	1393	0.2	0.0-0.4	2114	3.8	2.7-4.8
45-59	519	9.6	6.2-12.9	812	0.5	0.0-1.1	1331	4.9	3.2-6.7
60-69	232	14.5	9.3-19.7	338	0.0	0.0-0.0	570	7.3	4.7-9.9
18-69	**2022**	**9.3**	**7.2-11.4**	**3416**	**0.3**	**0.1-0.5**	**5438**	**4.8**	**3.8-5.9**

There is no significant difference in the proportion of current smokers between urban dwellers (5.2%, 95% CI: 3.6-6.9) and rural dweller (4.3%, 95% CI: 3.1-5.3).

3.2.2 Current Daily Smokers Among Smoking Population

More than half (64.8%) of current smokers smoke daily. Among these, 65.6% of men and 38.6% of women smoke daily. The age group and sex distribution of daily smokers is presented in Table 3.2.2.1.

Table 3.2.2.1: Percentage of current daily smokers among smokers

Age Group (years)	Men			Women			Both Sexes		
	n	% Daily smokers	95% CI	n	% Daily smokers	95% CI	n	% Daily smokers	95% CI
18-29	40	61.2	40.9-81.4	4	52.3	0.0-100.0	44	60.8	41.3-80.4
30-44	59	58.7	44.3-73.2	2	57.2	0.0-100.0	61	58.7	44.4-73.0
45-59	50	89.3	78.3-100.0	2	0.0	0.0-0.0	52	84.8	72.8-96.9
60-69	36	61.5	42.0-81.1	-	-	-	36	61.5	42.0-81.1
18-69	**185**	**65.6**	**55.2-76.0**	**8**	**38.6**	**0.0-100.0**	**193**	**64.8**	**54.6-74.9**

3.2.3 Initiation and Duration of Smoking

Younger generations (18–29 years), with a mean age of 19 (95% CI: 17.3–20.2), began smoking at an earlier age compared to the older generation (60–69 years), who started smoking at a mean age of 28 (95% CI: 21.6–34.3). The mean duration of smoking increases with age, from 5.2 years among the 18–29 years group to 35.2 years in the 60–69 years group.

There is a significant difference in the average age at which smoking begins between urban and rural respondents. Urban respondents started smoking at an average age of 21.0 years, while rural respondents began at an average age of 25.0 years. Table 3.2.3.1 displays the mean age of starting smoking among respondents.

Table 3.2.3.1: Mean age of starting smoking

Age Group (years)	Men			Women			Both Sexes		
	n	Mean age	95% CI	n	Mean age	95% CI	n	Mean age	95% CI
18-29	21	19	-	-	-	-	23	19	17.3-20.2
30-44	38	23	-	-	-	-	39	23	20.9-25.6
45-59	44	26	-	-	-	-	44	26	23.1-29.0
60-69	22	28	-	-	-	-	22	28	21.6-34.3
Residency									
Rural	73	25	-	-	-	-	73	25	22.3-27.6
Urban	52	21	-	-	-	-	55	21	19.1-22.2
Total	**125**	**22**	**-**	**-**	**-**	**-**	**128**	**22**	**20.7-23.8**

The empty cells are due to insignificant results arising from the very small numbers involved.*

3.2.4 Manufactured Cigarette Smokers

The proportion of current smokers who use manufactured cigarettes was 66.7%. Approximately 73.6% of daily smokers use manufactured cigarettes, with this pattern being more common among men. There are no significant differences in the proportion of manufactured cigarette use between age groups among both current and daily smokers. Additionally, the proportion of those smoking manufactured cigarettes and the mean number of cigarettes smoked per day did not vary significantly between urban and rural dwellers.

3.2.5 Amount of Tobacco Used Among Daily Smokers by Type

The mean numbers of various types of tobacco used by daily smokers differed significantly: manufactured cigarettes had a mean of 3.0 (95% CI: 2.2–3.9), hand-rolled cigarettes 1.3 (95% CI: 0.6–2.0), pipes of tobacco 0.1 (95% CI: 0.0–0.3), cigars/cheroots/cigarillos 0.2 (95% CI: 0.0–0.4), and other types of tobacco 0.7 (95% CI: 0.0–1.5). Shisha use was predominantly observed among the 18–29-year age group, with a mean number of sessions of 0.1.

3.2.6 Percentage of Current Smokers by Type of Tobacco

A significant percentage of smokers use various types of tobacco: 66.7% smoke manufactured cigarettes, 40.5% smoke hand-rolled cigarettes, 10.2% use cigars, 7.8% use shisha, 3.8% use pipes, and 15.4% smoke other types.

The proportion of current smokers who use shisha is 7.8%, with a higher prevalence among the 18–29 years age group (78.6%) and a greater proportion among women. While only 6.6% of male smokers use shisha, 44.0% of female smokers do. Of the women who smoke shisha, 78.6% are in the 18–29 years age group.

The percentage of current smokers by type of tobacco is detailed in Table 3.2.6.1.

Table 3.2.6.1: Percentage of current smokers by type of tobacco

Age Group (years)	n	% Manuf. cigs.	95% CI	n	% Hand-rolled cigs.	95% CI	n	% Pipes of tobacco	95% CI	n	% Cigars, cheroots, cigarillos	95% CI	n	% Shisha	95% CI	n	% Other	95% CI
18-29	44	60.2	40.4-80.1	44	47.7	24.5-70.9	44	4.5	0.0-10.4	44	13.8	1.9-25.7	44	12.7	2.1-23.2	44	28.3	4.0-52.6
30-44	61	70.7	56.6-84.7	61	36.2	22.4-50.0	61	4.5	0.0-9.9	61	7.9	0.4-15.5	61	4	0.0-11.7	61	4.4	0.0-9.4
45-59	52	77.2	64.9-89.4	52	30.9	16.9-44.9	52	1.7	0.0-4.4	52	4.5	0.3-8.6	52	2.8	0.0-8.4	52	1.9	0.0-4.7
60-69	36	70.1	52.4-87.8	35	32.6	14.4-50.9	36	2.5	0.0-6.3	36	8.5	0.0-19.6	35	1.9	0.0-5.6	36	3.1	0.0-7.3
18-69	**193**	**66.7**	**56.6-76.8**	**192**	**40.5**	**29.1-51.9**	**193**	**3.8**	**0.7-6.9**	**193**	**10.2**	**4.0-16.4**	**192**	**7.8**	**2.4-13.1**	**193**	**15.4**	**2.2-28.7**

Table 3.2.6.2: Percentage of current smokers who smoke Shisha

Age Group (years)	Men			Women			Both Sexes		
	n	% Smoke Shisha	95% CI	n	% Smoke Shisha	95% CI	n	% Smoke Shisha	95% CI
18-29	40	10.1	0.0-20.1	4	78.6	6.6-150.6	44	12.7	2.1-23.2
30-44	59	4.1	-3.8-11.9	2	-	-	61	4.0	0.0-11.7
45-59	50	3.0	-2.9-8.9	2	-	-	52	2.8	0.0-8.4
60-69	35	1.9	-1.8-5.6	0	-	-	35	1.9	0.0-5.6
18-69	**184**	**6.6**	**1.3-11.8**	**8**	**44.0**	**-30.6-118.6**	**192**	**7.8**	**2.4-13.1**

3.2.7 Current Smokers Who have Attempted to Quit

The majority of current smokers have attempted to quit. Overall, 62.3% of current smokers have tried to stop smoking. Among female smokers, 68.8% have attempted to quit, while 62.1% of male smokers have done the same. Only 25% of current smokers have received advice from a doctor or health worker to stop smoking. Table 3.2.7.1 presents the percentage of current smokers who have tried to quit.

Table 3.2.7.1: Percentage of current smokers who have tried to stop smoking

Age Group (years)	Men			Women			Both Sexes		
	n	% Tried to stop smoking	95% CI	n	% Tried to stop smoking	95% CI	n	% Tried to stop smoking	95% CI
18-29	40	66.3	41.4-91.2	4	69.1	0.0-100.0	44	66.4	42.4-90.5
30-44	59	69.8	56.9-82.6	2	100.0	100.0-100.0	61	70.4	57.9-83.0
45-59	50	38.9	21.6-56.2	2	49.7	0.0-100.0	52	39.5	22.7-56.3
60-69	36	64.3	43.9-84.7	-	-	-	36	64.3	43.9-84.7
18-69	**185**	**62.1**	**48.9-75.2**	**8**	**68.8**	**58.3-79.4**	**193**	**62.3**	**49.6-75.0**

3.2.8 Current Users of Smokeless Tobacco

The proportion of smokers who use smokeless tobacco is 5.2%, with a significant predominance among males (7.7%, 95% CI: 6.2–9.2) compared to females (5.2%, 95% CI: 4.3–6.0). The younger age group (18–29 years) uses less smokeless tobacco (2.1%, 95% CI: 1.1–3.1) compared to the older age groups.

Status of Smokeless Tobacco Use

Overall, 2.1% of the population uses smokeless tobacco daily, 3.1% use it non-daily, and 6.3% have used it in the past. However, 88.6% of respondents have never used smokeless tobacco products.

Among current users, 3.0% of men use smokeless tobacco daily, compared to only 1.1% of women. Past usage of smokeless tobacco is higher among men (9.7%) than women (2.8%).

The proportion of rural dwellers who use smokeless tobacco daily (3.3%, 95% CI: 2.3–4.3) is significantly higher than that of urban dwellers (1.3%, 95% CI: 0.7–1.8). Although non-daily use of smokeless tobacco does not show a significant difference by residency, past use is significantly higher among rural dwellers (8.0%) compared to urban dwellers (5.1%).

Table 3.2.9.1 presents the age group and residency distribution of users and non-users of smokeless tobacco.

Table 3.2.9.1: Users and non-users of smokeless tobacco.

Age Group (years)	n	Current user				Non user			
		% Daily	95% CI	% Non-daily	95% CI	% Past user	95% CI	% Never used	95% CI
18-29	1423	1.0	0.3-1.7	1.1	0.3-1.8	3.9	2.7-5.2	94.0	92.3-95.7
30-44	2114	2.3	1.5-3.1	4.0	2.6-5.3	7.7	6.1-9.4	86.0	83.9-88.2
45-59	1331	4.4	2.8-6.0	5.5	3.4-7.6	8.7	6.5-10.9	81.4	78.3-84.5
60-69	570	2.3	0.9-3.6	5.9	3.4-8.4	9.3	5.8-12.8	82.6	78.4-86.7
Residency									
Rural	2575	3.3	2.3-4.3	3.0	2.2-3.8	8.0	6.5-9.6	85.6	83.4-87.9
Urban	2863	1.3	0.7-1.8	3.1	2.1-4.1	5.1	3.9-6.4	90.5	88.9-92.2
Total	**5438**	**2.1**	**1.6-2.6**	**3.1**	**2.4-3.7**	**6.3**	**5.3-7.3**	**88.6**	**87.2-89.9**

3.2.8 Type of Smokeless Tobacco Use Among Current Users

The types of smokeless tobacco commonly used by current users include snuff by mouth, snuff by nose, and chewable tobacco. Among current users, 68.1% (95% CI: 60.2–76.0) use snuff by nose, 33.9% (95% CI: 26.0–41.8) use snuff by mouth, and only 6.1% (95% CI: 1.5–10.7) use chewable tobacco. Table 3.2.10.1 shows the age group and types of smokeless tobacco used among users.

Table 3.2.10.1: Type of smokeless tobacco use among all current users

Age Group (years)	n	% Snuff by mouth	95% CI	% Snuff by nose	95% CI	% Chewing tobacco	95% CI	% Other	95% CI
18-29	29	32.5	10.1-55.0	75.8	53.8-97.7	0.9	0.0-2.8	0.7	0.0-2.2
30-44	116	36.0	25.8-46.2	66.5	52.4-80.7	7.6	0.0-17.9	2.6	0.0-6.1
45-59	104	32.9	19.1-46.6	65.6	53.4-77.8	8.0	1.8-14.2	1.0	0.0-2.2
60-69	46	32.1	13.4-50.8	68.2	51.9-84.5	3.4	0.0-8.0	2.2	0.0-6.5
18-69	**295**	**33.9**	**26.0-41.8**	**68.1**	**60.2-76.0**	**6.1**	**1.5-10.7**	**1.7**	**0.2-3.2**

There are no significant differences in tobacco use among the various age groups, whether as daily users or current users. A significant proportion of men are current tobacco users (15.9%, 95% CI: 13.3–18.4) and daily tobacco users (9.0%, 95% CI: 7.0–11.0), compared to women, with 2.9% (95% CI: 2.1–3.7) and 1.3% (95% CI: 0.8–1.7) respectively.

3.2.10 Exposure to Second-hand Smoke

Both men and women are similarly exposed to second-hand smoke in the home environment, with 15.2% of men and 13.3% of women being exposed. There are no significant differences in exposure to second-hand smoke at home between the sexes or across various age groups.

However, exposure to second-hand smoke at the workplace is significantly higher among men (23.6%, 95% CI: 20.8–26.4) compared to women (16.2%, 95% CI: 14.2–18.2). This difference is particularly pronounced in the 30–44 years age group, where a significant disparity between men and women is observed. Table 3.2.10.1 presents the extent of exposure to second-hand smoke at the workplace in the 30 days prior to the survey.

Table 3.2.11.1: Exposure to second-hand smoke at the workplace

Age Group (years)	Men			Women			Both Sexes		
	n	% Exposed	95% CI	n	% Exposed	95% CI	n	% Exposed	95% CI
18-29	451	22.8	17.7-27.9	736	16.0	12.9-19.1	1187	19.5	16.4-22.5
30-44	592	26.6	22.4-30.9	1148	17.0	14.3-19.8	1740	21.7	19.1-24.3
45-59	421	22.8	17.6-28.0	634	16.4	12.5-20.2	1055	19.6	16.5-22.6
60-69	190	16.4	9.9-23.0	263	13.0	7.8-18.2	453	14.8	10.6-18.9
18-69	**1654**	**23.6**	**20.8-26.4**	**2781**	**16.2**	**14.2-18.2**	**4435**	**19.9**	**18.1-21.7**

3.3 Alcohol Consumption

3.3.1 Alcohol Consumption Status

Adults who have never consumed alcohol, referred to as lifetime abstainers, make up 43.9% of the population. In contrast, 56.1% of the population has consumed alcohol at some point. Currently, 22.6% of adults aged 18–69 years drink alcohol, with 30.6% (95% CI: 27.4–33.8) of men and 14.5% (95% CI: 12.5–16.4) of women being current drinkers. There is a significant difference between men and women, with a higher proportion of men currently consuming alcohol. The proportion of current alcohol consumers increases with age, with younger adults aged 18–29 years drinking significantly less compared to older generations. Table 3.3.1.1 provides details on age groups, residency, and alcohol consumption status among respondents.

Table 3.3.1.1: Alcohol consumption status of the population

Age Group (years)	Both Sexes								
	n	% Current drinker (past 30 days)	95% CI	% Drank in past 12 months, not current	95% CI	% Past 12 months abstainer	95% CI	% Life-time abstainer	95% CI
18-29	1423	14.1	11.4-16.7	16.7	13.9-19.6	17.6	14.9-20.3	51.6	47.2-55.9
30-44	2114	28.6	25.7-31.4	12.1	10.2-13.9	19.8	17.7-21.9	39.6	36.4-42.7
45-59	1331	30.2	26.3-34.1	10.5	8.4-12.5	22.6	19.7-25.6	36.7	32.6-40.8
60-69	570	32.4	27.3-37.6	9.2	6.2-12.2	28.0	22.7-33.3	30.4	25.6-35.1
Residency									
Rural	2575	28.4	24.9-32.0	13.5	11.5-15.5	17.3	14.9-19.7	40.7	36.6-44.8
Urban	2863	18.6	16.1-21.2	13.8	11.5-16.1	21.5	19.0-24.0	46.0	41.4-50.6
Total	**5438**	**22.6**	**20.5-24.7**	**13.7**	**12.1-15.3**	**19.8**	**18.2-21.5**	**43.9**	**40.9-46.9**

There is a significant variation in the proportion of current alcohol drinkers between urban and rural populations. In urban areas, 18.6% (95% CI: 16.1–21.1) of adults currently drink alcohol, compared to 28.4% (95% CI: 24.9–32.0) in rural areas.

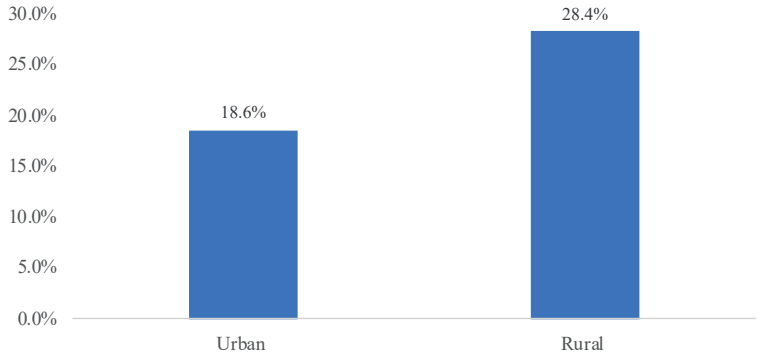

Figure 3.3.1.1: Bar chart showing proportion of urban and rural population who currently drink alcohol

3.3.2 Quitting Alcohol Consumption for Health Reasons

Overall, 20.5% of individuals who drink alcohol have had to stop due to health reasons. This proportion is similar across different age groups and sexes, indicating that the decision to stop drinking is more closely related to the negative health impacts of alcohol rather than aging itself. The lack of significant variation with age suggests that health concerns, rather than age-related factors, are the primary influence. Table 3.3.2.1 presents the proportion of respondents in each age group who have stopped drinking due to health reasons.

Table 3.3.2.1: Proportion of people stopping drinking of alcohol due to health reasons

Age Group (years)	Men			Women			Both Sexes		
	n	% stopping due to health reasons	95% CI	n	% stopping due to health reasons	95% CI	n	% stopping due to health reasons	95% CI
18-29	83	25.9	11.9-39.8	178	12.4	6.0-18.8	261	18.0	11.0-24.9
30-44	107	24.5	15.3-33.6	326	17.4	12.7-22.2	433	20.2	15.6-24.9
45-59	81	22.1	11.8-32.3	222	22.1	15.5-28.7	303	22.1	16.4-27.8
60-69	37	30.0	13.6-46.5	123	28.7	17.5-39.9	160	29.1	19.7-38.6
18-69	**308**	**25.0**	**17.7-32.3**	**849**	**17.6**	**13.9-21.2**	**1157**	**20.5**	**16.9-24.1**

3.3.3 Alcohol Consumption Levels Among Current Drinkers: High-end, Intermediate, and Low

In the context of alcohol consumption, high-end drinkers are defined as those consuming ≥60g of pure alcohol per occasion for men and ≥40g for women. Intermediate drinkers consume 40–59.9g of pure alcohol per occasion for men and 20–39.9g for women. Lower-end drinkers consume less than 40g for men and less than 20g for women per occasion.

The majority of current alcohol drinkers are classified as lower-end drinkers (83.9%), followed by intermediate drinkers (12.3%), with high-end drinkers constituting only 3.8%. Table 3.3.3.1 displays the age group and drinking levels of current drinkers.

Table 3.3.3.1: Level of alcohol drinking among current drinkers

Age Group (years)	n	% high-end	95% CI	% intermediate	95% CI	% lower-end	95% CI
18-29	205	3.3	0.6-6.0	11.6	6.9-16.3	85.1	80.0-90.2
30-44	538	3.6	1.8-5.4	12.4	9.2-15.6	84.0	80.5-87.5
45-59	375	5.8	2.3-9.3	12.6	8.7-16.6	81.6	76.4-86.7
60-69	157	0.9	0.0-2.6	13.7	6.7-20.8	85.4	78.2-92.5
18-69	**1275**	**3.8**	**2.5-5.1**	**12.3**	**10.2-14.5**	**83.9**	**81.6-86.2**

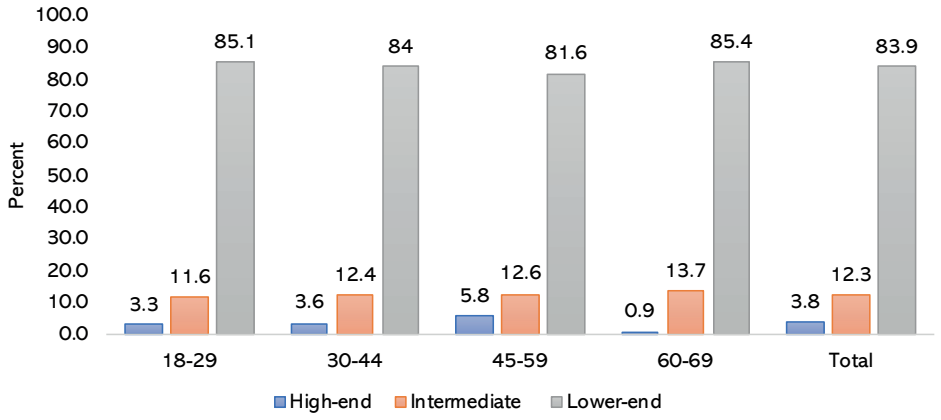

Figure 3.3.3.1: Bar chart showing age groups and level of alcohol drinkers among current drinkers

3.3.4 Mean Number of Standard Drinks Per Occasion Among Current Drinkers

The mean number of standard drinks consumed per occasion is 2.1 for the population. There is a significant difference between the mean number of standard drinks consumed by men and women. Men consume an average of 2.3 (95% CI: 2.1–2.5) standard drinks per occasion, while women consume 1.7 (95% CI: 1.4–2.0) standard drinks per occasion. The mean number of standard drinks consumed per occasion does not vary significantly between younger and older age groups. Table 3.3.4.1 presents the distribution of the number of standard drinks per occasion by age group and sex among current drinkers.

Table 3.3.4.1: Mean maximum number of standard drinks consumed on one occasion by current alcohol drinkers in the past 30 days.

Age Group (years)	Men			Women			Both Sexes		
	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI
18-29	109	2.0	1.6-2.3	94	1.5	1.3-1.7	203	1.8	1.6-2.0
30-44	300	2.4	2.2-2.7	236	1.7	1.5-1.8	536	2.2	2.0-2.4
45-59	213	2.5	2.2-2.8	161	2.1	1.1-3.1	374	2.4	2.0-2.8
60-69	103	2.2	1.8-2.5	52	1.5	1.2-1.7	155	2.0	1.7-2.2
18-69	**725**	**2.3**	**2.1-2.5**	**543**	**1.7**	**1.4-2.0**	**1268**	**2.1**	**2.0-2.3**

3.3.5 Six or More drinks Per Occasion (Heavy Episodic Drinking) Among the Population.

The proportion of the population engaged in heavy episodic drinking (defined as consuming six or more drinks on a single occasion) is 2.5%. A higher percentage of men (3.6%, 95% CI: 2.7–4.5) engage in heavy episodic drinking compared to women (1.4%, 95% CI: 0.8–1.9). Additionally, a slightly higher proportion of people in rural settings participate in heavy episodic drinking compared to those in urban settings.

The table below shows age group and sex distribution of heavy episodic drinking among respondents.

Table 3.3.5.1: Heavy episodic drinkers (six or more drinks) on a single occasion at least once during the past 30 days among total population

Age Group (years)	Men			Women			Both Sexes		
	n	% ≥ 6 drinks	95% CI	n	% ≥ 6 drinks	95% CI	n	% ≥ 6 drinks	95% CI
18-29	547	0.9	0.2-1.6	867	1.1	0.3-1.9	1414	1.0	0.5-1.5
30-44	698	5.7	3.7-7.6	1383	1.6	0.7-2.4	2081	3.5	2.5-4.5
45-59	504	7.1	4.3-9.9	807	1.9	0.6-3.3	1311	4.5	3.0-6.0
60-69	229	4.7	1.8-7.7	334	0.7	0.0-1.5	563	2.7	1.1-4.3
18-69	**1978**	**3.6**	**2.7-4.5**	**3391**	**1.4**	**0.8-1.9**	**5369**	**2.5**	**2.0-3.0**

3.3.6 Consumption of Unrecorded Alcohol

This section examines the proportion of the population that consumed unrecorded alcohol—such as home-brewed alcohol, alcohol smuggled across borders, alcohol not intended for drinking, or other untaxed alcohol—during the past 7 days among current drinkers (those who have drunk in the past 30 days).

A significant proportion of current drinkers (41.3%) consume unrecorded alcohol, with 44.0% (95% CI: 38.9–49.0) of men and 35.6% (95% CI: 29.8–41.3) of women engaging in such consumption. There are no significant differences in the proportions across various age groups or between sexes. Table 3.3.6.1 presents the proportions of unrecorded alcohol consumption by age group and sex.

Table 3.3.6.1: Proportions of respondents consuming unrecorded alcohol

Age Group (years)	Men			Women			Both Sexes		
	n	% consuming unrecorded alcohol	95% CI	n	% consuming unrecorded alcohol	95% CI	n	% consuming unrecorded alcohol	95% CI
18-29	108	32.2	21.8-42.5	93	24.7	14.1-35.3	201	29.5	22.1-36.9
30-44	304	45.1	37.9-52.3	226	34.5	26.9-42.2	530	42.1	36.5-47.7
45-59	215	55.4	46.2-64.7	157	49.0	38.4-59.5	372	53.3	46.1-60.4
60-69	100	43.8	30.4-57.1	51	40.2	23.1-57.3	151	42.8	31.3-54.4
18-69	**727**	**44.0**	**38.9-49.0**	**527**	**35.6**	**29.8-41.3**	**1254**	**41.3**	**37.4-45.3**

3.3.7 Frequency of Impaired Control Over Alcohol Consumption

The frequency of being unable to stop drinking once started in the past 12 months was assessed among drinkers. A high proportion of individuals (82.3%) are able to stop drinking once they start. Specifically, 77.1% of men and 90.4% of women are able to stop drinking once they begin. There are no significant differences among the various age groups in their ability to stop drinking once started. Table 3.3.7.1 presents the age groupings and frequency of instances where individuals are unable to stop drinking once they start.

Table 3.3.7.1: Frequency of not being able to stop drinking alcohol once started

Age Group (years)	n	% monthly or more frequently	95% CI	% less than monthly	95% CI	% never	95% CI
18-29	447	7.8	4.8-10.8	3.7	1.4-6.0	88.5	84.8-92.3
30-44	815	13.9	10.6-17.2	3.9	2.1-5.6	82.3	78.7-85.8
45-59	528	17.9	13.5-22.4	7.5	4.8-10.2	74.6	69.8-79.4
60-69	209	21.8	12.3-31.3	7.8	3.2-12.4	70.4	60.7-80.1
18-69	**1999**	**12.9**	**10.9-15.0**	**4.8**	**3.5-6.1**	**82.3**	**79.9-84.6**

3.3.7 Frequency of Alcohol Consumption in the Morning

Needing a drink first thing in the morning to get going after a heavy drinking session is a behaviour observed among some alcohol drinkers. Among men, 10.4% and among women, 3.9% sometimes needed a first drink in the morning to start their day in the past 12 months. Among individuals who have consumed alcohol in the past 12 months, 7.8% reported sometimes needing a first drink in the morning. Table 3.3.8.1 presents the age groups and frequency of needing a drink first thing in the morning among drinkers within the past 12 months.

Table 3.3.8.1: Proportion of people needing a first drink in the morning to get going

Age Group (years)	n	% monthly or more frequently	95% CI	% less than monthly	95% CI	% never	95% CI
18-29	447	1.0	0.0-2.3	1.8	0.2-3.5	97.1	95.0-99.2
30-44	815	7.0	4.8-9.1	3.1	1.5-4.8	89.9	87.3-92.5
45-59	528	8.9	5.8-12.1	2.0	0.8-3.3	89.0	85.7-92.3
60-69	209	12.8	6.1-19.6	1.8	0.2-3.4	85.3	78.5-92.2
18-69	**1999**	**5.5**	**4.3-6.8**	**2.3**	**1.4-3.3**	**92.2**	**90.6-93.7**

Alcohol consumption can impact individuals' ability to function optimally. Among those who have consumed alcohol in the past 12 months, 10.6% of men and 5.3% of women reported failing to meet their usual expectations following some drinking sessions.

3.4 Diet

3.4.1 Mean Number of Days of Fruit and Vegetable Consumption

Among the adult population, the mean number of days they consume fruits in a typical week is 2.2 days, while for vegetables, the mean number of days is 6.0 days. The mean number of days for consuming both fruits and vegetables does not differ significantly among different age groups or between sexes. However, the mean number of days for vegetable consumption (6.0 days) is higher than for fruit

consumption across all groups, although this difference is not statistically significant. Tables 3.4.1.1 and 3.4.1.2 present the mean number of days for fruit and vegetable consumption, respectively, in a typical week.

Table 3.4.1.1: Mean number of days fruits was consumed in a typical week.

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean Number of days	95% CI
18-29	541	2.0	1.8-2.2	856	2.0	1.8-2.1	1397	2.0	1.9-2.1
30-44	706	2.5	2.3-2.7	1362	2.3	2.1-2.5	2068	2.4	2.3-2.6
45-59	501	2.4	2.2-2.6	793	2.3	2.1-2.5	1294	2.4	2.2-2.5
60-69	220	2.2	1.9-2.6	325	2.0	1.8-2.2	545	2.1	1.9-2.3
18-69	**1968**	**2.2**	**2.1-2.4**	**3336**	**2.1**	**2.0-2.2**	**5304**	**2.2**	**2.1-2.3**

Table 3.4.1.2: Age and sex distribution of mean number of days vegetables was consumed in a typical week.

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean Number of days	95% CI
18-29	544	5.6	5.4-5.9	872	6.1	5.9-6.2	1416	5.8	5.7-6.0
30-44	719	6.0	5.9-6.2	1390	6.1	6.0-6.2	2109	6.1	5.9-6.2
45-59	518	6.1	5.9-6.2	808	6.1	5.9-6.3	1326	6.1	5.9-6.2
60-69	232	6.3	6.0-6.5	338	6.0	5.8-6.3	570	6.2	6.0-6.3
18-69	**2013**	**5.9**	**5.7-6.0**	**3408**	**6.1**	**6.0-6.2**	**5421**	**6.0**	**5.9-6.1**

The mean number of days people consume fruits and vegetables does not differ between urban and rural populations, and there is no significant variation among different age groups.

3.4.2 Mean Number of Servings* of Fruits and Vegetables Consumed

The consumption of an adequate number of fruit servings is low among the population. On average, majority of individuals consume less than one serving (0.8 servings) of fruit per day. There are no significant differences in fruit consumption among various age groups or sexes, and no variation is observed between urban and rural populations. Table 3.4.2.1 displays the mean number of fruit servings consumed on average per day.

Table 3.4.2.1: Mean number of servings of fruits on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean Number of servings	95% CI
18-29	540	0.8	0.6-0.9	853	0.6	0.6-0.7	1393	0.7	0.6-0.8
30-44	705	1.0	0.9-1.2	1358	0.9	0.8-1.0	2063	0.9	0.9-1.0
45-59	498	0.8	0.7-0.9	791	0.7	0.6-0.8	1289	0.8	0.7-0.8
60-69	220	0.8	0.6-0.9	325	0.6	0.5-0.7	545	0.7	0.6-0.8
18-69	**1963**	**0.9**	**0.8-0.9**	**3327**	**0.7**	**0.7-0.8**	**5290**	**0.8**	**0.7-0.8**

*A serving is equivalent to 80 grams of fruits or vegetables, or one of the following:

- 1 cup of green leafy vegetables
- 1 medium-sized banana, orange, or apple
- ½ cup of chopped, cooked, or canned fruits or vegetables
- ½ cup of fruit or vegetable juice

Although the mean number of days vegetables are consumed per week is 6, the average number of servings per day is only 2.7. Men average 2.6 servings per day, while women average 2.9 servings per day. There are no significant differences in the average number of vegetable servings per day among different age groups. Table 3.4.2.2 presents the mean number of vegetable servings consumed per day among the population.

Table 3.4.2.2: Mean number of servings of vegetables per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
18-29	540	2.2	2.0-2.5	863	2.8	2.5-3.1	1403	2.5	2.3-2.7
30-44	710	2.8	2.6-3.0	1381	3.1	2.8-3.4	2091	2.9	2.8-3.1
45-59	509	2.9	2.6-3.2	802	2.9	2.6-3.1	1311	2.9	2.7-3.1
60-69	228	3.0	2.6-3.4	336	2.8	2.5-3.2	564	2.9	2.6-3.2
18-69	1987	2.6	2.4-2.7	3382	2.9	2.7-3.1	5369	2.7	2.6-2.9

3.4.3 Average Daily Servings of Fruits and Vegetables

The majority of the population, 76.0%, consume fewer than 5 servings of fruits and/or vegetables on average per day. Only 24.0% of individuals meet the recommended intake of more than 5 servings per day. There are no significant differences in consumption patterns among various age groups. Table 3.4.3.1 displays the average number of servings of fruits and/or vegetables consumed per day.

Table 3.4.3.1: Number of servings of fruits and/or vegetable on average per day

Age Group (years)	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
18-29	1414	9.4	7.1-11.6	48.5	44.8-52.1	22.0	19.0-25.0	20.1	17.0-23.3
30-44	2101	8.2	6.6-9.9	39.4	36.5-42.2	23.8	21.4-26.3	28.6	25.4-31.8
45-59	1324	9.6	7.0-12.1	38.3	34.6-41.9	26.5	23.3-29.6	25.7	22.4-29.0
60-69	566	9.3	5.5-13.2	38.8	33.4-44.2	26.8	22.1-31.6	25.1	20.4-29.7
18-69	**5405**	**9.0**	**7.6-10.5**	**43.2**	**41.1-45.4**	**23.7**	**21.8-25.6**	**24.0**	**21.9-26.2**

*A serving is equivalent to 80 grams of fruits or vegetables, or one of the following:

- 1 cup of green leafy vegetables
- 1 medium-sized banana, orange, or apple
- ½ cup of chopped, cooked, or canned fruits or vegetables
- ½ cup of fruit or vegetable juice

3.5 Salt Intake

3.5.1 Adding Salt to Meals

13.0% of the population always or often add salt or salty sauces, such as soy or Maggi sauce, to their meals before or during eating. Among the sexes, 12.6% of males and 13.3% of females engage in this behaviour. In urban settings, 13.7% of the population frequently adds salt or salty sauces, compared to 11.9% in rural areas. There are no significant differences between men and women in either rural or urban populations regarding the frequency of adding salt to meals. Table 3.5.1.1 presents the proportions of individuals who add salt to their meals, broken down by age group and residency.

Table 3.5.1.1: Proportion of population who add salt always or often before eating or when eating.

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	548	14.2	9.9-18.5	872	13.8	10.4-17.1	1420	14.0	11.1-16.9
30-44	720	10.6	7.7-13.6	1393	14.4	11.4-17.5	2113	12.6	10.3-14.8
45-59	519	10.9	7.6-14.2	811	11.7	8.9-14.4	1330	11.3	9.1-13.4
60-69	232	15.4	8.3-22.5	338	9.5	5.3-13.7	570	12.5	7.5-17.5
Residency									
Rural	1032	11.8	9.1-14.4	1540	12.1	9.9-14.3	2572	11.9	11.1-16.9
Urban	987	13.3	9.5-17.0	1874	14.1	11.4-16.7	2861	13.7	10.3-14.8
Total	**2019**	**12.6**	**10.2-15.0**	**3414**	**13.3**	**11.5-15.2**	**5433**	**13.0**	**11.2-14.7**

3.5.2 Adding Salt When Cooking at Home

The percentage of the population who always or often add salt to their food when cooking or preparing meals at home is 90.5%. Only 9.5% of the population does not use salt or salty sauces during cooking at home. There is a significant difference in the proportion of urban (88.4%, 95% CI: 86.3–90.5) versus rural dwellers (93.6%, 95% CI: 92.2–95.0) who add salt to their food regularly during home cooking or preparation. Table 3.5.2.1 shows the proportions of the population who add salt always or often when cooking or preparing food at home.

Table 3.5.2.1: Proportion of the population adding salt always or often when cooking or preparing food at home

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	547	92.1	89.1-95.0	873	92.7	90.5-94.9	1420	92.4	90.4-94.4
30-44	720	89.3	86.4-92.3	1393	91.5	89.6-93.4	2113	90.5	88.7-92.3
45-59	517	87.7	83.8-91.6	812	85.7	82.1-89.4	1329	86.7	83.9-89.6
60-69	229	89.4	84.8-94.0	338	86.1	81.1-91.2	567	87.8	84.3-91.2
Residency									
Rural	1029	93.5	89.1-95.0	1541	93.7	91.8-95.7	2570	93.6	92.2-95.0
Urban	984	88.0	86.4-92.3	1875	88.8	86.5-91.1	2859	88.4	86.3-90.5
Total	**2013**	**90.3**	**88.5-92.2**	**3416**	**90.7**	**89.1-92.2**	**5429**	**90.5**	**89.2-91.8**

3.5.2 Consumption of Salty Processed Foods

The proportion of the population who always or often consume processed foods high in salt is 22.8%. Among men, 21.0% and among women, 24.7% regularly eat salty processed foods. Although a higher proportion of women consume these foods, there is no statistically significant difference between sexes or among different age groups. The only significant difference observed is between rural men and women, with significantly more women (26.0%, 95% CI: 22.3–29.7) consuming salty processed foods compared to men (19.5%, 95% CI: 16.2–22.9). Overall, 23.1% of urban dwellers and 22.5% of rural dwellers always or often consume processed foods high in salt. Table 3.5.3.1 shows the proportions of the population by age groups and residence who regularly consume salty processed foods.

Table 3.5.3.1: Proportion of the population who always or often consume processed food high in salt

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	549	19.0	14.0-23.9	873	22.4	18.9-25.9	1422	20.6	17.3-23.9
30-44	720	21.6	18.1-25.1	1391	27.1	24.1-30.1	2111	24.4	22.0-26.9
45-59	519	24.0	19.3-28.7	812	26.3	22.6-30.0	1331	25.2	22.0-28.3
60-69	232	24.8	18.3-31.2	338	24.5	16.8-32.2	570	24.6	19.4-29.9
Residency									
Rural	1033	19.5	16.2-22.9	1540	26.0	22.3-29.7	2573	22.5	19.6-25.5
Urban	987	22.1	17.8-26.4	1874	24.0	21.1-26.8	2861	23.1	20.1-26.0
Total	2020	21.0	18.3-23.7	3414	24.7	22.7-26.8	5434	22.8	20.9-24.8

3.5.4 Self-reported Salt Consumption Levels Among the Population

A significantly higher proportion of the younger age group (10.6% of those aged 18-29 years) perceive that they consume too much or far too much salt compared to older age groups. The proportion of individuals who believe they consume excessive amounts of salt decreases with age, from 10.6% in the youngest group to 4.8% in the oldest group. Overall, 9.1% of the population thinks they consume too much or far too much salt, with 9.3% of men and 8.9% of women reporting this. Among women in the 60–69-year age group, self-reported excessive salt consumption is significantly lower at 2.6%.

There are no significant differences in the perception of excessive salt intake between sexes in rural and urban populations. Table 3.5.4.1 presents the data by age groups and residency for those who think they consume too much or far too much salt, while Table 3.5.4.2 shows the proportion of individuals self-reporting their salt consumption levels.

Table 3.5.4.1: Proportion of the population who think they take in too much or far too much salt

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	547	10.5	6.6-14.3	870	10.7	8.3-13.2	1417	10.6	8.4-12.8
30-44	717	8.9	6.5-11.2	1388	7.9	6.0-9.8	2105	8.4	6.9-9.9
45-59	513	7.8	5.4-10.2	809	8.6	6.2-10.9	1322	8.2	6.4-9.9
60-69	230	7.0	3.5-10.5	337	2.6	1.0-4.3	567	4.8	2.9-6.8
Residency									
Rural	1028	9.0	6.8-11.2	1537	10.1	8.0-12.1	2565	9.5	8.0-11.0
Urban	979	9.5	6.5-12.6	1867	8.2	6.6-9.9	2846	8.9	7.0-10.7
Total	**2007**	**9.3**	**7.3-11.3**	**3404**	**8.9**	**7.6-10.2**	**5411**	**9.1**	**7.9-10.4**

Table 3.5.4.2: Self-reported quantity of salt consumption

Age Group (years)	n	% Far too much	95% CI	% Too much	95% CI	% Just the right amount	95% CI	% Too little	95% CI	% Far too little	95% CI
18-29	1417	2.4	1.2-3.7	8.2	6.1-10.3	72.6	69.0-76.3	15.3	12.5-18.1	1.5	0.6-2.4
30-44	2105	1.5	0.7-2.4	6.9	5.5-8.2	74.5	72.0-77.0	15.3	13.0-17.5	1.9	1.0-2.8
45-59	1322	1.2	0.4-2.0	6.9	5.4-8.5	70.9	67.6-74.1	18.4	15.5-21.3	2.6	1.6-3.6
60-69	567	0.3	0.0-0.7	4.5	2.6-6.4	66.9	62.5-71.2	25.0	21.0-28.9	3.4	1.8-5.0
Residency											
Rural	2565	1.2	0.6-1.8	8.3	7.0-9.7	73.2	71.0-75.5	15.5	13.7-17.3	1.7	1.0-2.5
Urban	2846	2.2	1.2-3.3	6.6	5.0-8.3	72.1	69.0-75.1	17.0	14.7-19.3	2.0	1.2-2.9
Total	**5411**	**1.8**	**1.1-2.5**	**7.3**	**6.2-8.4**	**72.5**	**70.5-74.5**	**16.4**	**14.9-17.9**	**1.9**	**1.4-2.5**

The proportion of individuals who self-report consuming too little or far too little salt is 18.3%, while 72.5% of the population believe they consume just the right amount of salt. There is no significant difference in self-reported salt consumption patterns between urban and rural populations.

3.5.5 Importance of Lowering Salt in Diet

Most people (68.8%) believe it is very important to reduce salt intake, although 10.4% think it is not at all important. The proportion of individuals in the 18-29 age group who consider it very important to lower salt intake is lower compared to older age groups. Conversely, a higher percentage in the younger age group also believes it is not at all important to reduce salt in the diet.

Among urban dwellers, 71.1% view it as very important to lower salt intake, while 65.3% of rural residents hold the same view. However, almost equal proportions in both urban and rural populations believe it is not at all important to lower salt intake. Table 3.5.5.1 shows the proportions of the population's responses regarding the importance of reducing salt in the diet.

Table 3.5.5.1: Importance of lowering salt in diets among the population

Age Group (years)	n	% Very important	95% CI	% Somewhat important	95% CI	% Not at all important	95% CI
18-29	1403	63.7	59.7-67.8	24.0	20.8-27.3	12.2	9.5-14.9
30-44	2079	72.0	69.1-74.8	18.8	16.5-21.1	9.2	7.5-10.9
45-59	1314	72.7	69.5-75.9	18.0	15.3-20.6	9.3	6.8-11.8
60-69	563	77.7	73.2-82.2	15.4	11.5-19.3	6.9	4.3-9.5
Residency							
Rural	2533	65.3	62.3-68.2	24.1	21.5-26.7	10.6	8.8-12.5
Urban	2826	71.1	67.7-74.4	18.6	16.2-21.0	10.3	8.1-12.5
Total	**5359**	**68.8**	**66.5-71.0**	**20.8**	**19.1-22.5**	**10.4**	**9.0-11.9**

3.5.6 Awareness of Health Risks Associated with Salt and Salty Sauces in Diet

The level of awareness regarding the health risks associated with excessive salt intake is high across the population and shows minimal variation between different age groups and sexes. A substantial majority, 86.1%, recognise that a salty diet can cause serious health problems. Conversely, 13.9% of individuals do not believe that consuming too much salt or salty sauces can lead to significant health issues. This group may be more inclined to consume foods with high salt content.

There is little difference in the awareness of the health risks associated with salty diets between urban and rural populations, as well as between sexes. Table 3.5.6.1 provides details on the level of knowledge regarding the health implications of salty diets.

Table 3.5.6.1: Knowledge on salty diets causing serious health problem

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	550	81.0	76.5-85.5	873	88.3	85.5-91.0	1423	84.5	81.5-87.4
30-44	721	87.5	84.7-90.4	1393	88.0	84.9-91.1	2114	87.8	85.7-89.8
45-59	519	85.3	80.2-90.4	812	88.8	86.0-91.6	1331	87.1	84.2-90.0
60-69	232	82.4	74.8-90.0	338	92.2	88.8-95.6	570	87.3	83.2-91.4
Residency									
Rural	1034	84.2	80.8-87.7	1541	88.6	86.5-90.7	2575	86.3	84.2-88.3
Urban	988	83.5	80.0-87.1	1875	88.5	86.0-91.0	2863	86.1	83.5-88.6
Total	**2022**	**83.8**	**81.3-86.3**	**3416**	**88.5**	**86.8-90.3**	**5438**	**86.1**	**84.4-87.9**

3.5.7 Specific Actions to Control Salt Intake

Only 45.2% of the population regularly limits their consumption of processed foods to control salt intake. While this proportion increases with age, the difference is not statistically significant. A smaller proportion of men (42.3%) and women (48.2%) restrict their processed food intake. The limitation of processed food consumption does not significantly differ between rural (43.7%) and urban (46.3%) populations. (Table 3.5.7.1)

A very low proportion of the population (9.8%) examines sodium content on food labels. Younger individuals are more likely to check sodium content, although the proportions remain low. The percentages of rural (8.4%) and urban (10.8%) dwellers who check sodium content on food labels are also low. (Table 3.5.7.2)

Despite the lower proportions (9.8%) examining sodium content on labels, a relatively higher proportion (23.4%) report purchasing low-sodium alternatives. Among women, 26.0% buy low-sodium alternatives compared to 20.8% of men. Younger women are more likely to buy low-sodium alternatives. Similarly, a relatively equal higher proportion of both rural (23.2%) and urban (23.5%) dwellers report buying low-sodium alternatives. (Table 3.5.7.3)

The use of spices other than salt when cooking is reported by 25.6% of the population. There is a significantly lower proportion of men (21.6%, 95% CI: 18.7-24.5) compared to women (29.7%, 95% CI: 27.2-32.3) who use spices other than salt when cooking. A significantly higher proportion of the urban population (25.6%, 95% CI: 25.5-31.6) uses other spices when cooking compared to the rural population (21.3%, 95% CI: 18.7-23.9). (Table 3.5.7.4)

A higher proportion of women (47.2%) avoid eating food prepared outside the home compared to men (35.5%). Notably, individuals aged 18–29 are more likely to consume food prepared outside the home than older age groups. Overall, 41.3% of the population avoid eating food prepared outside the home environment. Almost equal proportions of rural (40.5%) and urban (41.9%) dwellers avoid eating food prepared outside the home. (Table 3.5.7.5)

Only 3.9% of the population engage in other specific measures to control their salt intake. Similarly, 3.9% of rural dwellers and 4.0% of urban dwellers adopt other measures to control their salt intake. (Table 3.5.7.6)

Tables 3.5.7.1-6 illustrate the various proportions and specific actions taken by individuals to control their salt intake.

Table 3.5.7.1: Proportions limiting consumption of processed foods

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	550	39.2	33.3-45.2	873	48.0	43.3-52.6	1423	43.4	39.4-47.3
30-44	721	45.4	40.7-50.0	1393	45.6	42.1-49.0	2114	45.5	42.6-48.4
45-59	519	44.5	38.2-50.7	812	49.2	44.9-53.4	1331	46.9	42.9-50.8
60-69	232	45.0	37.5-52.6	338	60.3	53.4-67.1	570	52.6	47.4-57.8
Residency									
Rural	1034	42.6	38.0-47.2	1541	45.0	41.3-48.7	2575	43.7	40.2-47.2
Urban	988	42.1	36.5-47.8	1875	50.1	46.3-53.9	2863	46.3	42.5-50.0
Total	**2022**	**42.3**	**38.8-45.9**	**3416**	**48.2**	**45.5-50.8**	**5438**	**45.2**	**42.8-47.7**

Table 3.5.7.2: Proportions who look at salt or sodium contents of food labels

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	550	10.4	7.0-13.8	873	11.2	8.3-14.1	1423	10.8	8.7-12.9
30-44	721	13.0	9.8-16.2	1393	8.8	7.0-10.6	2114	10.8	9.1-12.6
45-59	519	6.9	4.4-9.4	812	6.8	4.6-9.0	1331	6.8	5.1-8.6
60-69	232	7.5	3.2-11.8	338	5.9	3.3-8.5	570	6.7	4.2-9.2
Residency									
Rural	1034	8.5	6.3-10.6	1541	8.4	6.2-10.5	2575	8.4	6.8-10.1
Urban	988	11.8	8.8-14.9	1875	9.8	7.8-11.9	2863	10.8	9.2-12.4
Total	**2022**	**10.4**	**8.4-12.4**	**3416**	**9.3**	**7.8-10.8**	**5438**	**9.8**	**8.7-11.0**

Table 3.5.7.3: Proportions who buy low salt/sodium alternatives

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	550	18.7	14.6-22.8	873	28.4	24.3-32.5	1423	23.3	20.3-26.3
30-44	721	23.7	19.8-27.6	1393	24.2	21.5-27.0	2114	24.0	21.6-26.4
45-59	519	21.1	16.7-25.5	812	24.0	20.4-27.6	1331	22.6	19.7-25.5
60-69	232	21.5	14.9-28.0	338	24.3	18.8-29.9	570	22.9	18.5-27.3
Residency									
Rural	1034	22.4	18.6-26.2	1541	24.1	20.9-27.3	2575	23.2	20.6-25.8
Urban	988	19.6	16.1-23.1	1875	27.1	24.1-30.1	2863	23.5	20.9-26.1
Total	**2022**	**20.8**	**18.2-23.4**	**3416**	**26.0**	**23.8-28.2**	**5438**	**23.4**	**21.5-25.2**

Table 3.5.7.4: Proportions who use spices other than salt when cooking

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	550	25.4	19.9-30.9	873	29.6	25.8-33.5	1423	27.4	23.8-31.0
30-44	721	17.1	13.7-20.4	1393	31.8	27.3-36.2	2114	24.6	21.8-27.5
45-59	519	20.7	15.9-25.5	812	26.6	22.3-30.9	1331	23.7	20.3-27.2
60-69	232	16.9	10.6-23.2	338	29.4	21.6-37.2	570	23.1	18.3-28.0
Residency									
Rural	1034	17.7	14.5-20.8	1541	25.5	22.1-29.0	2575	21.3	18.7-23.9
Urban	988	24.5	20.0-29.0	1875	32.3	28.8-35.8	2863	28.5	25.5-31.6
Total	**2022**	**21.6**	**18.7-24.5**	**3416**	**29.7**	**27.2-32.3**	**5438**	**25.6**	**23.5-27.8**

Table 3.5.7.5: Proportions who avoid eating foods prepared outside of a home

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	550	27.4	22.7-32.1	873	44.2	39.6-48.7	1423	35.4	32.1-38.7
30-44	721	40.2	35.9-44.5	1393	46.3	42.6-50.1	2114	43.4	40.5-46.2
45-59	519	44.9	39.6-50.2	812	52.5	47.8-57.2	1331	48.8	45.1-52.5
60-69	232	47.0	38.7-55.2	338	57.5	50.4-64.6	570	52.2	46.8-57.6
Residency									
Rural	1034	35.4	31.8-39.0	1541	46.2	42.6-49.7	2575	40.4	37.8-43.0
Urban	988	35.5	31.4-39.7	1875	47.9	43.8-51.9	2863	41.9	38.6-45.2
Total	**2022**	**35.5**	**32.8-38.2**	**3416**	**47.2**	**44.5-49.9**	**5438**	**41.3**	**39.3-43.3**

Table 3.5.7.6: Proportions who do other things specifically to control salt intake

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	550	3.0	1.3-4.6	873	3.6	1.9-5.2	1423	3.2	2.0-4.5
30-44	721	4.9	3.1-6.8	1393	4.5	3.0-6.0	2114	4.7	3.5-5.9
45-59	519	3.9	2.0-5.8	812	5.6	3.4-7.7	1331	4.7	3.3-6.2
60-69	232	2.6	0.2-5.0	338	2.9	1.0-4.9	570	2.8	1.2-4.3
Residency									
Rural	1034	4.4	2.5-6.3	1541	3.3	2.0-4.6	2575	3.9	2.6-5.2
Urban	988	3.2	2.1-4.3	1875	4.7	3.3-6.2	2863	4.0	3.0-4.9
Total	**2022**	**3.7**	**2.7-4.7**	**3416**	**4.2**	**3.2-5.2**	**5438**	**3.9**	**3.2-4.7**

3.6 Physical Activity

3.6.1 WHO Global Recommendations on Physical Activity

To calculate the categorical indicator for the recommended amount of physical activity for health, both the total time spent in physical activity during a typical week and the intensity of the activity are considered.

Throughout a week, including activity for work, transport, and leisure, adults should engage in at least:

- 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 amounting to at least 600 MET-minutes.

Physical activity levels are classified into three categories: low, moderate, and high. The criteria for these levels are outlined below.

High

A person is classified in this category if they meet any of the following criteria:

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

Moderate

A person who does not meet the criteria for the “high” category but meets any of the following criteria is classified in this category:

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

Low

A person who does not meet any of the criteria mentioned above is classified in this category.

3.6.2 Population Not Meeting WHO Recommendation on Physical Activity

The proportion of the population not meeting the WHO recommended level of physical activity for health is 9.9%. A higher percentage of women (14.6%, 95% CI: 12.7-16.5) fail to meet these recommendations compared to men (5.5%, 95% CI: 4.0-6.9). There is no significant difference in the proportions not meeting the recommended physical activity levels between younger and older age groups. Table 3.6.2.1 presents the proportions of the population not meeting the WHO recommended level of physical activity for health.

Table 3.6.2.1: Proportion of populations not meeting WHO recommended physical activity for health

Age Group (years)	Men			Women			Both Sexes		
	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI
18-29	531	5.1	2.8-7.3	826	16.2	12.7-19.7	1357	10.3	8.2-12.4
30-44	692	6.7	4.0-9.4	1326	12.1	9.4-14.8	2018	9.5	7.5-11.5
45-59	503	3.9	1.9-5.9	773	12.6	9.5-15.6	1276	8.3	6.4-10.1
60-69	224	7.0	3.5-10.5	309	22.8	16.4-29.3	533	14.6	10.6-18.5
Residency									
Rural	1006	3.5	2.0-4.9	1471	9.4	7.0-11.7	2477	6.2	4.7-7.6
Urban	944	7.0	4.7-9.4	1763	17.8	15.2-20.4	2707	12.5	10.7-14.3
Total	**1950**	**5.5**	**4.0-6.9**	**3234**	**14.6**	**12.7-16.5**	**5184**	**9.9**	**8.7-11.2**

Comparing urban (12.5%, 95% CI: 10.7-14.4) and rural (6.2%, 95% CI: 4.7-7.6) populations, a significantly higher proportion of urban dwellers are not meeting the recommended physical activity levels for health compared to their rural counterparts.

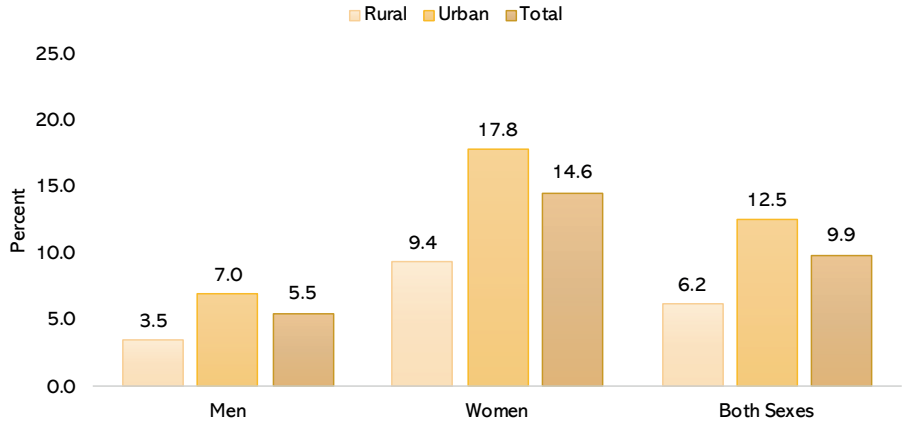

Figure 3.6.2.1: Bar chart proportions of population not meeting WHO recommended level of physical activity for health

3.6.3 Level of Total Physical Activity

Among women, 52.5% have a physical activity level classified as high, whereas 76.4% of men fall into the high category. This indicates that a higher proportion of women are less active than men relative to the WHO recommended physical activity levels for health. (Tables 3.6.3.1 and 3.6.3.2)

The distribution of total physical activity levels according to WHO recommendations among the population is as follows: 14.9% (95% CI: 13.4-16.4) are classified as low, 20.5% (95% CI: 18.8-22.1) as moderate, and 64.7% (95% CI: 62.4-66.9) as high. Significant differences were observed among the various levels of WHO recommended physical activity for the general population. (See Table 3.6.3.3)

Tables 3.6.3.1-3 below display the physical activity levels among women, men, and both sexes combined, respectively.

Table 3.6.3.1: Level of total physical activity among women

Age Group (years)	Women						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
18-29	826	23.1	19.1-27.2	29.9	25.8-34.1	46.9	42.6-51.2
30-44	1326	19.2	16.2-22.3	24.2	21.0-27.4	56.5	52.6-60.4
45-59	773	19.6	15.9-23.4	18.8	15.3-22.2	61.6	56.8-66.4
60-69	309	29.9	22.7-37.1	26.6	17.9-35.3	43.5	35.2-51.8
18-69	**3234**	**21.6**	**19.4-23.9**	**25.8**	**23.4-28.2**	**52.5**	**49.7-55.3**

Table 3.6.3.2: Level of total physical activity among men

Age Group (years)	Men						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
18-29	531	7.6	4.9-10.4	16.9	12.4-21.4	75.5	70.0-81.0
30-44	692	10.0	7.0-13.0	11.9	9.0-14.7	78.2	74.4-82.0
45-59	503	7.5	4.6-10.3	14.3	10.5-18.0	78.3	73.7-82.9
60-69	224	8.6	4.9-12.4	22.1	14.1-30.1	69.3	61.0-77.5
18-69	**1950**	**8.4**	**6.6-10.1**	**15.3**	**12.8-17.7**	**76.4**	**73.4-79.4**

Table 3.6.3.3: Level of total physical activity for both sexes

Age Group (years)	Both Sexes						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
18-29	1357	14.9	12.4-17.5	23.0	20.1-26.0	62.0	58.1-66.0
30-44	2018	14.7	12.5-17.0	18.2	15.9-20.5	67.0	64.1-70.0
45-59	1276	13.6	11.2-16.0	16.5	14.0-19.0	69.9	66.4-73.3
60-69	533	18.8	14.5-23.1	24.3	18.3-30.3	56.9	50.6-63.2
18-69	5184	14.9	13.4-16.4	20.5	18.8-22.1	64.7	62.4-66.9

3.6.4 Mean Minutes of Physical Activity

The mean number of minutes of total physical activity per day, encompassing activity at work, travel to and from work, and recreational activities, differs significantly between men and women. The average daily physical activity is 323.8 minutes (95% CI: 308.5-339.1) for men and 223.1 minutes (95% CI: 211.6-234.6) for women. For both sexes combined, the mean daily physical activity is 274.4 minutes. The younger (18-29 years) and older (60-69 years) age groups engage in fewer minutes of total physical activity per day on average compared to the middle-aged group (30-59 years). This trend is consistent across the general population of adults aged 18-69 years. Table 3.6.4.1 presents the mean minutes of total physical activity per day for men, women, and both sexes combined.

Table 3.6.4.1: Mean minutes of total physical activity on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	531	297.7	272.3-323.0	826	198.5	179.8-217.2	1357	250.9	233.7-268.2
30-44	692	349.1	328.2-370.0	1326	246.8	230.3-263.4	2018	296.5	281.7-311.3
45-59	503	365.3	336.3-394.4	773	256.0	235.7-276.3	1276	310.1	291.7-328.6
60-69	224	283.8	245.6-322.0	309	170.2	141.8-198.5	533	229.5	205.0-254.0
18-69	**1950**	**323.8**	**308.5-339.1**	**3234**	**223.1**	**211.6-234.6**	**5184**	**274.4**	**263.9-284.8**

The mean number of minutes spent on work-related, transport-related, and recreation-related physical activities per day is detailed in Tables 3.6.4.2-4. The average daily time spent on recreational activities is 12.6 minutes, which is considered inadequate. This figure is even lower for women, who average 4.5 minutes (95% CI: 3.2-5.8), compared to men, who average 20.4 minutes (95% CI: 17.5-23.3). Overall, the average time spent on recreational activities decreases with age for men but increases with age for women between 30 and 69 years. (Table 3.6.4.2)

Men engage in significantly more work-related physical activity, with a mean of 214.2 minutes (95% CI: 200.8-227.5) per day, compared to women, who average 129.4 minutes (95% CI: 119.9-138.9) per day. Among the general population, the middle-aged group (30-59 years) has significantly higher mean minutes of work-related physical activity compared to the younger (18-29 years) and older (60-69 years) age groups. (Table 3.6.4.3)

The mean minutes of transport-related physical activity is 89.2 minutes for the population, with no significant difference between men (89.2 minutes) and women (89.2 minutes). (Table 3.6.4.4)

Table 3.6.4.2: Mean minutes of recreation related physical activity on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	531	31.0	25.2-36.8	826	4.4	3.1-5.6	1357	18.5	15.4-21.6
30-44	692	14.4	11.1-17.7	1326	3.7	2.7-4.8	2018	8.9	7.2-10.6
45-59	503	7.4	5.1-9.8	773	5.7	1.8-9.7	1276	6.6	4.3-8.9
60-69	224	5.0	3.3-6.7	309	5.9	1.1-10.6	533	5.4	2.9-7.9
18-69	**1950**	**20.4**	**17.5-23.3**	**3234**	**4.5**	**3.2-5.8**	**5184**	**12.6**	**11.0-14.2**

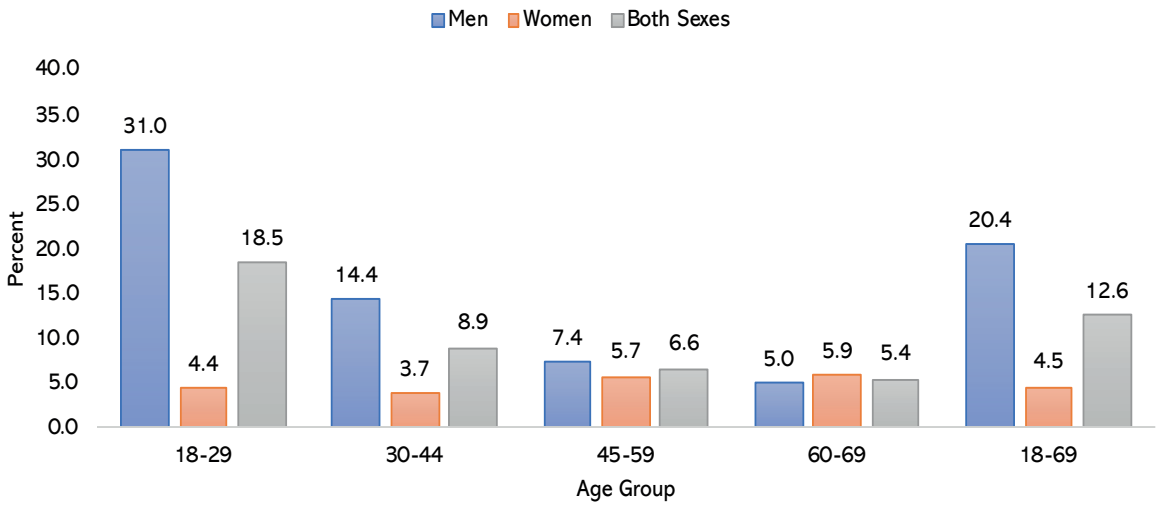

Figure 3.6.4.1: Bar chart of mean minutes of recreation related physical activity on average per day

Table 3.6.4.3: Mean minutes of work-related physical activity on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	531	176.2	155.8-196.7	826	105.9	91.3-120.4	1357	143.1	129.7-156.5
30-44	692	251.7	232.2-271.2	1326	150.2	136.5-164.0	2018	199.5	186.4-212.7
45-59	503	262.7	237.5-287.9	773	159.1	142.4-175.8	1276	210.4	194.2-226.5
60-69	224	185.6	155.1-216.1	309	94.8	72.4-117.2	533	142.2	122.9-161.5
18-69	**1950**	**214.2**	**200.8-227.5**	**3234**	**129.4**	**119.9-138.9**	**5184**	**172.6**	**163.7-181.4**

Table 3.6.4.4: Mean minutes of transport-related physical activity on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	531	90.4	78.5-102.3	826	88.3	77.0-99.5	1357	89.4	81.2-97.6
30-44	692	83.0	72.6-93.4	1326	92.9	83.4-102.3	2018	88.1	80.4-95.8
45-59	503	95.2	82.1-108.3	773	91.2	81.0-101.4	1276	93.2	84.4-101.9
60-69	224	93.2	71.4-115.1	309	69.5	55.2-83.9	533	81.9	68.1-95.7
18-69	**1950**	**89.2**	**81.8-96.6**	**3234**	**89.2**	**82.7-95.7**	**5184**	**89.2**	**84.1-94.3**

3.6.5 Population Engaged in No Work, Transportation, or Recreational Physical Activity

The proportion of women reporting no work-related physical activity is 45.4% (95% CI: 42.3-48.5), which is significantly higher than the proportion of men at 30.7% (95% CI: 27.5-33.8). The younger age group of 18-19 years exhibits a higher proportion (46.5%) with no work-related physical activity. Overall, 37.9% of the population reports having no work-related physical activity. (Table 3.6.5.1)

Table 3.6.5.1: No work-related physical activity among respondents

Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at work	95% CI	n	% no activity at work	95% CI	n	% no activity at work	95% CI
18-29	531	39.4	33.9-44.9	826	54.5	49.7-59.2	1357	46.5	42.6-50.4
30-44	692	22.2	18.1-26.4	1326	37.8	33.8-41.8	2018	30.2	27.0-33.5
45-59	503	21.6	16.8-26.4	773	35.9	31.1-40.7	1276	28.8	25.2-32.3
60-69	224	30.5	22.7-38.3	309	50.3	41.7-58.9	533	40.0	33.7-46.3
18-69	**1950**	**30.7**	**27.5-33.8**	**3234**	**45.4**	**42.3-48.5**	**5184**	**37.9**	**35.4-40.4**

3.6.6 Population Engaged in No Recreational Physical Activity

A significant proportion of the population is not engaged in recreational activities involving physical activity. Overall, 71.1% of the population does not participate in such activities. Specifically, 83.8% (95% CI: 81.2-86.3) of women and 59.0% (95% CI: 55.6-62.4) of men are not involved in recreation-related physical activity. The likelihood of engaging in recreational physical activity decreases with increasing age. (Table 3.6.6.1)

Table 3.6.6.1: Proportion of population with no recreation related physical activity among respondents

Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI
18-29	531	47.2	40.4-54.1	826	80.0	75.9-84.1	1357	62.7	58.7-66.7
30-44	692	63.7	59.0-68.3	1326	87.5	85.0-89.9	2018	75.9	73.2-78.7
45-59	503	77.0	72.6-81.4	773	85.5	81.7-89.3	1276	81.3	78.2-84.3
60-69	224	75.0	67.2-82.8	309	85.4	77.0-93.9	533	80.0	74.3-85.7
18-69	**1950**	**59.0**	**55.6-62.4**	**3234**	**83.8**	**81.2-86.3**	**5184**	**71.1**	**68.8-73.5**

3.6.7 Composition of Total Physical Activity

While work-related physical activity contributes significantly to the total physical activity for men (51.4%), transport-related physical activity (56.0%) is a greater contributor for women. (Tables 3.6.7.1 and 3.6.7.2)

Physical activity during leisure time makes the smallest contribution to total physical activity for both men (11.9%) and women (5.1%). (Tables 3.6.7.1 and 3.6.7.2)

The contributions of various domains to the total physical activity of the population are 45.4% from work-related activities, 46.0% from transport-related activities, and 8.6% from leisure-time activities. (Table 3.6.7.3)

Leisure-time physical activity contributes less to the total physical activity across all age groups and sexes. However, the younger age group (18–29 years) engages in significantly more physical activity during leisure time compared to older age groups. (Table 3.6.7.3)

The distribution of work activity, transport (travel to and from places), and recreational activities as components of total physical activity for men, women, and both sexes combined is detailed below.

Table 3.6.7.1: Composition of total physical activity for men

Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
18-29	523	42.3	38.3-46.3	40.3	36.2-44.4	17.4	14.2-20.6
30-44	670	60.3	56.7-64.0	31.6	28.4-34.9	8.0	6.3-9.7
45-59	494	61.0	57.0-64.9	33.2	29.6-36.8	5.8	3.5-8.2
60-69	217	52.5	46.3-58.7	42.8	36.6-48.9	4.7	2.7-6.8
18-69	**1904**	**51.4**	**48.9-54.0**	**36.7**	**34.4-39.0**	**11.9**	**10.1-13.6**

Table 3.6.7.2: Composition of total physical activity for women

Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
18-29	792	31.4	27.9-34.9	62.2	58.4-66.0	6.4	4.1-8.7
30-44	1278	44.5	41.5-47.5	52.0	48.9-55.0	3.5	2.3-4.7
45-59	742	47.2	43.6-50.9	48.8	45.1-52.4	4.0	2.3-5.7
60-69	287	37.3	30.5-44.2	54.9	48.1-61.8	7.8	0.0-15.5
18-69	**3099**	**38.9**	**36.6-41.2**	**56.0**	**53.6-58.4**	**5.1**	**3.8-6.4**

Table 3.6.7.3: Composition of total physical activity of the population

Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
18-29	1315	37.3	34.4-40.1	50.5	47.6-53.3	12.3	10.2-14.4
30-44	1948	52.3	49.7-54.8	42.0	39.6-44.4	5.7	4.6-6.8
45-59	1236	54.1	51.3-57.0	41.0	38.3-43.6	4.9	3.5-6.4
60-69	504	45.5	40.5-50.5	48.4	43.6-53.1	6.1	2.3-9.9
18-69	**5003**	**45.4**	**43.5-47.3**	**46.0**	**44.2-47.8**	**8.6**	**7.4-9.8**

3.6.8 Proportion of the Population Not Engaging in Vigorous Physical Activity

As high as 91.2% (95% CI: 89.6-92.8) of women engage in no vigorous activity, compared to 51.9% (95% CI: 47.9-55.9) of men. The majority of women, across all age groups, do not participate in vigorous activity. Overall, 71.2% of the population does not engage in vigorous activity. The proportion of individuals not engaging in vigorous activity is higher among urban dwellers (73.5%) compared to rural dwellers (67.8%). Table 3.6.8 below shows the percentage of the population not engaging in vigorous physical activity.

Table 3.6.8.1: Percentage of population not engaging in vigorous physical activity

Age Group (years)	Men			Women			Both Sexes		
	n	% no vigorous activity	95% CI	n	% no vigorous activity	95% CI	n	% no vigorous activity	95% CI
18-29	531	42.6	35.2-50.0	826	91.9	89.1-94.6	1357	65.8	61.8-69.8
30-44	692	53.5	48.7-58.3	1326	90.6	88.3-92.8	2018	72.5	69.6-75.5
45-59	503	64.1	58.6-69.6	773	89.5	86.4-92.7	1276	76.9	73.8-80.1
60-69	224	80.5	74.1-86.9	309	94.4	91.3-97.5	533	87.1	83.1-91.1
18-69	1950	51.9	47.9-55.9	3234	91.2	89.6-92.8	5184	71.2	68.9-73.4

3.6.9 Mean Daily Minutes Spent on Sedentary Activities

The mean time spent in sedentary activities is higher for women (278.8 minutes) compared to men (254.2 minutes). There is no significant difference in the mean time spent in sedentary activities across different age groups. The average time spent in sedentary activities per day for the population is 266.4 minutes. Table 3.6.9 presents the mean and median minutes spent in sedentary activities per day by the population.

Table 3.6.9: Mean and median minutes spent in sedentary activities on average per day by both sexes

Age Group (years)	n	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25-P75)
18-29	1423	275.9	262.1-289.7	240.0	120.0-360.0
30-44	2114	257.1	247.4-266.8	240.0	120.0-360.0
45-59	1331	250.3	237.3-263.3	240.0	120.0-360.0
60-69	570	290.6	269.8-311.4	240.0	120.0-420.0
18-69	**5438**	**266.4**	**258.3-274.5**	**240.0**	**120.0-360.0**

3.7 History of Blood Pressure Measurement and Diagnosis of Elevated Blood Pressure

3.7.1 Blood Pressure Measurement and Diagnosis Among All Respondents

Blood pressure measurement among the population reveals that 33.8% of men have never had their blood pressure measured, compared to only 14.7% of women. Significantly, 49.2% of men and 23.5% of women aged 18-29 years have never measured their blood pressure. As age increases, the proportion of respondents who have never checked their blood pressure decreases. While 54.1% of men and 63.9% of women have measured their blood pressure but have not been diagnosed with elevated blood pressure, 5.4% of men and 10.3% of women have been diagnosed with elevated blood pressure but not in the past 12 months. Additionally, 6.7% of men and 11.2% of women have had their elevated blood pressure diagnosed within the past 12 months. (Tables 3.7.1.1 and 3.7.1.2)

The proportion of women who have had their blood pressure checked is high (85.3%) compared to 62.2% among men.

Overall, 24.3% of respondents have never measured their blood pressure, while 59.0% have measured it but have not been diagnosed with elevated blood pressure. The proportion of respondents who

have been diagnosed with elevated blood pressure but not in the past 12 months is 7.8%, and those diagnosed within the past 12 months is 8.9%. This results in a prevalence of 16.7% for a positive history of diagnosed elevated blood pressure among all respondents, either within the past 12 months or before. (Table 3.7.1.3)

Tables 3.7.1.1-3 present blood pressure measurement and diagnosis data for men, women, and both sexes, respectively.

Table 3.7.1.1: Blood pressure measurement and diagnosis of elevated blood pressure among men

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	550	49.2	43.3-55.1	47.6	41.8-53.4	2.0	0.8-3.3	1.1	0.4-1.9
30-44	721	23.5	19.1-28.0	60.0	55.7-64.4	5.3	3.3-7.4	11.1	8.1-14.1
45-59	519	17.8	14.0-21.6	60.1	54.7-65.5	10.4	7.1-13.6	11.8	8.0-15.6
60-69	232	12.3	7.5-17.2	58.1	50.0-66.2	16.4	8.9-23.8	13.2	8.2-18.2
18-69	**2022**	**33.8**	**30.7-36.9**	**54.1**	**50.9-57.4**	**5.4**	**4.2-6.5**	**6.7**	**5.4-8.0**

Table 3.7.1.2: Blood pressure measurement and diagnosis of elevated blood pressure among women

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	873	23.5	19.6-27.3	68.5	64.2-72.9	3.9	2.4-5.4	4.1	2.6-5.6
30-44	1393	8.5	6.7-10.4	69.5	66.4-72.7	10.4	8.2-12.5	11.5	9.2-13.9
45-59	812	8.1	5.9-10.3	53.0	48.3-57.7	17.0	14.0-20.1	21.9	18.2-25.5
60-69	338	4.7	2.3-7.1	35.1	28.4-41.8	33.8	25.5-42.2	26.4	19.8-32.9
18-69	**3416**	**14.7**	**12.7-16.6**	**63.9**	**61.4-66.5**	**10.3**	**9.0-11.5**	**11.2**	**9.8-12.5**

Table 3.7.1.3: Blood pressure measurement and diagnosis of elevated blood pressure among both sexes

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	1423	37.0	33.3-40.7	57.6	53.9-61.2	2.9	2.0-3.9	2.5	1.7-3.4
30-44	2114	15.8	13.4-18.2	64.9	62.2-67.6	7.9	6.5-9.4	11.3	9.4-13.3
45-59	1331	12.8	10.6-15.1	56.5	53.0-60.0	13.8	11.6-15.9	16.9	14.2-19.6
60-69	570	8.5	5.9-11.2	46.6	41.4-51.8	25.1	19.4-30.7	19.8	15.4-24.1
18-69	**5438**	**24.3**	**22.4-26.2**	**59.0**	**56.9-61.1**	**7.8**	**7.0-8.6**	**8.9**	**7.9-9.9**

3.7.2 Treatment of Elevated Blood Pressure Among Diagnosed Individuals

The proportion of the population currently taking medication for elevated blood pressure, as prescribed by a doctor or a health worker, is only 29.1% among those diagnosed with elevated blood pressure. Significantly, a higher proportion of women (33.7%, 95% CI: 29.5-37.8) are on medication for elevated blood pressure compared to 21.0% (95% CI: 15.5-26.6) of men. The proportion of individuals on medication increases with age among both sexes; however, none of the men in the 18–29-year age group diagnosed with elevated blood pressure are on medication. (Table 3.7.2.1)

Table 3.7.2.1: Proportions currently on medications for elevated blood pressure prescribed by doctor or health worker among those diagnosed

Age Group (years)	Men			Women			Both Sexes		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
18-29	25	0.0	0.0-0.0	84	10.5	1.4-19.7	109	7.3	0.6-14.1
30-44	107	20.1	10.8-29.4	283	17.4	11.8-22.9	390	18.5	13.5-23.5
45-59	104	20.8	11.1-30.5	314	45.5	38.5-52.5	418	36.8	31.0-42.5
60-69	71	41.2	28.0-54.4	180	63.0	53.5-72.5	251	55.8	47.9-63.6
18-69	**307**	**21.0**	**15.5-26.6**	**861**	**33.7**	**29.5-37.8**	**1168**	**29.1**	**25.5-32.6**

3.7.3 Blood Pressure Advice from Traditional Healer

A proportion of the population with previously diagnosed elevated blood pressure have sought advice and/or treatment from traditional healers. Specifically, 16.8% of those previously diagnosed with elevated blood pressure have consulted a traditional healer, while 13.4% are currently using herbal or traditional remedies. Proportionally, a higher percentage of men with previously diagnosed elevated blood pressure have seen a traditional healer (21.1%) and are using herbal or traditional remedies (14.8%) compared to women, at 14.3% and 12.5%, respectively. Tables 3.7.3.1 and 3.7.3.2 present data on individuals who have consulted a traditional healer and those currently using herbal or traditional remedies, respectively.

Table 3.7.3.1: Proportion of people with elevated blood pressure seeing a traditional healer

Age Group (years)	Men			Women			Both Sexes		
	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI
18-29	25	20.2	0.0-42.4	84	3.4	0.0-7.2	109	8.4	0.6-16.3
30-44	107	18.5	8.6-28.5	283	10.2	3.9-16.5	390	13.7	8.1-19.2
45-59	104	25.5	14.0-36.9	314	16.6	11.3-21.9	418	19.7	14.5-24.9
60-69	71	19.4	8.0-30.8	180	27.9	15.9-39.9	251	25.1	16.2-34.0
18-69	**307**	**21.1**	**14.6-27.5**	**861**	**14.3**	**10.8-17.9**	**1168**	**16.8**	**13.3-20.3**

Table 3.7.3.2: Proportion of people currently taking herbal or traditional remedy for elevated blood pressure among those previously diagnosed

Age Group (years)	Men			Women			Both Sexes		
	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI
18-29	25	18.6	0.0-40.9	84	1.2	0.0-2.8	109	6.4	0.0-14.0
30-44	107	11.9	3.2-20.5	283	5.1	1.8-8.5	390	7.9	3.8-12.0
45-59	104	10.7	2.3-19.0	314	19.0	13.4-24.7	418	16.1	11.6-20.6
60-69	71	28.4	14.9-41.9	180	24.5	12.8-36.3	251	25.8	16.8-34.8
18-69	**307**	**14.8**	**8.9-20.7**	**861**	**12.5**	**9.2-15.8**	**1168**	**13.4**	**10.1-16.6**

3.8 History of Blood Glucose Measurement and Diagnosis of Diabetes

3.8.1 Blood sugar measurement and diagnosis

The majority (70.3%) of the population have never checked their blood glucose levels, while 26.2% have checked but have not been diagnosed with diabetes. 1.5% have been diagnosed with diabetes but not within the past 12 months. Additionally, 1.9% of the population have had their blood glucose measured and been diagnosed with diabetes within the past 12 months. Therefore, the prevalence of a history of diagnosed diabetes among the population, either within the past 12 months or before, is 3.4%. (Table 3.8.1.1)

A higher proportion of men (76.6%) have never checked their blood glucose levels, with 21.1% having measured but not been diagnosed with diabetes, 1.1% diagnosed with diabetes but not within the past 12 months, and 1.1% diagnosed within the past 12 months. (Table 3.8.1.2)

Among women, 63.9% have never measured their blood glucose levels, 31.4% have measured but have not been diagnosed with diabetes, 2.0% have been diagnosed with diabetes but not within the past 12 months, and 2.7% have been diagnosed within the past 12 months. The proportion of individuals who have never measured their blood glucose levels decreases with increasing age for both sexes. Tables 3.8.1.1-3 show the history of blood glucose measurements for both sexes, and separately for men and women.

Table 3.8.1.1: History of blood glucose measurement and diagnosis diabetes in the population

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	1423	80.9	78.2-83.6	18.1	15.5-20.7	0.5	0.1-0.9	0.5	0.2-0.9
30-44	2114	65.3	62.4-68.3	30.9	28.1-33.8	1.6	0.8-2.4	2.1	1.3-2.9
45-59	1331	59.5	55.6-63.4	34.1	30.3-37.9	3.1	2.0-4.2	3.3	2.1-4.5
60-69	570	50.5	44.6-56.5	38.4	32.7-44.1	4.2	2.2-6.1	6.9	4.1-9.7
18-69	**5438**	**70.3**	**68.3-72.4**	**26.2**	**24.3-28.1**	**1.5**	**1.2-1.9**	**1.9**	**1.5-2.3**

Table 3.8.1.2: History of blood sugar measurement and diagnosis of diabetes among men

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	550	87.4	83.9-90.9	12.5	9.0-15.9	0.0	0.0-0.1	0.1	0.0-0.3
30-44	721	69.8	65.1-74.5	26.3	21.9-30.6	1.9	0.5-3.2	2.1	0.7-3.5
45-59	519	66.4	60.8-71.9	30.8	25.3-36.3	2.1	0.8-3.4	0.7	0.0-1.3
60-69	232	57.6	49.4-65.7	34.2	26.1-42.3	2.7	0.2-5.3	5.5	1.9-9.1
18-69	**2022**	**76.6**	**74.0-79.3**	**21.1**	**18.6-23.6**	**1.1**	**0.6-1.6**	**1.1**	**0.6-1.6**

Table 3.8.1.3: History of blood sugar measurement and diagnosis of diabetes among women

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	873	73.7	70.0-77.5	24.2	20.7-27.8	1.0	0.2-1.8	1.0	0.4-1.7
30-44	1393	61.1	57.9-64.4	35.3	32.1-38.6	1.4	0.6-2.2	2.1	1.2-3.0
45-59	812	52.9	48.2-57.5	37.3	32.6-42.0	4.0	2.3-5.7	5.8	3.6-8.0
60-69	338	43.4	35.7-51.2	42.6	35.3-49.9	5.6	2.6-8.7	8.3	4.4-12.3
18-69	**3416**	**63.9**	**61.5-66.4**	**31.4**	**29.1-33.7**	**2.0**	**1.4-2.6**	**2.7**	**2.0-3.4**

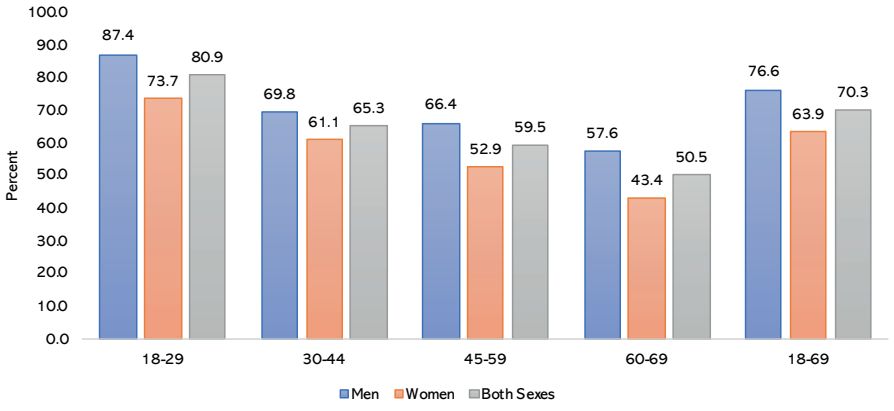

Figure 3.8.1.1: Bar chart of respondents who have never measured their blood glucose level

3.8.2 History of treatment among those previously diagnosed of diabetes

Among those diagnosed with diabetes, 15.4% are on insulin medication (9.6% for men and 18.2% for women) prescribed by a doctor or health worker; however, none of those in the 18–29-year age group are on insulin. Additionally, 34.6% of all individuals diagnosed with diabetes are on other prescribed medications for diabetes (21.7% for men and 40.9% for women).

Table 3.8.2.1: Proportion of people currently on prescribed insulin for diabetes

Currently taking drugs (insulin) prescribed for diabetes among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking insulin	95% CI	n	% taking insulin	95% CI	n	% taking insulin	95% CI
18-29	2	0.0	0.0-0.0	19	0.0	0.0-0.0	21	0.0	0.0-0.0
30-44	20	0.0	0.0-0.0	44	9.9	0.0-22.5	64	4.8	0.0-11.1
45-59	19	19.9	0.0-41.5	69	29.7	17.5-41.9	88	27.6	16.7-38.5
60-69	19	23.3	0.8-45.8	40	23.3	6.7-39.8	59	23.3	10.5-36.1
18-69	**60**	**9.6**	**1.8-17.5**	**172**	**18.2**	**11.6-24.8**	**232**	**15.4**	**10.2-20.5**

Table 3.8.2.2: Proportion of people on other prescribed medications for diabetes

Currently taking drugs (medication) prescribed for diabetes among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
18-29	2	0.0	0.0-0.0	19	2.5	0.0-7.4	21	2.3	0.0-6.8
30-44	20	6.2	0.0-17.0	44	19.9	4.9-35.0	64	12.9	3.5-22.3
45-59	19	38.9	15.6-62.1	69	60.4	47.9-72.9	88	55.7	44.8-66.7
60-69	19	44.3	16.7-72.0	40	66.3	49.0-83.5	59	58.1	42.2-73.9
18-69	**60**	**21.7**	**9.6-33.8**	**172**	**40.9**	**32.0-49.8**	**232**	**34.6**	**27.4-41.9**

3.8.3 History of Seeking Diabetes Advice and Treatment from a Traditional Healer

A higher proportion of men (17.1%) have consulted a traditional healer for diabetes compared to women (9.8%) among those previously diagnosed with diabetes. (Table 3.8.3.1) Consequently, 9.8% of men who are previously diagnosed with diabetes are using herbal or traditional treatments, compared to 7.0% of women. Only individuals in the 45–69-year age group are using herbal or traditional treatments for their diabetes. (Table 3.8.3.2)

Table 3.8.3.1: Proportion of people who have seen a traditional healer for diabetes among those previously diagnosed

Age Group (years)	Men			Women			Both Sexes		
	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI
18-29	2	0.0	0.0-0.0	19	5.4	0.0-13.6	21	5.0	0.0-12.5
30-44	20	11.9	0.0-27.0	44	0.0	0.0-0.0	64	6.1	0.0-14.2
45-59	19	20.7	0.0-42.1	69	15.9	6.0-25.8	88	16.9	7.7-26.2
60-69	19	28.1	4.1-52.1	40	14.2	0.0-29.7	59	19.4	5.6-33.3
18-69	**60**	**17.1**	**6.3-28.0**	**172**	**9.8**	**4.6-15.0**	**232**	**12.2**	**6.8-17.6**

Table 3.8.3.2: Proportion of people currently taking herbal or traditional treatment for diabetes among those previously diagnosed

Age Group (years)	Men			Women			Both Sexes		
	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI
18-29	2	0.0	0.0-0.0	19	0.0	0.0-0.0	21	0.0	0.0-0.0
30-44	20	0.0	0.0-0.0	44	0.0	0.0-0.0	64	0.0	0.0-0.0
45-59	19	20.8	2.2-39.3	69	13.7	4.7-22.7	88	15.2	6.9-23.5
60-69	19	23.2	6.5-39.9	40	9.3	0.0-18.6	59	14.5	4.4-24.5
18-69	**60**	**9.8**	**3.8-15.8**	**172**	**7.0**	**3.0-11.1**	**232**	**7.9**	**4.6-11.2**

3.9 History of Elevated Total Cholesterol

3.9.1 Total Cholesterol Measurement and Diagnosis of Elevated Cholesterol

Most men (91.3%) have never had their cholesterol level checked by a health worker. Of the male population, 7.0% have had their cholesterol level measured but were not diagnosed with elevated cholesterol, while an equal proportion of 0.9% have been diagnosed with elevated cholesterol but not within the past 12 months and within the past 12 months, respectively. (Table 3.9.1.1)

Among women, 88.7% have never checked their cholesterol level, 8.3% have checked but have not been diagnosed with elevated cholesterol, 1.8% have been diagnosed with elevated cholesterol but not within the past 12 months, and 1.2% have been diagnosed within the past 12 months. (Table 3.9.1.2)

Overall, 90.0% of respondents have never checked their blood cholesterol level. Only 10.0% have checked before, with a prevalence of 2.3% diagnosed with high cholesterol either within the past 12 months or before. (Table 3.9.1.3)

Table 3.9.1.1: History of total cholesterol measurement and diagnosis among men

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	550	96.2	94.3-98.0	3.6	1.8-5.4	0.2	0.0-0.6	0.0	0.0-0.0
30-44	721	88.9	85.9-91.9	8.1	5.7-10.6	1.3	0.2-2.4	1.6	0.4-2.9
45-59	519	84.4	79.8-89.0	12.0	8.1-15.9	1.8	0.1-3.5	1.8	0.0-3.6
60-69	232	84.9	78.7-91.1	13.1	7.1-19.1	1.0	0.0-2.4	1.1	0.0-2.5
18-69	2022	91.3	89.6-93.0	7.0	5.5-8.5	0.9	0.4-1.4	0.9	0.4-1.4

Table 3.9.1.2: History of total cholesterol measurement and diagnosis among women

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	873	93.4	91.4-95.4	5.3	3.5-7.2	0.8	0.0-1.6	0.5	0.1-0.9
30-44	1393	88.7	86.1-91.4	8.5	6.6-10.5	1.7	0.1-3.4	1.0	0.4-1.6
45-59	812	81.4	77.6-85.2	12.7	9.7-15.6	3.8	2.1-5.4	2.2	0.8-3.5
60-69	338	78.0	71.7-84.4	14.2	9.0-19.5	3.6	1.5-5.7	4.2	1.5-6.8
18-69	**3416**	**88.7**	**87.0-90.4**	**8.3**	**6.9-9.6**	**1.8**	**1.1-2.6**	**1.2**	**0.8-1.6**

Table 3.9.1.3: History of total cholesterol measurement and diagnosis among the population

Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	1423	94.8	93.5-96.2	4.4	3.1-5.7	0.5	0.1-0.9	0.2	0.0-0.4
30-44	2114	88.8	86.8-90.8	8.3	6.8-9.9	1.5	0.6-2.5	1.3	0.7-2.0
45-59	1331	82.9	79.8-86.0	12.3	9.9-14.8	2.8	1.6-4.0	2.0	0.9-3.1
60-69	570	81.5	77.1-85.8	13.7	9.7-17.6	2.3	1.0-3.6	2.6	1.1-4.1
18-69	**5438**	**90.0**	**88.7-91.3**	**7.6**	**6.5-8.7**	**1.3**	**0.9-1.8**	**1.0**	**0.7-1.3**

3.9.2 History of Cholesterol Treatment Among Individuals Previously Diagnosed with Elevated Cholesterol Level

The proportion of men (17.2%) and women (18.6%) using prescribed oral medications for elevated total cholesterol among those previously diagnosed is not significantly different. Among all individuals previously diagnosed with elevated total cholesterol, 18.1% are prescribed oral medication. The proportions of respondents on medication for elevated total cholesterol differ significantly between the 18–44-year age group and the 45–69-year age group. Table 3.9.2.1 presents the proportion of individuals on oral medications for elevated total cholesterol among those previously diagnosed.

Table 3.9.2.1: Proportion of people taking oral medication prescribed for elevated total cholesterol level among those previously diagnosed

Age Group (years)	Men			Women			Both Sexes		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
18-29	2	0.0	0.0-0.0	10	2.5	0.0-8.0	12	2.1	0.0-6.6
30-44	17	7.2	0.0-21.7	26	4.7	0.0-11.8	43	5.9	0.0-13.7
45-59	12	31.5	6.6-56.4	42	31.3	13.9-48.7	54	31.4	17.9-44.8
60-69	5	30.3	0.0-80.0	25	33.9	10.3-57.5	30	33.1	12.2-54.1
18-69	**36**	**17.2**	**4.5-29.8**	**103**	**18.6**	**9.6-27.6**	**139**	**18.1**	**10.7-25.5**

3.9.3 Cholesterol Advice from a Traditional Healer

Among all individuals previously diagnosed with elevated total cholesterol, a total of 14.5% have consulted a traditional healer. Specifically, 15.3% of men and 14.0% of women with previously diagnosed elevated total cholesterol have sought the services of a traditional healer. (Table 3.9.3.1)

Table 3.9.3.1: Proportion of people who have seen a traditional healer for elevated total cholesterol level among those previously diagnosed

Age Group (years)	Men			Women			Both Sexes		
	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI
18-29	2	0.0	0.0-0.0	10	25.6	0.0-54.8	12	21.3	0.0-46.5
30-44	17	13.4	0.0-40.6	26	7.9	0.0-20.0	43	10.7	0.0-24.4
45-59	12	14.3	0.0-39.9	42	17.4	0.2-34.7	54	16.3	2.4-30.2
60-69	5	47.6	0.0-100.0	25	3.9	0.0-11.7	30	13.2	0.0-27.3
18-69	**36**	**15.3**	**0.0-32.0**	**103**	**14.0**	**5.0-23.0**	**139**	**14.5**	**6.4-22.6**

Among individuals with previously diagnosed elevated cholesterol levels, 8.1% are using traditional medication. A higher proportion of men (16.3%) are using traditional medications compared to women (3.3%) for previously diagnosed elevated cholesterol levels. (Table 3.9.3.2)

Table 3.9.3.2 Proportion of people currently taking herbal or traditional treatment for elevated cholesterol among those previously diagnosed

Age Group (years)	Men			Women			Both Sexes		
	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI
18-29	2	0.0	0.0-0.0	10	3.5	0.0-10.7	12	2.9	0.0-8.9
30-44	17	13.4	0.0-40.6	26	2.7	0.0-8.4	43	8.1	0.0-21.8
45-59	12	20.9	0.0-46.9	42	3.4	0.0-7.5	54	9.8	0.0-20.7
60-69	5	27.5	0.0-77.2	25	3.9	0.0-11.7	30	8.9	0.0-21.3
18-69	**36**	**16.3**	**0.0-33.4**	**103**	**3.3**	**0.4-6.2**	**139**	**8.1**	**1.3-14.9**

3.10 History of Cardiovascular Diseases

3.10.1 History of Heart Attack, Angina or Stroke

Among the adult population aged 18-69 years, the proportions of individuals with a history of cardiovascular disease, such as heart attack, chest pain, or stroke (cardiovascular accident or injury), are similar across all age groups. The prevalence of a history of cardiovascular disease is 9.2% for men and 10.2% for women. Overall, 9.7% of the population have a history of heart attack, angina, or stroke, with the highest prevalence of 12.1% observed in the 45–59-year age group, which includes 11.6% of men and 12.6% of women. Table 3.10.1.1 presents the proportions of men, women, and the general population with a history of heart attack, chest pain, or stroke.

Table 3.10.1.1: History of heart attack or chest pain from heart disease or a stroke in men, women and the population.

Age Group (years)	Men			Women			Both Sexes		
	n	% CVD history	95% CI	n	% CVD history	95% CI	n	% CVD history	95% CI
18-29	550	9.0	5.9-12.2	873	9.3	6.9-11.7	1423	9.2	7.3-11.0
30-44	721	8.2	6.0-10.5	1393	9.7	7.8-11.7	2114	9.0	7.5-10.5
45-59	519	11.6	8.1-15.1	812	12.6	9.8-15.5	1331	12.1	9.9-14.4
60-69	232	7.6	4.3-10.8	338	11.3	7.4-15.2	570	9.4	6.8-12.1
18-69	**2022**	**9.2**	**7.3-11.0**	**3416**	**10.2**	**9.0-11.4**	**5438**	**9.7**	**8.6-10.7**

3.10.2 Prevention and Treatment of Heart Diseases

Two of the most commonly prescribed medications for preventing heart disease are aspirin and statins. Among men, 0.9% take aspirin regularly to prevent or treat heart disease, while 1.6% of women do same. Overall, 1.2% of the population are taking aspirin, with no significant difference observed across various age groups. Table 3.10.2.1 shows the proportion of the population currently taking aspirin regularly to prevent or treat heart disease.

Table 3.10.2.1: Proportion of men, women and population currently taking aspirin regularly to prevent or treat heart disease

Age Group (years)	Men			Women			Both Sexes		
	n	% taking aspirin	95% CI	n	% taking aspirin	95% CI	n	% taking aspirin	95% CI
18-29	550	0.4	0.0-0.8	873	1.2	0.4-2.1	1423	0.8	0.3-1.2
30-44	721	1.2	0.4-2.1	1393	1.4	0.4-2.3	2114	1.3	0.6-2.0
45-59	519	1.7	0.0-3.6	812	2.6	1.1-4.2	1331	2.2	1.0-3.4
60-69	232	1.5	0.0-3.3	338	1.7	0.0-3.6	570	1.6	0.3-2.9
18-69	**2022**	**0.9**	**0.5-1.4**	**3416**	**1.6**	**1.0-2.1**	**5438**	**1.2**	**0.9-1.6**

Regularly, 0.6% of men and 1.6% of women take statins for the prevention or treatment of heart disease. None of the men in the 18–29-year age group are on statins. Overall, 1.1% of the population are taking statins. Table 3.10.2.2 shows the proportion of the population using statins for the prevention or treatment of heart disease.

Table 3.10.2.2: Respondents currently taking statins to prevent or treat heart disease

Age Group (years)	Men			Women			Both Sexes		
	n	% taking statins	95% CI	n	% taking statins	95% CI	n	% taking statins	95% CI
18-29	550	0.0	0.0-0.1	873	0.7	0.1-1.2	1423	0.3	0.1-0.6
30-44	721	0.9	0.2-1.6	1393	1.3	0.5-2.1	2114	1.1	0.6-1.6
45-59	519	1.4	0.4-2.5	812	3.3	1.8-4.9	1331	2.4	1.4-3.3
60-69	232	0.4	0.0-1.0	338	4.0	1.3-6.7	570	2.2	0.8-3.6
18-69	**2022**	**0.6**	**0.3-0.8**	**3416**	**1.6**	**1.1-2.1**	**5438**	**1.1**	**0.8-1.3**

3.10.3 Prevalence of Some Non-Communicable Diseases in the Population

The proportion of the population with a history of diagnoses of elevated blood pressure, elevated blood glucose, elevated blood cholesterol, and cardiovascular disease, along with the corresponding figures for men and women, are shown in Table 3.10.3.1.

Table 3.10.3.1: Percentage of the population, men and women with some non-communicable diseases.

Disease condition	Population (%)	Men (%)	Women (%)
Elevated blood pressure	16.7	12.1	21.3
Elevated blood glucose	3.4	2.2	4.7
Elevated blood cholesterol	2.3	1.8	3.0
Cardiovascular disease	9.7	9.2	10.2

Figure 3.10.3.1: Bar chart of some non-communicable diseases among the population

3.10.4 Proportion of Population Who Have Never Been Screened

The proportion of population who have never had their blood pressure, blood sugar or blood cholesterol ever checked.

Table 3.10.4.1: Percentage of population who have never checked their blood pressure, glucose or cholesterol

Parameter	Population	Men	Women
Blood pressure	24.3	33.8	14.7
Blood sugar	70.3	76.6	63.9
Blood cholesterol	90.0	91.3	88.7

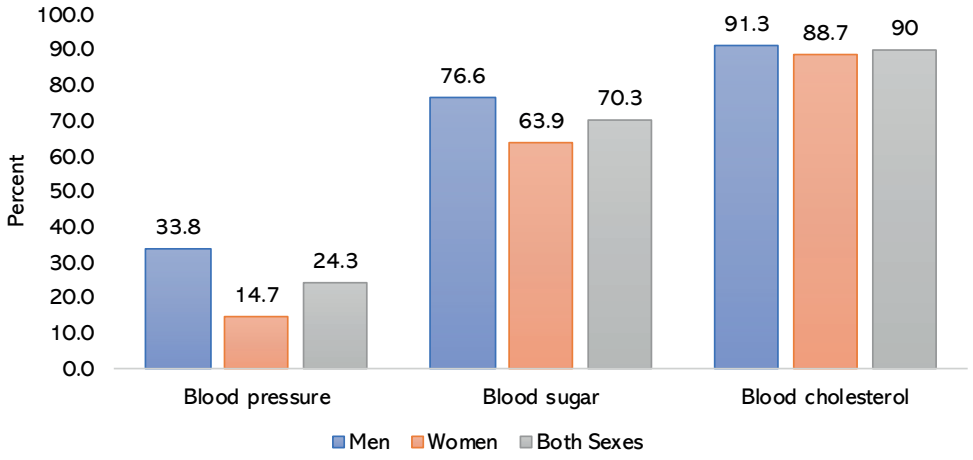

Figure 3.10.4.1: Bar chart of the population who have never checked their blood pressure, sugar or cholesterol.

3.11 Lifestyle Advice

3.11.1 Advice from a Doctor or Health Worker on Avoiding Tobacco

Among the population, 6.4% have been advised by a doctor or health worker within the last three years to either avoid starting or to quit using tobacco. Younger age groups have received such advice more frequently than older age groups. Specifically, 7.6% of men and 5.7% of women have been advised to cease or avoid tobacco use. (Table 3.11.1.1)

Table 3.11.1.1: Proportions of the population advised by doctor or health worker to quit or not to start tobacco use

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	159	6.4	2.1-10.7	461	9.1	5.7-12.6	620	8.2	5.4-11.0
30-44	272	8.9	5.0-12.8	735	4.7	3.2-6.2	1007	6.4	4.6-8.2
45-59	206	7.8	2.8-12.8	460	1.5	0.5-2.5	666	4.0	1.9-6.1
60-69	114	7.4	2.0-12.8	238	2.4	0.3-4.6	352	4.5	1.9-7.0
18-69	**751**	**7.6**	**5.4-9.9**	**1894**	**5.7**	**4.2-7.2**	**2645**	**6.4**	**5.1-7.8**

3.11.2 Advice from a Doctor or Health Worker on Reducing Salt Intake

Advice on reducing salt intake over the last three years has been given to 21.4% of the population, with 18.0% of men and 23.6% of women receiving such advice. The proportion of individuals receiving advice on salt reduction significantly increases with age. Table 3.11.2.1 shows the proportions of the population advised by a doctor or health worker to reduce salt in their diet.

Table 3.11.2.1: Proportions of the populations advised by doctor or health worker to reduce salt in the diet

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	159	9.3	3.5-15.1	461	13.8	9.4-18.3	620	12.2	8.6-15.7
30-44	272	20.6	14.9-26.4	735	22.1	18.1-26.2	1007	21.5	17.9-25.1
45-59	206	22.4	15.4-29.4	460	37.9	32.9-42.9	666	31.8	27.7-35.9
60-69	114	33.0	22.9-43.1	238	42.4	33.0-51.8	352	38.6	32.0-45.1
18-69	**751**	**18.0**	**14.4-21.5**	**1894**	**23.6**	**21.0-26.1**	**2645**	**21.4**	**19.3-23.5**

3.11.3 Advice from a Doctor or Health Worker on Consuming at Least Five Servings of Fruit and/or Vegetables Per Day

The proportion of the population advised to consume five servings of fruit and/or vegetables per day over the last three years is 41.3%. Specifically, 34.3% of men and 45.8% of women have received this advice. Notably, as age increases, the proportion of men advised to eat fruit and vegetables rises, whereas it decreases among women. Table 3.11.3.1 shows the proportion of the population advised by a doctor or health worker to consume at least five servings of fruit and/or vegetables each day.

Table 3.11.3.1: Proportion of the population advised by doctor or health worker to eat at least five servings of fruit and/or vegetables each day

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	159	25.7	16.5-34.9	461	50.0	44.2-55.7	620	41.1	35.8-46.4
30-44	272	35.3	28.5-42.0	735	45.2	40.7-49.7	1007	41.1	37.1-45.2
45-59	206	43.0	34.3-51.7	460	40.4	35.2-45.5	666	41.4	36.7-46.1
60-69	114	45.6	33.3-57.8	238	40.2	31.8-48.6	352	42.4	34.7-50.1
18-69	**751**	**34.3**	**29.5-39.0**	**1894**	**45.8**	**42.5-49.0**	**2645**	**41.3**	**38.5-44.0**

3.11.4 Advice from a Doctor or Health Worker on Reducing Fat Intake

Advice on reducing fat in the diet over the last three years has been given to 22.1% of men, 26.7% of women, and 24.9% of both sexes combined. Although there is no significant difference between the various age groups, the proportion of individuals advised to reduce fat intake increases with age. Table 3.11.4 shows the proportion of the population advised by a doctor or health worker to reduce dietary fat.

Table 3.11.4.1: Proportions of the population advised by a doctor or health worker to reduce fat in the diet

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	159	13.4	6.9-19.8	461	24.6	19.2-30.0	620	20.5	16.0-25.0
30-44	272	24.5	18.0-31.0	735	24.3	18.6-30.0	1007	24.4	20.2-28.6
45-59	206	28.2	20.4-36.1	460	32.7	27.7-37.6	666	30.9	26.8-35.1
60-69	114	34.4	23.0-45.8	238	31.8	22.2-41.3	352	32.8	25.9-39.8
18-69	**751**	**22.1**	**18.3-25.9**	**1894**	**26.7**	**23.7-29.7**	**2645**	**24.9**	**22.9-26.9**

3.11.5 Advise from a Doctor or Health Worker on Physical Activity

Almost equal proportions of men (25.6%) and women (25.4%) have received advice from a doctor or health worker to start or increase physical activity over the last three years. Overall, 25.5% of the population have received such advice. (Table 3.11.5.1)

Table 3.11.5.1: Proportions of the population advised by doctor or health worker to start or do more physical activity

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	159	19.4	9.7-29.1	461	26.2	21.3-31.1	620	23.7	19.5-28.0
30-44	272	27.2	20.5-33.9	735	22.0	18.3-25.8	1007	24.1	20.8-27.5
45-59	206	30.6	22.5-38.8	460	28.7	23.9-33.6	666	29.5	25.3-33.6
60-69	114	33.9	22.6-45.3	238	26.6	19.3-33.9	352	29.6	23.0-36.2
18-69	**751**	**25.6**	**21.1-30.1**	**1894**	**25.4**	**23.0-27.9**	**2645**	**25.5**	**23.3-27.7**

3.11.6 Advice from a Doctor or Health Worker on Maintaining a Healthy Body Weight

Among the population, 17.8% have received advice to maintain a healthy weight or to lose weight in the past three years. This advice has been fairly evenly distributed between men and women, with 17.9% of men and 17.7% of women receiving such recommendations. This data is illustrated in Table 3.11.6, which shows the proportions of respondents who have been advised by a doctor or health worker to manage their weight.

Table 3.11.6.1: Proportions of the population advised by a doctor or health worker to maintain a healthy weight or to lose weight

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	159	12.0	5.4-18.6	461	18.0	12.7-23.2	620	15.8	11.8-19.8
30-44	272	18.5	12.8-24.1	735	13.3	10.4-16.1	1007	15.4	12.6-18.3
45-59	206	25.3	17.7-32.9	460	21.1	16.4-25.9	666	22.8	18.7-26.9
60-69	114	22.6	13.2-32.0	238	25.2	15.0-35.4	352	24.1	17.1-31.2
18-69	**751**	**17.9**	**14.0-21.8**	**1894**	**17.7**	**15.1-20.4**	**2645**	**17.8**	**15.6-19.9**

3.11.7 Proportion of Respondents Advised on Various Lifestyles

The lifestyle of an individual plays a significant role in influencing the occurrence, progression, or management of NCDs. The STEPS survey provided insights into the proportions of the population who have received advice from doctors or health workers regarding various lifestyle factors. These proportions are detailed in Table 3.11.7.1, which outlines the extent to which individuals have been advised on different aspects of lifestyle that impact health.

Table 3.11.7.1: Proportions of the population advised by a doctor or health worker on various lifestyles

Lifestyle	Population (%)	Men (%)	Women (%)
Tobacco use	6.4	7.6	5.7
Salt in diets	21.4	18.0	23.6
Fruits and Vegetables	41.3	34.3	45.8
Fat in diet	24.9	22.1	26.7
Physical activity	25.5	25.6	25.4
Healthy weight or loss	17.8	17.9	17.7

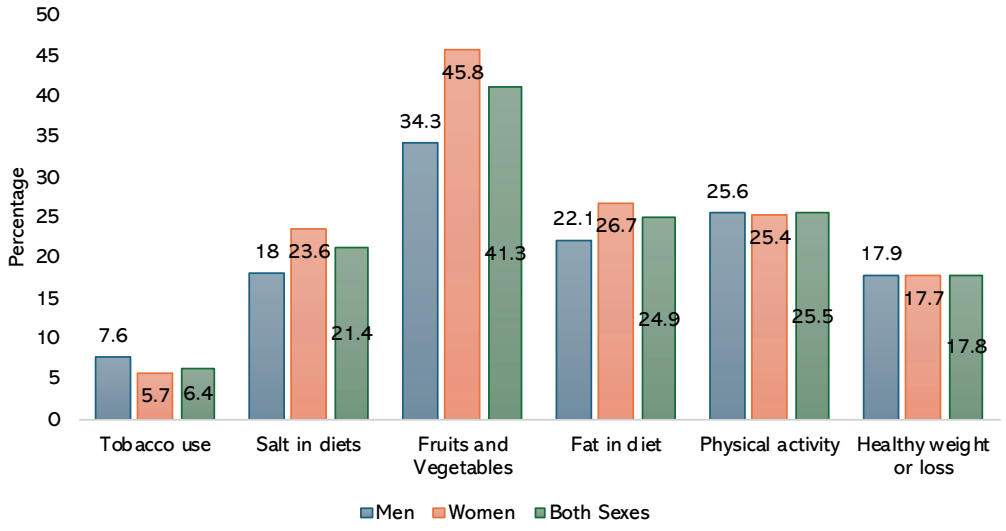

Figure 3.11.7.1: Bar chart of proportions of the population who have received various lifestyle advice from a doctor or a health worker.

3.12 Cervical Cancer

3.12.1 History Cervical Cancer Screening

Among women, only 3.6% have ever undergone cervical cancer screening using any of the available methods, including Pap Smear, Visual Inspection with Acetic Acid (VIA), or the Human Papillomavirus (HPV) test. Although the proportion of women who have been screened for cervical cancer increases with age, ranging from 2.0% in the 18–29-year age group to 7.9% in the 60–69-year age group, there are no statistically significant differences between the various age groups. For a detailed breakdown, see Table 3.12.1.1, which illustrates the proportion of women who have ever been screened for cervical cancer.

Table 3.12.1.1: Proportion of women screened for cervical cancer

Age Group (years)	Women		
	n	% ever tested	95% CI
18-29	848	2.0	0.8-3.2
30-44	1356	3.4	2.0-4.7
45-59	794	6.4	4.1-8.7
60-69	328	7.9	4.2-11.5
18-69	**3326**	**3.6**	**2.8-4.5**

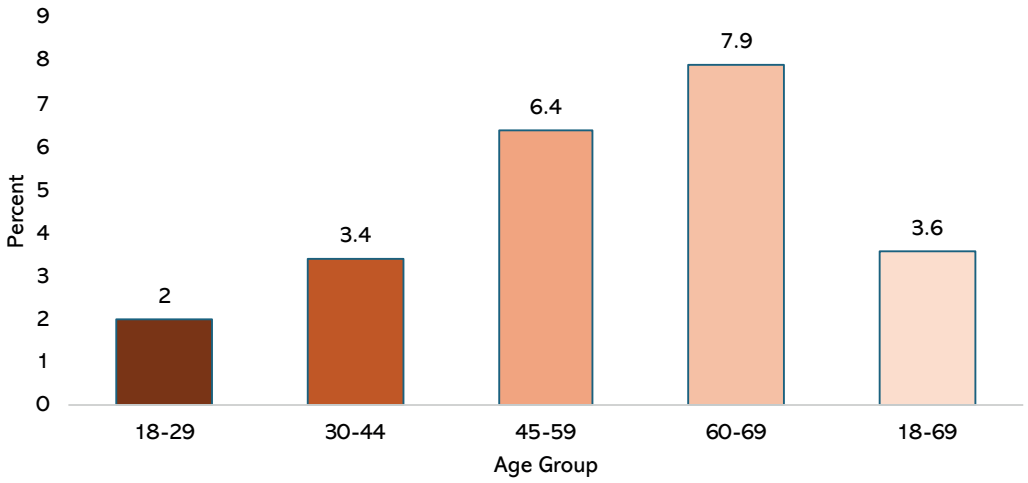

Figure 3.12.1.1: Bar chart of the proportion of women in various age groups who have ever been screened for cervical cancer

For women aged 30-49 years, 4.3% have ever undergone cervical cancer screening. Among these women, the proportion of those who have been screened is higher in urban areas (5.1%) compared to rural areas (3.0%).

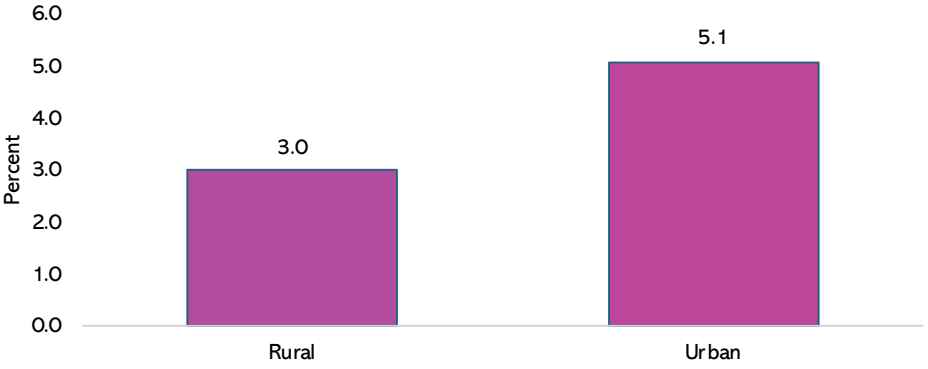

Figure 3.12.1.2: Bar chart of the proportion of women (30-49 years) in rural and urban population who have ever been screened for cervical cancer

3.13 Physical Measurement

3.13.1 Mean Blood Pressure Measurement

The mean systolic blood pressure of the population, including those currently on medication for elevated blood pressure, is 120.3 mmHg, while the mean diastolic blood pressure is 79.6 mmHg. Blood pressures generally increase with age for both sexes. Notably, the mean systolic blood pressure is significantly higher in men at 122.3 mmHg (95% CI: 121.2-123.4) compared to women at 118.3 mmHg (95% CI: 117.3-119.3). Conversely, the mean diastolic blood pressure is significantly higher in women at 80.7 mmHg (95% CI: 80.1-81.3) than in men at 78.5 mmHg (95% CI: 77.7-79.3).

There is no significant difference in the mean systolic blood pressure between urban (120.5 mmHg) and rural (120.0 mmHg) populations. However, the mean diastolic blood pressure is lower in the rural population at 78.5 mmHg (95% CI: 77.8-79.3) compared to the urban population, which has a mean of 80.3 mmHg (95% CI: 79.4-81.2).

Table 3.13.1.1: Mean systolic blood pressure (mmHg) for the population

Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	550	115.9	114.8-117.1	871	108.7	107.8-109.6	1421	112.5	111.7-113.3
30-44	721	124.7	123.1-126.3	1392	118.3	116.9-119.7	2113	121.4	120.3-122.5
45-59	514	130.3	127.8-132.8	807	133.4	131.5-135.3	1321	131.9	130.3-133.5
60-69	229	136.5	132.5-140.6	337	139.7	133.3-146.1	566	138.1	134.7-141.6
18-69	**2014**	**122.3**	**121.2-123.4**	**3407**	**118.3**	**117.3-119.3**	**5421**	**120.3**	**119.5-121.1**

Table 3.13.1.2: Mean diastolic blood pressure (mmHg) for the population

Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	550	72.7	71.7-73.7	871	75.1	74.4-75.9	1421	73.9	73.2-74.5
30-44	721	82.3	81.1-83.4	1392	82.2	81.3-83.1	2113	82.2	81.5-83.0
45-59	514	85.2	83.6-86.7	807	89.1	87.9-90.2	1321	87.2	86.1-88.2
60-69	229	85.8	83.3-88.3	337	86.8	84.5-89.1	566	86.3	84.9-87.7
18-69	**2014**	**78.5**	**77.7-79.3**	**3407**	**80.7**	**80.1-81.3**	**5421**	**79.6**	**79.0-80.2**

3.13.2 Elevated Blood Pressure

Elevated blood pressure, defined as having a systolic blood pressure of 140 mmHg or higher and/or a diastolic blood pressure of 90 mmHg or higher, is prevalent among 19.6% of the population. This includes 17.3% of men and 22.0% of women. The prevalence of elevated blood pressure increases with age, reflecting a significant trend as age progresses.

In terms of geographic differences, a significant proportion of the urban population, at 23.4% (95% CI: 21.1-25.9), has elevated blood pressure compared to 19.1% (95% CI: 17.0-21.1) in the rural population. This indicates a notable urban-rural disparity in the prevalence of elevated blood pressure.

Table 3.13.2.1: Elevated blood pressure (SBP ≥140 and/or DBP ≥ 90 mmHg) among the population

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	548	4.1	2.3-6.0	863	6.2	4.3-8.0	1411	5.1	3.8-6.4
30-44	715	22.8	19.1-26.5	1378	24.3	21.4-27.2	2093	23.6	21.2-26.0
45-59	509	34.5	29.1-39.8	792	47.4	43.2-51.7	1301	41.1	37.6-44.5
60-69	226	43.3	34.7-51.8	330	45.6	37.9-53.3	556	44.4	39.0-49.9
18-69	**1998**	**17.3**	**15.3-19.4**	**3363**	**22.0**	**20.3-23.7**	**5361**	**19.6**	**18.1-21.1**

Severe elevated blood pressure is observed in 8.4% of the population, with 7.3% among men and 9.5% among women. The prevalence of severe elevated blood pressure shows a significant variation across age groups. Specifically, there is a marked difference between those aged 18-44 years and those aged 45-69 years.

The prevalence of severe elevated blood pressure increases substantially with age. It starts at 1.1% among the 18–29-year age group and rises sharply to 9.7% in the 30–44-year group. However, within the older age groups, there is no significant difference in the prevalence of severe elevated blood pressure. The rates are similar between the 45–59-year group (19.2%) and the 60–69-year group (23.6%). This pattern underscores the growing prevalence of severe elevated blood pressure as individuals age, particularly from mid-adulthood onwards.

Table 3.13.2.2: Severe elevated blood pressure (SBP ≥160 and/or DBP ≥ 100 mmHg) among the population

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	548	0.9	0.0-2.0	863	1.4	0.6-2.1	1411	1.1	0.5-1.8
30-44	715	9.0	6.5-11.5	1378	10.3	8.3-12.3	2093	9.7	8.0-11.3
45-59	509	16.9	12.3-21.5	792	21.4	17.9-25.0	1301	19.2	16.3-22.1
60-69	226	20.7	14.2-27.2	330	26.6	18.6-34.6	556	23.6	18.8-28.4
18-69	**1998**	**7.3**	**5.9-8.7**	**3363**	**9.5**	**8.2-10.7**	**5361**	**8.4**	**7.4-9.3**

3.13.3 Prevalence of people living with hypertension

The proportion of the population with elevated blood pressure or currently on medications for elevated blood pressure stands at 21.7%. This condition is more prevalent among women (25.3%) compared to men (18.2%).

The prevalence of hypertension significantly increases with age. For the 18–29-year age group, 5.5% are affected, a figure that rises substantially to 24.9% in the 30–44-year group. The prevalence escalates further to 45.6% among those aged 45–59 years and reaches 55.3% among individuals in the 60–69-year group. This indicates that approximately one in every two individuals older than 45 years has hypertension.

The increase in hypertension prevalence is notably steep among women as they age. In the younger age groups (18–29 years), 7.0% of women have hypertension, which surges dramatically to 64.2% in the older age groups (60–69 years) (Table 3.13.3.1)

Table 3.13.3.1: Prevalence of people living with hypertension (SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for elevated blood pressure)

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	548	4.1	2.3-6.0	863	7.0	5.1-8.9	1411	5.5	4.1-6.9
30-44	715	24.0	20.2-27.8	1378	25.7	22.8-28.7	2093	24.9	22.5-27.4
45-59	509	36.3	31.0-41.6	792	54.6	50.3-58.8	1301	45.6	42.1-49.1
60-69	226	46.5	37.9-55.0	330	64.2	57.2-71.3	556	55.3	49.9-60.8
18-69	**1998**	**18.2**	**16.1-20.3**	**3363**	**25.3**	**23.4-27.1**	**5361**	**21.7**	**20.2-23.2**

People living with severe hypertension make up 11.8% of the population. The prevalence varies by age group, with 1.6% in the 18–29-year group, 11.9% in the 30–44-year group, 27.7% in the 45–59-year group, and 40.8% in the 60–69-year group (Table 3.13.3.2).

Table 3.13.3.2: Prevalence of people living with severe hypertension (SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for elevated blood pressure)

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	548	0.9	0.0-2.0	863	2.3	1.1-3.4	1411	1.6	0.8-2.3
30-44	715	10.4	7.8-13.1	1378	13.3	11.0-15.6	2093	11.9	10.2-13.7
45-59	509	19.6	14.9-24.3	792	35.5	31.2-39.8	1301	27.7	24.5-30.9
60-69	226	28.7	21.6-35.8	330	52.9	45.3-60.5	556	40.8	35.7-45.9
18-69	**1998**	**8.7**	**7.2-10.1**	**3363**	**15.0**	**13.5-16.5**	**5361**	**11.8**	**10.7-12.9**

3.13.4 Diagnosis, Treatment and Control of Elevated Blood Pressure

Among individuals with elevated blood pressure, 60.6% of men and 44.1% of women had not been previously diagnosed. Of those who had been previously diagnosed but were not on medication, 24.2% were men and 25.0% were women. Among those on medication for elevated blood pressure, 10.4% of men had uncontrolled blood pressure, while 4.8% had controlled blood pressure. For women, 18.0% had uncontrolled blood pressure, with 13.0% being controlled (Table 3.13.4.1 and 3.13.4.2).

Overall, 51.1% of the population with elevated blood pressure had not been previously diagnosed, 24.6% of those previously diagnosed were not on medication, 14.7% were on medication but not controlled, and only 9.5% of those diagnosed and on medication had controlled blood pressure (Table 3.13.4.3).

Tables 3.13.4.1-3 illustrate the proportions of the population with elevated blood pressure who were not previously diagnosed, previously diagnosed but not on medication, previously diagnosed and on medication but not controlled, and previously diagnosed and on medication with controlled blood pressure, among men, women, and the overall population, respectively.

Table 3.13.4.1: Proportions with elevated blood pressure diagnosis, treatment and control among those with elevated blood pressure (SBP ≥ 140 and/or DBP ≥ 90 mmHg) or on medication for elevated blood pressure among men

Age Group (years)	n	% with elevated blood pressure, not previously diagnosed	95% CI	% with previously diagnosed elevated blood pressure, not on medication	95% CI	% with previously diagnosed elevated blood pressure, on medication but not controlled	95% CI	% with previously diagnosed elevated blood pressure, on medication and blood pressure controlled	95% CI
18-29	34	96.2	91.1-100.0	3.8	0.0-8.9	0.0	0.0-0.0	0.0	0.0-0.0
30-44	167	56.9	47.6-66.3	27.4	18.7-36.1	10.5	4.6-16.5	5.1	1.3-8.9
45-59	181	61.3	52.6-70.1	24.7	17.2-32.1	9.0	3.4-14.5	5.0	0.9-9.2
60-69	112	44.1	32.2-56.0	28.7	18.3-39.1	20.3	10.6-30.0	6.9	2.4-11.4
18-69	**494**	**60.6**	**55.4-65.9**	**24.2**	**19.6-28.7**	**10.4**	**6.8-14.0**	**4.8**	**2.6-7.0**

Table 3.13.4.2: Proportions with elevated blood pressure diagnosis, treatment and control among those with elevated blood pressure (SBP ≥ 140 and/or DBP ≥ 90 mmHg) or on medication for elevated blood pressure among women

Age Group (years)	n	% with elevated blood pressure, not previously diagnosed	95% CI	% with previously diagnosed elevated blood pressure, not on medication	95% CI	% with previously diagnosed elevated blood pressure, on medication but not controlled	95% CI	% with previously diagnosed elevated blood pressure, on medication and blood pressure controlled	95% CI
18-29	67	70.7	57.6-83.7	16.2	7.3-25.1	1.3	0.0-2.9	11.8	0.4-23.2
30-44	361	55.0	48.5-61.4	28.6	22.7-34.4	10.9	6.9-14.9	5.6	2.9-8.3
45-59	430	37.7	32.1-43.4	26.8	21.6-32.1	22.4	17.4-27.3	13.1	9.0-17.1
60-69	198	17.2	11.3-23.0	19.5	12.4-26.6	34.3	23.5-45.1	29.0	20.6-37.4
18-69	**1056**	**44.1**	**40.4-47.8**	**25.0**	**21.7-28.2**	**18.0**	**14.6-21.3**	**13.0**	**10.4-15.5**

Table 3.13.4.3: Proportions of the population with elevated blood pressure diagnosis, treatment and control among those with elevated blood pressure (SBP ≥ 140 and/or DBP ≥ 90 mmHg) or on medication for elevated blood pressure among both sexes

Age Group (years)	n	% with elevated blood pressure, not previously diagnosed	95% CI	% with previously diagnosed elevated blood pressure, not on medication	95% CI	% with previously diagnosed elevated blood pressure, on medication but not controlled	95% CI	% with previously diagnosed elevated blood pressure, on medication and blood pressure controlled	95% CI
18-29	101	80.7	71.9-89.5	11.3	5.6-17.0	0.8	0.0-1.8	7.1	0.0-14.3
30-44	528	55.9	50.3-61.5	28.0	22.8-33.3	10.7	7.3-14.1	5.4	3.1-7.6
45-59	611	47.0	42.2-51.8	26.0	21.7-30.3	17.1	13.2-21.0	9.9	7.0-12.8
60-69	310	28.5	22.2-34.8	23.4	17.3-29.5	28.4	20.7-36.1	19.7	14.5-24.9
18-69	**1550**	**51.1**	**48.2-54.1**	**24.6**	**22.0-27.3**	**14.7**	**12.1-17.4**	**9.5**	**7.7-11.3**

3.13.5 Mean Heart Rate (Beats Per Minute)

The mean heart rate for women (79.6 bpm) is significantly higher than that for men (72.0 bpm). The overall mean heart rate for the population is 75.7 bpm, with the rate being higher in the younger age group (Table 3.13.5.1).

Table 3.13.5.1: Mean heart rate of the population

Age Group (years)	Men			Women			Both Sexes		
	n	mean	95% CI	n	mean	95% CI	n	mean	95% CI
18-29	550	71.4	70.0-72.8	871	81.8	81.0-82.7	1421	76.4	75.5-77.2
30-44	721	72.6	71.5-73.8	1392	78.3	77.4-79.2	2113	75.6	74.9-76.2
45-59	514	72.7	71.3-74.0	807	77.6	76.6-78.5	1321	75.2	74.3-76.0
60-69	230	71.4	69.9-73.0	337	76.0	74.3-77.8	567	73.7	72.5-75.0
18-69	**2015**	**72.0**	**71.2-72.7**	**3407**	**79.6**	**79.1-80.1**	**5422**	**75.7**	**75.3-76.2**

3.14 Anthropometric Measurements

3.14.1 Mean Height of the Population (Excluding Pregnant Women)

The mean height of men is 168.8 cm, while that of women is 158.7 cm, indicating that, on average, men are significantly taller than women by 10.1 cm across all age groups. The older age group (60–69 years) is significantly shorter than the 18–59-year group for both sexes (Table 3.14.1.1).

Table 3.14.1.1: Mean height (cm) of men and women

Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	550	169.2	168.4-170.1	797	159.5	158.9-160.2
30-44	719	169.1	168.4-169.8	1304	158.8	158.3-159.4
45-59	514	168.0	167.1-169.0	804	157.6	157.0-158.2
60-69	231	165.8	164.6-166.9	336	155.9	154.8-156.9
18-69	**2014**	**168.8**	**168.3-169.2**	**3241**	**158.7**	**158.3-159.1**

3.14.2 Mean Weight of Men and Women (Excluding Pregnant Women)

The mean weight of men is 63.5 kg, while that of women is 65.5 kg. Although the mean weight varies across different age groups for both sexes, these differences are not statistically significant. However, the mean weight in all age groups is higher for women than for men. Table 3.14.2.1 presents the mean weight (kg) of men and women.

Table 3.14.2.1: Mean weight (kg) of men and women

Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	550	61.1	59.8-62.4	797	62.2	60.8-63.6
30-44	719	66.5	65.3-67.6	1304	68.8	67.6-69.9
45-59	513	65.5	64.0-67.1	803	67.9	66.3-69.6
60-69	231	62.7	60.8-64.6	336	63.8	61.8-65.8
18-69	**2013**	**63.5**	**62.7-64.4**	**3240**	**65.5**	**64.7-66.3**

3.14.3 Mean BMI of Men, Women and All Respondents (Excluding Pregnant Women)

The mean BMI is significantly higher for women (26.0 kg/m^2) compared to men (22.4 kg/m^2). Overall, the mean BMI of the population is 24.2 kg/m^2 (Table 3.14.3.1).

The urban population has a mean BMI of 24.8 kg/m^2 (95% CI: 24.5-25.2), which is higher than that of the rural population, at 23.2 kg/m^2 (95% CI: 22.8-23.5).

Table 3.14.3.1: Mean BMI for men, women and both sexes (excluding pregnant women)

Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	545	21.5	21.2-21.9	795	24.5	23.9-25.0	1340	22.9	22.6-23.2
30-44	716	23.3	22.9-23.6	1300	27.3	26.8-27.8	2016	25.3	25.0-25.6
45-59	508	23.1	22.6-23.6	798	27.2	26.5-27.9	1306	25.2	24.7-25.7
60-69	229	22.8	22.2-23.5	334	26.4	25.5-27.3	563	24.6	24.0-25.2
18-69	**1998**	**22.4**	**22.2-22.7**	**3227**	**26.0**	**25.7-26.4**	**5225**	**24.2**	**23.9-24.4**

3.14.4 BMI Classifications and Percentage of the Population (Excluding Pregnant Women) in Each Category

A higher proportion of men (12.1%) are classified as underweight compared to women (6.7%) (see Tables 3.14.4a and 3.14.4b). The majority of men (68.3%) are within the normal weight range, while less than half of women (43.5%) fall into this category (see Tables 3.14.4.1 and 3.14.4.2).

The proportion of overweight individuals (BMI ≥25 kg/m^2) is 19.7% for men and 49.8% for women. Overweight is more prevalent among men in the 45–59-year age group, whereas women show higher rates of overweight in the 30–44-year age group. Overall, 34.3% of both sexes are classified as overweight (see Table 3.14.4.4).

The proportion of overweight individuals is significantly higher in urban areas (40.3%, 95% CI: 37.1-43.5) compared to rural areas (25.3%, 95% CI: 22.2-28.4).

Obesity is more prevalent among women (22.8%) compared to men (4.5%). Higher proportions of obese individuals are found in the 30–59-year age range (see Tables 3.14.4a and 3.14.4b). The obesity rate in the urban population (16.9%, 95% CI: 14.8-19.0) is twice that of the rural population (8.2%, 95% CI: 6.7-9.7).

Overall, 56.3% of the population have normal weight, 9.5% are underweight, 20.9% are overweight, and 13.4% are classified as obese. (Table 3.14.4.3)

The Tables 3.14.4a-d show the BMI classifications for men, women, both sexes and the population who are overweight respectively.

Table 3.14.4.1: BMI classification for men

Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Overweight 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
18-29	545	14.4	9.6-19.2	74.6	69.2-79.9	8.9	5.6-12.3	2.1	0.6-3.6
30-44	716	7.8	5.5-10.2	65.9	61.5-70.2	19.8	16.3-23.3	6.5	4.3-8.7
45-59	508	12.4	8.8-16.0	58.1	52.3-64.0	22.7	17.7-27.6	6.8	3.8-9.8
60-69	229	13.8	8.7-19.0	61.7	53.5-69.8	18.6	12.2-25.0	5.9	2.6-9.1
18-69	**1998**	**12.1**	**9.6-14.6**	**68.3**	**65.3-71.3**	**15.2**	**12.9-17.5**	**4.5**	**3.3-5.7**

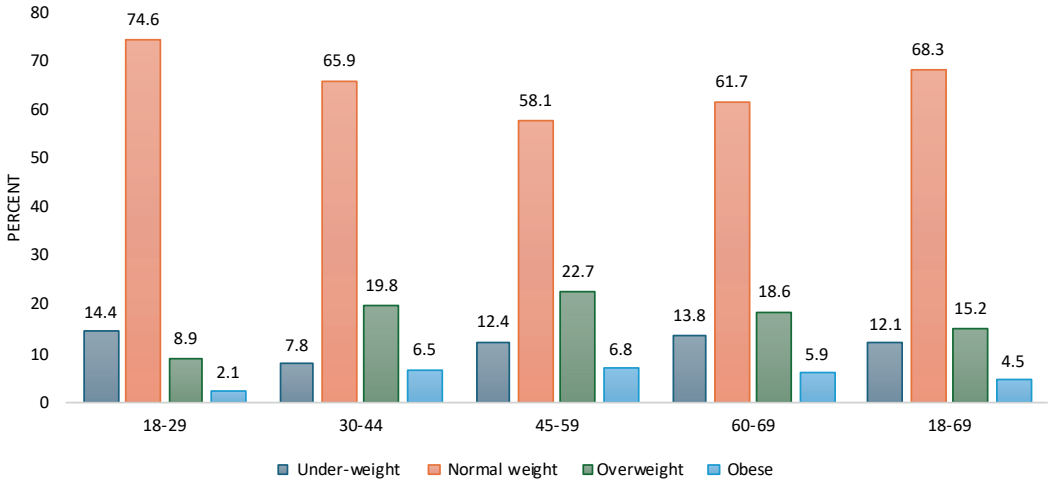

Figure 3.14.4.1: Bar charts showing BMI classification for men in the various age groups

Table 3.14.4.2: BMI classification for women

Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Overweight 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
18-29	795	8.9	6.3-11.5	54.9	50.5-59.3	22.5	18.8-26.1	13.8	10.5-17.0
30-44	1300	3.8	2.5-5.2	35.2	31.5-39.0	31.0	27.8-34.3	29.9	26.8-33.0
45-59	798	6.3	4.5-8.1	34.7	30.5-38.9	28.8	24.9-32.8	30.2	25.8-34.7
60-69	334	8.3	4.3-12.3	37.1	29.9-44.3	29.7	24.1-35.3	24.9	17.2-32.6
18-69	**3227**	**6.7**	**5.4-8.1**	**43.5**	**40.9-46.2**	**26.9**	**24.8-29.0**	**22.8**	**20.5-25.2**

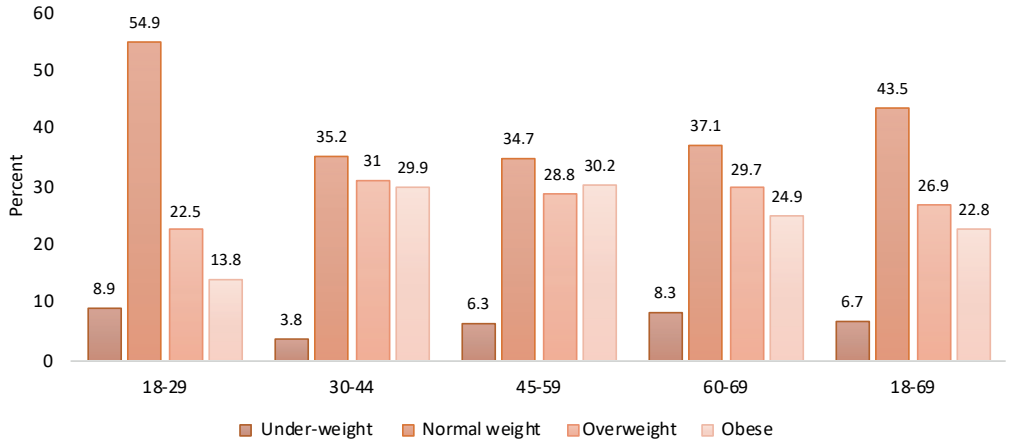

Figure 3.14.4.2: Bar chart showing BMI classification for women in the various age groups

Table 3.14.4.3: BMI classification for both sexes

Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Overweight 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
18-29	1340	11.9	9.1-14.6	65.5	61.8-69.1	15.2	12.6-17.7	7.5	5.8-9.2
30-44	2016	5.8	4.5-7.1	50.4	47.5-53.4	25.4	23.1-27.8	18.3	16.3-20.2
45-59	1306	9.3	7.3-11.3	46.2	42.3-50.0	25.8	22.7-28.9	18.8	15.8-21.7
60-69	563	11.1	7.7-14.4	49.4	43.8-55.0	24.2	19.9-28.4	15.4	11.0-19.8
18-69	**5225**	**9.5**	**8.1-10.9**	**56.3**	**54.1-58.4**	**20.9**	**19.3-22.5**	**13.4**	**12.1-14.7**

Table 3.14.4.4: Percentage of the population (excluding pregnant women) classified as overweight (BMI≥25)

Age Group (years)	Men			Women			Both Sexes		
	n	% BMI≥25	95% CI	n	% BMI≥25	95% CI	n	% BMI≥25	95% CI
18-29	545	11.0	7.4-14.7	795	36.2	32.0-40.5	1340	22.7	19.8-25.5
30-44	716	26.3	22.2-30.4	1300	60.9	57.0-64.9	2016	43.7	40.7-46.8
45-59	508	29.5	23.9-35.0	798	59.1	54.6-63.5	1306	44.6	40.5-48.6
60-69	229	24.5	17.4-31.6	334	54.6	47.4-61.8	563	39.5	34.1-45.0
18-69	**1998**	**19.7**	**17.1-22.2**	**3227**	**49.8**	**47.1-52.4**	**5225**	**34.3**	**32.2-36.4**

3.14.5 Waist Circumference of the Population (Excluding Pregnant Women)

The mean waist circumference is 78.7 cm for men and 86.1 cm for women. There is a significant difference in mean waist circumference for individuals in the 18-29 year age group compared to those in other age groups across all sexes. (Table 3.14.5.1)

Table 3.14.5.1: Mean waist circumference (cm) of the population (excluding pregnant women)

Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	549	75.0	74.2-75.8	798	80.6	79.5-81.6
30-44	718	80.9	80.1-81.8	1304	89.1	88.2-90.1
45-59	514	83.3	81.9-84.6	803	91.5	90.1-92.9
60-69	231	83.7	82.0-85.4	337	91.6	89.7-93.5
18-69	**2012**	**78.7**	**78.1-79.4**	**3242**	**86.1**	**85.5-86.8**

3.14.6 Hip Circumference of the Population (Excluding Pregnant Women)

The mean hip circumference is 92.0 cm for men and 100.7 cm for women. Among the younger age group (18-29 years), mean hip circumference is lower for both men and women. The mean hip circumference for the population, excluding pregnant women, is detailed in Table 3.14.6.1.

Table 3.14.6.1: Mean hip circumference (cm) of the population (excluding pregnant women)

Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	549	90.0	89.3-90.8	798	98.3	97.1-99.4
30-44	718	93.9	93.2-94.7	1304	102.9	102.0-103.8
45-59	514	93.9	92.8-95.0	803	102.1	100.9-103.4
60-69	231	91.8	90.2-93.4	337	101.1	99.0-103.2
18-69	**2012**	**92.0**	**91.4-92.5**	**3242**	**100.7**	**100.0-101.4**

3.14.7 Waist-to-hip Ratio of the Population (Excluding Pregnant Women)

The mean waist-to-hip ratio is 0.9 for both men and women across all age groups, except for the 18-29 year age group, which has a mean ratio of 0.8 (Table 3.14.7.1).

Table 3.14.7.1: Mean waist-to-hip ratio of the population (excluding pregnant women)

Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	549	0.8	0.8-0.8	798	0.8	0.8-0.8
30-44	718	0.9	0.9-0.9	1304	0.9	0.9-0.9
45-59	514	0.9	0.9-0.9	803	0.9	0.9-0.9
60-69	231	0.9	0.9-0.9	337	0.9	0.9-0.9
18-69	**2012**	**0.9**	**0.9-0.9**	**3242**	**0.9**	**0.9-0.9**

STEP THREE

3.15 Blood Glucose Measurement

3.15.1 Mean Fasting Blood Glucose

This section describes the mean fasting blood glucose of the population including those currently on medication for diabetes.

The mean blood glucose level for the population is 5.5 mmol/L, with men having a mean of 5.6 mmol/L and women 5.5 mmol/L. The mean blood glucose level increases with age across both sexes and various age groups (Table 3.15.1.1).

The urban population has a mean blood glucose level of 5.6 mmol/L (95% CI: 5.5-5.7), whereas the rural population has a mean of 5.5 mmol/L (95% CI: 5.4-5.5).

Table 3.15.1.1: Mean blood glucose (mmol/L) of the population.

Age Group (years)	Mean fasting blood glucose (mmol/L)								
	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	521	5.5	5.3-5.6	815	5.3	5.2-5.3	1336	5.4	5.3-5.5
30-44	680	5.6	5.5-5.7	1321	5.5	5.4-5.5	2001	5.5	5.5-5.6
45-59	473	5.7	5.5-5.9	767	6.0	5.8-6.2	1240	5.9	5.7-6.0
60-69	213	6.0	5.7-6.3	321	6.0	5.7-6.2	534	6.0	5.8-6.2
18-69	**1887**	**5.6**	**5.5-5.7**	**3224**	**5.5**	**5.5-5.6**	**5111**	**5.5**	**5.5-5.6**

3.15.2 Impaired Fasting Blood Glucose

Impaired fasting glucose is defined as either a plasma venous glucose level ≥6.1 mmol/L (110 mg/dL) and <7.0 mmol/L (126 mg/dL), or a capillary whole blood glucose level ≥5.6 mmol/L (100 mg/dL) and <6.1 mmol/L (110 mg/dL).

Overall, 10.2% of the population has impaired fasting glucose, with a significant proportion in the 60–69-year age group (16.5%). Nearly twelve percent (11.9%) of men have impaired fasting glucose compared to 8.3% of women (Table 3.15.2.1).

The proportion of the urban population with impaired fasting glucose is 10.5%, compared with 9.7% in the rural population.

Table 3.15.2.1: Proportion of the population with impaired fasting blood glucose

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	521	8.8	5.7-11.9	815	6.1	4.3-8.0	1336	7.6	5.6-9.5
30-44	680	15.4	12.2-18.7	1321	9.4	7.4-11.4	2001	12.3	10.4-14.2
45-59	473	11.8	7.9-15.7	768	9.2	6.7-11.7	1241	10.5	8.3-12.7
60-69	214	18.3	11.9-24.7	321	14.6	9.9-19.3	535	16.5	12.6-20.4
18-69	**1888**	**11.9**	**10.1-13.8**	**3225**	**8.3**	**7.2-9.5**	**5113**	**10.2**	**9.0-11.3**

3.15.3 Elevated Blood Glucose or Currently on Medication for Diabetes

Elevated blood glucose is defined as either a plasma venous glucose level ≥7.0 mmol/L (126 mg/dL) or a capillary whole blood glucose value ≥6.1 mmol/L (110 mg/dL).

The proportion of the population with elevated fasting blood glucose is not significantly different between men (5.0%) and women (5.4%), with an overall prevalence of 5.2%. A considerable proportion of the population with elevated blood glucose is observed in the 60–69-year age group for both sexes (12.7%). The proportion with elevated fasting blood glucose increases with age for both sexes (Table 3.15.3.1).

A significant difference is noted in the proportion of elevated fasting blood glucose between the urban population (6.1%) and the rural population (3.9%).

Table 3.15.3.1: Proportion of the population with elevated blood glucose or currently on medication for diabetes

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	521	4.1	1.8-6.5	815	2.0	1.0-3.0	1336	3.1	1.8-4.5
30-44	680	3.4	1.8-5.1	1321	4.6	3.0-6.2	2001	4.1	2.9-5.2
45-59	473	6.7	3.9-9.5	768	12.5	9.5-15.4	1241	9.7	7.6-11.8
60-69	214	13.6	7.9-19.2	321	11.8	7.7-15.9	535	12.7	9.0-16.4
18-69	**1888**	**5.0**	**3.6-6.4**	**3225**	**5.4**	**4.4-6.4**	**5113**	**5.2**	**4.3-6.1**

3.15.4 Proportion of the Population Currently on Medication for Diabetes

In the population, 2.4% of women and 0.8% of men are on medication for diabetes. Overall, 1.6% of the population across both sexes are on diabetes medication. The proportion of individuals on diabetes medication increases with age for both sexes (Table 3.15.4.1).

Table 3.15.4.1: Proportion of the population currently on medication for diabetes

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	529	0.0	0.0-0.0	831	0.3	0.0-0.6	1360	0.1	0.0-0.3
30-44	690	0.6	0.0-1.3	1345	1.1	0.4-1.8	2035	0.8	0.3-1.4
45-59	491	2.0	0.5-3.5	780	6.7	4.3-9.0	1271	4.4	3.0-5.8
60-69	222	3.7	0.7-6.7	324	10.4	6.1-14.7	546	6.9	4.3-9.5
18-69	**1932**	**0.8**	**0.4-1.2**	**3280**	**2.4**	**1.7-3.0**	**5212**	**1.6**	**1.2-1.9**

3.15.5 Blood Glucose Diagnosis and Treatment

Among the population, 4.0% of men and 3.4% of women have elevated blood glucose that was not previously diagnosed. The proportion of individuals with previously diagnosed elevated blood glucose who are not on medication is 1.9% for men and 2.8% for women. The proportion of those with previously diagnosed elevated blood glucose who are on medication is 0.5% for men and 2.1% for women (Tables 3.15.5.1 and 3.15.5.2).

Table 3.15.5.1: Proportions of men with elevated blood glucose diagnosis and treatment

Age Group (years)	n	% with elevated blood glucose, not previously diagnosed	95% CI	% with previously diagnosed elevated blood glucose, not on medication	95% CI	% with previously diagnosed elevated blood glucose, on medication	95% CI
18-29	521	4.1	1.8-6.5	0.2	0.0-0.4	0.0	0.0-0.0
30-44	681	2.6	1.2-4.0	4.0	1.8-6.2	0.3	0.0-0.9
45-59	473	4.2	1.9-6.5	1.8	0.6-3.1	1.2	0.2-2.2
60-69	214	9.4	4.1-14.6	5.0	1.5-8.4	3.2	0.2-6.2
18-69	**1889**	**4.0**	**2.7-5.4**	**1.9**	**1.2-2.7**	**0.5**	**0.2-0.8**

Table 3.15.5.2: Proportions of women with elevated blood glucose diagnosis and treatment

Age Group (years)	n	% with elevated blood glucose, not previously diagnosed	95% CI	% with previously diagnosed elevated blood glucose, not on medication	95% CI	% with previously diagnosed elevated blood glucose, on medication	95% CI
18-29	815	1.7	0.8-2.7	2.1	1.0-3.2	0.1	0.0-0.2
30-44	1321	3.5	2.2-4.8	2.8	1.5-4.1	0.8	0.2-1.4
45-59	768	6.0	4.0-7.9	4.0	2.4-5.6	6.3	4.0-8.6
60-69	322	6.7	3.3-10.0	3.7	1.4-6.0	9.7	5.4-14.0
18-69	**3226**	**3.4**	**2.6-4.2**	**2.8**	**2.1-3.5**	**2.1**	**1.5-2.6**

Overall, 3.7% of the population have elevated blood glucose that was not previously diagnosed. Among both sexes, 2.4% are previously diagnosed with elevated blood glucose but are not on medication, while 1.3% are on medication (Table 3.15.5.3).

Table 3.15.5.3: Proportions with elevated blood glucose diagnosis and treatment among both sexes

Age Group (years)	n	% with elevated blood glucose, not previously diagnosed	95% CI	% with previously diagnosed elevated blood glucose, not on medication	95% CI	% with previously diagnosed elevated blood glucose, on medication	95% CI
18-29	1336	3.0	1.6-4.4	1.1	0.6-1.6	0.0	0.0-0.1
30-44	2002	3.0	2.1-4.0	3.4	2.2-4.6	0.6	0.1-1.0
45-59	1241	5.1	3.6-6.6	2.9	2.0-3.9	3.8	2.6-5.1
60-69	536	8.1	4.9-11.2	4.4	2.3-6.4	6.3	3.7-9.0
18-69	**5115**	**3.7**	**2.9-4.5**	**2.4**	**1.9-2.8**	**1.3**	**0.9-1.6**

3.16 Blood Cholesterol Measurements

3.16.1 Mean Total Cholesterol Measurement

The mean total cholesterol level for all respondents is 4.1 mmol/L, with men having a mean of 3.9 mmol/L and women 4.4 mmol/L. There is a significant difference in mean total cholesterol levels between the 18–29-year age group and the older age groups. Table 3.16.1.1 shows the mean total cholesterol levels among respondents.

Table 3.16.1.1: Mean total cholesterol (mmol/L) among the population

Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	516	3.5	3.3-3.6	813	4.1	4.0-4.2	1329	3.8	3.7-3.9
30-44	682	4.2	4.1-4.4	1329	4.4	4.3-4.5	2011	4.3	4.2-4.4
45-59	486	4.1	4.0-4.3	770	4.9	4.7-5.1	1256	4.5	4.4-4.6
60-69	218	4.3	4.0-4.6	321	5.1	4.9-5.4	539	4.7	4.5-4.9
18-69	**1902**	**3.9**	**3.8-4.0**	**3233**	**4.4**	**4.3-4.5**	**5135**	**4.1**	**4.1-4.2**

3.16.2 Elevated Total Cholesterol

Elevated total cholesterol is defined as a total cholesterol level ≥5.0 mmol/L or ≥190 mg/dL. A higher proportion of women (27.4%) have elevated total cholesterol compared to men (16.0%), with this trend observed across all age groups. The proportion of women with elevated total cholesterol increases from 18.5% in the 18–29-year age group to 44.0% in the 60–69-year age group. This is significantly higher compared to men, where the proportion rises from 7.5% to 28.9% across the same age groups.

Overall, 21.6% of the population has elevated total cholesterol. The proportion increases from 12.7% in the 18–29-year age group to 36.2% in the 60–69-year age group across both sexes (Table 3.16.2.1).

Table 3.16.2.1: Proportion of the population with elevated total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl) level

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	516	7.5	4.9-10.2	813	18.5	15.0-22.0	1329	12.7	10.3-15.0
30-44	682	21.9	18.0-25.8	1329	27.4	23.8-31.0	2011	24.8	21.9-27.6
45-59	486	23.3	18.6-28.0	770	41.4	36.4-46.3	1256	32.5	28.8-36.2
60-69	218	28.9	20.7-37.2	321	44.0	35.9-52.0	539	36.2	29.8-42.5
18-69	**1902**	**16.0**	**13.8-18.2**	**3233**	**27.4**	**24.8-29.9**	**5135**	**21.6**	**19.6-23.6**

3.16.2 Population with Very Elevated Total Cholesterol Levels

Among both sexes, 9.2% have a very elevated total cholesterol level (defined as ≥6.2 mmol/L or ≥240 mg/dL), with 6.3% for men and 12.1% for women. The proportion with very elevated total cholesterol increases with advancing age. Table 3.16.3.1 shows the population with very elevated total cholesterol values.

Table 3.16.3.1: Proportion of the population with very elevated total cholesterol values (≥ 6.2 mmol/L or ≥ 240 mg/dl)

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	516	3.0	1.4-4.5	813	8.5	5.9-11.1	1329	5.6	3.9-7.2
30-44	682	9.1	6.6-11.5	1329	11.0	8.9-13.1	2011	10.1	8.4-11.8
45-59	486	7.7	4.5-10.8	770	18.9	14.7-23.1	1256	13.4	10.8-16.0
60-69	218	13.1	5.7-20.4	321	21.4	15.2-27.6	539	17.1	11.3-22.8
18-69	**1902**	**6.3**	**5.0-7.6**	**3233**	**12.1**	**10.2-13.9**	**5135**	**9.2**	**7.9-10.4**

3.16.4 Proportion of the Population on Treatment for Elevated Total Cholesterol

The proportion of the population with elevated total cholesterol who have been on medication prescribed by a doctor or other health worker in the last two weeks is 21.8%, with 16.1% for men and 27.6% for women. There is a significant difference in these proportions between women and men (Table 3.16.4.1).

Among the population with very elevated total cholesterol values (9.4%), 6.4% of men and 12.5% of women have been on medication prescribed by a doctor or health worker within the last two weeks (Table 3.16.4.2).

Urban residents are more likely to be on medication prescribed by a doctor or health worker for elevated cholesterol values compared to rural residents, with proportions of 24.0% and 18.6%, respectively.

Table 3.16.4.1: Percentage of the population with elevated total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl) or currently on medication for elevated cholesterol

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	516	7.6	4.9-10.2	813	18.5	15.0-22.0	1329	12.7	10.3-15.1
30-44	682	21.9	18.0-25.8	1329	27.4	23.8-31.0	2011	24.8	21.9-27.6
45-59	486	23.8	19.1-28.6	770	42.3	37.4-47.3	1256	33.3	29.5-37.0
60-69	218	29.4	21.1-37.7	321	45.7	37.8-53.6	539	37.3	30.9-43.6
18-69	**1902**	**16.1**	**13.9-18.3**	**3233**	**27.6**	**25.1-30.2**	**5135**	**21.8**	**19.8-23.8**

Table 3.16.4.2: Proportion of the population with very elevated total cholesterol (≥ 6.2 mmol/L or ≥ 240 mg/dl) or currently on medication for elevated cholesterol

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	516	3.0	1.4-4.5	813	8.5	5.9-11.1	1329	5.6	3.9-7.2
30-44	682	9.1	6.6-11.5	1329	11.1	9.0-13.1	2011	10.1	8.4-11.8
45-59	486	8.2	5.0-11.4	770	20.4	16.1-24.7	1256	14.4	11.8-17.0
60-69	218	13.6	6.2-20.9	321	23.3	17.2-29.5	539	18.3	12.5-24.0
18-69	**1902**	**6.4**	**5.1-7.8**	**3233**	**12.5**	**10.7-14.3**	**5135**	**9.4**	**8.2-10.7**

3.16.5 Mean High-density Lipoprotein (HDL) Values

The mean values for high density lipoprotein values for the population is 2.0 mmol/L. There is no difference in the mean values for men and women or across different age groups. (Table 3.16.5.1).

The proportion of the population with HDL values less than 1.03 mmol/L for men or 1.29 mmol/L for women is not significant.

Table 3.16.5.1: Mean HDL values (mmol/L) for the population

Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	13	2.0	-	19	2.0	-	32	2.0	-
30-44	12	2.0	-	23	2.0	-	35	2.0	-
45-59	6	2.0	-	12	2.0	-	18	2.0	-
60-69	5	2.0	-	4	2.0	-	9	2.0	-
18-69	**36**	**2.0**	**-**	**58**	**2.0**	**-**	**94**	**2.0**	**-**

3.17 Cardiovascular Disease Risk Prediction

A ten-year cardiovascular disease (CVD) risk prediction was assessed for the population aged 40–69 years, using risk factors from STEP 1, 2, and 3. These risk factors include sex, age, smoking status, systolic blood pressure, history of diabetes, total cholesterol levels, and body mass index.

3.17.1 Proportion of Population Aged 40-69 years by Level of 10-Year CVD Risk

Among men, 91.9% have a cardiovascular disease (CVD) risk prediction of less than 10%, 7.1% have a risk of 10-20%, and 0.1% have a risk of ≥20%. For women, 92.7% have a CVD risk prediction of less than 10%, 7.1% have a risk of 10-20%, and 0.3% have a risk of ≥20%. The overall CVD risk for the population is detailed in Table 3.17.1.1.

Table 3.17.1.1: Percentage of population aged 40-69 years (both sexes) by level of 10-year CVD risk

Age Group (years)	n	<10%	95% CI	10-20%	95% CI	≥20%	95% CI
40-54	1639	99.0	98.0-99.5	0.9	0.4-2.0	0.0	0.0-0.2
55-69	814	76.5	72.4-80.2	21.6	17.9-25.7	1.9	1.1-3.4
40-69	**2453**	**92.3**	**90.8-93.6**	**7.1**	**5.8-8.6**	**0.6**	**0.4-1.0**

3.17.1 Population with CVD Risk of ≥20% or Having an Existing CVD

The population with CVD risk ≥20% or having an existing CVD is not significantly different between men and women in the ages of 40-69 years. The proportion of the population with CVD risk ≥20% or having an existing CVD is 10.4% for men, 12.0% for women and 11.2% in both sexes. The proportion of people with CVD risk ≥20% or having an existing CVD increases with age among both sexes. (Table 3.17.2.1).

Among the urban residents, 9.3% (95% CI: 7.6-11.4) of the 40–69-year-old have CVD risk ≥20% or have an existing CVD, significantly lower compared to the rural respondents (13.8%, 95% CI: 11.7-16.2).

Table 3.17.2.1: Proportion of the population CVD risk ≥20% or have an existing CVD

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
40-54	643	9.4	7.1-12.4	998	11.7	9.6-14.3	1641	10.6	8.9-12.4
55-69	322	12.7	9.1-17.5	495	12.7	9.4-17.0	817	12.7	10.1-16.0
40-69	**965**	**10.4**	**8.4-12.8**	**1493**	**12.0**	**10.2-14.2**	**2458**	**11.2**	**9.8-12.7**

3.17.3 Drug Therapy and Counselling for Those with CVD Risk ≥20% or with an Existing CVD

Counselling was defined as receiving advice from a doctor or other health worker to quit tobacco use or to avoid starting, reduce dietary salt, consume at least five servings of fruit and/or vegetables per day, reduce dietary fat, increase physical activity, maintain a healthy body weight, or lose weight.

Among the 40–69-year age group, 15.5% of men, 22.8% of women, and 19.4% of both sexes have received drug therapy and counselling to prevent cardiovascular diseases, such as heart attacks and strokes. The proportions of the population receiving drug therapy and counselling for CVDs are shown in Table 3.17.3.1.

Table 3.17.3.1: The proportion of population receiving drug therapy and counselling to prevent heart attacks and strokes

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
40-54	72	14.9	6.5-30.6	131	15.6	8.6-26.8	203	15.3	9.5-23.8
55-69	48	16.7	7.7-32.4	72	37.9	24.8-53.0	120	27.3	18.6-38.2
40-69	**120**	**15.5**	**8.6-26.4**	**203**	**22.8**	**15.8-31.7**	**323**	**19.4**	**14.3-25.7**

3.18 Summary of Combined Risk Factors for NCDs

The combined risk factors assessed include the percentage of the population with 0, 1-2, or 3-5 of the following risk factors: current daily smoking; consuming fewer than five servings of fruit and/or vegetables per day; not meeting WHO recommendations on physical activity for health (less than 150 minutes of moderate activity per week, or equivalent); overweight or obesity (BMI ≥ 25 kg/m^2); and elevated blood pressure (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg) or currently on medication for elevated blood pressure.

3.18.1 Combined Risk Factors for Men

The proportion of men with no risk factors for NCDs is 13.3%. Within the 18–44-year age group, this proportion is 13.5%, whereas in the 45–69-year age group, it is 12.5%. The percentage of men with 1-2 combined risk factors is 79.5%, while those with 3-5 combined risk factors constitute 7.3%. The proportion of men aged 45–69 years with 3-5 combined risk factors is significantly higher (16.0%) compared to those aged 18–44 years (4.6%). Table 3.17.1 shows the proportion of men with no risk factors and those with combined risk factors.

Table 3.18.1.1: Percentage of men with combined risk factors

Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
18-44	1199	13.5	11.0-16.0	81.9	79.2-84.7	4.6	3.3-5.9
45-69	696	12.5	9.4-15.6	71.5	67.4-75.7	16.0	12.3-19.6
18-69	**1895**	**13.3**	**11.2-15.3**	**79.5**	**77.2-81.8**	**7.3**	**5.9-8.6**

3.18.2 Combined Risk factors for Women

Among women, 8.8% have no risk factors, 73.7% have 1-2 risk factors and 17.4% have 3-5 combined risk factors. For women between the ages of 45-69 years, 33.8% have 3-5 combined risk factors, which is significantly higher than that of men (16.0%) in the same age group. Table 3.18.2.1 shows the proportion of women with no risk factors and those with combined risk factors.

Table 3.18.2.1: Percentage of women with combined risk factors

Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
18-44	1958	10.0	7.9-12.2	78.1	75.6-80.6	11.9	10.1-13.7
45-69	1037	5.3	3.5-7.0	60.9	56.7-65.1	33.8	29.6-38.0
18-69	**2995**	**8.8**	**7.1-10.6**	**73.7**	**71.7-75.8**	**17.4**	**15.7-19.1**

3.18.3 Combined Risk Factors for Both Sexes

Among the population, 11.1% have no risk factors, 76.7% have 1-2 combined risk factors and 12.1% have 3-5 combined risk factors. The percentage of the population with a higher number of combined risk factors increased with age. (Table 3.18.3.1)

Table 3.18.3.1: Percentage of the population with combine risk factors

Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
18-44	3157	11.9	10.1-13.7	80.1	78.1-82.1	8.0	6.8-9.2
45-69	1733	8.9	7.1-10.7	66.3	63.1-69.4	24.8	21.7-28.0
18-69	**4890**	**11.1**	**9.7-12.6**	**76.7**	**75.1-78.4**	**12.1**	**10.9-13.4**

The percentage of the population with none of the combined risk factors is higher among rural residents (15.6%, 95% CI: 12.4-18.9) compared to urban residents (8.7%, 95% CI: 7.1-10.4). The various percentages with or without the combined risk factors are detailed in Table 3.18.3.1.2.

Table 3.18.3.2: Percentage of urban and rural residents with combined risk factors.

Combined risk factors and age groupings	Both	Urban	Rural
Percentage with none of the above risk factors	11.1% (9.7-12.6)	8.7% (7.1-10.4)	15.6% (12.4-18.9)
Percentage with three or more of the above risk factors, aged 18 to 44 years	8.0% (6.8-9.2)	9.1% (7.5-10.7)	6.4% (4.6-8.2)
Percentage with three or more of the above risk factors, aged 45 to 69 years	24.8% (21.7-28.0)	31.8% (27.0-36.6)	15.7% (12.5-18.8)
Percentage with three or more of the above risk factors, aged 18 to 69 years	12.1% (10.9-13.4)	14.4% (12.6-16.1)	8.8% (7.2-10.4)

The percentage of the population with three or more combined risk factors is significantly higher among urban residents compared to rural residents across the 18–44-year group, the 45–69-year group, and the 18–69-year group. (Figures 3.18.3.1 and 3.18.3.2)

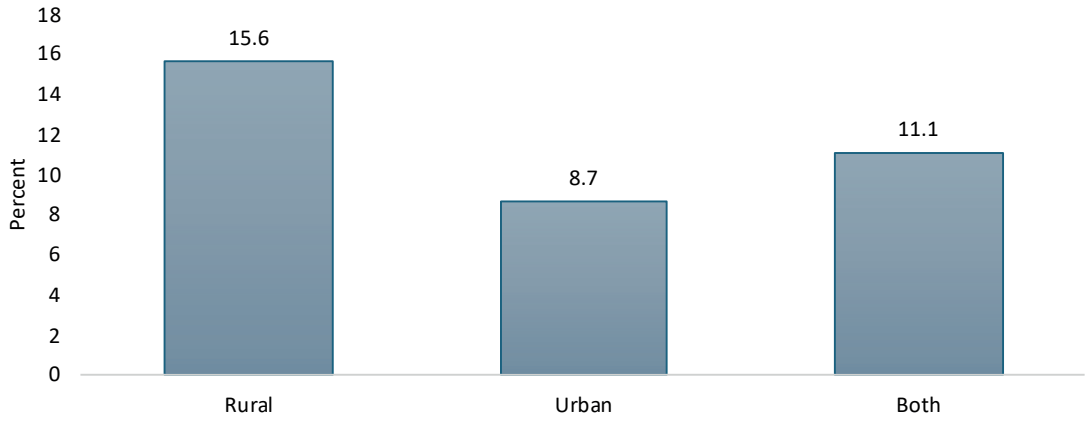

Figure 3.18.3.1: Bar charts showing proportion of rural and urban residents with no risk factors

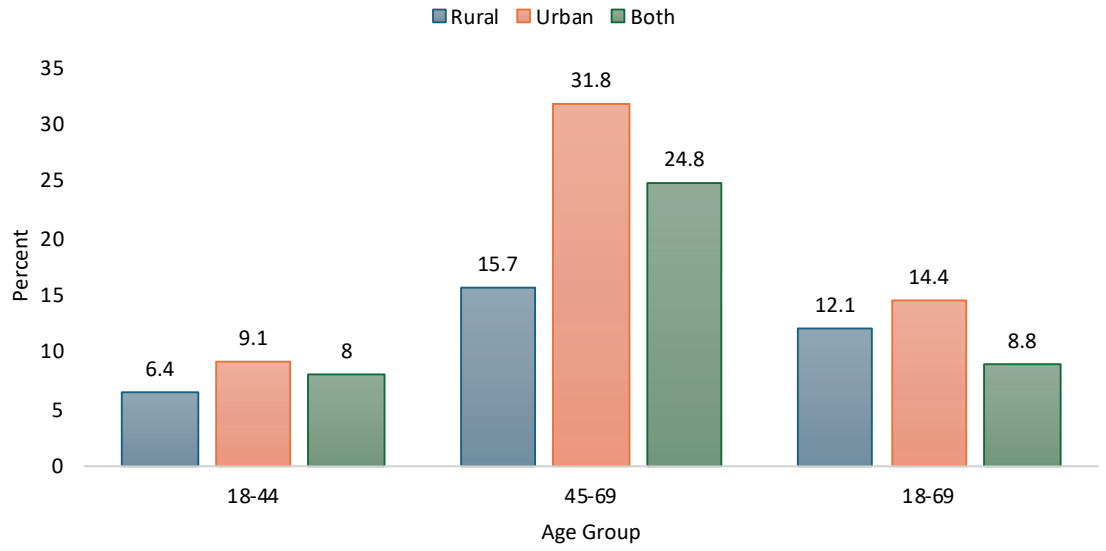

Figure 3.18.3.2: Bar chart showing proportion of rural and urban residents with three or more combined risk factors

3.19 Oral Health

3.19.1 Proportion of the Population with Natural Teeth

A significant proportion of the population, 98.9%, have ≥ 20 natural teeth. Only 0.1% of population have no natural teeth, 0.1% have between 1-9 natural teeth and 0.9% have between 10-19 natural teeth. The proportion of the population who have lost some natural teeth increases with age. (Table 3.18.1)

Table 3.19.1.1: Percentage of the population with natural teeth

Age Group (years)	n	% No natural teeth	95% CI	% 1 - 9 natural teeth	95% CI	% 10 - 19 natural teeth	95% CI	% ≥ 20 natural teeth	95% CI
18-29	1402	0.0	0.0-0.0	0.0	0.0-0.1	0.1	0.0-0.2	99.9	99.8-100.0
30-44	2074	0.0	0.0-0.0	0.0	0.0-0.1	0.5	0.1-0.9	99.5	99.0-99.9
45-59	1299	0.2	0.0-0.6	0.4	0.0-1.0	2.5	1.3-3.8	96.8	95.5-98.2
60-69	555	0.2	0.0-0.5	0.5	0.0-1.3	4.4	2.4-6.3	94.9	92.8-97.0
18-69	**5330**	**0.1**	**0.0-0.1**	**0.1**	**0.0-0.3**	**0.9**	**0.6-1.2**	**98.9**	**98.6-99.2**

3.19.2 Respondents with Oral Pain or Discomfort

The proportion of the population experiencing pain or discomfort from their teeth or mouth over the last 12 months is 29.0%, with 28.3% for men and 29.7% for women. There are no significant differences in the proportions among men across various age groups. However, among women, there is a significant difference between the 18-44-year group and the 45-69-year group. (Table 3.18.2)

Table 3.19.2.1: Percentage of population with oral pain or discomfort

Age Group (years)	Men			Women			Both Sexes		
	n	% Having oral pain or discomfort	95% CI	n	% Having oral pain or discomfort	95% CI	n	% Having oral pain or discomfort	95% CI
18-29	550	27.4	22.7-32.0	873	26.0	22.2-29.8	1423	26.7	23.6-29.8
30-44	721	24.0	19.8-28.2	1393	28.3	25.3-31.4	2114	26.2	23.4-29.1
45-59	519	32.8	28.0-37.6	812	36.7	32.7-40.7	1331	34.8	31.8-37.8
60-69	232	44.0	35.9-52.1	338	41.2	34.4-48.1	570	42.6	37.3-48.0
Residency									
Rural	1034	28.2	24.5-32.0	1541	30.4	27.4-33.4	2575	29.2	26.8-31.7
Urban	988	28.4	25.1-31.8	1875	29.2	26.6-31.9	2863	28.8	26.6-31.1
18-69	**2022**	**28.3**	**25.9-30.8**	**3416**	**29.7**	**27.7-31.7**	**5438**	**29.0**	**27.4-30.6**

3.19.3 Proportion of the Population Who Have Seen a Dentist Within the Past 12 Months

Only 3.4% of the population has seen a dentist within the past 12 months, with 3.6% of men and 3.1% of women having visited a dentist. The highest proportion of dental visits (4.2%) is observed in the 30-44-year age group, while the lowest proportion (2.4%) is found in the 18-29-year age group. (Table 3.19.3.1)

Table 3.19.3.1: Percentage of the population having seen a dentist during the past 12 months.

Age Group (years)	Men			Women			Both Sexes		
	n	% having seen a dentist during the past 12 months	95% CI	n	% having seen a dentist during the past 12 months	95% CI	n	% having seen a dentist during the past 12 months	95% CI
18-29	550	2.6	1.1-4.0	873	2.3	1.1-3.5	1423	2.4	1.5-3.4
30-44	721	5.1	3.2-7.0	1393	3.4	2.3-4.5	2114	4.2	3.1-5.3
45-59	519	3.9	1.4-6.3	812	4.1	2.0-6.2	1331	4.0	2.4-5.6
60-69	232	3.5	1.1-5.9	338	4.7	1.5-7.9	570	4.1	2.1-6.1
Residency									
Rural	1034	3.2	1.9-4.5	1541	3.5	2.1-4.9	2575	3.3	2.4-4.3
Urban	988	3.9	2.4-5.4	1875	2.9	2.0-3.8	2863	3.4	2.5-4.2
18-69	**2022**	**3.6**	**2.6-4.6**	**3416**	**3.1**	**2.4-3.9**	**5438**	**3.4**	**2.7-4.0**

3.19.4 Percentage of the Population Who Have Never Received Dental Care

A significant majority of the population (84.9%) have never received dental care, with almost equal proportions for men (85.3%) and women (84.5%). The likelihood of having never received dental care is higher among younger age groups, decreasing from 90.1% in the 18–29-year group to 72.8% in the 60–69-year age group for both sexes. (Table 3.19.4.1)

Table 3.19.4.1: Percentage of the population who have never received dental care

Age Group (years)	Men			Women			Both Sexes		
	n	% never received dental care	95% CI	n	% never received dental care	95% CI	n	% never received dental care	95% CI
18-29	550	89.8	86.6-93.0	873	90.5	87.6-93.3	1423	90.1	88.0-92.2
30-44	721	82.1	78.7-85.6	1393	84.4	81.5-87.3	2114	83.3	80.9-85.7
45-59	519	81.8	76.9-86.8	812	75.5	71.4-79.7	1331	78.6	75.2-82.0
60-69	232	75.7	68.6-82.8	338	69.9	63.0-76.8	570	72.8	67.8-77.9
Residency									
Rural	1034	90.2	88.1-92.4	1541	88.5	86.5-90.5	2575	89.4	87.9-91.0
Urban	988	81.6	78.3-84.8	1875	82.1	78.9-85.2	2863	81.8	79.4-84.2
18-69	**2022**	**85.3**	**83.3-87.3**	**3416**	**84.5**	**82.4-86.6**	**5438**	**84.9**	**83.4-86.4**

3.19.5 Main reason for Seeing the Dentist

Among those who have visited a dentist, the primary reason for their last visit was pain or trouble with teeth or gums, reported by 70.7% of respondents. Other reasons included follow-up for treatment (9.5%), consultation or advice (8.3%), routine checkup (7.4%), and other reasons (4.1%). (Table 3.19.5.1)

Table 3.19.5.1: Main reasons for visit to the dentist among the population

Age Group (years)	n	% Consul-tation/ advice	95% CI	% Pain or trouble with teeth or gums	95% CI	% Follow-up treatment	95% CI	% Routine check-up treatment	95% CI	% Other	95% CI
18-29	136	14.1	6.1-22.2	60.6	49.7-71.4	9.5	3.6-15.5	6.3	1.6-11.0	9.4	2.4-16.4
30-44	329	7.4	3.2-11.6	70.8	63.9-77.6	7.2	3.9-10.6	12.0	7.2-16.9	2.5	0.2-4.9
45-59	260	3.6	0.7-6.4	79.7	73.7-85.7	10.8	6.4-15.2	4.4	1.7-7.2	1.6	0.1-3.0
60-69	155	6.8	0.8-12.8	76.5	66.8-86.1	13.0	6.1-20.0	2.8	0.1-5.4	0.9	0.0-2.1
Residency											
Rural	311	5.4	1.3-9.5	75.8	68.8-82.7	10.1	4.6-15.7	3.0	1.0-5.1	5.6	1.7-9.6
Urban	569	9.5	5.8-13.2	68.7	63.3-74.0	9.2	6.6-11.8	9.1	6.1-12.1	3.5	0.7-6.4
18-69	**880**	**8.3**	**5.4-11.2**	**70.7**	**66.4-75.0**	**9.5**	**7.0-11.9**	**7.4**	**5.1-9.7**	**4.1**	**1.8-6.4**

3.19.6 Frequency of Tooth Cleaning: At Least Once a Day vs At Least Twice a Day

A higher proportion of women (99.0%) clean their teeth at least once a day compared to 97.5% of men. Overall, 98.2% of the population clean their teeth at least once a day, with no significant differences observed among various age groups (Table 3.19.6.1).

Table 3.19.6.1: Proportion of the population cleaning their teeth at least once a day

Age Group (years)	Men			Women			Both Sexes		
	n	% cleaning teeth at least daily	95% CI	n	% cleaning teeth at least daily	95% CI	n	% cleaning teeth at least daily	95% CI
18-29	550	96.7	93.1-100.0	873	98.8	97.6-99.9	1423	97.7	95.7-99.7
30-44	721	98.3	97.3-99.3	1393	99.1	98.6-99.6	2114	98.7	98.2-99.3
45-59	518	98.1	96.7-99.4	811	99.5	98.9-100.0	1329	98.8	98.1-99.5
60-69	232	97.4	94.9-99.8	337	99.2	98.4-100.0	569	98.3	97.0-99.6
Residency									
Rural	1034	98.1	97.2-99.0	1540	98.6	97.5-99.7	2574	98.3	97.6-99.0
Urban	987	97.0	94.0-100.0	1874	99.3	98.8-99.8	2861	98.2	96.7-99.6
18-69	**2021**	**97.5**	**95.7-99.2**	**3414**	**99.0**	**98.5-99.6**	**5435**	**98.2**	**97.3-99.2**

A higher proportion of individuals in the older age groups clean their teeth at least twice a day compared to those in the younger age groups. Additionally, more women (57.9%) brush their teeth at least twice daily compared to men (50.8%). Overall, 54.3% of the population clean their teeth at least twice a day (Table 3.19.6.2).

Table 3.19.6.2: Proportion of the population cleaning their teeth at least twice a day

Age Group (years)	Men			Women			Both Sexes		
	n	% cleaning teeth at least twice a day	95% CI	n	% cleaning teeth at least twice a day	95% CI	n	% cleaning teeth at least twice a day	95% CI
18-29	550	45.6	40.2-51.1	873	56.2	51.6-60.7	1423	50.7	47.0-54.3
30-44	721	57.7	53.3-62.1	1393	57.7	54.3-61.2	2114	57.7	55.0-60.5
45-59	518	51.3	45.7-57.0	811	60.5	55.8-65.2	1329	56.0	52.2-59.8
60-69	232	54.8	47.1-62.6	337	63.0	56.2-69.7	569	58.9	54.0-63.8
Residency									
Rural	1034	53.0	48.8-57.2	1540	58.7	55.0-62.5	2574	55.6	52.7-58.6
Urban	987	49.2	44.6-53.7	1874	57.4	53.8-60.9	2861	53.4	50.5-56.4
18-69	**2021**	**50.8**	**47.6-54.0**	**3414**	**57.9**	**55.3-60.5**	**5435**	**54.3**	**52.2-56.5**

3.19.7 Proportion of the Population Using Toothpaste to Clean Their Teeth

A significant proportion of individuals in the 18–44-year age group use toothpaste to clean their teeth compared to those in the older age group of 45-69 years. The usage of toothpaste decreases with age, from 96.6% in the 18–29-year group to 88.3% in the 60–69-year group. Overall, 94.1% of the population use toothpaste, with 93.3% of men and 94.9% of women using it (see Table 3.19.7.1).

Table 3.19.7.1: Proportion of the population using toothpaste to clean their teeth

Age Group (years)	Men			Women			Both Sexes		
	n	% using toothpaste	95% CI	n	% using toothpaste	95% CI	n	% using toothpaste	95% CI
18-29	550	95.3	92.8-97.9	871	98.0	96.9-99.1	1421	96.6	95.3-98.0
30-44	718	94.6	92.6-96.6	1393	94.3	92.6-96.0	2111	94.5	93.2-95.7
45-59	517	88.2	84.8-91.6	811	90.2	87.9-92.6	1328	89.2	87.1-91.4
60-69	230	85.5	80.1-91.0	338	91.1	87.4-94.7	568	88.3	84.9-91.7
Residency									
Rural	1029	91.0	88.6-93.3	1539	91.5	89.4-93.6	2568	91.2	89.4-93.0
Urban	986	95.0	92.4-97.6	1874	97.0	96.0-98.0	2860	96.0	94.6-97.5
18-69	**2015**	**93.3**	**91.6-95.0**	**3413**	**94.9**	**94.1-95.8**	**5428**	**94.1**	**93.2-95.0**

3.19.8 Proportion of the Population Using Toothpaste Containing Fluoride

Among the population using toothpaste, 92.8% use a fluoride-containing toothpaste. Specifically, 92.1% of men and 93.5% of women use fluoride toothpaste. A significantly higher proportion of individuals in the 18-44 year age group use fluoride-containing toothpaste compared to those in the older age group of 45-60 years.

Table 3.19.8.1Proportion of the population using fluoride containing toothpaste

Percentage of respondents using toothpaste containing fluoride among those using toothpaste

Age Group (years)	Men			Women			Both Sexes		
	n	% using toothpaste containing fluoride	95% CI	n	% using toothpaste containing fluoride	95% CI	n	% using toothpaste containing fluoride	95% CI
18-29	545	94.2	91.6-96.9	853	96.6	94.8-98.3	1398	95.3	93.7-96.9
30-44	709	94.0	91.9-96.1	1366	93.0	91.1-94.9	2075	93.5	92.0-94.9
45-59	507	85.8	82.0-89.5	794	88.5	86.0-91.0	1301	87.2	84.8-89.5
60-69	224	84.1	78.4-89.8	335	90.3	86.5-94.2	559	87.2	83.7-90.8
Residency									
Rural	1015	89.1	86.4-91.8	1505	89.2	86.3-92.0	2520	89.2	86.9-91.4
Urban	970	94.2	91.5-97.0	1843	96.1	95.0-97.2	2813	95.2	93.7-96.7
18-69	**1985**	**92.1**	**90.2-93.9**	**3348**	**93.5**	**92.4-94.7**	**5333**	**92.8**	**91.7-93.9**

3.19.9 Proportion of the Population Using Various Tools to Clean Their Teeth

Among the population who clean their teeth, various tools are used, including toothbrushes, wooden toothpicks, plastic toothpicks, dental floss, charcoal, chewsticks/miswak, or other methods. The most commonly used tool is the toothbrush, utilized by 93.3% of the population. Other tools include chewsticks/miswak (57.5%), wooden toothpicks (25.2%), charcoal (14.2%), dental floss (4.5%), plastic toothpicks (3.7%), and other methods (4.0%).

Table 3.19.9.1: Proportion of the population using various tools to clean their teeth

Age Group (Years)	n	Tooth-brush	95 CI	Wooden tooth-picks	95 CI	Plastic tooth-picks	95 CI	Thread (dental floss)	95 CI	Charcoal	95 CI	Chewstick/ miswak	95 CI	Other	95 CI
18-29	1421	96.1	94.9-97.3	21.8	18.9-24.7	3.5	2.2-4.8	5	3.5-6.6	13.3	10.9-15.6	48.1	44.0-52.2	4	2.6-5.4
30-44	2111	93	91.7-94.4	27.4	24.9-30.0	4	3.0-5.0	3.5	2.6-4.5	15.1	12.8-17.4	63.7	60.4-67.0	4.9	3.3-6.5
45-59	1328	88.5	86.2-90.7	28	24.7-31.2	4.2	2.7-5.6	5.3	3.7-6.8	15	12.4-17.6	67.6	64.1-71.0	3	1.9-4.2
60-69	568	88.9	85.6-92.2	31.4	25.7-37.0	2.5	1.0-4.0	3.9	1.9-5.8	13.6	10.4-16.8	66.1	61.0-71.3	2.8	1.4-4.2
18-69	**5428**	**93.3**	**92.4-94.3**	**25.2**	**23.4-27.0**	**3.7**	**2.9-4.5**	**4.5**	**3.7-5.4**	**14.2**	**12.7-15.6**	**57.5**	**55.0-60.1**	**4.0**	**3.3-4.8**

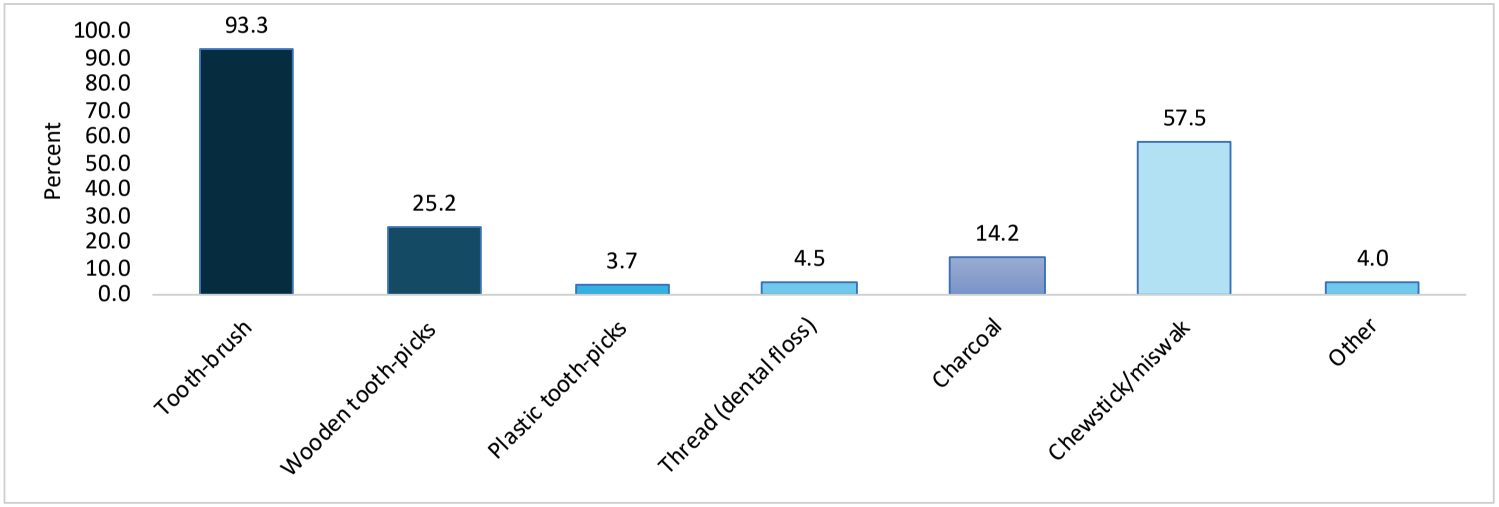

Figure 3.19.9.1: Bar chart showing various tools used by the population to clean their teeth

3.20 Mental Health

3.20.1 Population Who Considered Suicide in the past 12 months

The proportion of the population that has considered attempting suicide in the past 12 months is 3.8%. Among men, 3.1% have considered it, while 4.6% of women have had such thoughts. The highest proportions are found in the 18-29-year age group for men (3.7%) and the 30-44-year age group for women (5.4%). Overall, the proportion of individuals considering suicide decreases with increasing age.

Table 3.20.1.1: Percentage of the population having considered attempting suicide in the last 12 months

Age Group (years)	Men			Women			Both Sexes		
	n	% considered attempting suicide	95% CI	n	% considered attempting suicide	95% CI	n	% considered attempting suicide	95% CI
18-29	550	3.7	1.3-6.1	873	4.1	2.4-5.9	1423	3.9	2.4-5.4
30-44	721	2.7	1.5-3.9	1393	5.4	3.8-6.9	2114	4.1	3.0-5.1
45-59	519	2.3	0.9-3.8	812	4.4	3.0-5.8	1331	3.4	2.4-4.4
60-69	232	2.4	0.2-4.5	337	4.2	1.1-7.3	569	3.3	1.4-5.2
18-69	**2022**	**3.1**	**1.9-4.3**	**3415**	**4.6**	**3.6-5.6**	**5437**	**3.8**	**3.0-4.6**

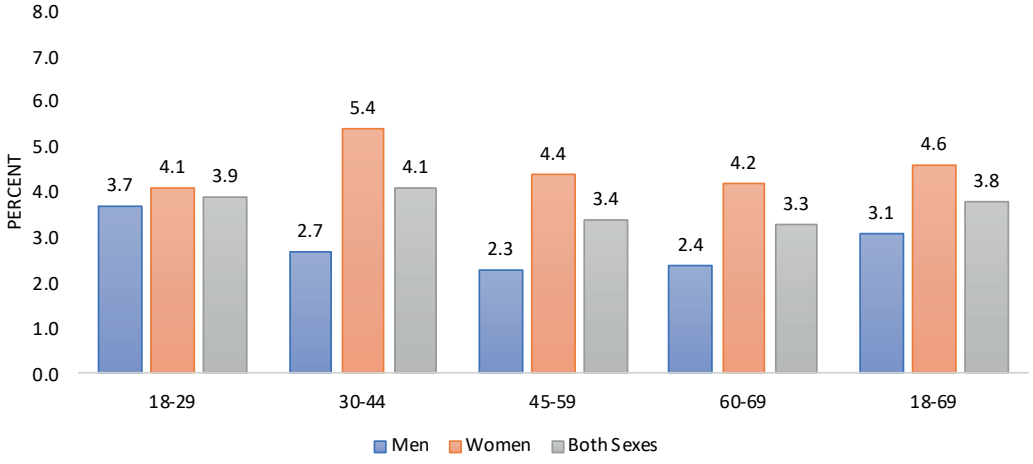

Figure 3.20.1.1: Bar chart showing percentage of the population having ever considered attempting suicide

Among people who considered attempting suicide, 9.1% of them sought professional help. A greater proportion of those who sought professional help are in the middle age group. None of the women in the 60–69-year group sought for help.

Among men who considered attempting suicide, 9.9% sought professional help whereas 8.5% of women did same.

Table 3.20.1.2: Percentage of those who considered attempting suicide who sought professional help

Age Group (years)	Men			Women			Both Sexes		
	n	% sought professional help	95% CI	n	% sought professional help	95% CI	n	% sought professional help	95% CI
18-29	16	7.8	0.0-20.5	39	1.3	0.0-4.0	55	4.5	0.0-10.6
30-44	22	12.5	0.0-27.4	73	13.0	4.3-21.8	95	12.9	5.3-20.4
45-59	14	14.6	0.0-32.3	44	17.4	3.9-30.9	58	16.4	5.5-27.4
60-69	7	7.5	0.0-23.3	12	0.0	0.0-0.0	19	2.8	0.0-8.1
18-69	59	9.9	1.1-18.7	168	8.5	4.1-12.9	227	9.1	4.9-13.2

3.20.2 Population Having Planned a Suicide Attempt

There is a significant difference in the proportion of women (2.9%) who have planned how to attempt suicide compared to men (1.3%). Overall, 2.1% of the population has made such plans. There are no significant differences in planning across various age groups for both men and women; however, the proportions are lower in the 40–45-year age group for both sexes.

Table 3.20.2.1: Proportion of the population who planned about how to attempt suicide

Age Group (years)	Men			Women			Both Sexes		
	n	% planned how to attempt suicide	95% CI	n	% planned how to attempt suicide	95% CI	n	% planned how to attempt suicide	95% CI
18-29	550	1.6	0.5-2.6	873	3.1	1.6-4.6	1423	2.3	1.4-3.2
30-44	721	1.2	0.3-2.1	1392	3.4	2.3-4.4	2113	2.3	1.5-3.1
45-59	519	0.9	0.2-1.6	812	1.5	0.7-2.3	1331	1.2	0.6-1.7
60-69	232	1.6	0.0-3.5	338	4.0	0.9-7.0	570	2.8	0.9-4.6
18-69	**2022**	**1.3**	**0.8-1.9**	**3415**	**2.9**	**2.1-3.8**	**5437**	**2.1**	**1.6-2.7**

3.20.3 Population Having Ever Attempted Suicide

Among the population, 2.3% have ever attempted suicide, with 1.8% of men and 2.7% of women reporting such attempts. In women, the proportion decreases with age, with the highest proportion found in the 18-29-year age group. In men, the proportion varies with age, with the highest proportion observed in the 60-69-year age group.

Table 3.20.3.1: Percentage of the population who have ever attempted suicide

Age Group (years)	Men			Women			Both Sexes		
	n	% attempted suicide	95% CI	n	% attempted suicide	95% CI	n	% attempted suicide	95% CI
18-29	549	1.8	0.6-3.1	873	3.0	1.5-4.5	1422	2.4	1.3-3.4
30-44	721	1.5	0.5-2.6	1393	2.7	1.8-3.6	2114	2.1	1.4-2.8
45-59	519	2.0	0.8-3.2	812	2.6	1.5-3.7	1331	2.3	1.5-3.2
60-69	232	2.5	0.0-5.1	338	1.4	0.0-3.1	570	1.9	0.4-3.5
18-69	**2021**	**1.8**	**1.1-2.5**	**3416**	**2.7**	**2.0-3.5**	**5437**	**2.3**	**1.7-2.8**

Among individuals who have ever attempted suicide, 39.2% have done so in the past 12 months. This proportion is higher in younger age groups compared to older ones. Specifically, 36.7% of men who have ever attempted suicide did so in the past year, while 40.9% of women did the same. The highest proportion of recent attempts among men is found in the 40-59-year age group, whereas among women, it is in the 30-44-year age group. Various methods were used by individuals during their most recent suicide attempt.

Table 3.20.3.2: Percentage of the population having attempted suicide in the past 12 months

Age Group (years)	Men			Women			Both Sexes		
	n	% attempted suicide in past 12 months	95% CI	n	% attempted suicide in past 12 months	95% CI	n	% attempted suicide in past 12 months	95% CI
18-29	12	37.6	11.9-63.3	23	44.1	21.1-67.2	35	41.5	24.6-58.5
30-44	9	37.4	0.0-75.1	41	45.9	28.7-63.0	50	42.9	25.5-60.3
45-59	12	44.2	8.9-79.5	23	23.3	3.4-43.3	35	32.1	13.7-50.6
60-69	5	11.8	0.0-37.1	3	40.7	0.0-100.0	8	22.2	0.0-53.0
18-69	**38**	**36.7**	**20.4-53.0**	**90**	**40.9**	**27.5-54.3**	**128**	**39.2**	**29.1-49.3**

3.20.4 Population Seeking Medical Care Following Their Most Recent Suicide Attempt

Among individuals who have ever attempted suicide, 8.2% sought medical care during their most recent attempt. The majority did not seek medical care. Specifically, 8.7% of men sought medical care, with this proportion decreasing with age. In contrast, 7.9% of women sought medical care, with the proportion increasing as age increases.

Table 3.20.4.1: Percentage who sought medical care after last suicide attempt

Age Group (years)	Men			Women			Both Sexes		
	n	% sought care	95% CI	n	% sought care	95% CI	n	% sought care	95% CI
18-29	12	15.8	0.0-35.0	23	5.7	0.0-13.5	35	9.7	0.0-21.0
30-44	9	0.0	0.0-0.0	41	7.5	0.0-15.6	50	4.9	0.0-10.3
45-59	12	6.8	0.0-21.3	23	15.8	0.0-34.8	35	12.0	0.0-24.5
60-69	5	0.0	0.0-0.0	3	0.0	0.0-0.0	8	0.0	0.0-0.0
18-69	**38**	**8.7**	**0.0-19.7**	**90**	**7.9**	**2.0-13.8**	**128**	**8.2**	**2.1-14.4**

The majority of individuals admitted to the hospital following a suicide attempt are women. Specifically, 68.2% of those admitted are women. Additionally, all individuals in the age group of 30-44 years who sought medical care were admitted to the hospital.

3.20.5 Population with a Close Family Member Who Attempted Suicide

The proportion of the population with a close family member (mother, father, brother, sister or children) ever attempting suicide is 4.4%: 5.3% among men and 3.5% among women.

Table 3.20.5.1: Proportion of the population having a close family member attempt suicide

Age Group (years)	Men			Women			Both Sexes		
	n	% close family attempt suicide	95% CI	n	% close family attempt suicide	95% CI	n	% close family attempt suicide	95% CI
18-29	550	6.7	3.3-10.0	873	3.2	1.8-4.6	1423	5.0	3.2-6.9
30-44	721	4.3	2.7-5.9	1393	2.7	1.8-3.7	2114	3.5	2.6-4.5
45-59	519	4.1	2.1-6.1	812	4.9	3.0-6.8	1331	4.5	3.1-5.9
60-69	232	2.6	0.6-4.7	338	5.3	2.1-8.5	570	4.0	2.1-5.8
18-69	**2022**	**5.3**	**3.6-7.0**	**3416**	**3.5**	**2.7-4.3**	**5438**	**4.4**	**3.5-5.3**

3.20.6 Population with a Close Family Member Who Died by Suicide

The proportion of men and women with a close family member who died by suicide is almost equal. Among men, 2.8% report this experience, while 2.9% of women report the same. Overall, 2.8% of the population has had a close family member die by suicide.

Table 3.20.6.1: Proportion of the populations having a close family member die from suicide.

Age Group (years)	Men			Women			Both Sexes		
	n	% close family died from suicide	95% CI	n	% close family died from suicide	95% CI	n	% close family died from suicide	95% CI
18-29	550	3.0	1.2-4.8	872	2.5	1.2-3.7	1422	2.8	1.7-3.8
30-44	721	2.2	1.0-3.4	1393	2.8	1.8-3.8	2114	2.5	1.8-3.3
45-59	519	3.3	1.5-5.2	810	4.1	2.4-5.7	1329	3.7	2.5-4.9
60-69	232	1.8	0.0-3.6	338	3.5	0.6-6.3	570	2.6	0.9-4.3
18-69	**2022**	**2.8**	**1.8-3.7**	**3413**	**2.9**	**2.2-3.7**	**5435**	**2.8**	**2.2-3.5**

3.20.7 Assessment of Depression Among Respondents

Respondents were assessed for depression using the Patient Health Questionnaire 9 (PHQ 9) as a guide.

Table 3.20.7.1: Classification of Depression by Severity

TOTAL SCORE	DEPRESSION SEVERITY
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

Among men, 34.5% reported no depression, 59.0% experienced minimal to mild depression, and 6.4% had moderate to severe depression (see Table 3.20.7.1). In comparison, among women, 31.3% had no depression, 59.1% had minimal to mild depression, and 9.6% had moderate to severe depression (see Table 3.20.7.3).

Overall, the population showed the following distribution: 33.0% with no depression, 36.1% with minimal depression, 23.0% with mild depression, 6.2% with moderate depression, 1.3% with moderately severe depression, and 0.5% with severe depression (see Table 3.20.7.4). There are no significant differences in the proportions of individuals experiencing various degrees of depression across different age groups.

Table 3.20.7.2: Assessment of the various levels of depression in men

Age Group (years)	Depression assessment												
	Men												
	n	% No Depression	95% CI	% Minimal Depression	95% CI	% Mild Depression	95% CI	% Moderate Depression	95% CI	% Moderately Severe Depression	95% CI	% Severe Depression	95% CI
18-29	550	33.1	27.1-39.2	39.2	34.3-44.1	20.9	14.6-27.1	5.4	2.9-8.0	1.3	0.0-3.1	0.1	0.0-0.3
30-44	721	33.5	29.2-37.7	38.5	33.2-43.8	21.8	18.2-25.3	4.6	2.9-6.3	1.0	0.1-2.0	0.7	0.0-1.9
45-59	519	38.1	32.7-43.5	31.7	26.7-36.6	25.3	20.6-30.1	4.1	2.1-6.1	0.4	0.0-1.0	0.4	0.0-0.8
60-69	232	40.3	32.8-47.9	33.4	26.2-40.6	18.1	12.3-23.8	6.4	1.8-10.9	1.8	0.1-3.6	0.0	0.0-0.0
18-69	**2022**	**34.5**	**31.4-37.7**	**37.3**	**34.2-40.4**	**21.7**	**18.4-25.1**	**5.0**	**3.6-6.4**	**1.1**	**0.2-2.0**	**0.3**	**0.0-0.7**

Table 3.20.7.3: Assessment of the various levels of depression in women

Age Group (years)	Depression assessment												
	Women												
	n	% No Depression	95% CI	% Minimal Depression	95% CI	% Mild Depression	95% CI	% Moderate Depression	95% CI	% Moderately Severe Depression	95% CI	% Severe Depression	95% CI
18-29	873	31.0	26.7-35.3	35.9	31.8-40.0	24.8	21.3-28.4	6.5	4.4-8.5	1.0	0.2-1.7	0.8	0.1-1.5
30-44	1393	29.7	26.5-32.9	35.3	32.1-38.6	25.1	22.3-28.0	7.5	5.1-10.0	1.9	1.1-2.7	0.4	0.0-0.8
45-59	812	33.4	28.9-37.9	33.6	29.3-38.0	20.6	17.1-24.1	9.3	6.7-11.8	2.3	0.9-3.7	0.8	0.1-1.6
60-69	338	36.2	28.7-43.7	28.9	22.9-34.8	26.2	20.1-32.2	6.6	3.5-9.7	1.6	0.2-3.0	0.6	0.0-1.7
18-69	**3416**	**31.3**	**29.1-33.6**	**34.9**	**32.6-37.1**	**24.2**	**22.3-26.2**	**7.3**	**6.0-8.7**	**1.6**	**1.1-2.1**	**0.7**	**0.3-1.1**

Table 3.20.7.4: Assessment of the various levels of depression in the population

Age Group (years)	Depression assessment												
	Both Sexes												
	n	% No Depression	95% CI	% Minimal Depression	95% CI	% Mild Depression	95% CI	% Moderate Depression	95% CI	% Moderately Severe Depression	95% CI	% Severe Depression	95% CI
18-29	1423	32.1	28.5-35.8	37.6	34.3-40.9	22.7	19.3-26.2	5.9	4.1-7.7	1.1	0.1-2.2	0.5	0.1-0.8
30-44	2114	31.5	29.1-33.9	36.9	33.7-40.0	23.5	21.2-25.8	6.1	4.7-7.5	1.5	0.9-2.1	0.6	0.0-1.2
45-59	1331	35.7	31.9-39.5	32.7	29.1-36.2	22.9	19.9-26.0	6.7	5.1-8.4	1.4	0.6-2.1	0.6	0.2-1.1
60-69	570	38.3	33.1-43.4	31.2	26.8-35.5	22.1	17.9-26.3	6.5	3.7-9.3	1.7	0.6-2.8	0.3	0.0-0.8
18-69	**5438**	**33.0**	**31.0-34.9**	**36.1**	**34.2-38.0**	**23.0**	**21.1-24.8**	**6.2**	**5.2-7.1**	**1.3**	**0.8-1.9**	**0.5**	**0.2-0.8**

3.20.8 Causes of Mental Health Conditions

A significant proportion of women (39.2%, 95% CI: 36.6-41.8) believe that mental health conditions are caused by diseases, compared to 32.1% of men (95% CI: 29.0-35.3). Similar proportions of both men (11.3%) and women (9.4%) attribute mental health conditions to curses or spells. More than half of both men (56.6%) and women (51.4%) believe that other factors are responsible for mental health conditions.

Among the general population, the perceived causes of mental health conditions are as follows: diseases (35.6%), curses/spells (10.4%), and other factors (54.0%) (see Table 3.20.8.1). There are no significant differences in the perceived causes of mental health conditions across different age groups for men, women, or the overall population.

Table 3.20.8.1: Causes of mental health conditions among all respondents

Age Group (years)	What do you think cause mental health conditions						
	Both Sexes						
	n	% Disease	95% CI	% Curse/ Spell	95% CI	% Other	95% CI
18-29	1324	33.0	29.5-36.6	11.8	8.9-14.7	55.2	51.1-59.3
30-44	1988	38.2	35.0-41.5	8.8	7.2-10.4	53.0	49.7-56.3
45-59	1211	37.7	34.2-41.1	9.9	7.6-12.3	52.4	48.8-56.0
60-69	529	35.0	29.5-40.5	10.0	6.6-13.3	55.0	48.9-61.1
18-69	**5052**	**35.6**	**33.4-37.8**	**10.4**	**8.8-12.0**	**54.0**	**51.5-56.5**

3.20.9 Knowledge on Whether Mental Health Conditions are Treatable

As the population ages, the proportion of individuals who believe that mental health conditions are treatable increased. However, this belief does not differ significantly across age groups. Overall, a high proportion of the population (86.4%) perceives mental health conditions as treatable, with 86.0% of men and 86.7% of women sharing this view (see Table 3.20.9.1).

Table 3.20.9.1: Population indicating mental health conditions are treatable

Age Group (years)	Percentage indicating mental health conditions are treatable								
	Men			Women			Both Sexes		
	n	% Mental health conditions are treatable	95% CI	n	% Mental health conditions are treatable	95% CI	n	% Mental health conditions are treatable	95% CI
18-29	525	83.8	78.9-88.8	831	87.0	84.1-90.0	1356	85.3	82.4-88.2
30-44	689	86.5	83.4-89.6	1326	85.0	81.8-88.2	2015	85.7	83.5-88.0
45-59	487	89.3	86.1-92.4	762	87.1	84.0-90.3	1249	88.2	86.0-90.4
60-69	223	91.5	87.6-95.5	314	92.0	88.6-95.3	537	91.7	89.1-94.4
18-69	**1924**	**86.0**	**83.3-88.7**	**3233**	**86.7**	**85.0-88.4**	**5157**	**86.4**	**84.6-88.1**

3.20.10 Proportion of the Population Ever Diagnosed with a Mental Health Condition

Whereas 1.1% of men have ever been diagnosed with a mental health condition, 2.1% of women have. The difference is not significant between men and women and between the various age groups. (Table 3.20.10.1)

Table 3.20.10.1: Percentage of the population ever diagnosed as having mental health condition

Age Group (years)	Percentage ever been diagnosed as having a mental health condition								
	Men			Women			Both Sexes		
	n	% Ever diagnosed as having a Mental health condition	95% CI	n	% Ever diagnosed as having a Mental health condition	95% CI	n	% Ever diagnosed as having a Mental health condition	95% CI
18-29	550	0.7	0.0-1.5	873	1.3	0.3-2.3	1423	0.9	0.3-1.6
30-44	721	1.1	0.3-1.9	1393	3.4	1.7-5.2	2114	2.3	1.4-3.3
45-59	519	2.1	0.0-4.4	811	1.9	0.8-3.1	1330	2.0	0.8-3.2
60-69	232	2.1	0.2-4.0	338	2.0	0.0-4.1	570	2.0	0.7-3.4
18-69	**2022**	**1.1**	**0.5-1.7**	**3415**	**2.1**	**1.3-2.9**	**5437**	**1.6**	**1.1-2.2**

3.20.11 History of Diagnosed Mental Health Conditions

Among men who have ever been diagnosed with a mental health condition, depression was 58.0%, anxiety 18.5%, psychosis 13.9% and others 9.5%. Though the proportion of 18-29-year group diagnosed depression is high (87.6%), it was not significantly different from the other age groups. (Table 3.20.5b) Interestingly, among men, anxiety was only diagnosed among the 45-59-year group with a proportion of 59.0%.

Table 3.20.11.1: Mental health conditions ever diagnosed among men

Age Group (years)	Mental health conditions ever diagnosed – Men								
		% Depression	95% CI	% Anxiety	95% CI	% Psychosis	95% CI	% Other	95% CI
18-29	4	87.6	70.1-100.0	0.0	0.0-0.0	12.4	0.0-29.9	0.0	0.0-0.0
30-44	8	50.6	9.0-92.2	0.0	0.0-0.0	18.2	0.0-53.6	31.1	0.0-71.0
45-59	4	41.0	0.0-100.0	59.0	0.0-100.0	0.0	0.0-0.0	0.0	0.0-0.0
60-69	4	41.2	0.0-84.1	0.0	0.0-0.0	58.8	15.9-100.0	0.0	0.0-0.0
18-69	**20**	**58.0**	**20.1-96.0**	**18.5**	**0.0-56.2**	**13.9**	**0.0-28.8**	**9.5**	**0.0-26.3**

In women, 39.7% were diagnosed with depression, 23.2% with anxiety, 22.0% with psychosis and 15.1% with other conditions. There were no significant differences in the various proportions for the various conditions among the age groups of women. (Table 3.20.11.2)

Table 3.20.11.2: Mental health conditions ever diagnosed among women

Age Group (years)	Mental health conditions ever diagnosed – Women								
		% Depression	95% CI	% Anxiety	95% CI	% Psychosis	95% CI	% Other	95% CI
18-29	7	37.3	0.0-87.5	21.6	0.0-52.2	26.5	0.0-67.9	14.6	0.0-42.8
30-44	29	43.0	23.2-62.8	32.8	13.0-52.7	9.6	0.0-19.3	14.6	0.9-28.2
45-59	16	40.2	10.9-69.4	7.5	0.0-19.9	47.8	15.4-80.2	4.6	0.0-14.5
60-69	4	19.8	0.0-62.3	5.7	0.0-19.4	6.5	0.0-15.8	68.0	15.3-100.0
18-69	**56**	**39.7**	**20.9-58.5**	**23.2**	**7.5-38.9**	**22.0**	**4.9-39.1**	**15.1**	**3.7-26.5**

Among those in the population who have ever been diagnosed with a mental health condition, 46.7% were diagnosed with depression, 21.4% with anxiety, 18.9% with psychosis, and 13.0% with other conditions. There are no significant differences in the proportions diagnosed with various mental health conditions across the different age groups (Table 3.20.11.3). The most prevalent mental health condition ever diagnosed among men, women, and both sexes is depression, followed by anxiety and psychosis.

Table 3.20.11.3: Mental health conditions ever diagnosed among the population

Age Group (years)	Mental health conditions diagnosed as having – Both Sexes								
		% Depression	95% CI	% Anxiety	95% CI	% Psychosis	95% CI	% Other	95% CI
18-29	11	56.9	20.1-93.6	13.2	0.0-32.7	21.0	0.0-49.3	8.9	0.0-26.4
30-44	37	45.2	25.7-64.8	23.3	7.4-39.3	12.1	0.0-24.2	19.4	4.6-34.2
45-59	20	40.6	10.7-70.5	32.8	0.0-75.6	24.3	0.0-52.5	2.3	0.0-7.3
60-69	8	30.7	0.0-67.1	2.8	0.0-8.8	33.2	0.0-73.7	33.4	0.0-82.1
18-69	76	46.7	28.0-65.4	21.4	7.5-35.3	18.9	7.9-30.0	13.0	3.7-22.2

3.20.12 History of Change in Behaviour Among respondents

Nearly every day, 0.9% of men and 0.7% of women receive complaints from others about changes in their behaviour, while 81.2% of men and 80.6% of women have never received such complaints. Among men, 17.9% have received complaints on more than half of the days or on several days, compared to 18.8% of women (Table 3.20.12.1 and 3.20.12.2).

Overall, 80.9% of the population have never received complaints about a change in their behaviour, 12.8% have received complaints on several days, 5.6% on more than half of the days, and 0.8% nearly every day (Table 3.20.12.3).

Table 3.20.12.1: History of the degree of change in behaviour among men

Age Group (years)	People complain about your change in behaviour — Men								
	n	% Not at all	95% CI	% Several days	95% CI	% More than half the days	95% CI	% Nearly everyday	95% CI
18-29	550	78.2	73.0-83.5	15.9	10.9-20.9	4.6	2.2-7.0	1.2	0.4-2.1
30-44	721	81.4	78.1-84.7	11.3	8.7-13.8	7.0	4.6-9.4	0.4	0.0-0.8
45-59	519	87.6	84.3-90.8	7.4	4.6-10.1	3.9	1.9-5.8	1.2	0.2-2.3
60-69	232	84.3	77.0-91.6	9.7	2.9-16.5	5.7	2.0-9.4	0.3	0.0-0.7
18-69	**2022**	**81.2**	**78.3-84.1**	**12.7**	**10.1-15.2**	**5.2**	**3.9-6.6**	**0.9**	**0.5-1.4**

Table 3.20.12.2: History of the degree of change in behaviour among women

Age Group (years)	People complain about your change in behaviour — Women								
	n	% Not at all	95% CI	% Several days	95% CI	% More than half the days	95% CI	% Nearly everyday	95% CI
18-29	873	75.3	71.2-79.3	16.3	12.9-19.7	7.8	5.4-0.2	0.6	0.1-1.0
30-44	1393	84.1	81.4-86.8	10.4	8.0-12.7	5.0	3.2-6.9	0.5	0.2-0.9
45-59	812	85.1	82.3-87.9	10.3	7.8-12.8	3.5	2.0-4.9	1.1	0.3-1.9
60-69	338	85.8	81.3-90.2	9.5	5.6-13.3	4.2	1.7-6.6	0.6	0.0-1.7
18-69	**3416**	**80.6**	**78.4-82.8**	**12.9**	**11.1-14.7**	**5.9**	**4.4-7.3**	**0.7**	**0.4-1.0**

Table 3.20.12.3: History of the degree of change in behaviour among all respondents

Age Group (years)	People complain about your change in behaviour — Both Sexes								
	n	% Not at all	95% CI	% Several days	95% CI	% More than half the days	95% CI	% Nearly everyday	95% CI
18-29	1423	76.8	73.5-80.1	16.1	13.1-19.2	6.1	4.3-8.0	0.9	0.4-1.4
30-44	2114	82.8	80.6-85.0	10.8	9.1-12.5	6.0	4.6-7.3	0.4	0.2-0.7
45-59	1331	86.3	84.0-88.5	8.9	6.9-10.8	3.7	2.4-4.9	1.2	0.5-1.8
60-69	570	85.0	80.3-89.7	9.6	5.2-14.0	4.9	2.7-7.2	0.4	0.0-1.0
18-69	**5438**	**80.9**	**79.0-82.7**	**12.8**	**11.1-14.4**	**5.6**	**4.5-6.6**	**0.8**	**0.5-1.1**

CHAPTER 04

DISCUSSION

The overall aim of the 2023 Ghana STEPS survey was to produce reliable national-level data on the prevalence of NCD risk factors in Ghana. The survey results were intended to contribute to evidence-based policy discussions and a multisectoral response for the prevention and control of NCDs, as well as to broader sectoral reforms.

Representation

This survey is the first nationwide STEPS survey conducted in the country, encompassing all 16 regions. The findings are representative of the entire country, as the data obtained from the sampled participants were weighted accordingly.

Previously, a sub-survey had been conducted in a single region, the Greater Accra Region. However, due to the limited geographical scope of that survey, it would not be scientifically valid to compare its findings with those of this nationwide survey.

The results of this survey will, however, serve as a baseline and can be compared with future STEPS surveys to monitor the outcomes of interventions that will be implemented.

Level of participation

Recruitment proceeded as planned, and a representative sample was successfully obtained. Participation levels did not vary significantly across different population groups, including age, sex, or rural/urban location. A total of 5,438 participants aged 18 to 69 years were interviewed nationwide.

KEY RESULTS

Tobacco use

The proportion of the adult population aged 18 to 69 years who currently smoke tobacco is 4.8%, with a statistically significant difference in prevalence between men (9.3%) and women (0.3%). Although the overall prevalence is low, more than half of current smokers use tobacco daily. Given the risks posed by cigarette smoking, both to smokers themselves and to those exposed to second-hand smoke, every effort should be made to encourage cessation.

There is no significant difference in the proportion of current smokers between urban and rural populations. Cigarette smoking and tobacco use have long been the leading cause of NCDs. Smoking is a major modifiable risk factor for type 2 diabetes, as it is associated with both the incidence and mortality of the disease (Russo & Mondati, 2013). Furthermore, smoking cessation has been shown to reduce the risk of developing diabetes among smokers (Tonstad, 2009). In addition, smoking is the most significant contributing factor in the development and progression of chronic lung disease (Mannino & Buist, 2007; Rennard & Vestbo, 2006).

Among daily tobacco smokers, the younger generation (aged 18–29 years) began smoking at an earlier age compared to the older generation (aged 60–69 years), a difference that is statistically significant. The average age at which individuals started smoking also differs significantly between urban (21.0 years) and rural (25.0 years) populations. The availability of social media and early exposure to tobacco products may have contributed to this trend. Efforts should be made to encourage people to delay smoking initiation, or better still, to prevent them from starting altogether, as this would reduce the duration of smoking.

Approximately 73.6% of daily smokers use manufactured cigarettes, a behaviour predominantly observed among men. There are no significant age group differences in the prevalence of both current and daily smokers of manufactured cigarettes. On average, smokers of manufactured cigarettes consume three sticks per day. The proportion of daily smokers using manufactured cigarettes, as well as

the average number of cigarettes smoked per day, does not differ between urban and rural respondents. Enforcement of smoking regulations should be intensified in both urban and rural areas.

The proportion of current smokers who smoke shisha is 7.8%, with its use being more prevalent among the 18–29-year age group and highest among women. While only 6.6% of men who currently smoke use shisha, 44.0% of women who currently smoke use shisha. This may be due to the perception that shisha is less harmful than manufactured cigarettes. Shisha smoking among the youth, particularly among females, is an increasing concern, and interventions are needed to address this issue.

The majority of current smokers (62.3%) have attempted to quit smoking; however, only 25% of current smokers have been advised by a doctor to stop. It is encouraging that a high proportion of smokers have made efforts to quit, and with appropriate interventions in place, they could be supported in successfully giving up smoking. Health professionals should seize every opportunity to advise smokers on cessation. There should be the implementation of cessation services for those attempting to quit.

Both men and women are equally exposed to second-hand smoke in the home environment, with no statistically significant difference between the sexes. In the workplace, however, significantly more men (23.6%) are exposed to second-hand smoke compared to women. This disparity may be related to the type of work they do or the individuals they work with or interact with.

Ghana has made significant strides in implementing the Framework Convention on Tobacco Control (FCTC), yet challenges remain in enforcing certain provisions on smoke-free policies, which should be prioritised. Compliance and regulatory processes must be strengthened at both national and subnational levels for all other provisions within the framework, including tobacco advertising, promotion and sponsorship (TAPS), plain packaging, and track and trace systems, using a multisectoral approach. Substantial efforts must also be made to counteract interference from the tobacco industry in the implementation of the framework.

Alcohol Consumption

Among adults aged 18 to 69 years, 43.9% have never consumed alcohol in their lifetime (lifetime abstainers). The percentage of past 12-month abstainers is 19.8%, while 22.6% of the population currently drink alcohol (consumed alcohol in the past 30 days). There is a statistically significant difference between men (30.6%) and women (4.5%). Those who have consumed alcohol before but are not current drinkers should be encouraged to maintain their abstinence. A significant difference exists in the proportion of current alcohol drinkers between urban (18.6%) and rural (28.4%) populations, highlighting the importance of including rural areas in intervention efforts.

Of those who have consumed alcohol, 20.5% have attempted to stop drinking due to health reasons. Drinking to the extent that it causes health problems is a serious concern, underscoring the need to educate the public on the dangers of alcohol consumption.

The majority (83.9%) of current alcohol drinkers are low-level drinkers, followed by intermediate drinkers and high-level drinkers. It is encouraging that most are in the lower range, and they should be supported to avoid progressing to higher levels, while additional efforts should be directed at those in the higher range. A portion of the population engages in heavy episodic drinking, defined as consuming six or more drinks on a single occasion within the past 30 days. Significantly more men than women engage in heavy drinking on a single occasion. Among past 12-month drinkers, 17.7% were unable to stop drinking once they started in the past year. These categories of drinkers are at increased risk of serious health problems due to their drinking habits, and efforts should be made to assist them in breaking the habit.

Expedited action is required for the passage of alcohol control legislation by parliament, as this would facilitate the implementation of regulations to limit alcohol advertisements in both print and electronic media, as well as impose restrictions on the timing of such advertisements on electronic platforms. Age limits for purchasing alcoholic beverages should be strictly enforced, and advocacy and awareness initiatives should be rolled out in schools and workplaces, including the adoption of Employee Assistance Programmes (EAP).

Service delivery agencies should prioritise the provision of cessation services as part of promoting wellness at various levels of care. Community-based interventions, such as existing self-help groups (e.g. Alcoholics Anonymous), should be strengthened to provide targeted support for those in need.

Fruit and Vegetable Consumption

The consumption of fruits and/or vegetables is significantly below the WHO recommendation of five servings per day. Fruits and vegetables are crucial components of a healthy diet. Inadequate consumption is linked to poor health outcomes and an increased risk of NCDs. Including fruits and vegetables in the daily diet may reduce the risk of certain NCDs, such as cardiovascular diseases and some types of cancer. Additionally, evidence suggests that when consumed as part of a healthy diet low in fat, sugar, and salt/sodium, fruits and vegetables may help to prevent weight gain and reduce the risk of obesity, an independent risk factor for NCDs. A systematic review clearly demonstrates that increasing daily fruit and vegetable intake has favourable effects on cardiovascular disease (CVD) risk factors (Hartley et al., 2013). There is also evidence that the risk of cancer in general is inversely associated with the consumption of vegetables and fruit (Rodriguez-Casado, 2016). Furthermore, fruit and vegetable consumption may help prevent weight gain, which is a risk factor for type 2 diabetes mellitus (Scott et al., 2013). Fruits and vegetables are also essential for promoting eye health and preventing chronic bone diseases (Alissa & Ferns, 2017). Increasing the population's intake of fruits and vegetables is therefore crucial.

The mean number of days on which the population consumes fruits and vegetables does not differ between urban and rural populations. This is unexpected, as one might assume that those in rural areas would have greater access to fruits and vegetables, given their likelihood of cultivating them. It is possible, however, that although they may grow these crops, they sell them for income.

Salt Intake

13% of the adult population aged 18 to 69 years always or often adds salt or salty sauces, such as soy sauce, to their meals before or during eating. Furthermore, 90.5% always or often add salt when cooking or preparing food at home, while 22.8% regularly consume processed foods high in salt. Only 9.1% believe they consume far too much or too much salt, whereas 18.3% think they consume too little or far too little salt. These figures suggest a generally high salt intake among respondents. Unfortunately, the spot urine test, which would have provided a more objective assessment of salt intake, could not be conducted.

The practice of adding salt while cooking or preparing food at home is widespread in Ghana, with 90.5% of respondents indicating they engage in this habit. Adding salt or salty sauces to meals before or during eating is likely to contribute to excessive salt intake and should be discouraged.

A notable 22.8% of the population always or often consume processed foods high in salt. There is a pressing need to intensify education on the risks of high salt consumption, as this percentage may increase with rising levels of sophistication and advertising exposure.

Physical Activity

A significantly higher proportion of women (14.6%) compared to men (5.5%) are not meeting the recommended levels of physical activity for health, a difference that is statistically significant. Efforts should be made to encourage more women to engage in physical activity to improve their health. Urban dwellers are less physically active (12.5%) than those in rural areas (6.1%), with this difference also being statistically significant. This may be attributed to the lifestyles and amenities available to urban residents, placing them at increased risk of developing NCDs.

It is well established that regular physical activity provides both physical and mental health benefits across all age groups. Physically, it improves quality of life, sleep, and stress management, while mentally, it enhances social relationships. Physical inactivity is one of the most significant risk factors for chronic diseases and increases morbidity and mortality (Al-Hazzaa et al., 2011). In 2008, it was reported that 9% of premature deaths worldwide were linked to physical inactivity (Lee et al., 2012). Inactivity has a major impact on the occurrence of coronary heart disease, type 2 diabetes, and cancers, particularly breast and colon cancers (Lee et al., 2012). A 2012 study indicated that 6-10% of global deaths from NCDs were directly related to physical inactivity (Reiner et al., 2013).

The mean daily minutes of recreational physical activity are low for the population, with women being worse off than men. Men also record significantly higher mean minutes of work-related physical activity per day than women. Among the general population, the 30-59 age group has significantly higher mean minutes of work-related physical activity compared to the younger (18-29 years) and older (60-69 years) age groups. This is unsurprising, as those aged 30-59 are more likely to be in employment, and many of their jobs may require physical activity.

The mean daily minutes of transport-related physical activity for the population is 89.2 minutes, with no difference between men and women. This may be because both genders rely on similar modes of commuting to work. People should be encouraged to increase their time spent on recreational, work-related, and transport-related physical activity.

A significantly higher proportion of women engage in no vigorous physical activity compared to men, with most women across all age groups abstaining from vigorous activity. Among the general adult population, 71.2% do not engage in any vigorous physical activity. The percentage is higher in urban (73.5%) than in rural (67.8%) areas, although this difference is not statistically significant. Special efforts should be made to encourage people, particularly women, to engage in vigorous physical activity, as it is beneficial for the heart and the cardiovascular system in general.

Ghana has adopted global guidelines for physical activity that define and clarify physical activity within the local context. These guidelines need to be widely disseminated, and increased efforts should be made to raise awareness of the benefits of physical activity. Advocacy should prioritise increasing time allocated to physical activity in schools and creating an enabling environment within the school system to promote it. The workplace environment should also be conducive to physical activity, with best practices considered for adoption.

Blood Pressure Measurement

The survey findings indicate that 24.3% of adults aged 18 to 69 years have never had their blood pressure measured. This hinders efforts towards the early detection of hypertension and timely treatment to prevent complications. It is imperative that blood pressure is measured whenever individuals come into contact with the healthcare system, and health campaigns should be implemented to screen the population for elevated blood pressure. Early detection would enable prompt identification and management of those with elevated blood pressure.

When disaggregated by sex, 33.8% of men and 14.7% of women have never had their blood pressure measured. Women are more likely to come into contact with health services, for example, through attending antenatal clinics during pregnancy, childbirth, and postnatal care.

Elevated Blood Pressure on Medication

The proportion of individuals with elevated blood pressure who are currently taking medication prescribed by a doctor or health worker is 29.1%. This is concerning, as those not on medication are at increased risk of developing complications. A higher proportion of women with elevated blood pressure are on medication compared to men. The proportion of individuals on medication increases with age among both sexes; however, none of the men in the 18–29-year age group diagnosed with elevated blood pressure were on medication. It is crucial to educate people that the treatment of elevated blood pressure is lifelong, and adherence to medication is essential.

Some individuals with previously diagnosed elevated blood pressure have sought advice and/or treatment from traditional healers. These herbal remedies may pose additional health risks and may not effectively control blood pressure.

Prevalence of Hypertension

The proportion of the population with elevated blood pressure or who are currently on medication for elevated blood pressure is 21.7%. This represents approximately one-fifth of the population, which is a significant concern. Among the 18–29-year age group, 5.5% have hypertension, with the proportion increasing markedly to 24.9% in the 30–44-year group, 45.6% in the 45–59-year group, and reaching 55.3% in the 60–69-year group. Approximately one in two individuals over the age of 45 has hypertension, which is an unacceptably high rate.

Diagnosis, Treatment, and Control of Elevated Blood Pressure

Overall, 51.1% of the population with elevated blood pressure have not been previously diagnosed. Among those who have been diagnosed, 24.6% are not on medication, 14.7% are on medication but have not achieved control, and only 9.5% of those who are both diagnosed and on medication have controlled their blood pressure. For men with elevated blood pressure, 60.6% were not previously diagnosed, compared to 44.1% of women. This highlights the urgent need for innovative strategies to enhance screening for hypertension.

Only 10.4% of men and 18.0% of women with hypertension have achieved blood pressure control. There is a clear need to improve adherence counselling related to lifestyle modifications and treatment. Furthermore, the population should receive continuous education on the importance of medication adherence for the effective management of NCDs.

Blood Sugar Measurement and Diagnosis

The majority of the population (70.3%) have never had their blood sugar levels checked. This underscores the necessity for routine screening when individuals come into contact with health services. Opportunities should be seized to check blood glucose levels when people visit health facilities. Individuals should also be encouraged to undergo annual health checks to enable early detection of diseases, with such checks becoming routine for those over 40 years of age.

History of Treatment Among Those Diagnosed with Diabetes

Among those diagnosed with diabetes, 15.4% are on insulin medication, while 34.6% are on other prescribed diabetes medications. There is a need for increased health education regarding the dangers of not adhering to prescribed treatments, as half of those with diabetes are not receiving medication.

It has been observed that some individuals with diabetes use traditional or herbal remedies. Research is needed to ensure that treatments provided by traditional healers are appropriate and comparable to those produced by established institutions, such as the Centre for Plant Medicine Research in Mampong.

Impaired Fasting Blood Glucose

The mean blood glucose level for the population is 5.5 mmol/l, with no significant differences observed between sexes or between urban and rural residents. Among the population, 10.2% have impaired blood glucose levels, with a higher proportion in the 60–69-year age group. The rates of impaired fasting blood glucose are 11.9% for men and 8.3% for women. There is a significant difference in the proportion of urban and rural respondents with impaired fasting blood glucose. Interventions aimed at identifying individuals with impaired blood glucose levels are crucial for preventing progression to diabetes and its associated complications.

Elevated Fasting Blood Glucose or Currently on Medication for Diabetes

The percentage of the population with elevated fasting blood glucose is 5.2%, with a higher proportion observed in the 60–69-year age group (12.7%) for both sexes. There is a significant difference in the prevalence of elevated fasting blood glucose between urban (6.1%) and rural (3.9%) respondents. Elderly individuals and urban dwellers are at an increased risk of developing other NCDs, which may lead to higher healthcare costs.

Blood Glucose Diagnosis and Treatment

Overall, 3.7% of the population have elevated blood glucose levels that have not been previously diagnosed, 2.4% have previously diagnosed elevated blood glucose but are not on medication, and 1.3% have previously diagnosed elevated blood glucose and are on medication. There is a significant difference between men and women regarding the proportion of those with previously diagnosed elevated blood glucose who are on medication.

History of Elevated Total Cholesterol

Among adults aged 18–69 years, 90.0% have never checked their blood cholesterol levels, with 91.3% of men and 88.7% of women in this category. This high percentage underscores the importance of checking cholesterol levels during health facility visits. Additionally, individuals should be encouraged to undergo annual health checks. Only 10.0% of the population have previously checked their cholesterol levels, with 2.3% diagnosed with high cholesterol.

Among those with previously diagnosed elevated total cholesterol, 18.1% are on medication, with 17.2% of men and 18.6% of women receiving treatment. Notably, 14.5% and 8.1% of those with elevated cholesterol have sought treatment from traditional healers and are using traditional remedies. There is a need for health education regarding the risks associated with using herbal and traditional remedies, as this may increase the risk of developing CVDs. It is crucial to ensure that individuals are receiving appropriate treatment and to review the use of traditional healers for NCDs. It would be beneficial to ascertain whether these healers obtain their remedies from recommended sources, such as the Centre for Plant Medicine Research, Mampong. Further research is needed to determine if patients using traditional remedies are experiencing effective control of their conditions or developing complications.

The mean total cholesterol value for the population is 4.1 mmol/L. Among those aged 18–69 years whose cholesterol was checked, 21.6% had elevated levels, with a significantly higher prevalence among women compared to men. The proportion of individuals with elevated cholesterol increases significantly with age. A small proportion of those with elevated cholesterol levels are on medication

prescribed by a doctor or health worker, and this is more common in urban areas. This is concerning, as individuals with elevated cholesterol have fewer treatment options available to them. This disparity could be due to the limited availability of health services and medications in rural areas. Health facilities and pharmacists in rural areas should be encouraged to stock these medications.

Anthropometric Measurements

Body Mass Index (BMI) is higher among women and urban residents compared to men and rural residents. A greater proportion of men are classified as underweight than women across all age groups. Overweight prevalence is twice as high among women and urban residents compared to men and rural residents, respectively. Additionally, obesity rates are four times higher among women compared to men. The study indicates that men engage in more physical activities.

Cardiovascular Disease Risk

The risk of developing cardiovascular disease (CVD) among adults aged 40–69 years over the next 10 years is 7.7%. This risk is higher for women compared to men. Urban dwellers also face a greater risk of developing CVD or living with existing CVD. However, counselling on the treatment and prevention of CVD remains inadequate, and additional efforts are required to address this issue.

Combined Risk Factors

A higher proportion of women and urban dwellers exhibit more combined risk factors compared to men and rural residents. Approximately 10% of individuals have none of the combined risk factors, which is relatively low. Efforts should be made to increase this percentage through education on how to mitigate these risk factors.

The presence of three or more combined risk factors is particularly concerning, as individuals in this category are at a heightened risk of developing NCDs. Special attention should be given to educating those affected, particularly women, individuals aged 45 to 69 years, and urban residents, on lifestyle changes to reduce their risk.

Lifestyle Advice

Advice on lifestyle is crucial for the prevention of diseases, including NCDs. The study reveals that there has been insufficient advice on NCD risk factors over the past three years. Specifically, there has been a lack of guidance on the following: avoiding or quitting tobacco use, reducing salt intake, consuming the recommended five servings of fruit and/or vegetables per day, decreasing dietary fat, increasing physical activity, maintaining a healthy weight, or losing weight.

Ideally, such advice should be provided to a larger proportion of the population. Healthcare professionals should capitalise on every opportunity to offer lifestyle advice when interacting with patients in health facilities or during outreach programmes. Additionally, alternative communication channels should be utilised, including electronic and print media, social media, billboards, flyers, leaflets, and educational talks in schools and workplaces.

History of Cervical Cancer Screening

Among the female adult population, only 3.6% have ever undergone cervical cancer screening using any method, which is alarmingly low. For women aged 30–49 years, only 4.3% have ever been screened. While the proportion of women screened in urban areas (5.1%) is higher compared to rural areas (3.0%), this difference is not statistically significant.

The low prevalence of cervical cancer screening among women, particularly in the high-risk group of 30–49 years, is concerning. There is a pressing need to intensify education on the importance of screening.

The Ghana National Reproductive Health Policy, established in 2005, recommended cervical cancer screening using Visual Inspection with Acetic Acid (VIA) and treatment of pre-cancerous lesions with Cryotherapy for women aged 25–45 years, and Cytology screening with Pap smear for women aged 45 and older (MOH, 2011).

However, Ghana lacks a national cervical cancer screening programme. In the absence of such a programme, most cervical cancer screening conducted in the country can be classified as opportunistic. This means that doctors request Pap smears or VIA only when patients present for general medical examinations or consultations unrelated to cervical cancer.

Public education on cervical cancer remains inadequate, reflected in the low uptake of screening services as observed in the survey. Cervical cancer screening programmes are predominantly based in urban areas, with services primarily available at major hospitals, especially regional and teaching hospitals, and very few hospitals in rural areas offering such services.

Challenges contributing to the low screening rates include insufficient skills, lack of local and sustainable research, high costs of HPV immunisation, unaffordability of therapeutic resources, inadequate palliative care, and poor collaboration and coordination among stakeholders. These issues need to be addressed comprehensively to enhance early detection, diagnosis, and management of cervical cancer.

Oral Health

A significant proportion of the population (98.9%) have 20 or more natural teeth, which is beneficial for proper mastication and a varied diet. While it is encouraging that 98.2% of Ghanaians brush their teeth at least once a day, only about half of them adhere to the recommended practice of brushing at least twice a day (54.3%). Notably, a higher percentage of women (57.9%) brush their teeth at least twice a day compared to men (50.8%).

Among respondents, 94.1% use toothpaste, which is positive. However, 84.9% of individuals have never received dental care. This highlights the need for targeted interventions to improve oral hygiene practices and encourage regular dental check-ups.

Mental Health

Significant efforts by the Ghana Mental Health Authority has focused on reducing stigma around mental health conditions and encouraging individuals to seek help. Despite these efforts, the survey reveals that 3.8% of the population considered attempting suicide in the past 12 months, with a slightly higher prevalence among women. Women also reported planning and attempting suicide more frequently than men, though men are more likely to use lethal methods when attempting suicide, resulting in higher success rates.

The highest proportion of suicide attempts was observed in the younger age group, though the rate increases with age among men. Despite more women considering, planning, and attempting suicide, a larger number of men sought professional help. The middle age groups were most likely to seek help. Although the reasons for suicide attempts were not specifically identified, economic hardships and emotional challenges, which are often more pronounced in women, might contribute to these findings.

Interestingly, almost equal numbers of men and women have experienced the suicide of a close family member. However, it is unclear why men reported having more close family members who attempted suicide compared to women in Ghana.

The survey found that a higher proportion of women reported varying degrees of depression compared to men, which aligns with the WHO global status report on mental health (WHO, 2023). However, the reported prevalence of depression in this survey (8.0%) is higher than the global average, possibly due to the economic and health challenges faced by individuals in Ghana.

A little over a third of the population believes that mental health conditions, such as depression, anxiety, and psychosis, are caused by supernatural forces or curses. This belief may influence health-seeking behaviours, leading individuals to consult spiritualists or alternative practitioners rather than seeking professional care. On a positive note, 86.4% of the population acknowledges that mental health conditions are treatable.

Only 1.6% of the population reported having been diagnosed with a mental condition, a figure that is low compared to the survey's findings. This low diagnosis rate may be due to a lack of mental health professionals or the stigma associated with mental health conditions, leading to underreporting. The PHQ-9 assessment identified 8.0% of the population as experiencing depression, suggesting that many individuals with mental health conditions remain undiagnosed.

Depression was the most commonly diagnosed mental health condition, followed by anxiety and psychosis, affecting all age groups and gender. Approximately 20% of the population reported noticeable changes in behaviour, which may indicate undiagnosed mental health issues. Interventions, including coping strategies, are needed to help individuals manage life's challenges.

To address the issue of suicide comprehensively, Ghana should develop a suicide prevention strategy in line with WHO's LIVE LIFE guidance document. The government's commitment to suicide prevention, exemplified by the decriminalization of suicide in March 2023, is a positive step. This change will facilitate open discussions about suicide and provide support for at-risk populations.

Capacity-building efforts for primary healthcare providers, including pre-service and ongoing in-service training using the WHO mhGAP Intervention Guide, should be expanded to include community volunteers and other stakeholders. Additionally, investment in research is crucial to better understand the complexities of suicide and develop evidence-based interventions.

Strengths and Limitations

The following measures were put in place and ensured that the survey was well conducted, and data collected was of high quality and reliable:

A Technical Working Committee (TWC) was formed to oversee the study, providing robust management and oversight throughout the process. The survey protocol, developed by experts in research and NCDs, incorporated inputs from WHO colleagues with experience in similar STEPs surveys. This protocol received approval from the Ghana Health Service Ethics Review Committee (GHS ERC) before the survey was conducted.

Data collectors received comprehensive training that included both classroom instruction and a pilot study, ensuring their preparedness for fieldwork. The TWC was actively involved in training, supervising, analysing data, and writing reports, with additional support from WHO colleagues. During data collection, supervision and quality checks were integral to maintaining data quality, with real-time review and feedback mechanisms in place.

Despite these strengths, there were notable limitations. Spot urine sample collection for salt and creatinine analysis was suspended after initial samples due to logistical and financial constraints. Consequently, the assessment of salt intake relied solely on questionnaire responses rather than direct measurement, which could affect the accuracy of the findings.

Furthermore, while the survey aimed to provide a true representation of NCD prevalence and risk factors, the reliance on questionnaire data for certain measures and the absence of some biomedical measures may impact the precision of the results. Resource constraints, including financial limitations, also influenced the scope of certain measurements and analyses, potentially affecting the breadth and depth of the data collected.

Overall, while the survey was well-executed with rigorous planning and quality control, these limitations must be acknowledged as they may affect the interpretation of some findings. Nonetheless, the survey provides valuable insights into the prevalence and risk factors for NCDs in the country.

CHAPTER 05

CONCLUSIONS AND RECOMMENDATIONS

The 2023 Ghana STEPS survey has provided information on the prevalence of risk factors NCDs, including oral and mental health in the country. It has revealed a high prevalence of risk factors for NCDs and has provided data for the development of interventions to track and monitor the progress of efforts to prevent and control NCDs in the country.

Key findings are as follows:

Tobacco use

- The percentage of adults aged 18-69 years who currently smoke tobacco is 4.8% (95% CI: 3.8-5.9), with a statistically significant difference in prevalence between men, 9.3% (95% CI: 7.2-11.4), and women, 0.3% (95% CI: 0.1-0.5). More than half of the current tobacco smokers smoke daily.
- The percentage of daily smokers who smoke manufactured cigarettes is 73.6% (95% CI: 61.5-85.8), whilst the mean number of manufactured cigarettes smoked per day is 3 sticks.
- Among daily smokers, the younger generations started smoking at an earlier age compared to the older generation.
- The proportion of current smokers who smoke shisha is 7.8%, which is more prevalent among the 18-29 years age group (12.7%, 95% CI: 2.1-23.2) and is highest among women.
- The percentage of the population exposed to second-hand smoke at the workplace is 19.9%. Significantly more men (23.6%, 95% CI: 20.8-26.4) are exposed to second-hand smoke than women (16.2%, 95% CI: 14.2-18.2) at the workplace.

Alcohol consumption

- The proportion of the population aged 18-69 years who have never consumed alcohol in their life (lifetime abstainers) is 43.9%.
- Past-12-month abstainers comprise 19.8%, whilst those who currently drink alcohol (consumed alcohol in the past 30 days) constitute 22.6% of the population, (30.6%, 95% CI: 27.4-33.8) among men and (14.5%, 95% CI: 12.5-16.4) among women. The difference is statistically significant between the sexes.
- There is a significant difference between the proportion of the population who currently drink alcohol in urban (18.6%, 95% CI: 16.1-21.1) and rural (28.4%, 95% CI: 24.9-34.9) areas.
- The proportion of the population engaged in heavy episodic drinking on a single occasion is 2.5%. They consumed 6 or more drinks on a single occasion in the past 30 days. Significantly more men (3.6%, 95% CI: 2.7-4.5) drink heavily on a single occasion compared to women (1.4%, CI 0.8-1.9).

Diet

- The mean number of days fruits are consumed in a typical week by the population is 2.2 days, and for vegetables, 6.0 days. The mean number of days of consumption of fruits and vegetables does not differ significantly among the different age groups and sexes or between urban and rural dwellers.
- The consumption of adequate servings of fruits and vegetables is low among the population. On average, they consumed less than one serving (0.8) of fruits per day and 2.7 servings of vegetables per day. There was no statistically significant difference between the various age groups and sexes or between urban and rural dwellers.
- The majority of the population, 76.0%, consume less than 5 servings of fruits and/or vegetables on average per day and are therefore not meeting the WHO recommendation of 5 or more servings.

Salt Intake

- Thirteen per cent (13.0%) of adults aged 18-69 years always or often add salt or salty sauce such as soy sauce to their meal before eating or during eating; 90.5% always or often add salt to their food

when cooking or preparing foods at home; 22.8% always or often eat processed food high in salt; 9.1% think they consume far too much or too much salt; and 18.3% think they consume too little or far too little salt. These are indicators of high salt intake among the general population.

Physical Activity

- The adult population aged 18-69 years who are not meeting the WHO recommended physical activity level for health (defined as < 150 minutes of moderate-intensity activity per week, or equivalent) constitute 9.9%. More women (14.6%, 95% CI: 12.7-16.5) than men (5.5%, 95% CI: 4.0-6.9) are not meeting recommendations for physical activity for health.
- The mean minutes of total physical activity on average per day is significantly different for men (323.8 minutes, 95% CI: 308.5-339.1) and women (223.1 minutes, 95% CI: 211.6-234.6). The younger (18-29 years) and older (60-69 years) age groups did fewer mean minutes of total physical activity on average per day than the middle age group (30-59 years).
- The mean minutes of recreational activity is 12.6 minutes on average per day, which is inadequate. It is statistically significantly different between women, who averaged 4.5 minutes (95% CI: 3.2-5.8), compared to men (20.4 minutes, 95% CI: 17.5-23.3).
- Men have significantly higher mean minutes (214.2, 95% CI: 200.8-227.5) on average per day for work-related physical activity than women, who have a mean of 129.4 minutes (95% CI: 119.9-138.9).
- Mean minutes of transport-related physical activity (89.2 minutes) was not different for men and women.
- In summary, total physical activity for the adult population was comprised of 45.4% from work, 46.0% from transport and 8.6% from leisure time.
- For vigorous physical activity, the majority of the population (71.2%, 95% CI: 68.9-73.4) are not engaging in it, with a statistically significant difference between men (51.9%, 95% CI: 47.9-55.9) and women (91.2%, 95% CI: 89.6-92.8). There is no statistical difference between urban and rural dwellers.

History of Blood Pressure Measurement, Diagnosis of Elevated Blood Pressure and Treatment

- About a quarter of all adults aged 18-69 years (24.3%) have never had their blood pressure measured, with a statistically significant difference between men (33.8%, 95% CI: 30.7-36.9) and women (14.7%, 95% CI: 12.7-16.6).
- 16.7% of the population aged 18-69 years have ever been diagnosed with elevated blood pressure. 29.1% are currently on medication for elevated blood pressure prescribed by a doctor or a health worker.
- 16.8% have been seen by a traditional healer and 13.4% are currently taking herbal or traditional remedies.

History of Blood Glucose Measurement, Diagnosis of Diabetes and Treatment

- The majority (70.3%) of the adult population (18-69 years) have never had their blood sugar level checked. However, 1.9% of the population have had their blood sugar measured and been diagnosed with diabetes within the past 12 months.
- Among those diagnosed with diabetes, 15.4% are on insulin medication prescribed by a doctor or health worker. 9.6% of men and 18.2% of women diagnosed with diabetes are on insulin. Those on other medications prescribed for diabetes were 34.6% for both sexes, 21.7% among men and 40.9% among women.

History of Total Cholesterol Measurement, Diagnosis of Elevated Cholesterol and Treatment

- 90.0% of adults aged 18-69 years have never had their blood cholesterol level checked, 91.3% among men and 88.7% among women.
- About a similar proportion of men (17.2%) and women (18.6%) are on prescribed oral medications for their elevated total cholesterol level among those previously diagnosed.

Physical Measurements

Mean Blood Pressure

- The mean blood pressure of adults aged 18-69 years, including those currently on medication for elevated blood pressure, is 120.3 mmHg for systolic and 79.6 mmHg for diastolic. These figures are within the normal range. The mean blood pressures increased with increasing age for both sexes.

Elevated Blood Pressure

- The prevalence of elevated blood pressure (defined as systolic blood pressure ≥ 140mmHg and/or diastolic blood pressure of ≥ 90mmHg) is 19.6% among adults aged 18-69 years, (17.3%, 95% CI: 15.3-19.4) in men and (22.0%, 95% CI: 20.3-23.7) in women. The prevalence increased with increasing age.
- Severe elevated blood pressure (SBP ≥160 and/or DBP ≥ 100 mmHg) was present in 8.4% of the entire population; (7.3%, 95% CI: 5.9-8.7) of men and (9.5%, 95% CI: 8.2-10.7) of women.

Proportion of Adults Aged 18-69 Years Who Have Hypertension

- The proportion of the population who have elevated blood pressure or are currently on medications for elevated blood pressure is 21.7%. Among women, it is 25.3% (95% CI: 23.4-27.1) compared to men (18.2%, 95% CI: 16.1-20.3).
- The proportion living with severe hypertension is 11.8%.

Elevated Blood Pressure Diagnosis, Treatment and Control of Elevated Blood Pressure

- Among the adult population (18-69 years) with elevated blood pressure, 51.1% were not previously diagnosed; 60.6% of men and 44.1% of women.
- 24.6% of the people previously diagnosed with elevated blood pressure are not on medication; 24.2% in men and 25.0% in women.
- 14.7% of those previously diagnosed and on medication are not controlled and 9.5% are controlled.
- For those on medication for elevated blood pressure, 10.4% of men are not controlled whereas 4.8% have controlled blood pressure, and 18.0% of women are not controlled with 13.0% being controlled.
- The percentage of people with elevated blood pressure (systolic blood pressure ≥ 140mmHg and/or diastolic blood pressure of ≥ 90mmHg or currently on medication for elevated BP) who are not currently on medication for elevated blood pressure is 75.8% for both sexes, 84.8% for men and 69.1% for women.

Body Mass Index (BMI)

- Mean BMI (excluding pregnant women) is significantly higher for women (26.0 kg/m2, 95% CI: 25.7-26.4) than for men (22.4 kg/m2, 95% CI: 22.2-22.7). For both sexes, the mean BMI is 24.2 kg/m2. The mean BMI is higher for those in urban areas, 24.8 kg/m2 (95% CI: 24.5-25.2) than in rural areas 23.1 kg/m2 (95% CI: 22.8-23.5). The majority of men (68.3%) have normal weight, whilst less than half

(43.5%) of women have normal weight.

- For the general adult population, overweight (BMI ≥25kg/m^2) is 34.3%. The urban population has a significantly higher proportion of being overweight (40.3% 95% CI: 37.1-43.5) compared to the rural population (25.3% 95% CI: 22.2-28.4). The proportion of men who are overweight (BMI ≥25kg/m^2) is 19.7% (95% CI: 17.1-22.2) and women, 49.8% (95% CI: 47.1-52.4). The majority of overweight men are in the age group of 45-59 years whilst for women it is more prevalent in the 30-44 years age group.
- Obesity (BMI≥ 30) is significantly higher among women (22.8%, 95% CI: 20.5-25.2) than in men (4.5%, 95% CI: 3.3-5.7). Higher proportions of the obese population are in the age range of 30-59 years. The proportion of obesity among the urban population (16.9%, 95% CI: 14.8-19.0) is twice that of the rural population (8.2%, 95% CI: 6.7-9.7).
- Among the population, 56.3% have normal weight, 9.5% are underweight, 34.3% are overweight (BMI ≥ 25 kg/m2) and 13.4% have obesity (BMI≥ 30).

Biochemical Measurements

Mean Fasting Blood Glucose

- The mean fasting blood glucose, including those who are on medication for diabetes, for the general adult population is 5.5 mmol/l; 5.6 mmol/l for men and 5.5 mmol/l for women. There was no statistically significant difference between men and women.

Impaired Fasting Blood Glucose

- Impaired fasting blood glucose is defined as either plasma venous glucose ≥6.1mmol/l (110mg/dl) and <7.0mmol/l (126mg/dl) or capillary whole blood glucose level ≥5.6mmol/l (100mg/dl) and <6.1mmol/l (110mg/dl).
- Among the adult population, 10.2% have impaired blood glucose with a larger proportion in the 60–69-year group (16.5%). Disaggregated by sex, 11.9% (95% CI: 10.1-13.8) of men and 8.3% (95% CI: 7.2-9.5) of women have impaired fasting blood glucose.

Elevated Fasting Blood Glucose or Currently on Medication for Diabetes

- Elevated blood glucose is defined as either plasma venous glucose level ≥7.0mmol/l (126mg/dl) or capillary whole blood glucose value ≥6.1mmol/l (110mg/dl).
- Across the sexes, there are no statistically significant differences between men (5.0%) and women (5.4%). Overall, 5.2% of the population have elevated fasting blood glucose. In both sexes, the percentage of people with elevated fasting blood glucose typically rises from the younger to the older age groups.

Elevated Blood Glucose Diagnosis and Treatment

- In total, 3.7% of the population have elevated blood sugar without a prior diagnosis: 4.0% of men and 3.4% of women.
- The population with previously diagnosed elevated blood glucose and not on medication is 1.9% for men and 2.8% for women.
- For the general population, 2.4% have a prior diagnosis but are not taking medication, whilst 1.3% have a prior diagnosis and are taking medication.

Mean Total Cholesterol Measurement

- The mean total cholesterol level for the adult population is 4.1mmol/l. Men have a mean cholesterol value of 3.9mmol/l (95% CI: 3.8-4.0), which is relatively lower than women (4.4mmol/l, 95% CI: 4.3-4.5).

Elevated Total Cholesterol

- Women (27.4%, 95% CI: 24.8-29.9) have statistically significantly more elevated total cholesterol (defined as total cholesterol ≥5.0mmol/l or ≥190mg/dl) than men (16.0%, 95% CI: 13.8-18.2). Also, across all age groups, the total cholesterol levels are higher in women than men.
- The percentage of the population with very elevated total cholesterol (≥6.2mmol/l or ≥ 240mg/dl) is 9.2%; 6.3% for men and 12.1% for women, and increases with age.
- The proportion of the adult population with elevated total cholesterol who have been on treatment for elevated cholesterol with medication prescribed by a doctor or other health worker during the last two weeks is 21.8%; 16.1% (95% CI: 13.9-18.3) of men and 27.6% (95% CI: 25.1-30.2) of women.
- Those with very elevated total cholesterol and on medication for the past 2 weeks prescribed by a doctor or health worker is 9.4%: 6.4% of men and 12.5% of women.

Cardiovascular Disease Risk

- The percentage of those aged 40-69 years with a 10-year CVD risk of ≥ 20%, or with existing CVD is 11.2%, 10.4% for men and 12.0% for women.

Summary of Combined Risk Factors

- Generally, 13.3% of men and 8.8% of women have none of the combined risk factors (current daily smoking, less than five servings of fruit and/or vegetables per day, not meeting WHO recommendations on physical activity for health (<150 minutes of moderate activity per week, or equivalent), overweight or obesity (BMI ≥ 25kg/m^2) and elevated BP (SBP ≥ 140 mmHg and/or DBP ≥ 90mmHg) or currently on medication for elevated BP).
- The percentage of men aged 18 to 69 years with 3 or more of these risk factors is 7.3%. The percentage in the 45–69-year group is significantly higher at 16.0% (95% CI: 12.3-19.6) than those in the 18-44-year group, 4.6% (95% CI: 3.3-5.9).
- For women aged 18-69 years, 17.4% have 3 or more of the combined risk factors; 11.9% among those aged 18-44 years and 33.8% (95% CI: 29.6-38.0) for the ages of 45-69 years. There is a statistically significant higher risk for women within the 45-69 age group (33.8%, 95% CI: 29.6-38.0) compared with men in the same age group (16.0%, 95% CI: 12.3-19.6).
- The percentage of people with three or more combined risk factors for the 45–69-year group and the 18–69-year groups were significantly higher among the urban population than rural.

Cervical Cancer Screening

- Among the female population, 3.6% have ever been screened for cervical cancer using Pap smear, visual inspection with acetic acid/vinegar and human papillomavirus DNA test.
- For women aged 30-49 years, 4.3% (95% CI: 2.9-5.7) have ever been screened.
- The proportion of women in urban areas (5.1%, 95% CI: 3.1-7.0) screened is more than in rural areas (3.0%, CI 1.3-4.6), though not significantly different.

Oral Health

Respondents with Natural Teeth

- Almost all (98.9%) of the adults aged 18-69 years have ≥ 20 natural teeth. The proportion of the population who have lost some natural teeth increased with increasing age.

Proportion of the Population with Oral Pain or Discomfort and Seeing a Dentist

- The proportion of the population who have had pain or discomfort caused by their teeth or mouth during the last 12 months is 29.0% for both sexes. Despite this, very few people (3.4%) have seen a dentist within the past 12 months.
- Most people (84.9%) have never received dental care.

Cleaning of Teeth at Least Once or Twice a Day

- Almost all women, 99.0% (95% CI: 98.5-99.6), clean their teeth at least once a day and 97.5% (95% CI: 95.7-99.2) of men do so. Overall, 98.2% of the population clean their teeth at least once a day.
- 54.3% of people clean their teeth at least twice a day, significantly more women (57.9%, 95% CI 55.3-60.5) than men (50.8%, 95% CI: 47.6-54.0).

Proportion of the Population Using Toothpaste to Clean Their Teeth

- Among adults aged 18-69 years, 94.1% use toothpaste. A significantly higher proportion of the 18-44-year group use toothpaste to clean their teeth than the older age group of 45-69 years.

Mental Health

Suicide

- 3.8% of the population reported having considered attempting suicide within the past 12 months, slightly higher in women than men.
- More women went ahead to plan how to attempt suicide than men.
- More women attempted suicide than men, and whilst for men it increases with increasing age, in women the highest proportion of those who have attempted suicide are in the younger age group.
- The proportion among those who considered attempting suicide who sought professional help was 9.1% for both sexes, 9.9% for men and 8.5% for women.
- Almost equal numbers of men and women have had a close family member die from suicide.

Depression

- 8.0% of the population have moderate, moderately severe or severe depression.
- More women have various degrees of depression than men, 6.4% of men and 9.6% of women have depression.

Perceived Causes of Mental Health Conditions and Treatments

- A little over a third of the population thinks mental health conditions such as depression, anxiety, psychosis and others are due to a spell/curse.
- A significantly higher proportion (86.4%) believe that mental health conditions are treatable.

History of Diagnosis of Mental Health Conditions

- A very low proportion (1.6%) of the population said they have been diagnosed with a mental condition before. Though there was a slight difference between men and women, it remains low.
- Depression was the most common mental health condition people have ever been diagnosed with, followed by anxiety and psychosis. These conditions were diagnosed among all age groups and sexes.

Conclusions

The 2023 Ghana STEPS survey has shown a high prevalence of risk factors for NCDs and provided data for the development of interventions to prevent and control NCDs in the country, as well as to monitor the impact of the interventions. Information has also been provided on oral and mental health. The conclusions from the survey include:

- Tobacco smoking still occurs among the adult population, with most of the daily smokers smoking manufactured cigarettes.
- Exposure to second-hand smoke is common in workplaces despite the existence of regulations.
- Smoking of shisha is occurring and is more prevalent among the younger age groups and in women.
- Harmful intake of alcohol exists among the adult population.
- There is low intake of fruits and vegetables.
- There is high salt intake.
- Many more women are not meeting the WHO recommended physical activity level for health.
- There is a low level of vigorous and recreational physical activity among the adult population.
- Overweight and obesity are prevalent among the adult population.
- Hypertension is common among the population.
- There are high levels of impaired blood glucose.
- There are high levels of elevated total cholesterol among the population.
- Cardiovascular disease risk is high among the adult population.
- A high number of people have 3 or more of the combined risk factors for CVDs.
- There is low use of dental services.
- Attempted suicide and depression are mental health conditions with significant burden among the population.

Recommendations

Tobacco and Alcohol Use

- Existing regulations on cigarette smoking should be enforced. These include danger signs/warnings on cigarette packs, no advertisements in electronic and print media, posters and billboards being set up displaying the harmful effects of cigarette smoking, smoking to be done only in restricted places, and heavy taxes imposed on manufactured cigarettes.
- Regulations prohibiting smoking in work and public places should be enforced.
- People should be sensitised to the harmful effects of tobacco smoking, smokeless tobacco, shisha and excessive alcohol intake.
- There should be implementation of cessation services for those who try to stop smoking and drinking alcohol.
- There is a need to enforce the regulations in the alcohol policy, e.g., those limiting advertisements on alcohol in both the print and electronic media and restricting the times of showing these advertisements in the electronic media.
- There should be health talks in schools and workplaces on the harmful effects of tobacco and alcohol use.

Fruit and Vegetable Intake

Education on the need to improve the number of days fruits and vegetables are consumed in a week, as well as the number of servings per day, should be provided through health talks, advertisements, and posters in strategic places.

Salt Intake

Education should be conducted through talks and media discussions on the unhealthy habit of adding salt to food before eating or during eating, as well as limiting the amount of salt added to food whilst cooking.

Physical Activity

- People should be encouraged to engage in more recreational, work-related and transport-related physical activity.
- The health benefits of physical activities such as football, tennis, swimming, jogging and brisk walking should be emphasised during health education.

Blood Pressure, Blood Glucose and Blood Cholesterol Levels/Measurements

- People should be sensitised to the need to routinely check their blood pressure, blood glucose and cholesterol.
- Health campaigns should be organised to screen people for hypertension, diabetes and elevated cholesterol.
- People should be educated on the need to adhere to management of NCDs such as lifestyle modification, medications and physical activity.
- There should be no missed opportunities to give advice on NCDs when contact is made with patients in health facilities and at outreach programmes. Other channels should be explored, such as the use of electronic and print media, social media, billboards, pamphlets and talks in schools and workplaces.

Oral Health

- Enhance Public Oral Health Education through increased awareness campaigns and school-based programmes.
- Educate the public on the importance of routine oral and dental care.
- Promote daily oral hygiene practices including twice-daily brushing.

Mental Health

- Stigma reduction campaigns by the Mental Health Authority should be sustained.
- Education of the public on causes of mental health conditions should be intensified.
- Awareness creation on the decriminalisation of attempted suicide should be done to enable more people to seek help.

Future Research

1. **Objective Assessment of Salt Intake:** Implementing 24-hour urine testing for salts and creatinine would provide a more objective and precise measurement of salt intake.
2. **Fruit and Vegetable Intake:** Further research is needed to investigate the underlying reasons for the low consumption of fruits and vegetables.

3. **Suicide and Mental Health:** Additional studies should be conducted to explore the causes of attempted suicide and other mental health issues within the population.

4. **Regular Monitoring through STEPS Surveys:** Repeating the STEPS survey every five years will be crucial for monitoring progress and evaluating the impact of public health interventions.

Roles and responsibilities of various stakeholders

KEY STAKEHOLDERS	ROLES AND RESPONSIBILITIES
Parliamentary Select Committee on Health, Finance and Legislation	■ High level advocacy on NCDs financing ■ Support enactment of laws and legislature on NCD risk factors
Ministry of Health	■ Development of relevant policies ■ High level advocacy ■ Capital investment ■ Inter-sectoral collaborations and partnerships ■ Strengthen regulation of traditional medicines practice
Non-Health Ministries, Departments and Agencies	■ Advocacy for targeted interventions to promote women's health and wellbeing (cervical cancer screening) ■ Promotion of gender mainstreaming, equity and psychoeducation ■ People-centred and rights-based care ■ Creating an enabling environment to promote walking, recreation and other forms of physical activity ■ School curricula should include lessons on prevention of NCDs at an early age.
National Health Insurance Authority	■ Operationalization of NCD early detection programmes under the benefits package
Ghana Health Service	High level advocacy for the establishment of a functional national screening program ■ Development of new and review of existing tools and guidelines ■ Alignment of integrated NCD prevention and control to Network of Practice Concept ■ Prioritization of adult health screening for NCDs for the general population ■ Capacity building programmes for health workers on NCD and risk factors ■ Improved data capture, reporting & analytics for decision-making ■ Equitable healthcare worker distribution with appropriate skill mix (Dental and mental health care workers, dieticians etc) ■ Monitoring and evaluation of NCD interventions at national and subnational level

Mental Health Authority	■ Prioritize suicide prevention programs ■ Create awareness on the decriminalization of suicide ■ Strengthen referral pathways for depressive disorders ■ Build the capacity of traditional healers and promote collaboration with orthodox facilities
Teaching Hospitals, Quasi Government Institutions, Faith-Based, Private & Public health facilities	■ Train and orient healthcare workers including community-based volunteers for the provision of NCD prevention and control ■ Promote provision of non-judgemental, client-centred and respectful care for NCD patients ■ Integrate routine screening and counselling services for NCD. ■ Strengthen supportive supervision, clinical mentoring, and onsite coaching at subnational levels
Development Partners	■ Advocate for prioritization of domestic resource mobilization for NCDs ■ Advocate for strengthened governance, intersectoral collaboration and partnerships ■ Technical assistance for the improvement of NCD interventions ■ Capacity development programmes to improve NCD prevention and control ■ Support development of training modules ■ Catalytic financial support for the piloting of NCD interventions ■ Promote and support research agenda for NCD
Academic Institutions	■ Include NCD modules into curriculum for medical, nursing, midwifery, and allied health training institutions ■ Prioritize implementation research for NCD ■ School curricula at the lower levels should include lessons on prevention of NCDs
Professional Societies & Associations	■ Organize CPDs on NCD prevention and control for members ■ Awareness creation and public education on NCDs
Media	■ Drive public advocacy agenda on NCDs in the Ghanaian society ■ Lead awareness creation campaign nationwide through print, radio, television, social media, etc ■ Prioritize agenda setting for discussions on NCDs related issues (policy, service delivery, social support systems and structures) in collaboration with relevant stakeholders
Traditional Leaders, Civil Society Organizations and Community-Based Health Groups	■ Advocate for screening services in the community ■ Support advocacy initiatives for awareness creation and stigma reduction ■ Mobilize resources for promotion and provision of NCD

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APPENDICES

Appendix 1: Technical Working Committee and their designated role

Name of Staff	Affiliation	Area of Expertise	Position Assigned in the survey	Task Assigned
Dr. Dennis Odai Laryea	Ghana Health Service	Public Health Physician	Team Leader / Technical Committee Member	Provides oversight throughout the project. Reviews, advises the Project Team on project scope, schedule, budget.
Dr. Abraham Hodgson	Former Director, Research and Development Division, Ghana Health Service	Epidemiology, Research	Technical / Research Implementation Committee Member	Responsible for quality control and reviewing of technical aspects of study and fieldwork supervision.
Prof. Samuel Kobina Annim	Ghana Statistical Service	Statistician and Economics	Technical / Research Implementation Committee member	Responsible for the survey design, technical aspects of the data collection, analysis and reporting.
Dr. Sally-Ann Ohene	World Health Organization	Epidemiology, Research	Technical/ Research Implementation Committee Member	Responsible for research design, tools development, training, data collection, analysis and reporting.
Dr. Joana Ansong	World Health Organization	Public Health, Research	Technical / Research Implementation Committee Member	Responsible for research design, tools development, training, data collection, analysis and reporting.
Dr. Peter Takyi Peprah	Ghana Statistical Service	Statistics, Research	Research Implementation Committee Member	Responsible for research design, tools development, data collection, analysis and reporting.
Dr. Mary Efua Commeh	Acting Programme Manager, NCD, GHS	Public Health, Research	Research Implementation Committee Member	Responsible for research design, tools development, training, data collection, analysis and reporting.
Dr, Yaw Ampem Amoako	Senior Lecturer	Consultant Physician, Health Research	Research Implementation Committee Member	Responsible for research design, tools development, training, data collection, analysis and reporting.
Dr. Emmanuel Abbeyquaye Parbie	37 Military Hospital	Paediatrician and Researcher	Research Implementation Committee Member	Responsible for research design, tools development, training, data collection, analysis and reporting.
Mr. Isaac Obeng Tandoh	NCD Programme	Data Management/ M& E	Research Implementation Committee Member	Responsible for research design, tools development, training, data collection, analysis and reporting.
Dr. Philip Teg-Nefaah Tabong	Senior Lecturer	Public Health Researcher	Research Implementation Committee Member	Responsible for research design, tools development, training, data collection, analysis and reporting.

Appendix 2: Roles and Responsivities of Fieldworkers

Fieldworkers	Role and Responsibilities
Team Supervisor	1. Obtaining and preparing household lists and maps for each area, or other lists to be used as the sampling frame, data collection forms, devices for data collection, supplies and equipment, and distributing them to data collectors 2. Coordinating logistics and assigning interviewers to households in each cluster or primary sampling unit 3. Making travel arrangements for data collectors 4. Informing local authorities about the survey 5. Supervising the interview process and recording daily activities 6. Ensuring data quality 7. Ensuring regular submission of the data to the server 8. Managing human resources performance and issues 9. Sending regular progress reports to STEPS Survey Coordinator
Interviewers	1. Approach selected households. 2. Brief household members on purpose of the survey. 3. Select a participant from all eligible members within a selected household using the Android Device. 4. Record information on the Interview Tracking Form. 5. Inform the selected participant using the Participant Information Form and 6. Obtain written consent. 7. Conduct the interview and record results for Steps 1. 8. Take measurements and record results for Steps 2. 9. Fill in Participant Feedback Form on results of Step 2 measurements for the participant. 10. Make appointment for Step 3 (if consent given), provide instructions for correct collection of urine sample and inform participant on correct method of fasting. 11. Report any difficulties to supervisor.
Nurses/Health professionals	1. Approach selected households 2. Make enquiries about the participant from household in steps 3 3. Explain procedure to participant 4. Ensure privacy 5. Take biomedical measurements (Fasting blood sugar, Total cholesterol 6. HDL-cholesterol and sugar test using the CardioChek Plus and Onetouch Select Plus device respectively. 7. Record results on participant feedback form 8. Collect urine samples for sodium and creatinine test 9. Report any difficulties to supervisor

Appendix 3: Flash Cards for data collection

Tobacco Show Cards (to be adapted for Ghana)

5.1.1.1.1

Manufactured cigarettes.

5.1.1.1.2

Roll-your-own (RYO) cigarettes.

5.1.1.1.3

Snuff, available in wet and dry form.

5.1.1.1.4

Cigars, e.g., cigarillos, double coronas, cheroots, stumpen, chutts and dhumtis.

5.1.1.1.5

Pipe.

Alcohol - Standard drink

1 standard drink =

1 standard bottle of **regular beer** (285ml)

1 single measure of **spirits** (30ml)

1 medium size glass of wine (120ml)

1 measure of **aperitif** (60ml)

Note: Net alcohol content of a **standard drink is approximately 10g** of ethanol.

Typical Fruit and Vegetables and Serving Sizes

VEGETABLES are considered to be:	1 Serving =	Examples
Raw green leafy vegetables	1 cup	Spinach, salad, etc.
Other vegetables, cooked or chopped raw	½ cup	Tomatoes, carrots, pumpkin, corn, Chinese cabbage, fresh beans, onion, etc.  
Vegetable juice	½ cup	

FRUIT Is considered to be:	1 Serving =	Examples
Apple, banana, orange	1 medium size piece	 
Chopped, cooked, canned fruit	½ cup	
Fruit juice	½ cup	Juice from fruit, not artificially flavoured

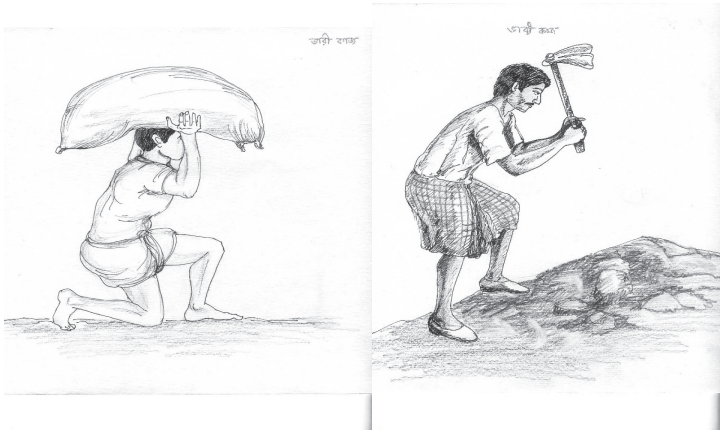
5.1.1.1.6 Serving size	One standard serving = 80 grams (translated into different units of cups depending on type of vegetable and standard cup measures available in the country).

Note: Tubers such as potatoes and cassava should not be included.

Physical Activity

Vigorous Physical Activity at Work

5.1.1.1.7 Examples for vigorous activities at WORK



5.1.1.1.8

VIGOROUS Intensity Activities

Make you breathe <u>much</u> harder than normal

- Forestry (cutting, chopping, carrying wood)
- Sawing hardwood
- Ploughing
- Cutting crops (sugar cane)
- Gardening (digging)
- Grinding (with pestle)
- Labouring (shovelling sand)
- Loading furniture (stoves, fridge)
- Instructing spinning (fitness)
- Instructing sports aerobics
- Sorting postal parcels (fast pace)
- Cycle rickshaw driving

Moderate Physical Activity at Work

5.1.1.1.9

5.1.1.1.10 **MODERATE Intensity Activities**

Make you breathe somewhat harder than normal

- Cleaning (vacuuming, mopping, polishing, scrubbing, sweeping, ironing)
- Washing (beating and brushing carpets, wringing clothes (by hand)
- Gardening
- Milking cows (by hand)
- Planting and harvesting crops
- Digging dry soil (with spade)
- Weaving
- Woodwork (chiselling, sawing softwood)
- Mixing cement (with shovel)
- Labouring (pushing loaded wheelbarrow, operating jackhammer)
- Walking with load on head
- Drawing water
- Tending animals

Vigorous Physical Activity during Leisure Time

5.1.1.1.11

5.1.1.1.12 VIGOROUS Intensity Activities

Make you breathe much harder than normal

- Soccer
- Rugby
- Tennis
- High-impact aerobics
- Aqua aerobics
- Ballet dancing
- Fast swimming

Moderate Physical Activity during Leisure Time

5.1.1.1.13 Examples for MODERATE activities during LEISURE TIME	MODERATE Intensity Activities Make you breathe somewhat harder than normal ■ Cycling ■ Jogging ■ Dancing ■ Horse-riding ■ Skipping ■ Yoga ■ Pilates ■ Low-impact aerobics ■ Cricket

Appendix 4: WHO STEPS Instrument

WHO STEPS Instrument

for Noncommunicable Disease Risk Factor Surveillance

2023 Ghana

Survey Information

Location and Date	Response	Code
Cluster/Centre/Village ID		I1
Cluster/Centre/Village name		I2
Interviewer ID		I3
Date of completion of the instrument	dd mm year	I4

Consent, Interview Language and Name	Response		Code
Consent has been read and obtained	Yes	1	I5
	No	2 **If NO, END**	
Interview Language *[English, TWI, Ga, Ewe, Dagbanli]*	English	1	I6
	Twi	2	
	Ga	3	
	Ewe	4	
		Dagbanli 5	

Time of interview (24-hour clock)	☐☐☐☐: ☐☐☐☐ hrs mins	I7
Family Surname		I8
First Name		I9
Additional Information that may be helpful		
Contact phone number where possible		I10

Step 1 Demographic Information

CORE: Demographic Information			
Question	Response		Code
Sex (*Record Male / Female as observed)*	Male	1	C1
	Female	2	
What is your date of birth? Don't Know 77 77 7777	☐☐☐☐ ☐☐☐☐ ☐☐☐☐☐☐☐☐ dd mm year		C2
How old are you?	Years	☐☐☐☐	C3
In total, how many years have you spent at school and in full-time study (excluding pre-school)?	Years	☐☐☐☐	C4

EXPANDED: Demographic Information			
What is the **highest level of education** you have completed?	No formal schooling	1	C5
	Pre-primary	2	
	Primary	3	
	Middle	4	
	Junior Secondary School/Junior High School	5	
	Secondary	6	
	Senior Secondary School /Senior High School	7	
	Higher	8	
	Refused/don't know	88	

What is your ethnic group?	Akan	1	C6
	Ga/Dangme	2	
	Ewe	3	
	Guan	4	
	Mole-Dagbani	5	
	Grusi	6	
	Gurma	7	
	Mande	8	
	Other (specify: _____)	9	
	Refused	88	
What is your religion?	Christian	1	X1
	Muslim	2	
	Traditionalist/Spiritual	3	
	None	4	
	Other (specify: _____)	9	
	Refused	88	
What is your **marital status**?	Never married	1	C7
	Currently married	2	
	Separated	3	
	Divorced	4	
	Widowed	5	
	Cohabitating	6	
	Refused	88	
Which of the following best describes your **main work** status over the past 12 months? *[INSERT COUNTRY-SPECIFIC CATEGORIES]* (*USE SHOWCARD)*	Government employee	1	C8
	Non-government employee	2	
	Self-employed	3	
	Non-paid	4	
	Student	5	
	Housewife/Homemaker	6	
	Retired	7	
	Unemployed (able to work)	8	
	Unemployed (unable to work)	9	
	Refused	88	
How many people older than 18 years, including yourself, live in your household?	Number of people	▯▯▯	C9

TYPE OF TOILET FACILITY USUALLY USED BY THE HOUSEHOLD OBSERVE AND RECORD	**FLUSH OR POUR FLUSH TOILET**		X2
	Flush to piped sewer system	1	
	Flush to septic tank	2	
	Flush to pit latrine	3	
	Flush to somewhere else	4	
	Flush, don't know where	5	
	PIT LATRINE		
	Ventilated improved pit latrine	6	
	Pit latrine with slab	7	
	Pit latrine without slab/ open pit	8	
	Bucket toilet	9	
	Hanging toilet/hanging latrine	10	
	No facility/bush/field	11	
	Other: (specify: _____)	12	
MAIN CONSTRUCTION MATERIAL USED FOR THE OUTER WALL OBSERVE AND RECORD	Mud bricks/earth	1	X3
	Wood	2	
	Metal sheet/slate/asbestos	3	
	Stone	4	
	Burnt bricks	5	
	Cement blocks/concrete	6	
	Land Crete	7	
	Bamboo	8	
	Palm leaves/Thatch (grass/Raffia)	9	
	Other (Specify)	10	
MAIN CONSTRUCTION MATERIAL USED FOR THE FLOOR OBSERVE AND RECORD	Earth/Mud	1	X4
	Cement/Concrete	2	
	Stone	3	
	Burnt bricks	4	
	Wood	5	
	Vinyl tiles	6	
	Ceramic/Porcelain/Granite/Marble tiles	7	
	Terrazzo/Terrazzo tiles	8	
	Other (Specify)	9	

MAIN MATERIAL OF THE ROOF OBSERVE AND RECORD	**NATURAL ROOFING**		x5
	No roofing	1	
	Thatch/palm leaf	2	
	RUDIMENTARY ROOFING		
	Rustic mat	3	
	Palm/bamboo	4	
	Wood planks	5	
	Cardboard	6	
	FINISHED ROOFING		
	Wood	7	
	Calamine/cement fibre	8	
	Ceramic/brick tiles	9	
	Cement	10	
	Roofing Shingles	11	
	Asbestos/slate roofing sheets	12	
	Other (Specify)	13	

Does your household have:		YES	NO	
Furniture (stuffed)	Furniture (stuffed)	1	2	x6a
Car/truck?	Car/truck?	1	2	x6b
Bicycle?	Bicycle?	1	2	x6c
Motor bike/scooter bike?	Motor bike/scooter bike?	1	2	x6d
An animal-drawn cart?	An animal-drawn cart?	1	2	x6e
A boat with a motor?	A boat with a motor?	1	2	x6f
A boat without a motor?	A boat without a motor?	1	2	x6g
Electricity?	Electricity?	1	2	x6h
Stove (kerosene)?	Stove (kerosene)?	1	2	x6i
Stove (electric)?	Stove (electric)?	1	2	x6j
Microwave?	Microwave?	1	2	x6k
Stove (gas)?	Stove (gas)?	1	2	x6l
Satellite dish?	Satellite dish?	1	2	x6m
Washing machine?	Washing machine?	1	2	x6n
Computer/Tablet computer?	Computer/Tablet computer?	1	2	x6o
Video deck/DVD/VCD?	Video deck/DVD/VCD?	1	2	x6p
A refrigerator?	A refrigerator?	1	2	x6q
A freezer?	A freezer?	1	2	x6r
Electric generator/Invertor(s)?	Electric generator/Invertor(s)?	1	2	x6s
A land-line telephone?	A land-line telephone?	1	2	x6t
Sewing machine?	Sewing machine?	1	2	x6v
A wall clock?	A wall clock?	1	2	x6w
A radio?	A radio?	1	2	Cex6x
A black/white television?	A black/white television?	1	2	x6y
A colour television?	A colour television?	1	2	x6z
A mobile telephone?	A mobile telephone?	1	2	x6aa
Bed?	Bed?	1	2	x6ab
Table?	Table?	1	2	x6ac
Cabinet/cupboard?	Cabinet/cupboard?	1	2	x6ad
Access to the Internet in any device?	Access to the Internet in any device?	1	2	x6ae
				x6af
				x6ag
				x6ah
				x6ai
				x6aj
				Cex6ak
				x6al
				x6am

Does any member of the household own a house?	Yes No	1 2	x7
Does any member of the household own land/plot?	Yes No	1 2	x8
How many household members are covered by health insurance? IF NONE, RECORD '00'	Number of people Don't know/not sure	▯▯▯ 98	X9

Step 1 Behavioural Measurements

CORE: Tobacco Use

Now I am going to ask you some questions about tobacco use.

Question	Response		Code
Do you **currently** smoke any **tobacco** products, such as cigarettes, cigars or pipes? *(USE SHOWCARD)*	Yes	1	T1
	No	2 *If No, go to T8*	
Do you currently smoke tobacco products **daily**?	Yes	1	T2
	No	2	
How old were you when you **first started** smoking?	Age (years)		T3
	Don't know 77	*If Known, go to T5a/T5aw*	
Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* *Don't know 77*	In Years	*If Known, go to T5a/T5aw*	T4a
	OR in Months	*If Known, go to T5a/T5aw*	T4b
	OR in Weeks		T4c
On average, **how many** of the following products do you smoke **each day/week?** *(IF LESS THAN DAILY, RECORD WEEKLY)* *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 7777*		DAILY↓ WEEKLY↓	
	Manufactured cigarettes		T5a/T5aw
	Hand-rolled cigarettes		T5b/T5bw
	Pipes full of tobacco		T5c/T5cw
	Cigars, cheroots, cigarillos		T5d/T5dw
	Number of Shisha sessions		T5e/T5ew
	Other	*If Other, go to T5other, else go to T6*	T5f/T5fw
	Other (please specify):		T5other/ T5otherw
During the past 12 months, have you tried to **stop smoking**?	Yes	1	T6
	No	2	

During any visit to a doctor or other health worker in the past 12 months, were you advised to quit smoking tobacco?	Yes	1 *If T2=Yes, go to T12; if T2=No, go to T9*	T7
	No	2 *If T2=Yes, go to T12; if T2=No, go to T9*	
	No visit during the past 12 months	3 *If T2=Yes, go to T12; if T2=No, go to T9*	
In the past, did you **ever smoke** any tobacco products? *(USE SHOWCARD)*	Yes	1	T8
	No	2 *If No, go to T12*	
In the past, did you **ever** smoke **daily**?	Yes	1 *If T1=Yes, go to T12, else go to T10*	T9
	No	2 *If T1=Yes, go to T12, else go to T10*	

EXPANDED: Tobacco Use			
Question	**Response**		**Code**
How old were you when you **stopped** smoking?	Age (years)		T10
	Don't Know 77	*If Known, go to T12*	
How **long ago** did you stop smoking? *(RECORD ONLY 1, NOT ALL 3)* *Don't Know 77*	Years ago	*If Known, go to T12*	T11a
	OR Months ago	*If Known, go to T12*	T11b
	OR Weeks ago		T11c
Do you **currently use** any **smokeless tobacco** products such as *[snuff, chewing tobacco, betel]*? *(USE SHOWCARD)*	Yes	1	T12
	No	2 *If No, go to T15*	
Do you **currently use smokeless tobacco** products **daily?**	Yes	1	T13
	No	2 *If No, go to T14aw*	

On average, how many **times a day/week** do you use .... *(IF LESS THAN DAILY, RECORD WEEKLY)* *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 7777*		DAILY↓ WEEKLY↓	
	Snuff, by mouth	[redacted]	T14a/ T14aw
	Snuff, by nose	[redacted]	T14b/ T14bw
	Chewing tobacco	[redacted]	T14c/ T14cw
	Betel, quid	[redacted]	T14d/ T14dw
	Other	[redacted] *If Other, go to T14other, if T13=No, go to T16, else go to T17*	T14e/ T14ew
	Other (please specify):	[redacted] *If T13=No, go to T16, else go to T17*	T14other/ T14otherw
In the **past**, did you **ever use** smokeless tobacco products such as *[snuff, chewing tobacco, or betel]*?	Yes	1	T15
	No	2 *If No, go to T17*	
In the **past**, did you **ever use** smokeless tobacco products such as *[snuff, chewing tobacco, or betel]* **daily**?	Yes	1	T16
	No	2	
During the past 30 days, did someone smoke **in your home**?	Yes	1	T17
	No	2	
During the past 30 days, did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office)?	Yes	1	T18
	No	2	
	Don't work in a closed area	3	

CORE: Alcohol Consumption

The next questions ask about the consumption of alcohol.

Question	Response		Code
Have you **ever** consumed any alcohol such as beer, wine, spirits or pito, akpetsesi? *(USE SHOWCARD OR SHOW EXAMPLES)*	Yes	1	A1
	No	2 *If No, go to A16*	
Have you consumed any alcohol within the **past 12 months**?	Yes	1 *If Yes, go to A4*	A2
	No	2	
Have you stopped drinking due to health reasons, such as a negative impact on your health or on the advice of your doctor or other health worker?	Yes	1 *If Yes, go to A16*	A3
	No	2 *If No, go to A16*	
During the past 12 months, **how frequently** have you had at least one standard alcoholic drink? *(READ RESPONSES, USE SHOWCARD)*	Daily	1	A4
	5-6 days per week	2	
	3-4 days per week	3	
	1-2 days per week	4	
	1-3 days per month	5	
	Less than once a month	6	
	Never	7	
Have you consumed any alcohol within the **past 30 days**?	Yes	1	A5
	No	2 *If No, go to A13*	
During the past 30 days, on how many **occasions** did you have at least one standard alcoholic drink?	Number Don't know 77	▯▯ *If Zero, go to A13*	A6
During the past 30 days, when you drank alcohol, how many **standard drinks on average** did you have during one drinking occasion? *(USE SHOWCARD)*	Number Don't know 77	▯▯	A7
During the past 30 days, what was the **largest number** of standard drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number Don't Know 77	▯▯	A8
During the past 30 days, how many times did you have **six or more** standard drinks in a single drinking occasion?	Number of times Don't Know 77	▯▯	A9
During each of the **past 7 days**, how many standard drinks did you have each day? *(USE SHOWCARD)* *Don't Know 77*	Monday	▯▯	A10a
	Tuesday	▯▯	A10b
	Wednesday	▯▯	A10c
	Thursday	▯▯	A10d
	Friday	▯▯	A10e
	Saturday	▯▯	A10f
	Sunday	▯▯	A10g

CORE: Alcohol Consumption, continued

I have just asked you about your consumption of alcohol during the past 7 days. The questions were about alcohol in general, while the next questions refer to your consumption of homebrewed alcohol, alcohol brought over the border/from another country, any alcohol not intended for drinking or other untaxed alcohol. Please only think about these types of alcohol when answering the next questions.

Question	Response			Code
During the **past 7 days**, did you consume any **homebrewed** alcohol, any alcohol **brought over the border/from another country**, any alcohol **not intended for drinking** or other **untaxed** alcohol? *[AMEND ACCORDING TO LOCAL CONTEXT]* *(USE SHOWCARD)*	Yes	1		A11
	No	2	*If No, go to A13*	
On average, **how many standard drinks** of the following did you consume **during the past 7 days**? *[INSERT COUNTRY-SPECIFIC EXAMPLES]* *(USE SHOWCARD)* *Don't Know 77*	Homebrewed spirits, e.g. Akpetsesi, Pito, Atemuda, Shocker	▯▯		A12a
	Homebrewed beer or wine, e.g. beer, palm or fruit wine	▯▯		A12b
	Alcohol brought over the border/from another country	▯▯		A12c
	Alcohol not intended for drinking, e.g. alcohol-based medicines, perfumes, after shaves	▯▯		A12d
	Other untaxed alcohol in the country	▯▯		A12e

EXPANDED: Alcohol Consumption

During the past 12 months, how often have you found that you were not able to stop drinking once you had started?	Daily or almost daily	1	A13
	Weekly	2	
	Monthly	3	
	Less than monthly	4	
	Never	5	
During the past 12 months, how often have you failed to do what was normally expected from you because of drinking?	Daily or almost daily	1	A14
	Weekly	2	
	Monthly	3	
	Less than monthly	4	
	Never	5	

During the past 12 months, how often have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Daily or almost daily	1	A15
	Weekly	2	
	Monthly	3	
	Less than monthly	4	
	Never	5	
During the past 12 months, have you had family problems or problems with your partner due to someone else's drinking?	Yes, more than monthly	1	A16
	Yes, monthly	2	
	Yes, several times but less than monthly	3	
	Yes, once or twice	4	
	No	5	

CORE: Diet

The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.

Question	Response	Code
In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)*	Number of days Don't Know 77	If Zero days, go to D3 D1
How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD)*	Number of servings Don't Know 77	D2
In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)*	Number of days Don't Know 77	If Zero days, go to D5 D3
How many **servings** of vegetables do you eat on one of those days? *(USE SHOWCARD)*	Number of servings Don't know 77	D4

Dietary salt

With the next questions, we would like to learn more about salt in your diet. Dietary salt includes ordinary table salt, unrefined salt such as sea salt, iodized salt, salty stock cubes and powders, and salty sauces such as soy sauce or fish sauce (see showcard). The following questions are on adding salt to the food right before you eat it, on how food is prepared in your home, on eating processed foods that are high in salt such as *[insert country specific examples]*, and questions on controlling your salt intake. Please answer the questions even if you consider yourself to eat a diet low in salt.

How often do you **add salt or a salty sauce such as soy sauce** to your food right before you eat it or as you are eating it? *(SELECT ONLY ONE)* *(USE SHOWCARD)*	Always	1	D5
	Often	2	
	Sometimes	3	
	Rarely	4	
	Never	5	
	Don't know	77	
How often is **salt, salty seasoning or a salty sauce added** in cooking or preparing foods in your household?	Always	1	D6
	Often	2	
	Sometimes	3	
	Rarely	4	
	Never	5	
	Don't know	77	

How often do you eat **processed food high in salt**? By processed food high in salt, I mean foods that have been altered from their natural state, such as packaged salty snacks, canned salty food including pickles and preserves, salty food prepared at a fast-food restaurant, cheese, bacon, processed meat, Koobi, Momoni, Kaako, salted pig feet. *(USE SHOWCARD)*	Always	1	D7
	Often	2	
	Sometimes	3	
	Rarely	4	
	Never	5	
	Don't know	77	
How much salt or salty sauce do you think you consume?	Far too much	1	D8
	Too much	2	
	Just the right amount	3	
	Too little	4	
	Far too little	5	
	Don't know	77	

EXPANDED: Diet

Question	Response		Code
How important to you is **lowering the salt** in your diet?	Very important	1	D9
	Somewhat important	2	
	Not at all important	3	
	Don't know	77	
Do you think that too much salt or salty sauce in your diet could cause a **health problem**?	Yes	1	D10
	No	2	
	Don't know	77	
Do you do any of the following on a regular basis to **control your salt intake**? *(RECORD FOR EACH)*			
Limit consumption of processed foods	Yes 1 No 2		D11a
Look at the salt or sodium content on food labels	Yes 1 No 2		D11b
Buy low salt/sodium alternatives	Yes 1 No 2		D11c
Use spices other than salt when cooking	Yes 1 No 2		D11d
Avoid eating foods prepared outside of a home	Yes 1 No 2		D11e
Do other things specifically to control your salt intake	Yes 1 *If Yes, go to D11other* No 2		D11f
Other (please specify)			D11other

CORE: Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.

Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. *[Insert other examples if needed].* In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

Question	Response	Code
Work		
Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like *[carrying or lifting heavy loads, digging or construction work*? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 4*	P1
In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days L__L	P2
How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours: minutes ▯▯: ▯▯ hrs mins	P3 (a-b)
Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking *[or carrying light loads*? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 7*	P4
In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ▯▯	P5
How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours: minutes ▯▯: ▯▯ hrs mins	P6 (a-b)
Travel to and from places		
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. *[Insert other examples if needed]*		
Do you walk or use a bicycle *(pedal cycle* to get to and from places?	Yes 1 No 2 *If No, go to P 10*	P7
In a typical week, on how many days do you walk or bicycle to get to and from places?	Number of days L__L	P8
How much time do you spend walking or bicycling for travel on a typical day?	Hours: minutes ▯▯: ▯▯ hrs mins	P9 (a-b)

CORE: Physical Activity, Continued		
Question	**Response**	**Code**
Recreational activities		
The next questions exclude the work and transport activities that you have already mentioned. *Now I would like to ask you about sports, fitness and recreational activities (leisure), [Insert relevant terms].*		
Do you do any vigorous-intensity sports, fitness or recreational *(leisure)* activities that cause large increases in breathing or heart rate like *[running or football*? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 13*	P10
In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational *(leisure)* activities?	Number of days ☐☐	P11
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours: minutes ☐☐: ☐☐ hrs mins	P12 (a-b)
Do you do any moderate-intensity sports, fitness or recreational *(leisure)* activities that cause a small increase in breathing or heart rate such as brisk walking, *[cycling, swimming, volleyball]* *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P16*	P13
In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational *(leisure)* activities?	Number of days ☐☐	P14
How much time do you spend doing moderate-intensity sports, fitness or recreational *(leisure)* activities on a typical day?	Hours: minutes ☐☐: ☐☐ hrs mins	P15 (a-b)

EXPANDED: Physical Activity		
Sedentary behaviour		
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping. *[INSERT EXAMPLES] (USE SHOWCARD)*		
How much time do you usually spend sitting or reclining on a typical day?	Hours: minutes ☐☐: ☐☐ hrs mins	P16 (a-b)

CORE: History of Elevated Blood Pressure			
Question	**Response**		**Code**
Have you ever had your blood pressure measured by a doctor or other health worker?	Yes 1 No 2	*If No, go to H6*	H1
Have you ever been told by a doctor or other health worker that you have elevated blood pressure or hypertension?	Yes 1 No 2	*If No, go to H6*	H2a
Were you first told in the past 12 months?	Yes 1 No 2		H2b
In the past two weeks, have you taken any drugs (medication) for elevated blood pressure prescribed by a doctor or other health worker?	Yes 1 No 2		H3
Have you ever seen a traditional healer for elevated blood pressure or hypertension?	Yes 1 No 2		H4
Are you currently taking any herbal or traditional remedy for your elevated blood pressure?	Yes 1 No 2		H5

CORE: History of Diabetes			
Have you ever had your blood sugar measured by a doctor or other health worker?	Yes 1 No 2	*If No, go to H12*	H6
Have you ever been told by a doctor or other health worker that you have elevated blood sugar or diabetes?	Yes 1 No 2	*If No, go to H12*	H7a
Were you first told in the past 12 months?	Yes 1 No 2		H7b
In the past two weeks, have you taken any drugs (medication) for diabetes prescribed by a doctor or other health worker?	Yes 1 No 2		H8
Are you currently taking insulin for diabetes prescribed by a doctor or other health worker?	Yes 1 No 2		H9
Have you ever seen a traditional healer for diabetes or elevated blood sugar?	Yes 1 No 2		H10
Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1 No 2		H11

CORE: History of Elevated Total Cholesterol			
Question	**Response**	**Code**	
Have you ever had your cholesterol (fat levels in your blood) measured by a doctor or other health worker?	Yes 1 No 2	 *If No, go to H17*	H12
Have you ever been told by a doctor or other health worker that you have elevated cholesterol?	Yes 1 No 2	 *If No, go to H17*	H13a
Were you first told in the past 12 months?	Yes 1 No 2		H13b
In the past two weeks, have you taken any oral treatment (medication) for elevated total cholesterol prescribed by a doctor or other health worker?	Yes 1 No 2		H14
Have you ever seen a traditional healer for elevated cholesterol?	Yes 1 No 2		H15
Are you currently taking any herbal or traditional remedy for your elevated cholesterol?	Yes 1 No 2		H16

CORE: History of Cardiovascular Diseases		
Have you ever had a heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular accident or incident)? USE SHOW CARD DEPICTING LOCATION OF SHOW CARD	Yes 1 No 2	H17
Are you currently taking aspirin regularly to prevent or treat heart disease?	Yes 1 No 2	H18
Are you currently taking statins (cholesterol lowering medications (Lovastatin/Simvastatin/Atorvastatin or any other statin) regularly to prevent or treat heart disease?	Yes 1 No 2	H19

CORE: Lifestyle Advice		
Question	**Response**	**Code**
During the past 12 months, have you visited a doctor or other health worker?	Yes 1 2 No If No and C1=1, go to MH1 If No and C1=2, go to CX1	H20
During any of your visits to a doctor or other health worker in the past 12 months, were you advised to do any of the following? (RECORD FOR EACH)		
Quit using tobacco or don't start	Yes 1 No 2	H20a
Reduce salt in your diet	Yes 1 No 2	H20b
Eat at least five servings of fruit and/or vegetables each day	Yes 1 No 2	H20c
Reduce fat in your diet	Yes 1 No 2	H20d
Start or do more physical activity	Yes 1 No 2	H20e
Maintain a healthy body weight or lose weight	Yes 1 No 2	H20f
Reduce sugary beverages in your diet	Yes 1 If C1=1 go to MH1 No 2	H20g

Cervical Cancer

CORE (for women only): Cervical Screening

The next questions ask about cervical prevention.

Screening tests for cervical cancer prevention can be done in different ways, including Visual Inspection with Acetic Acid/vinegar (VIA), pap smear and Human Papillomavirus (HPV) test. VIA is an inspection of the surface of the uterine cervix after acetic acid (or vinegar) has been applied to it. For both pap smear and HPV test, a doctor or nurse uses a swab to wipe from inside your vagina, take a sample and send it to a laboratory. It is even possible that you were given the swab yourself and asked to swab the inside of your vagina. The laboratory checks for abnormal cell changes if a pap smear is done, and for the HP virus if an HPV test is done.

The next questions ask about cervical cancer prevention. Screening tests for cervical cancer prevention can be done in different ways, including Visual Inspection with Acetic Acid/vinegar (VIA), pap smear and Human Papillomavirus (HPV) test. VIA is an inspection of the surface of the uterine cervix after acetic acid (or vinegar) has been applied to it. For both pap smear and HPV test, a doctor or nurse uses a swab to wipe from inside your vagina, take a sample and send it to a laboratory. It is even possible that you were given the swab yourself and asked to swab the inside of your vagina. The laboratory checks for abnormal cell changes if a pap smear is done, and for the HP virus if an HPV test is done.

Question	Response		Code
Have you ever had a screening test for cervical cancer, using any of these methods described above?	Yes	1	CX1
	No	2	
	Don't know	77	
If Yes, please indicate the type pf test that was carried out	HPV-DNA	1	CXX1
	Pap Smear	2	
	Visual Inspection with Acetic Acid	3	

The next questions CX2 – CX10 are administered only to those that ever had a screening test for cervical cancer (CX1=1). If CX1=2, go to CX11.

At what age were you **first tested** for cervical cancer?	Age	▯▯	CX2
	Don't know	77	
	Refused	88	
When was your **last (most recent) test** for cervical cancer?	Less than 1 year ago	1	CX3
	1-2 years ago	2	
	3-5 years ago	3	
	More than 5 years ago	4	
	Don't know	77	
	Refused	88	

What is the **main reason** you had your **last** test for cervical cancer?	Part of a routine exam	1	CX4
	Following up on abnormal or inconclusive result	2	
	Recommended by healthcare provider	3	
	Recommended by other source	4	
	Experiencing pain or other symptoms	5	
	Other	6	
	Don't know	77	
	Refused	88	
Where did you receive your last test for cervical cancer? *[INSERT COUNTRY-SPECIFIC CATEGORIES]*	Doctor's office	1	CX5
	Mobile clinic	2	
	Community clinic	3	
	Hospital	4	
	Other	5	
	Don't know	77	
	Refused	88	
What was the result of your **last (most recent)** test for cervical cancer?	Did not receive result	1 *If CC6=1, go to next section*	CX6
	Normal / Negative	2 *If CC6=2, go to next section*	
	Abnormal /Positive	3	
	Suspect cancer	4	
	Inconclusive	5	
	Don't know	77	
	Refused	88	
Did you have any follow-up visits because of your test results?	Yes	1	CX7
	No	2	
	Don't know	77	
	Refused	88	
Did you receive any treatment to your cervix because of your test result?	Yes	1	CX8
	No	2 *If No, go to CC10*	
	Don't know	77 *If Don't know, go to next section*	
	Refused	88 *If Refused, go to next section*	

Did you receive treatment **during the same visit** as your last test for cervical cancer?	Yes	1 *If Yes, go to next section*	CX9
	No	2 *If No, go to next section*	
	Don't know	77 *If Don't know, go to next section*	
	Refused	88 *If Refused, go to next section*	
What is the **main** reason you did not receive treatment?	Was not told I needed treatment	1	CX10
	Did not know how/where to get treatment	2	
	Embarrassment	3	
	Too expensive	4	
	Didn't have time	5	
	Clinic too far away	6	
	Poor service quality	7	
	Fear (afraid of procedure; afraid of social stigma)	8	
	Cultural beliefs	9	
	Family member would not allow it	10 *If CC10=10, go to C10Spec, else go to next section*	
	Don't know	77	
	Refused	88	
	Family member (please specify)	□□□□□□□□□□□□	CX10Spec

What is the **main** reason you have never had a cervical cancer test?	Did not know how/ where to get test	1	CX11
	Embarrassment	2	
	Too expensive	3	
	Didn't have time	4	
	Clinic too far away	5	
	Poor service quality	6	
	Fear (afraid of procedure; afraid of social stigma)	7	
	Cultural beliefs	8	
	Family member would not allow it	9 *If CC11=9, go to C11Spec, else go to next section*	
	Don't know	77	
	Refused	88	
	Family member (please specify)	□□□□□□□□□□□□	CX11Spec

Addition (for women only): Breast Cancer Screening

The next questions ask about breast cancer prevention. Screening tests for breast cancer prevention can be done to identify breast cancer before any symptoms appear. There are various screening methods for breast cancer, such as mammography and clinical breast exam. For mammography, X-rays are used to identify abnormal tissues, while clinical breast exam is physical examination of both breasts by a trained health professional.

Have you ever had a screening test for breast cancer, using any of these methods described above?	Yes 1 No 2 Don't know 77	BX1

Which type of test did you receive Mammography 1 X-Ray 3	Mammography 1 Clinical Breast Examination 2 Clinical breast Examination 2 *X-Ray 3*	BX2

At what age were you **first screened/ tested** for breast cancer?	Age □□□□□ Don't know 77 Refused 88	BX3

When was your **last (most recent) screen/test** for breast cancer?	Less than 1 year ago	1		BX4
	1-2 years ago	2		
	3-5 years ago	3		
	More than 5 years ago	4		
	Don't know	77		
	Refused	88		
What is the **main reason** you had your **last** screening/test for breast cancer?	Part of a routine exam	1		BX5
	Following up on abnormal or inconclusive result	2		
	Recommended by healthcare provider	3		
	Recommended by other source	4		
	Experienced pain or other symptoms such as lumps	5		
	Other	6		
	Don't know	77		
	Refused	88		
Where did you receive your last screening/test for breast cancer? *[INSERT COUNTRY-SPECIFIC CATEGORIES]*	Doctor's office	1		BX6
	Mobile clinic	2		
	Community clinic	3		
	Hospital	4		
	Other	5		
	Don't know	77		
	Refused	88		
What was the result of your ***last (most recent)*** test for breast cancer?	Did not receive result	1	*If BX6=1, go to next section*	BX7
	Normal / Negative	2	*If BX6=2, go to next section*	
	Abnormal /Positive	3		
	Suspect cancer	4		
	Inconclusive	5		
	Don't know	77		
	Refused	88		
Did you have any follow-up visits because of your breast screening/test results?	Yes	1		BX8
	No	2		
	Don't know	77		
	Refused	88		

Did you receive any treatment/surgical procedures to your breast(s) because of your screening/test result?	Yes	1 *If Yes, go to next section*	BX9
	No	2	
	Don't know	77 *If Don't know, go to next section*	
	Refused	88 *If refused, go to next section*	
What is the **main** reason you did not receive treatment?	Was not told I needed treatment	1	BX10
	Did not know how/where to get treatment	2	
	Embarrassment	3	
	Too expensive	4	
	Didn't have time	5	
	Clinic too far away	6	
	Poor service quality	7	
	Fear (afraid of procedure; afraid of social stigma)	8	
	Cultural beliefs	9	
	Family member would not allow it	10 *If BX10=10, go to BX10Spec, else go to next section*	
	Don't know	77	
	Refused	88	
	Family member (please specify)	□□□□□□□□□□□□	BX10Spec

What is the **main** reason you have never had a breast cancer screening/ test?	Did not know how/where to get test	1	BX11
	Embarrassment	2	
	Too expensive	3	
	Didn't have time	4	
	Clinic too far away	5	
	Poor service quality	6	
	Fear (afraid of procedure; afraid of social stigma)	7	
	Cultural beliefs	8	
	Family member would not allow it	9 *If BX10=9, go to BX10Spec, else go to next section*	
	Don't know	77	
	Refused	88	
	Family member (please specify)	□□□□□□□□□□□□	CX11Spec

Mental health / Depression/Suicide

Mental health / Suicide

The next questions ask about thoughts, plans, and attempts of suicide. Please answer the questions even if no one usually talks about these issues.

Question	Response	Code
What do you think causes mental health conditions?	DISEASE 1 CURSE/SPELL 2 OTHER (SPECIFY: _____) 3 DON'T KNOW 99 REFUSED 88	ExMH01
Are mental health conditions treatable?	YES 1 NO 2 DON'T KNOW 99 REFUSSED 88	ExMH02
Have you ever been diagnosed as having a mental health condition?	YES 1 NO 2 Go to ExMH05 REFUSED 88 Go to ExMH05	ExMH03
If yes, what condition(s) were you diagnosed as having?	Depression 1 Mood Disorders (Anxiety, Bipolar) 2 Schizophrenia 3	ExMH04
During the last two-week period, did you feel sad or empty every day, nearly every day, most days, about half the days or less than half the days? Specify.	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH05
During the last two-week period, did you feel little interest or pleasure in doing things	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH06
During the two-week period, did you feel down, depressed, or hopeless	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH07

During the last two weeks, did you have trouble falling or staying asleep, or sleeping too much	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH08
During the last two weeks did you experience of feeling tired or having little energy	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH9
During the last two weeks did you, did you experience poor appetite or overeating	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH10
During the last two weeks, did you have a feel bad about yourself, or that you are a failure, or have let yourself or your family down	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH11
During the last two weeks, did you have trouble concentrating on things	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH12
During the last two weeks, did you experience moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH13
During the last two weeks, did you attempt suicide or feel like committing suicide	NOT AT ALL 4 SEVERAL DAYS 3 MORE THAN HALF THE DAYS 2 NEARLY EVERYDAY 1 REFUSSED 88	ExMH14
Did people complain about your change in behaviour?	YES 1 NO 2 REFUSED 88	ExMH15

During the **past 12 months**, have you seriously **considered** attempting suicide?	Yes	1	MH1
	No	2 *If No, go to MH3*	
	Refused	88	
Did you seek **professional help** for these thoughts?	Yes	1	MH2
	No	2	
	Refused	88	
During the **past 12 months**, have you made **a plan about how** you would attempt suicide?	Yes	1	MH3
	No	2	
	Refused	88	
Have you **ever attempted suicide**?	Yes	1	MH4
	No	2 *If No, go to MH9*	
	Refused	88	
During the **past 12 months**, have you **attempted suicide**?	Yes	1	MH5
	No	2	
	Refused	88	
What was the main **method you used** the last time you attempted suicide? *(SELECT ONLY ONE)*	Razor, knife or another sharp instrument	1	MH6
	Overdose of medication (e. g. prescribed, over-the-counter)	2	
	Overdose of other substance (e.g. heroin, crack, alcohol)	3	
	Poisoning with pesticides (e.g. rat poison, insecticide, ddt)	4	
	Other poisoning (e.g. plant/seed, household product)	5	
	Poisonous gases from exhaust	6	
	Other	7 *If Other, go to MH6other*	
	Refused	88	
	Other (specify)	_____	MH6other
Did you seek **medical care** for this attempt?	Yes	1	MH7
	No	2 *If No, go to MH9*	
	Refused	88	

Were you **admitted to hospital overnight** because of this attempt?	Yes 1 No 2 Refused 88	MH8
Has anyone in **your close family** (mother, father, brother, sister or children) ever attempted suicide?	Yes 1 No 2 Refused 88	MH9
Has anyone in **your close family** (mother, father, brother, sister or children) ever died from suicide?	Yes 1 No 2 Refused 88	MH10

Oral Health

Oral Health

The next questions ask about your oral health status and related behaviours.

Question	Response	Code
How many **natural teeth** do you have?	No natural teeth 1 *If No natural teeth, go to O4* 1 to 9 teeth 2 10 to 19 teeth 3 20 teeth or more 4 Don't know 77	O1
How would you describe the **state of your teeth?**	Excellent 1 Very Good 2 Good 3 Average 4 Poor 5 Very Poor 6 Don't Know 77	O2
How would you describe the **state of your gums?**	Excellent 1 Very Good 2 Good 3 Average 4 Poor 5 Very Poor 6 Don't know 77	O3

How would you describe the **state of your mouth (mucosa)?**	Excellent	1	O4
	Very Good	2	
	Good	3	
	Average	4	
	Poor	5	
	Very Poor	6	
	Don't know	77	
Do you have any **removable dentures**?	Yes	1	O5
	No	2 *If No, go to O7*	
Which of the following removable dentures do you have? *(RECORD FOR EACH)*			
An upper jaw denture	Yes	1	O6a
	No	2	
A lower jaw denture	Yes	1	O6b
	No	2	
During the past 12 months, did your teeth, gums or mouth cause any **pain or discomfort**?	Yes	1	O7
	No	2	
How long has it been since you last **saw a dentist**?	Less than 6 months	1	O8
	6-12 months	2	
	More than 1 year but less than 2 years	3	
	2 or more years but less than 5 years	4	
	5 or more years	5	
	Never received dental care	6 *If Never, go to O10*	
What was the **main reason for your last visit** to the dentist?	Consultation / advice	1	O9
	Pain or trouble with teeth, gums or mouth	2	
	Treatment / Follow-up treatment	3	
	Routine check-up treatment	4	
	Other	5 *If Other, go to O9other*	
	Other (please specify)	□□□□□□□□□□	O9other

Oral Health, Continued		
Question	**Response**	**Code**
How **often do you clean** your teeth?	Never 1 If *Never, go to O14a*	O10
	Once a month 2	
	2-3 times a month 3	
	Once a week 4	
	2-6 times a week 5	
	Once a day 6	
	Twice or more a day 7	
Do you use **toothpaste** to clean your teeth?	Yes 1	O11
	No 2 *If No, go to O13a*	
Do you use **toothpaste** containing **fluoride?**	Yes 1	O12
	No 2	
	Don't know 77	
Do you use any of the following to **clean your teeth**? *(RECORD FOR EACH)*		
Toothbrush	Yes 1	O13a
	No 2	
Wooden toothpicks	Yes 1	O13b
	No 2	
Plastic toothpicks	Yes 1	O13c
	No 2	
Thread (dental floss)	Yes 1	O13d
	No 2	
Charcoal	Yes 1	O13e
	No 2	
Chewstick / miswak	Yes 1	O13f
	No 2	
Other	Yes 1 *If Yes, go to O13other*	O13g
	No 2	
Other (please specify)	□□□□□□□□□□□□□□□□	O13other
Have you **experienced any of the following problems** during the past 12 months because of the **state of your teeth, gums or mouth**? *(RECORD FOR EACH)*		
Difficulty in chewing foods	Yes 1	O14a
	No 2	

Difficulty with speech/trouble pronouncing words	Yes 1 No 2	O14b
Mouth feels dry	Yes 1 No 2	O14c
Have a persistent wound and/or swelling in the mouth for more than three weeks	Yes 1 No 2	O14d
Have a red or red and white patch in the mouth	Yes 1 No 2	O14e
Felt tense because of problems with teeth or mouth	Yes 1 No 2	O14f
Embarrassed about appearance of teeth	Yes 1 No 2	O14g
Avoid smiling because of teeth	Yes 1 No 2	O14h
Sleep is often interrupted	Yes 1 No 2	O14i
Days not at work because of teeth or mouth	Yes 1 No 2	O14j
Difficulty doing usual activities	Yes 1 No 2	O14k
Less tolerant of spouse or people close to you	Yes 1 No 2	O14l
Reduced participation in social activities	Yes 1 No 2	O14m

Step 2 Physical Measurements

CORE: Blood Pressure

Question	Response		Code
Interviewer ID		□□□□□□□	M1
Device ID for blood pressure		□□□□□	M2
Cuff size used	Small	1	M3
	Medium	2	
	Large	3	
Reading 1	Systolic (mmHg)	□□□□□□□	M4a
	Diastolic (mmHg)	□□□□□□□	M4b
Reading 2	Systolic (mmHg)	□□□□□□□	M5a
	Diastolic (mmHg)	□□□□□□□	M5b
Reading 3	Systolic (mmHg)	□□□□□□□	M6a
	Diastolic (mmHg)	□□□□□□□	M6b
During the past two weeks, have you been treated for elevated blood pressure with drugs (medication) prescribed by a doctor or other health worker?	Yes	1	M7
	No	2	

CORE: Height and Weight

For women: Are you pregnant?	Yes	1 *If Yes, go to M 16*	M8
	No	2	
Interviewer ID		□□□□□□□	M9
Device IDs for height and weight	Height	□□□□□	M10a
	Weight	□□□□□	M10b
Height	in Centimetres (cm)	□□□□□□□. □□□	M11
Weight *If too large for scale 666.6*	in Kilograms (kg)	□□□□□□□.□□□	M12

CORE: Waist

Device ID for waist		□□□□□	M13
Waist circumference	in Centimetres (cm)	□□□□□□□.□□□	M14

EXPANDED: Hip Circumference and Heart Rate

Hip circumference	in Centimetres (cm)	□□□□□□□.□□□	M15
Heart Rate			
Reading 1	Beats per minute	□□□□□□□	M16a
Reading 2	Beats per minute	□□□□□□□	M16b
Reading 3	Beats per minute	□□□□□□□	M16c

Step 3 Biochemical Measurements

CORE: Blood Glucose

Question	Response		Code
During the past 12 hours have you had anything to eat or drink, other than water?	Yes	1	B1
	No	2	
Technician ID		□□□□□□□	B2
Device ID		□□□□□	B3
Time of day blood specimen taken (24-hour clock)	Hours: minutes	□□□□□: □□□□□ hrs mins	B4
Fasting blood glucose	mmol/l	□□□□□. □□□□□	B5
[CHOOSE ACCORDINGLY: MMOL/L OR MG/DL]	mg/dl	□□□□□□□.□□□	
Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for elevated blood glucose?	Yes	1	B6
	No	2	

CORE: Blood Lipids

Device ID		□□□□□	B7
Total cholesterol	mmol/l	□□□□□. □□□□□	B8
[CHOOSE ACCORDINGLY: MMOL/L OR MG/DL]	mg/dl	□□□□□□□.□□□	
During the past two weeks, have you been treated for elevated cholesterol with drugs (medication) prescribed by a doctor or other health worker?	Yes	1	B9
	No	2	

CORE: Urinary sodium and creatinine

Had you been fasting prior to the urine collection?	Yes	1	B10
	No	2	
Technician ID		□□□□□□□	B11
Device ID		□□□□□	B12
Time of day urine sample taken (24-hour clock)	Hours: minutes	□□□□□: □□□□□ hrs mins	B13
Urinary sodium	mmol/l	□□□□□□□.□□□	B14
Urinary creatinine	mmol/l	□□□□□. □□□□□	B15

EXPANDED: Triglycerides and HDL Cholesterol

Question	Response		Code
HDL Cholesterol	mmol/l	□□□. □□□□□	B16
[CHOOSE ACCORDINGLY: MMOL/L OR MG/DL]	mg/dl	□□□□□□□.□□□	

Appendix 5: Selected outcome measurements for STEPS survey

RESEARCH QUESTION	OUTCOME VARIABLES/INDICATORS (Disaggregated by age group/sex/urban vs rural/wealth quintiles
What is the magnitude of **tobacco** use/exposure among adults?	■ % who currently smoke tobacco daily
	■ Average age started smoking (years)
	■ Average years of smoking
	■ % smoking manufactured cigarettes
	■ Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)
What is the magnitude of alcohol use and its consumption patterns in Ghana?	■ % who are lifetime abstainers
	■ % who are past 12-month abstainers among alcohol consumers
	■ % who currently drink (drank alcohol in the past 30 days)
	■ % who engage in heavy episodic drinking (6 or more drinks on any occasion in the past 30 days)
	■ % of men who had 5 or more drinks on any day in the last week
What proportion of adults eat healthy foods, such as fruits and vegetables?	■ Mean number of days fruit consumed per week
	■ Mean number of servings of fruit consumed per day
	■ Mean number of days vegetables consumed per week
	■ Mean number of servings of vegetables consumed per day
What are the dietary salt consumption patterns?	■ % who ate less than 5 of combined servings of fruit & vegetables per day
	■ % who always or often add salt or salty sauce to their food before eating or as they are eating
	■ % who always or often eat processed foods high in salt
What is the level of physical inactivity among target population?	■ % with insufficient physical activity (defined as < 150 minutes of moderate-intensity activity per week, or equivalent)
	■ Median time spent in physical activity on average per day (minutes) (presented with inter-quartile range)
	■ % not engaging in vigorous activity
What is the coverage of cervical cancer screening?	■ % of women age 30-49 years who have ever had a screening test for cervical cancer
	■ Proportion of women who received various types of cervical cancer screening methods-VIA, Pap Smear, HPV DNA test

What is prevalence of overweight and obesity among adults in Ghana? What is the prevalence of hypertension among adults in Ghana? What proportion of people with hypertension is on medication?	■ Mean body mass index - BMI (kg/m^2) ■ Percentage who are overweight or obese (BMI ≥ 25 kg/m^2) ■ Percentage who are obese (BMI ≥ 30 kg/m^2) ■ Average waist circumference (cm) ■ Percentage with elevated BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for elevated BP) ■ Percentage with elevated BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg) who are not currently on medication for elevated BP
What is the prevalence of elevated fasting blood sugar? What is the population level total cholesterol patterns?	■ Percentage with elevated fasting blood glucose as defined below or currently on medication for elevated blood glucose ***(plasma venous value ≥ 7.0 mmol/L or ≥ 126 mg/dl capillary whole blood value ≥ 6.1 mmol/L or ≥ 110 mg/dl)*** ■ Mean total blood cholesterol (mg/dl) ■ % with elevated total cholesterol (≥ 190 mg/dl or currently on medication for elevated cholesterol)
Cardiovascular risk assessment?	■ % of age 40-69 years with a 10-year CVD risk ≥ 30%, or with existing CVD**
Do adults have usually more than one NCD risk/ combined risk factors*?	■ % with low risk (i.e. none of the risk factors included above) ■ % with elevated risk (at least three of the risk factors included above), aged 25 to 44 years old ■ % with elevated risk (at least three of the risk factors included above), aged 45 to 64 years old

Appendix 6: Fact Sheet (Sex)

GHANA STEPS Survey 2023

Fact Sheet

The STEPS survey of noncommunicable disease (NCD) risk factors in Ghana was carried out from June 2023 to August 2023. Ghana carried out Step 1, Step 2 and Step 3. Socio demographic and behavioural information was collected in Step 1. Physical measurements such as height, weight and blood pressure were collected in Step 2. Biochemical measurements were collected to assess blood glucose and cholesterol levels in Step 3. The survey was a nationwide population-based survey of adults aged 18-69**.** A multistage sample design was used to produce representative data for that age range in Ghana. A total of 5438 adults participated in the survey. The overall response rate was 94.2%. A repeat survey is planned for 2028 if funds permit.

Results for adults aged 18-69 years (incl. 95% CI) *(adjust if necessary)*	Both Sexes	Males	Females
Step 1 Tobacco Use			
Percentage who currently smoke tobacco	4.8% (3.8-5.9)	9.3% (7.2-11.4)	0.3% (0.1-0.5)
Percentage who currently smoke tobacco daily	3.1% (2.2-4.1)	6.1% (4.2-8.0)	0.1% (0.0-0.3)
For those who smoke tobacco daily			
Average age started smoking (years)	22.3 (20.7-23.8)	22.4 (- -)	-
Percentage of daily smokers smoking manufactured cigarettes	73.6% (61.5-85.8)	73.6% (61.4-85.8)	-
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	3.0 (2.2-3.9)	3.1 (- -)	
Step 1 Alcohol Consumption			
Percentage who are lifetime abstainers	43.9% (40.9-46.9)	40.5% (36.5-44.5)	47.3% (44.1-50.5)
Percentage who are past-12-month abstainers	19.8% (18.2-21.5)	15.4% (13.2-17.6)	24.4% (22.3-26.5)
Percentage who currently drink (drank alcohol in the past 30 days)	22.6% (20.5-24.7)	30.6% (27.4-33.8)	14.5% (12.5-16.4)
Percentage who engage in heavy episodic drinking (6 or more drinks on any occasion in the past 30 days)	2.5% (2.0-3.0)	3.6% (2.7-4.5)	1.4% (0.8-1.9)
Step 1 Diet			

Mean number of days fruit consumed in a typical week	2.2 (2.1-2.3)	2.2 (2.1-2.4)	2.1 (2.0-2.2)
Mean number of servings of fruit consumed on average per day	0.8 (0.7-0.8)	0.9 (0.8-0.9)	0.7 (0.7-0.8)
Mean number of days vegetables consumed in a typical week	6.0 (5.9-6.1)	5.9 (5.7-6.0)	6.1 (6.0-6.2)
Mean number of servings of vegetables consumed on average per day	2.7 (2.6-2.9)	2.6 (2.4-2.7)	2.9 (2.7-3.1)
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	76.0% (73.8-78.1)	77.3% (74.6-80.1)	74.6% (72.0-77.2)
Percentage who always or often add salt or salty sauce to their food before eating or as they are eating	13.0% (11.2-14.7)	12.6% (10.2-15.0)	13.3% (11.5-15.2)
Percentage who always or often eat processed foods high in salt	22.8% (20.9-24.8)	21.0% (18.3-23.7)	24.7% (22.7-26.8)
Step 1 Physical Activity			
Percentage with insufficient physical activity (defined as < 150 minutes of moderate-intensity activity per week, or equivalent)*	9.9% (8.7-11.2)	5.5% (4.0-6.9)	14.6% (12.7-16.5)
Median time spent in physical activity on average per day (minutes) (presented with inter-quartile range)	240.0 (65.7-420.0)	310.0 (120.0-462.9)	162.9 (42.9-360.0)
Percentage not engaging in vigorous activity	71.2% (68.9-73.4)	51.9% (47.9-55.9)	91.2% (89.6-92.8)

* For complete definitions of insufficient physical activity, refer to the GPAQ Analysis Guide (https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/physical-activity-surveillance) or to the WHO Global recommendations on physical activity for health (https://www.who.int/news-room/fact-sheets/detail/physical-activity).

GHANA STEPS Survey 2022

Fact Sheet

Results for adults aged 18-69 years (incl. 95% CI) *(adjust if necessary)*	Both Sexes	Males	Females
Step 1 Cervical Cancer Screening			
Percentage of women aged 30-49 years who have ever had a screening test for cervical cancer			4.3% (2.9-5.7)
Step 2 Physical Measurements			
Mean body mass index - BMI (kg/m^2)	**24.2 (23.9-24.4)**	**22.4 (22.2-22.7)**	**26.0 (25.7-26.4)**
Percentage who are overweight (BMI ≥ 25 kg/m^2)	**34.3% (32.2-36.4)**	**19.7% (17.1-22.2)**	**49.8% (47.1-52.4)**
Percentage who are obese (BMI ≥ 30 kg/m^2)	**13.4% (12.1-14.7)**	**4.5% (3.3-5.7)**	**22.8% (20.5-25.2)**
Average waist circumference (cm)		**78.7 (78.1-79.4)**	**86.1 (85.5-86.8)**
Mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised BP	**120.3 (119.5-121.1)**	**122.3 (121.2-123.4)**	**118.3 (117.3-119.3)**
Mean diastolic blood pressure - DBP (mmHg), including those currently on medication for raised BP	**79.6 (79.0-80.2)**	**78.5 (77.7-79.3)**	**80.7 (80.1-81.3)**
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	**21.7% (20.2-23.2)**	**18.2% (16.1-20.3)**	**25.3% (23.4-27.1)**
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP) who are not currently on medication for raised BP	**75.8% (72.9-78.6)**	**84.8% (80.8-88.8)**	**69.1% (65.4-72.8)**
Step 3 Biochemical Measurement			
Mean fasting blood glucose, including those currently on medication for raised blood glucose [*choose accordingly:* mmol/L or mg/dl]	**5.5 (5.5-5.6)**	**5.6 (5.5-5.7)**	**5.5 (5.5-5.7)**
Percentage with impaired fasting glycaemia as defined below • plasma venous value ≥6.1 mmol/L (110 mg/dl) and <7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥5.6 mmol/L (100 mg/dl) and <6.1 mmol/L (110 mg/dl)	**10.2% (9.0-11.3)**	**11.9% (10.1-13.8)**	**8.3% (7.2-9.5)**

Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose • plasma venous value ≥ 7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥ 6.1 mmol/L (110 mg/dl)	**5.2%** **(4.3-6.1)**	**5.0%** **(3.6-6.4)**	**5.4%** **(4.4-6.4)**
Mean total blood cholesterol, including those currently on medication for raised cholesterol [*choose accordingly:* mmol/L or mg/dl]	**4.1** **(4.1-4.2)**	**3.9** **(3.8-4.0)**	**4.4** **(4.3-4.5)**
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	**21.8%** **(19.8-23.8)**	**16.1%** **(13.9-18.3)**	**27.6%** **(25.1-30.2)**
Cardiovascular disease (CVD) risk			
Percentage aged 40-69 years with a 10-year CVD risk ≥ 20%, or with existing CVD**	**11.2%** **(9.8-12.7)**	**10.4%** **(8.4-12.8)**	**12.0%** **(10.2-14.2)**
Summary of combined risk factors • current daily smokers • less than 5 servings of fruits & vegetables per day • insufficient physical activity • overweight (BMI ≥ 25 kg/m2) • raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)			
Percentage with none of the above risk factors	**11.1%** **(9.7-12.6)**	**13.3%** **(11.2-15.3)**	**8.8%** **(7.1-10.6)**
Percentage with three or more of the above risk factors, aged 18 to 44 years	**8.0%** **(6.8-9.2)**	**4.6%** **(3.3-5.9)**	**11.9%** **(10.1-13.7)**
Percentage with three or more of the above risk factors, aged 45 to 69 years	**24.8%** **(21.7-28.0)**	**16.0%** **(12.3-19.6)**	**33.8%** **(29.6-38.0)**
Percentage with three or more of the above risk factors, aged 18 to 69 years	**12.1%** **(10.9-13.4)**	**7.3%** **(5.9-8.6)**	**17.4%** **(15.7-19.1)**

** A 10-year CVD risk of ≥20% is defined according to age, sex, blood pressure, smoking status (current smokers), total cholesterol, and previously diagnosed diabetes.

For additional information, please contact:

STEPS Survey Coordinator Dr. Joana Ansong, ansongj@who.int

Appendix 7: Fact Sheet (Residency)

GHANA STEPS Survey 2023

Fact Sheet

The STEPS survey of noncommunicable disease (NCD) risk factors in Ghana was carried out from June 2023 to August 2023. Ghana carried out Step 1, Step 2 and Step 3. Socio demographic and behavioural information was collected in Step 1. Physical measurements such as height, weight and blood pressure were collected in Step 2. Biochemical measurements were collected to assess blood glucose and cholesterol levels in Step 3. The survey was a population-based survey of adults aged 18-69**.** A multistage sample design was used to produce representative data for that age range in Ghana. A total of 5438 adults participated in the survey. The overall response rate was 94.2%. A repeat survey is planned for 2028 if funds permit.

Results for adults aged 18-69 years (incl. 95% CI) (adjust if necessary)	Both	Urban	Rural
Step 1 Tobacco Use			
Percentage who currently smoke tobacco	4.8% (3.8-5.9)	5.2% (3.6-6.9)	4.3% (3.1-5.3)
Percentage who currently smoke tobacco daily	3.1% (2.2-4.1)	3.3% (1.8-4.8)	2.9% (2.0-3.9)
For those who smoke tobacco daily			
Average age started smoking (years)	22.3 (20.7-23.8)	20.6 (19.1-22.2)	25.0 (22.3-27.6)
Percentage of daily smokers smoking manufactured cigarettes	73.6% (61.5-85.8)	74.9% (56.9-92.8)	71.6% (59.5-83.8)
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	3.0 (2.2-3.9)	3.0 (1.7-4.2)	3.0 (2.3-4.0)
Step 1 Alcohol Consumption			
Percentage who are lifetime abstainers	43.9% (40.9-46.9)	46.0% (41.4-50.6)	40.7% (36.6-44.8)
Percentage who are past-12-month abstainers	19.8% (18.2-21.5)	21.5% (19.0-24.0)	17.3% (14.9-19.7)
Percentage who currently drink (drank alcohol in the past 30 days)	22.6% (20.5-24.7)	18.6% (16.1-21.1)	28.4% (24.9-31.9)

Percentage who engage in heavy episodic drinking (6 or more drinks on any occasion in the past 30 days)	2.5% (2.0-3.0)	2.2% (1.6-2.9)	2.9% (2.1-3.7)
Step 1 Diet			
Mean number of days fruit consumed in a typical week DdaysWT	2.2 (2.1-2.3)	2.2 (2.1-2.3)	2.2 (2.0-2.3)
Mean number of servings of fruit consumed on average per day DservingsWT	0.8 (0.7-0.8)	0.8 (0.7-0.8)	0.8 (0.8-0.9)
Mean number of days vegetables consumed in a typical week DdaysWT	6.0 (5.9-6.1)	6.0 (5.8-6.1)	6.0 (5.9-6.1)
Mean number of servings of vegetables consumed on average per day DservingsWT	2.7 (2.6-2.9)	2.7 (2.5-2.9)	2.8 (2.7-3.1)
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day DfiveormoreWT	76.0% (73.8-78.1)	77.0% (74.0-80.1)	74.4% (71.1-77.7)
Percentage who always or often add salt or salty sauce to their food before eating or as they are eating	13.0% (11.2-14.7)	13.7% (10.9-16.4)	11.9% (10.2-13.7)
Percentage who always or often eat processed foods high in salt DprocessedWT	22.8% (20.9-24.8)	23.1% (20.1-26.0)	22.5% (19.6-25.4)
Step 1 Physical Activity			
Percentage with insufficient physical activity (defined as < 150 minutes of moderate-intensity activity per week, or equivalent)* PnotmeetingrecsWT	9.9% (8.7-11.2)	12.5% (10.7-14.4)	6.1% (4.7-7.6)
Median time spent in physical activity on average per day (minutes) (presented with inter-quartile range) PtotalmedianWT	240.0 (65.7-420.0)	180.0 (48.6-394.3)	314.3 (128.6-454.3)
Percentage not engaging in vigorous activity PnovigorousWT	71.2% (68.9-73.4)	73.5% (70.4-76.6)	67.8% (64.6-70.9)

* For complete definitions of insufficient physical activity, refer to the GPAQ Analysis Guide (https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/physical-activity-surveillance) or to the WHO Global recommendations on physical activity for health (https://www.who.int/news-room/fact-sheets/detail/physical-activity).

GHANA STEPS Survey 2022

Fact Sheet

Results for adults aged 18-69 years (incl. 95% CI) *(adjust if necessary)*	Both	Urban	Rural
Step 1 Cervical Cancer Screening			
Percentage of women aged 30-49 years who have ever had a screening test for cervical cancer	**4.3% (2.9-5.7)**	**5.1% (3.1-7.0)**	**3.0% (1.3-4.6)**
Step 2 Physical Measurements			
Mean body mass index - BMI (kg/m^2)	**24.2 (23.9-24.4)**	**24.8 (24.5-25.2)**	**23.1 (22.8-23.5)**
Percentage who are overweight (BMI ≥ 25 kg/m^2)	**34.3% (32.2-36.4)**	**40.3% (37.1-43.5)**	**25.3% (22.2-28.4)**
Percentage who are obese (BMI ≥ 30 kg/m^2)	**13.4% (12.1-14.7)**	**16.9% (14.8-19.0)**	**8.2% (6.7-9.7)**
Average waist circumference (cm)			
Mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised BP	**120.3 (119.5-121.1)**	**120.5 (119.3-121.7)**	**120.0 (119.0-121.0)**
Mean diastolic blood pressure - DBP (mmHg), including those currently on medication for raised BP	**79.6 (79.0-80.2)**	**80.3 (79.4-81.2)**	**78.5 (77.8-79.3)**
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	**21.7% (20.2-23.2)**	**23.4% (21.1-25.9)**	**19.1% (17.0-21.1)**
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP) who are not currently on medication for raised BP	**75.8% (72.9-78.6)**	**73.4% (69.4-77.4)**	**80.1% (76.9-83.3)**
Step 3 Biochemical Measurement			
Mean fasting blood glucose, including those currently on medication for raised blood glucose [*choose accordingly:* mmol/L or mg/dl]	**5.5 (5.5-5.6)**	**5.6 (5.5-5.7)**	**5.5 (5.4-5.5)**
Percentage with impaired fasting glycaemia as defined below • plasma venous value ≥6.1 mmol/L (110 mg/dl) and <7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥5.6 mmol/L (100 mg/dl) and <6.1 mmol/L (110 mg/dl)	**10.2% (9.0-11.3)**	**10.5% (8.9-12.0)**	**9.7% (8.0-11.4)**

Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose • plasma venous value ≥ 7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥ 6.1 mmol/L (110 mg/dl)	**5.2%** **(4.3-6.1)**	**6.1%** **(4.8-7.4)**	**3.9%** **(2.9-4.8)**
Mean total blood cholesterol, including those currently on medication for raised cholesterol [***choose accordingly:*** mmol/L or mg/dl]	**4.1** **(4.1-4.2)**	**4.2** **(4.1-4.4)**	**4.0** **(3.8-4.1)**
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	**21.8%** **(19.8-23.8)**	**24.0%** **(20.9-27.1)**	**18.6%** **(16.0-21.2)**
Mean intake of salt per day (in grams)			
Cardiovascular disease (CVD) risk			
Percentage aged 40-69 years with a 10-year CVD risk ≥ 20%, or with existing CVD**	**11.2%** **(9.8-12.7)**	**9.3%** **(7.6 – 11.4)**	**13.8%** **(11.7- 16.2)**
Summary of combined risk factors • current daily smokers • less than 5 servings of fruits & vegetables per day • insufficient physical activity • overweight (BMI ≥ 25 kg/m2) • raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)			
Percentage with none of the above risk factors	**11.1%** **(9.7-12.6)**	**8.7%** **(7.1-10.4)**	**15.6%** **(12.4-18.9)**
Percentage with three or more of the above risk factors, aged 18 to 44 years	**8.0%** **(6.8-9.2)**	**9.1%** **(7.5-10.7)**	**6.4%** **(4.6-8.2)**
Percentage with three or more of the above risk factors, aged 45 to 69 years	**24.8%** **(21.7-28.0)**	**31.8%** **(27.0-36.6)**	**15.7%** **(12.5-18.8)**
Percentage with three or more of the above risk factors, aged 18 to 69 years	**12.1%** **(10.9-13.4)**	**14.4%** **(12.6-16.1)**	**8.8%** **(7.2-10.4)**

** A 10-year CVD risk of ≥20% is defined according to age, sex, blood pressure, smoking status (current smokers), total cholesterol, and previously diagnosed diabetes.
For additional information, please contact:

STEPS Survey Coordinator Dr. Joana Ansong, ansongj@who.int

Appendix 8: List of Data Collectors

TEAM	NAME	POSITION
	WESTERN REGION	
1	Michael Agyinor Aboagye	Supervisor
	Vivian Asare	Interviewer
	Mavis Idan	Interviewer
	George Abroampa	Interviewer
	CENTRAL	
2	Laud Budu Ani	Supervisor
	Josephine Akua Donkor	Interviewer
	Clifford Adifu	Interviewer
	Lisa Forson Agyinor	Interviewer
	GT ACCRA, CENTRAL	
3	Benedicta Allotey	Supervisor
	Deborah Dodoo	Interviewer
	Anita Addy	Interviewer
	Patrick Adjei Ablorh	Interviewer
	GT ACCRA	
4	Mercy Naa Quarshie	Supervisor
	Mabel Badger	Interviewer
	Charles Addy	Interviewer
	Afua Korantema Asante	Interviewer
	GT ACCRA, VOLTA, EASTERN	
5	Alice Ofosu	Supervisor
	Queenster Entsie	Interviewer
	Eric Kwame Dey	Interviewer
	Ruth Tsakpo	Interviewer
	EASTERN	
6	Betty Agyemang	Supervisor
	Margaret Okwae	Interviewer
	Aubrey Vincent Nyan	Interviewer
	Ruth Adjei Larbi	Interviewer
	ASHANTI , CENTRAL	
7	Felix Osafo	Supervisor
	Rukaya Yussif	Interviewer
	Suweba Jibrine	Interviewer
	Esther Sarfo	Interviewer
	WESTERN NORTH, AHAFO	
8	Pascal Hackman Owusu	Supervisor
	Michael Peprah	Interviewer
	Amponsah Nada Osei	Interviewer
	Vera Naa Anerkai Abbey	Interviewer

	ASHANTI, WESTERN NORTH, AHAFO, BONO	
9	Emmanuel Dzelu	Supervisor
	Lord Assorme Dordzavu	Interviewer
	Priscilla Awoagyaa Frimpong	Interviewer
	Diana Mantey	Interviewer
	ASHANTI, BONO, BONO EAST	
10	Priscilla Opoku	Supervisor
	Sherifa Abass	Interviewer
	Maud Akyeabea Asiedu	Interviewer
	Elijah Kofi Amoako	Interviewer
	EASTERN , ASHANTI	
11	James Christian Adu	Supervisor
	Hilda Gyedu	
	Abena Fosua Amoah	Interviewer
	Joshua Yost	Interviewer
	VOLTA, BONO EAST, OTI	
12	Esther Dzifa Akoto	Supervisor
	Juliet Lucky Avedzi	Interviewer
	Philip Fu	Interviewer
	Salomey Najah	Interviewer
	OTI, NORTHERN	
13	Razak Mohammed	Supervisor
	Azaratu Masahudu	Interviewer
	Iddrisu Mohammed T. Innah	Interviewer
	Yinloobo Michal Tarezina	Interviewer
	ASHANTI, BONO EAST, SAVANNAH	
14	Grace Yaa Amenu	Supervisor
	Florence Teni Amadu	Interviewer
	Fatawu Ali	Interviewer
	Fuseni Bintu	Interviewer
	NORTHERN, NORTH EAST, UPPER EAST	
15	Awal Mohammed Alabira	Supervisor
	Leticia Nyaaba	Interviewer
	Alhassan Issahaku	Interviewer
	Kindness Laar	Interviewer
	NORTH EAST, UPPER EAST, UPPER WEST	
16	Edward Tabiasi-Naa	Supervisor
	Faustus Naal	Interviewer
	Vitus Bawa	Interviewer
	Theresa Turedomey Taayang	Interviewer

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