KINGDOM OF ESWATINI

MINISTRY OF HEALTH

ESWATINI STEPS REPORT 2024

Nationwide Non-Communicable Diseases Risk Factors Assessment Using the World Health Organization's Stepwise Approach in Eswatini

World Health Organization

Publication Details

publishing and indexing information
Director of Health Services,
Ministry of Health, Kingdom of Eswatini
Ministry of Justice Building, Mhlambanyatsi/Usuthu Link Road,
P.O. Box 5,
Mbabane, Eswatini

Citation of the report
Ministry of Health, Kingdom of Eswatini. (2024). ESWATINI STEPS REPORT. Ministry of Justice Building, Mhlambanyatsi/Usuthu Link Road, P.O. Box 5, Mbabane, Eswatini.

Table of Contents

List of Tables

List of Figures

Abbreviations

BMI	Body Mass Index
CI	Confidence Interval
IQR	Inter Quartile Range
CMIS	Client Management Information System
COPD	Chronic Obstructive Pulmonary Disease
CVD	Cardiovascular Diseases
CVD	Cardiovascular Disease
DBP	Diastolic Blood Pressure
DHS	Demographic and Health Survey
DM	Diabetes Mellitus
EA	Enumeration area
EHCP	Essential Health Care Package
EHHRRB	Eswatini Health and Human Research Review Board
HBP	High Blood Pressure
HDL	High Density Lipoprotein
HIV	Human Immune Virus
HMIS	Health Management Information System
IFG	Impaired Fasting Glucose
IGT	Impaired Glucose Tolerance
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
MOH	Ministry of Health
NCDs	Non-Communicable Diseases
PSU	Primary Sampling Unit
RHM	Rural Health Motivators
RTA	Road Traffic Accident
SBP	Systolic Blood Pressure
SRH	Sexual Reproductive Health
TB	Tuberculosis
URC	University Research Council
VIP	Violence and Injury Prevention
WHO	World Health Organization

Acknowledgements

The Ministry of Health would like to extend its heartfelt gratitude to all those who contributed to the successful execution of the 2024 STEPS survey on non-communicable disease (NCD) risk factors in Eswatini.
Firstly, we acknowledge the unwavering support and collaboration from our partners, including the Central Statistics Unit and the Strategic Information Department, whose expertise and dedication were instrumental in the planning and implementation of this survey.

We also extend our deepest appreciation to the data collectors for their hard work and commitment in gathering accurate and reliable data, often under challenging circumstances. Conducting the STEPS survey is a demanding task that requires committed and dedicated data collectors. There are situations where data collectors must visit a household three times, and it calls for them to wake up very early in the morning to collect critical biomarkers from the study population. Your relentless efforts are truly commendable.
We express our sincere gratitude to the survey study population for their cooperation and willingness to be part of this survey. Your participation is invaluable in helping us gather the necessary data to understand and address non-communicable diseases in Eswatini.

A special thank you goes to The World Bank for the COVID-19 grant that provided crucial financial support for this survey. We are also profoundly grateful to the World Health Organization (WHO), UNICEF and the Clinton Health Access Initiative (CHAI) for their steadfast support and facilitation throughout the survey process. Your collective efforts have been vital in the realization of this important health survey, and your contributions will help inform future public health strategies and interventions in Eswatini.
Thank you all for your unwavering commitment and support.

Foreword

The Ministry of Health has the honour to present the STEPS survey report for 2024, a vital tool in our mission to combat non-communicable diseases (NCDs) and promote the health and well-being of our population. This report provides invaluable insights into the prevalence and risk factors associated with NCDs, enabling us to develop targeted interventions and policies to address these pressing health challenges.

In alignment with the Political Declaration of the third high-level meeting of the General Assembly on the prevention and control of NCDs, A/RES/73/2, we recognize the urgency of accelerating our response to NCDs. This declaration, titled ***Time to deliver: accelerating our response to address NCDs for the health and well-being of present and future generations***, underscores the global commitment to reducing the burden of NCDs through comprehensive and coordinated action. "*We, Heads of State and Government assembled at the United Nations on 27 September 2018 to review challenges and opportunities in the implementation of our existing commitments for the prevention and control of NCDs and the promotion of mental health, which constitute a major challenge for the health and well-being of our peoples and for sustainable development. We therefore commit to scale up our efforts and strengthen our commitment, as Heads of State and Government, to provide strategic leadership for the prevention and control of NCDs by promoting greater policy coherence and coordination through whole-of-government and health-in-all-policies approaches and by engaging stakeholders in an appropriate, coordinated, comprehensive and integrated, bold whole-of-society action and response.*"

Our government is dedicated to implementing evidence-based strategies to prevent and control NCDs, including strengthening health systems, promoting healthy lifestyles, and ensuring access to essential health services. The STEPS survey report will serve as a foundation for our efforts, guiding us in the development of effective policies and programs that will improve the health outcomes of our citizens.

I extend my gratitude to all the stakeholders, researchers, and health professionals who contributed to this important survey. Together, we can make significant strides in reducing the impact of NCDs and achieving a healthier future for all.

KHANYAKWEZWE MABUZA
PRINCIPAL SECRETARY

Executive Summary

The Ministry of Health, with support from the World Health Organization (WHO) and other partners, conducted the Stepwise approach to surveillance (STEPS) survey in 2024. This survey focuses on obtaining core data on the established risk factors that contribute to the major non-communicable disease (NCD) burden. The survey involves three steps: questionnaire (step 1), physical measurements (step 2), and biochemical measurements (step 3).

The STEPS survey of non-communicable disease (NCD) risk factors in Eswatini was carried out from February to March 2024. A total of 4 703 adults participated in the survey, providing data through **Step 1** (*socio-demographic and behavioural information*), **Step 2** (4 384) (*physical measurements such as height, weight, and blood pressure*), and **Step 3** (4 376) (*biochemical measurements to assess blood glucose and cholesterol levels*). The survey employed a multi-stage cluster sampling design to produce representative data for adults aged 18-69 years in Eswatini, with a targeted sample size of 5 762. The overall response rate was 81.6%.

The instrument contains core and optional modules. The following optional modules included: mental health, violence and injury. The broad objective of the survey was to determine the magnitude of risk factors that attribute to non-communicable diseases

The findings of the survey revealed several critical findings regarding the prevalence of non-communicable disease (NCD) risk factors. Tobacco use remains significant, with 11.0% of adults currently smoking tobacco, and a higher prevalence among males (19.8%) compared to females (2.4%). Daily smoking rates stand at 7.3%, with the average starting age at 19.4 years. In terms of alcohol consumption, 22.0% of adults reported drinking alcohol in the past 30 days, with a notable difference between males (33.9%) and females (10.3%). Heavy episodic drinking was reported by 10.2% of adults, again higher among males (17.8%) compared to females (3.8%).

The survey highlighted concerning trends in overweight and obesity. Overall, 51.6% of adults were classified as overweight (BMI ≥ 25 kg/m²), with females (66.2%) significantly more affected than males (37.2%). Obesity (BMI ≥ 30 kg/m²) was prevalent in 24.7% of adults, with a stark contrast between males (12.1%) and females (37.5%). High blood pressure remains a critical health issue, with 21.7% of adults having raised blood pressure (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP). Among those with raised blood pressure, only 13.9% had their condition under control, with control rates lower in males (6.9%) compared to females (20.6%).

Biochemical measurements indicated that 3.7% of adults had raised fasting blood glucose or were on medication for raised blood glucose, with females (4.3%) more affected than males (3.1%). Additionally, the survey found that 2.9% of adults had raised total cholesterol levels. Cervical cancer screening rates among women aged 30-49 years were relatively high, with 65.9% having undergone a screening test at least once. This reflects a significant public health achievement in promoting preventive healthcare among women.

These findings underscore the urgent need for continued public health efforts to address NCD risk factors through lifestyle interventions and preventive measures. The Ministry of Health, along with other stakeholders, is encouraged to strengthen multi-sectoral strategies to combat the rising burden of NCDs in Eswatini

Chapter 1: INTRODUCTION

The 2024 STEPS Country Report offers a detailed analysis of the third nationwide WHO STEPwise Survey, which evaluates risk factors for non-communicable diseases (NCDs) in Eswatini. The STEPwise approach employs a globally standardized methodology that facilitates comparisons of NCD data across different regions and periods, providing valuable insights for national health strategies. As a key component of the national health surveillance system, the STEPS survey monitors trends in NCD risk factors, assesses the health system's response, and evaluates service delivery and utilization.

Building on the findings from the 2007 and 2014 surveys, the 2024 survey reflects the changing landscape of NCDs, guiding evidence-based interventions aimed at enhancing health system performance and improving the population's health outcomes.

1.1. BACKGROUND

Non-communicable diseases (NCDs) pose an increasing public health challenge in Eswatini, accounting for 46% of the country's mortality as reported in the WHO 2023 Country Disease Outlook. Conditions such as cardiovascular diseases (CVDs), diabetes, chronic obstructive pulmonary disease (COPD), and cancer are among the leading causes of illness and death globally. This burden is particularly pronounced in low - and middle-income countries, and Eswatini is no exception. The country is facing a triple burden of diseases that include communicable diseases, NCDs, and nutritional disorders.

The 2014 STEPS survey highlighted the extent of the problem, showing that 24.5% of the population had high blood pressure, and 14.2% had elevated blood glucose levels. Additionally, risk factors were prevalent, with 92.1% of individuals having unhealthy diets and 15.3% being physically inactive. Although various programmatic interventions have been implemented to address these risk factors, gaps still exist in understanding their current distribution and trends. This is particularly important in light of the disruptions caused by the COVID-19 pandemic, which strained health systems and hindered progress in the prevention and management of non-communicable diseases (NCDs).

The COVID-19 pandemic highlighted the vulnerability of individuals with non-communicable diseases (NCDs), who faced more severe outcomes from the virus. Additionally, the prolonged lockdowns and limited access to healthcare worsened conditions like depression and anxiety. These circumstances emphasize the urgent need for updated and comprehensive data on NCD risk factors in Eswatini.

The 2024 STEPS survey is crucial for identifying and addressing key health issues by providing evidence-based data on various risk factors. These include tobacco use, alcohol consumption, unhealthy diets, insufficient physical activity, overweight and obesity, elevated blood pressure, high blood glucose levels, and abnormal blood lipid levels. Additionally, the survey focuses on cervical cancer screening, mental health, violence and injury prevention, and the impacts of COVID-19.

This data is essential for assessing trends, monitoring progress toward national and global targets, and informing policy and program planning. By concentrating on primary prevention of non-communicable diseases (NCDs) through population-wide interventions, the findings from the 2024 STEPS survey will help design tailored strategies aimed at reducing risk, morbidity, disability, and mortality associated with NCDs. Ultimately, this will contribute to better health outcomes for the people of Eswatini.

1.2. DESCRIPTION OF STEPS

The WHO STEPwise approach to non-communicable diseases (NCDs) risk factor surveillance (STEPS) is a standardized yet adaptable framework that helps countries monitor the key risk factors associated with NCDs. By using a combination of questionnaire-based assessments, physical measurements, and biochemical testing, STEPS gathers essential data on behavioural risk factors, including tobacco and alcohol use, physical inactivity, and poor dietary habits. It also assesses biological risk factors such as overweight and obesity, high blood pressure, elevated blood glucose levels, and abnormal blood lipid levels. Additionally, the survey instrument includes expanded modules to cover topics like oral health, sexual health, and road safety, allowing countries to customize the survey according to their specific public health needs.

1.3. PURPOSE OF STEPS

STEPS surveys provide countries with a standardized and adaptable tool to monitor the main risk factors for non-communicable diseases (NCDs) through household-based, interviewer-administered surveys. By using scientifically selected samples of approximately 5 000 study population, along with consistent questions and protocols, STEPS enables countries to generate reliable and comparable data across various regions and over time.

This data is essential for understanding trends in NCDs, identifying at-risk populations, and evaluating the effectiveness of health policies and interventions. The straightforward and flexible nature of the STEPS approach allows countries to conduct regular surveillance, ensuring that decision-makers have access to current evidence. This information helps guide the development of targeted, evidence-based strategies aimed at reducing the burden of NCDs and improving population health outcomes.

1.4. THE AIM OF STEPS

The STEPS survey aims to determine the current prevalence and distribution of risk factors for chronic non-communicable diseases (NCDs) among adults living in Eswatini.

1.5. THE OBJECTIVES OF STEPS

1. To assess the prevalence of behavioural risk factors for non-communicable diseases (NCDs), such as tobacco use, alcohol consumption, unhealthy diets, and physical inactivity, among individuals aged 18 to 69 years.
2. To evaluate the prevalence of metabolic risk factors for non-communicable diseases (NCDs), including overweight and obesity, elevated blood pressure, high blood glucose, and increased cholesterol, within the target population.
3. To assess the status of other NCD-related conditions, such as cervical cancer violence and injuries, and mental health.
4. To evaluate the prevalence and severity of COVID-19 among individuals living with NCDs.

Chapter 2: METHODS

The methods section of this STEPS survey report outlines the scope, data collection approaches, and implementation processes used to gather reliable and representative data on NCD risk factors in Eswatini.

2.1. SCOPE

This nationwide survey used the standardized WHO STEPwise approach, which is adaptable and includes questionnaire-based assessments, physical measurements, and biochemical testing. The study implemented the WHO-STEPS methodology, a structured three-step process for data collection.

Step 1: Collection of demographic and behavioural data:

This step involved collecting information on education level, employment status, income, and lifestyle risk factors that contribute to noncommunicable diseases (NCDs). These risk factors include tobacco use, alcohol consumption, fruit and vegetable intake, physical inactivity, and a history of high blood pressure, diabetes, elevated cholesterol, and cardiovascular diseases. The process also included providing lifestyle advice and cervical cancer screening for female study population, as well as gathering data on mental health and suicide risk, oral healthcare, and incidents of violence and injuries.

Step 2: Physical measurements:

In this step, physical measurements were taken, including height, weight, waist circumference, hip circumference, blood pressure, and pulse rate.

Step 3: Biochemical measurements:

This step involved conducting point-of-care tests for fasting blood glucose and blood lipids, specifically cholesterol.

2.2. STUDY POPULATION

The target population for this STEPS survey was comprised of adults aged 18 to 69 years living in Eswatini across all four regions of the country. Study populations were drawn from the general population to ensure a diverse and representative sample of the NCD risk factor profile within the country.

Inclusion Criteria:

- Adults (males and females) aged 18 to 69 years.
- Usual residents of selected households or visitors who had been living in the household for 3–6 months before the survey or intended to stay for at least one month.
- Individuals who self-reported their age as 18 to 69 years and could provide written informed consent in English or siSwati.
- Study population could include undiagnosed, already diagnosed, or currently undergoing treatment for any disease of interest.

Exclusion Criteria:

- Individuals under 18 years or over 69 years of age.
- Persons unable to provide consent or assent due to cognitive impairment or intellectual disability.

2.3. SAMPLING PROCEDURE

A three-stage cluster sampling design was utilised. The overall sample size was selected from urban and rural households across the four geographic regions of the kingdom. The cluster sampling procedure was implemented in the following steps:

Stage 1: In each region, EAs were listed, stratified by Urban, and Rural Areas, and sorted by cumulative population size. This stage involved sampling the Primary Sampling Units (PSUs) within the Enumeration Areas. A total of 288 PSUs were selected at this stage to ensure precision in the survey estimates. The first PSU was sampled using simple random selection, employing the STEPs sampling spreadsheet provided by WHO. For the remaining PSUs, a systematic sampling method was used, applying an appropriate sampling interval along with a Probability Proportionate to Size (PPS) strategy to ensure representativeness across the Urban (25%) and Rural (75%) strata.

Stage 2: The second stage of the cluster sampling procedure involved organizing and systematically selecting Secondary Sampling Units (households) within the Primary Sampling Units (PSUs) chosen in the first stage. During the household listing process, Global Positioning System (GPS) coordinates for all dwelling units were collected. This information was used during the survey to assist field staff in identifying and locating selected households for data collection. The complete list of households, each with a unique serial identifier, served as the sampling frame for selecting households in the second stage of sampling. A total of fifteen (15) households were randomly selected from each PSU, resulting in one participant from each household. The overall sample size was 5 762.

Stage 3: The third stage involved randomly selecting one eligible participant from each household using a tablet equipped with a built-in steps application tool.

2.4. SAMPLE SIZE

The following procedure, formula, and adjustment parameters were applied to determine representative sample size for the survey.

Step 1:

→ Z static for a level of confidence 0. 95 = 1.96

→ Prevalence from STEPS (2014) = 50% = 0.5

→ Level of precision = 5% = 0.05

$$= \frac{(1.96)^2 0.5\ (1 - 0.5)}{0.05^2}$$

$$= \frac{0.9604}{0.0025}$$

$$= 384.16$$

Step 2: Multiply by the design effect and number of age-sex estimates:

$= 384.16$ design effect x number of groups

384.16 x 1.5 x 8

= 4609.92

Step 3: Adjust for expected non-response to get your final sample size:

4609.92 ÷ 0.8 = 5762.4 = 5762

Hence, the sample size was (384.16*1.50*8)/0.80 = 5762. WHO recommended an age-sex estimate adjustment of 8 (4 groups per gender: 18-29, 30-44, 45-59, 60-69) to balance precision optimisation against time and resources (human and financial) for conducting the survey.

2.5. TIMEFRAME

Table 1: Survey Timeframe

Activity	2024												
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Finalization of protocol													
Recruitment and interviewers' data collectors training, piloting, finalizing the tool													
Prepare training of interviewers sensitize EA's leaders and Community groups in the selected areas													
Data collection and entry													
Data cleaning													
Data weighting and analysis													
Report writing													
Dissemination of Findings													

2.6. STAFF RECRUITMENT AND TRAINING

Recruitment

All field personnel were proficient in both English and siSwati. Each field team consisted of four members: three data collectors, one of whom acted as the team leader, and a driver responsible for administrative tasks.

There were a total of 24 teams, each comprising four people. The team leader was responsible for planning, ensuring the completeness of questionnaires, supporting team members, and coordinating activities. The driver handled logistics and administrative duties for the team. The interviewer was responsible for collecting data through three distinct steps.

Survey personnel were selected based on their qualifications and areas of expertise. All survey staff members underwent training on the survey protocol to ensure effective implementation of the survey and its processes. Data collectors had the primary responsibility of conducting interviews. Additionally, supervisors and team leaders received training on administering interviews, performing biochemical tests, and overseeing the operations of the field teams.

Training

Before the initiation of the survey, all personnel participated in survey-specific training. Trainers were selected based on their qualifications and areas of expertise. The curriculum of the training covered, but not limited to the following: (a) rationale, purpose, and scientific objectives of the survey;(b) survey design and methodology; (c) how to gain entry into the study areas and households; (d) locating and recruiting study population; (e) informed consent procedures;(f) completion of survey forms, and data collection; interviewing procedures; (g) how to collect data using electronic devices; (h)tablet and data security procedures; (i) procedures for making referrals; (j) how to ensure quality control of all field processes (k) sample collection procedures, (l) reporting adverse events, and confidentiality requirements; (m) communication skills; (n) ethical guidelines for research including participant's rights and (o) specific code of conduct for all survey staff.

Immediately after training, data collectors were allocated into 24 teams. Each team were provided with a field kit containing a carrier bag, letters to the relevant authorities, referral forms, consent forms, a checklist, a list of the selected EAs, EA maps, a team field logbook, an operational manual, pens, pencils, clipboards, notebooks, tapes for measuring height and girth, scales for weight, blood pressure machines, lancets for finger pricks, sharp containers, gloves and electronic device. Each research team member had a project bag, an identity card and a unique code.

2.7. PILOT STUDY

Before the main data collection, a pilot study was conducted to test the survey instruments and data collection procedures and ensure the field staff were fully prepared. The pilot study was carried out during one of the training days and involved four enumeration areas (EAs) that were not part of the final sample selection. In each of the selected EAs, 15 households were chosen, resulting in 60 study population. The pilot study provided an opportunity to assess the questionnaire's clarity, the interview process's effectiveness, and the feasibility of the physical and biochemical measurements. Feedback from the pilot allowed for adjustments to the survey tools and protocols, ensuring a smoother and more efficient data collection process during the main survey.

2.8. INSTRUMENT AND DATA COLLECTION

The STEPS survey follows a structured, three-step process to collect detailed data on non-communicable disease (NCD) risk factors, ensuring a comprehensive understanding of the population's health profile. This sequential approach involves administering a questionnaire to capture behavioural risk factors (Step 1), performing physical measurements (Step 2), and conducting biochemical assessments (Step 3). The process is designed to adhere to WHO's standardized protocols while allowing flexibility to address country-specific priorities, enabling data comparability across regions and over time.

Step 1: Questionnaire Administration

The initial step involved administering a validated and standardized questionnaire to gather demographic data and assess behavioural risk factors, including tobacco and alcohol use, fruit and vegetable consumption, dietary fat intake, and physical activity levels. The questionnaire included core, expanded, and optional modules, offering varying levels of detail for each risk factor to suit national priorities. To enhance comprehension and ensure accurate responses, trained interviewers used show cards as visual aids when discussing dietary habits and physical activity. Data was collected in study population' households, creating a comfortable and familiar environment. This approach ensured inclusivity and accessibility, facilitating robust data collection across diverse regions of Eswatini.

Step 2: Physical Measurements

The second step focused on collecting physical measurements to quantify NCD risk factors such as obesity, hypertension, and central adiposity. Blood pressure was measured using digital monitors, with three readings taken three minutes apart. The average of the last two readings was used for analysis to improve accuracy. Waist circumference was measured using a standard tape measure, with the tape positioned midway between the last rib and the iliac crest, ensuring consistency. Height and weight were measured using stadiometers and pre-calibrated bathroom scales, respectively, with study population barefoot and in light clothing. These measurements were taken to the nearest 0.1 unit to ensure precision, and scales were recalibrated daily using standardized weights.

Step 3: Biochemical Assessments

The final step involved biochemical assessments of fasting blood glucose and cholesterol levels and critical metabolic health indicators. Study population who completed Steps 1 and 2 were instructed to fast overnight, consuming only water after their evening meal. The following morning, trained health personnel collected blood samples at study population' homesteads, ensuring convenience and compliance. Measurements were performed on-site using the CardioChek Point of Care device, which provided immediate results for fasting blood glucose and total cholesterol. This step added a vital clinical dimension to the survey, enabling a comprehensive assessment of NCD metabolic risk factors and their prevalence across the population.

2.9. DATA COLLECTION

The data collection tools were available in both English and Siswati to accommodate study population' language preferences. A total of 24 teams were established, with 6 teams assigned to each region. Each team consisted of four members: a team lead, a data collector, a sample collector, and a driver. There was also one supervisor in each region.

Rural Health Motivators (RHMs) in the communities assisted the teams by informing community leaders about the specific day and time for data collection. They also guided the survey teams to the selected households. Additionally, community police provided support to the teams to ensure safety, particularly in areas with high crime rates.

Data collection occurred in a private area identified by the participant, either near or within the selected household. The survey staff agreed on the location to ensure the space was private. In all settings, data was collected in a manner that maximized privacy. Training included instruction on how to identify a private area effectively and address privacy challenges during the survey administration.

Data from the household and individual questionnaires were entered directly onto mobile tablet devices using the STEPs application and the ODK platform, which were pre-programmed with the questionnaires and other data collection tools.

2.10. DATA DOWNLOADING

Each team used three tablets to collect data. These tablets were programmed with questionnaires for Step 1, measurements for Step 2 (*height, weight, blood pressure, and waist measurements*), and biochemical measures for Step 3. Seventy-two tablets were utilized in this process.

In the eSTEPs project, we had two databases: steps.ona.io for household (HH) data and ona.io for data from Steps 1, 2, and 3. A QR code system was implemented, and this was explained to the STEPS coordination team. Data collected on the tablets was uploaded to a password-protected STEPS online server, with access restricted to country administrators only.

Each participant's files—comprising questionnaire responses, body measurements, and biochemical test results—were merged using unique QR codes. Additionally, a Participant Identity (PID) number was used to cross-check with participant names, EA numbers, and other relevant details, particularly in cases of duplicate records.

2.11. DATA ANALYSIS

The ODK tool's embedded controls were utilized to address inconsistencies and gaps in the data. This tool allowed data capturers to edit questionnaires before submitting them to the server. R software package was used for data management including data merging. After merging the data, a cleaning process was implemented. The data management team merged common variables in the dataset and corrected any inconsistencies

Sample weights were calculated for all records based on the probability of selection at each sampling stage. For each participant, their weight was determined by multiplying the probabilities of selecting the enumeration area (EA), the household, and the individual within their household, as well as considering age and sex distribution. The participant's weight was then calculated as the inverse of this product. Additionally, the mean household size across all study population was used to calculate the weight for each individual. . Most of the generated results were presented as means or percentages, accompanied by standard errors and derived confidence intervals.

Chapter 3: RESULTS

This section presents the findings of the STEPs survey, offering a comprehensive overview of the sample population and the levels of participation achieved. It starts by outlining the demographic characteristics of the study population, including age, gender, geographic distribution, and other relevant variables, to demonstrate the representativeness of the data. The results then explore the prevalence and distribution of key risk factors assessed through the survey, providing insights into the population's health behaviours, conditions, and exposures. These findings lay the groundwork for understanding the current health landscape and identifying areas for targeted public health interventions.

3.1. RESPONSE PROPORTIONS

The STEPs survey initially recruited 5 762 study participants. All study participants completed Step 1, while 4,684 continued to complete Step 2. 4 376 study population completed step 3. After thorough data verification and checks for completeness, the final dataset 4 703 used for analysis.

3.2. DEMOGRAPHIC AND RESPONSE INFORMATION

The demographic characteristics of the study population, including variables such as age, gender, geographic distribution, and additional pertinent factors, are systematically examined and presented. This analysis provides a comprehensive understanding of the sample population, essential for contextualizing the findings and ensuring the robustness of the research outcomes.

3.3. POPULATION DISTRIBUTION

Among the 4 703 who participated in the STEPs survey, 2 858 (60.8%) were women, while 1 845 (39.2%) were men. The study population were categorized into four distinct age groups: 30.6% were young adults aged 18–29, 36.6% were aged 30–44, 21.6% were aged 45–59, and 11.3% were aged 60–69. This is observed to align with the general population distribution presented by the 2017 census report.

Geographically, the study population were spread across the four regions of Eswatini. The Manzini region represented the largest share, with 1 500(31.8%) participants, followed by the Hhohho region, which had 1 194 participants (25.3%). The Lubombo region accounted for 1 024 participants (21.7%), while the Shiselweni region had 982 participants (20.8%).

A significant majority of the participants, 98.3%, identified as Swati, with a mere 1.7% identifying as non-Swati.

3.4. DEMOGRAPHIC CHARACTERISTICS

Regarding marital status 39% (1833) of the 4 700-study population were currently married, whereas 51.1 % (2 397) reported never married. The remaining categories included separated individuals, divorced, widowed, and those cohabiting, collectively represent 9.9% of the target population.

The mean years of education was 10.2 for both sexes, where men accounted for 10.6 and 9.9 for women. Among the target population, 6.1% of men and 6.6% of women had no formal education, while for both sexes 12.6% had not completed their primary education. Of those who completed their formal education, 19.9 %

completed primary school, 19.4% achieved secondary education, 27.6% completed high school, 12.3% obtained a college or university degree, and only 1.9% held a postgraduate qualification.

Regarding employment status, 7.1% of target population were civil servants, non-governmental organisations employed 17.4%, and 2.31% were self-employed. The unemployed population, which includes unpaid individuals, students, homemakers, retirees, and job seekers, constituted the majority at 54.1%.

3.5. RISK FACTORS

The following section outlines the findings related to key individual risk factors assessed in the STEPs survey. These factors encompass behaviours and health conditions contributing to non-communicable diseases (NCDs) and various health challenges. The results include tobacco use, harmful use of alcohol, unhealthy dietary habits (such as low intake of fruits and vegetables and high salt consumption), insufficient physical activity, overweight and obesity, elevated blood pressure, raised blood glucose le vels, and abnormal blood lipid levels.

Furthermore, the expanded modules provide valuable insights into other essential health areas, including cervical cancer screening, mental health, incidents of violence and injury, and the effects of COVID-19.

3.6. TOBACCO USE

The prevalence of tobacco smoking was, 11.0% (95%CI: 9.6–12.5). It was significantly elevated among males, with 19.8% (CI: 17.3-22.6), in contrast to only 2.4.0% (CI: 1.7–3.3) of females. The highest prevalence was noted among the age group 30-44 (12.4%), with lowest rates among age group 60-69 (6%). Smoking rates were higher in urban areas, 13.0% (CI: 9.8–17.0), compared to 10.5% (CI: 9.1–12.2) in rural areas.

Table 2: Percentage of current smokers

	Male			Female			Total		
Age Categories (Years)	**n**	**% Current smoker**	**95% CI**	**n**	**% Current smoker**	**95% CI**	**n**	**% Current smoker**	**95% CI**
18-29	591	20.4	16.4 - 25.0	846	2.5	1.5 - 4.1	1437	11.5	9.4 - 14.0
30-44	661	22.6	18.7 - 27.2	1058	2.1	1.2 - 3.8	1719	12.4	10.2 - 15.0
45-59	408	15.4	11.8 - 19.9	608	2.7	1.1 - 6.4	1016	8.6	6.6 - 11.2
60-69	185	10.5	6.7 - 16.2	346	2.6	1.4 - 4.9	531	6.0	4.2 - 8.7
Total	**1845**	**19.8**	**17.3 - 22.6**	**2858**	**2.4**	**1.7 - 3.3**	**4703**	**11.0**	**9.6 - 12.5**
Location									
Rural	1472	19.9	17.1 - 23.1	2406	2.1	1.4 - 3.1	3878	10.5	9.1 - 12.2
Urban	373	19.3	14.3 - 25.5	452	4.1	2.3 - 7.5	825	13.0	9.8 - 17.0

The smoking status shows that those who were smoking daily among current smokers was 7.3%, with male smokers exhibiting a higher proportion at 13.4% compared to their female counterparts, who reported a daily smoking rate of 1.3% (CI: 35.9–69.9).

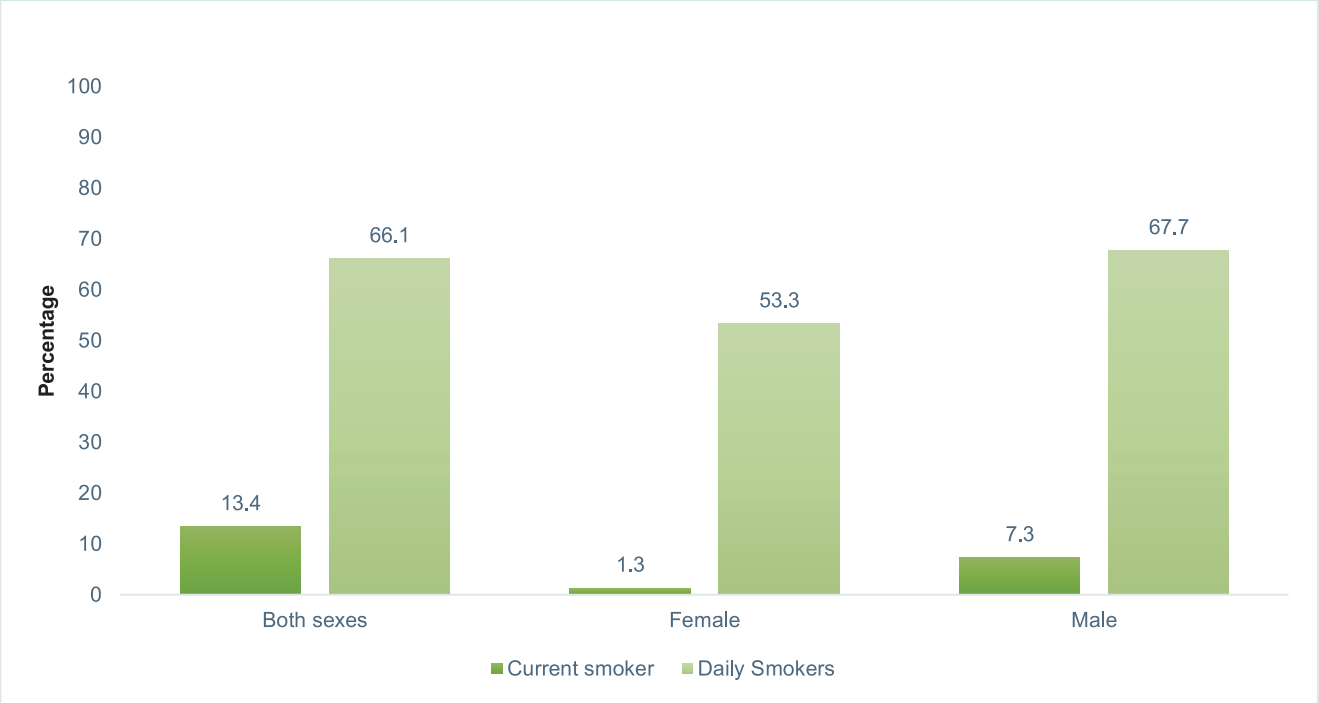

Figure 1: Proportion of daily smokers among current smokers

The average age at which the target population began smoking was 19.4 years (CI: 18.6–20.2). Males started at an average age of 19.2 years (CI: 18.4–20.0), while females began smoking at a slightly older average age of 21.7 years (CI: 18.2–25.1). Among daily smokers, a significant majority—97.5% (CI: 95.4–98.7)—used manufactured cigarettes, with an average consumption of 4.4 cigarettes per day (CI: 4.0–4.9). Regarding smokeless tobacco use, 3.1% (CI: 2.4–3.9) of the target population had used such products.

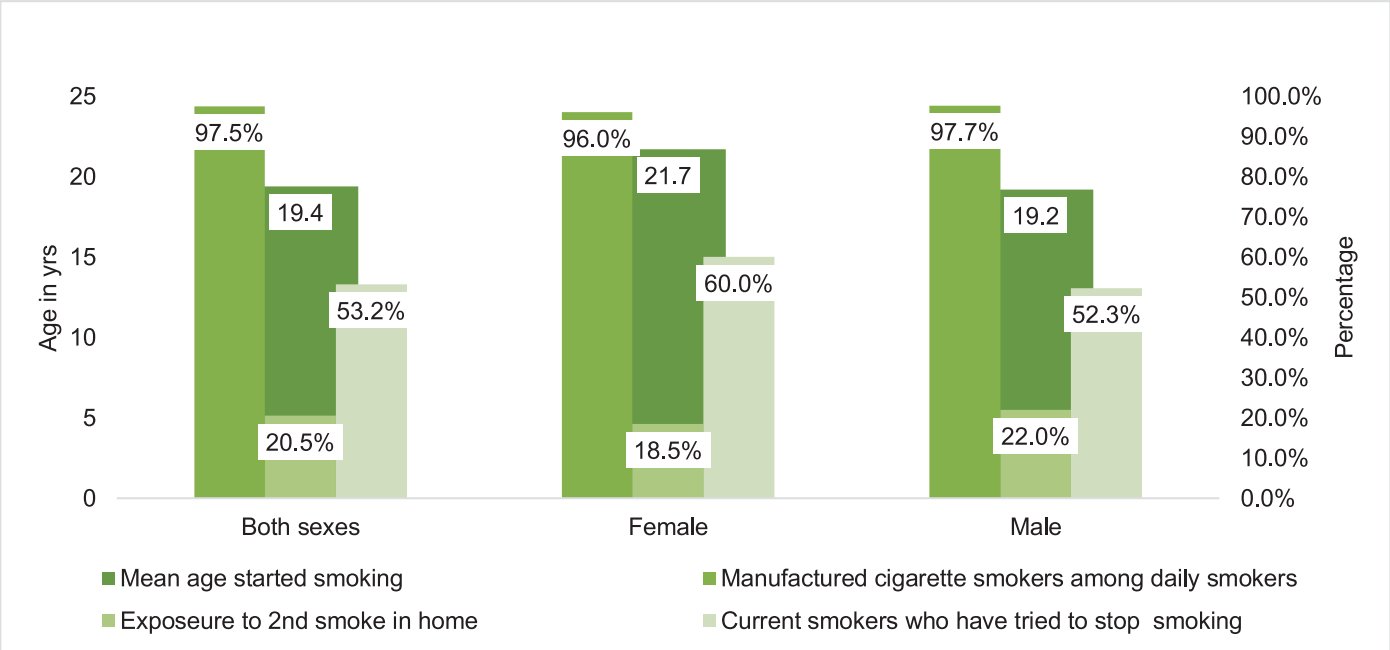

Figure 2: Exposure to smoking by age, type of tobacco and quitting attempts among current smokers

Furthermore, 53.2% (CI: 46.2–59.9) of current smokers had attempted to quit in the past year. Among the current smokers,18.8% (CI: 14.3–24.4 consulted a healthcare provider and received advice to quit. The

survey also revealed that a substantial majority of 81.1% (CI: 79.4–82.7), had never used any tobacco product among the target population. This percentage was notably higher among females 93.5% (CI: 92.1–94.6) compared to males 68.4% (CI: 65.5–71.2). Finally, 21.3% (CI: 19.1–23.8) of the target population reported exposure to second-hand smoke in their homes in the past 30 days, while 16.4% (CI: 14.5–18.5) experienced such exposure in the workplace.

3.7. ALCOHOL CONSUMPTION

Overall, 22.0% (CI: 20.1–24.0) of the target population is estimated to have consumed alcohol in the past 30 days, with males 33.9% (CI: 30.6–37.4) significantly higher than females at 10.3% (CI: 8.9–11.9). Among current drinkers, 6.9% (CI: 5.7–8.3) reported high-end consumption, which is defined as consuming at least 60g of pure alcohol per occasion for men and 40g for women.

Table 3: Alcohol consumption status

	Total				
Age Categories (Years)	**n**	**% Current drinker (past 30 days)**	**95% CI**	**% Drank in past 12 months, not current**	**95% CI**
18-29	1437	23.5	20.6 - 26.7	13.2	11.1 - 15.5
30-44	1719	23.9	20.8 - 27.3	8.1	6.2 - 10.5
45-59	1016	17.4	14.4 - 20.9	4.0	2.9 - 5.5
60-69	531	12.6	9.6 - 16.4	3.0	1.7 - 5.3
Total	**4703**	**22.0**	**20.1 - 24.0**	**9.4**	**8.2 - 10.7**
Location					
Rural	3878	21.2	19.2 - 23.3	9.5	8.2 - 11.0
Urban	825	25.5	20.2 - 31.6	9.0	6.4 - 12.3

Heavy episodic drinking, characterized by the consumption of six or more drinks on a single occasion within the last month, was reported by 10.2% (CI: 8.8–11.9) of current drinkers. This behaviour was notably more common among males 17.8% (CI: 15.0–21.0) than among females (3.8%, CI: 2.9–5.1). Despite these statistics, a substantial portion of study population—64.0% (CI: 61.7–66.2)—reported having never consumed alcohol in their lifetime, with abstinence being more prevalent among females (77.3%, CI: 75.0–79.5) compared to males (50.2%, CI: 46.9–53.5).

Six or more drinks on a single occasion at least once during the past 30 days among total population									
	Male			**Female**			**Total**		
Age Categories (Years)	**n**	**% ≥ 6 drinks**	**95% CI**	**n**	**% ≥ 6 drinks**	**95% CI**	**n**	**% ≥ 6 drinks**	**95% CI**
18-29	477	20.0	15.6 - 25.2	789	4.3	2.7 - 6.6	1266	11.6	9.3 - 14.4
30-44	532	20.5	15.9 - 26.1	1001	4.6	2.8 - 7.5	1533	12.0	9.2 - 15.4
45-59	329	10.5	7.0 - 15.5	569	2.2	0.8 - 5.9	898	5.9	4.0 - 8.5
60-69	155	5.5	2.8 - 10.4	325	1.4	0.4 - 4.1	480	3.0	1.7 - 5.2
Total	**1493**	**17.8**	**15.0 - 21.0**	**2684**	**3.8**	**2.9 - 5.1**	**4177**	**10.2**	**8.8 - 11.9**
Location									
Rural	1175	16.9	14.0 - 20.3	2272	3.5	2.5 - 4.9	3447	9.3	7.8 - 11.0
Urban	318	21.0	14.5 - 29.4	412	6.1	3.5 - 10.5	730	14.6	10.4 - 20.0

The average number of drinks consumed per occasion among current drinkers was 5.2 (CI: 4.7–5.8), with men averaging slightly more (5.6 drinks, CI: 5.0–6.2) than women (4.1 drinks, CI: 3.4–4.8). Daily alcohol consumption was relatively low, with only 4.4% (CI: 2.9–6.6) of current drinkers reporting daily use. Men were more likely to drink daily (5.0%, CI: 3.1–8.0) than women (2.9%, CI: 1.6–5.3).

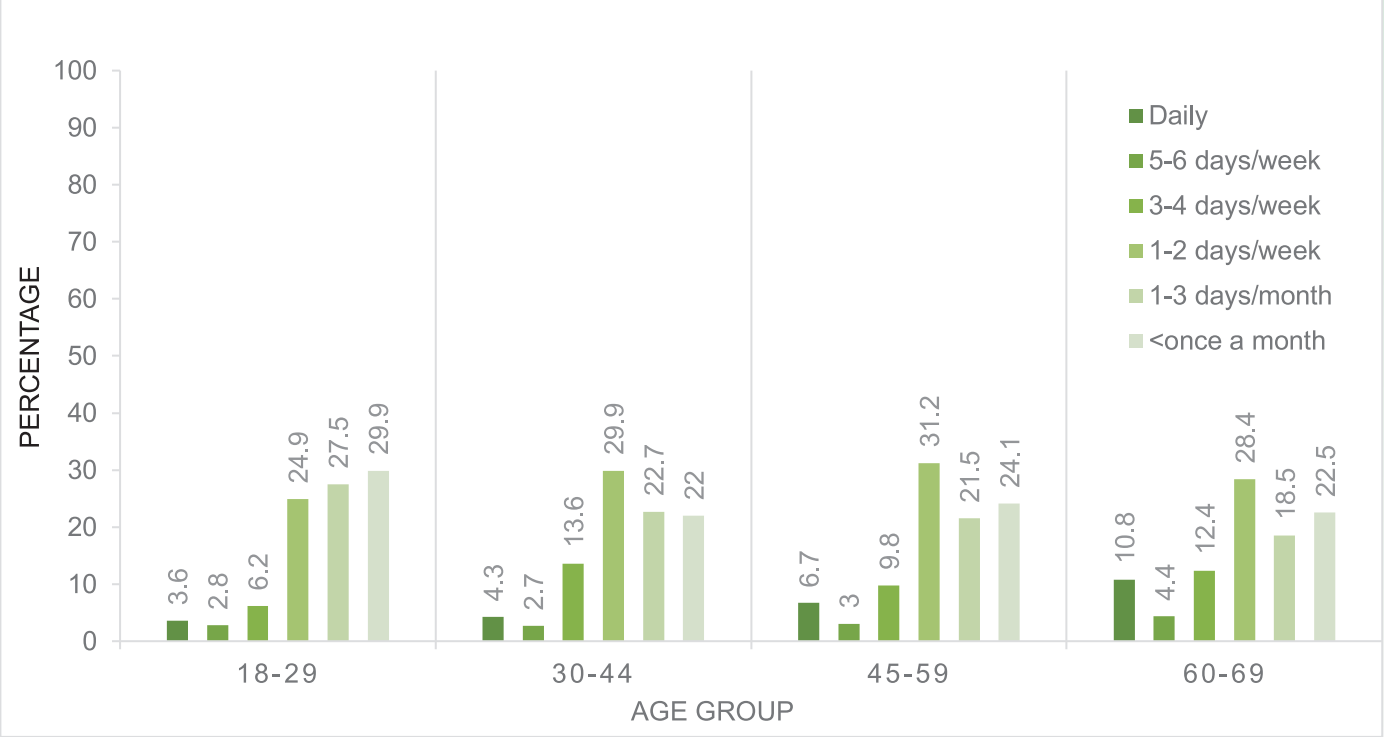

Figure 3: Frequency of alcohol consumption among those who drank in the past 12 months, 2024

Unrecorded alcohol, including homebrewed or untaxed beverages, was consumed by 36.7% (CI: 32.1–41.6) of current drinkers in the past week. This practice was more prevalent in rural areas, where 39.5% (CI: 34.2–45.1) reported consuming unrecorded alcohol, compared to 26.2% (CI: 18.6–35.5) in urban areas.

Approximately 2.4% (CI: 1.8-3.1) of study population reported experiencing issues with family or partners due to someone else's drinking in the past year. Among individuals who consumed alcohol in the past 12 months, 16.4% (CI: 13.7-19.4) admitted to needing a morning drink to recover from a heavy drinking session monthly or more frequently.

3.8. UNHEALTHY DIET

The survey findings offer valuable insights into the target populations' dietary behaviours, particularly regarding fruit and vegetable consumption and practices related to salt intake. On average, the target population reported consuming fruits on 3.7 days per week (CI: 3.6–3.9), with a daily intake of 1.2 servings (CI: 1.2–1.3). Vegetable consumption was slightly higher, averaging 5.0 days per week (CI: 4.8–5.1) and 1.8 servings per day (CI: 1.7–1.9). However, a significant majority of the target population—84.7% (CI: 82.7–86.5)—did not meet the recommended daily five servings of fruits or vegetables. There was no significance difference noted between males 85.3% (CI:82.5-87.7) and females 84.1% (CI:81.8-86.1) on the consumption of recommended daily servings of fruits and vegetables.

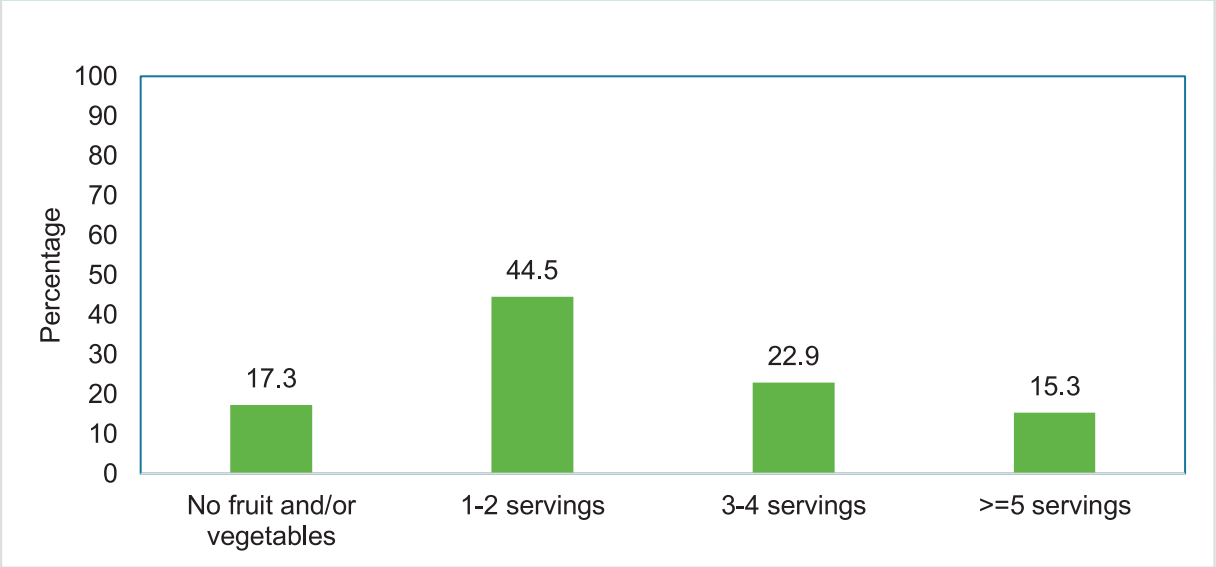

Figure 4: Number of serving of fruit and/or vegetables on average per day for both sexes, 2024

Regarding salt-related practices, 24.7% (CI: 22.1–27.4) of study population indicated that they always or often add salt or salty sauces to their food during meals, while 18.9% (CI: 17.5–20.4) frequently consume processed foods high in salt. These behaviours illustrate a notable reliance on salty foods in their diet.

3.9. INSUFFICIENT PHYSICAL ACTIVITY

Overall, 10.6% (CI: 9.4–12.0) of study population did not meet the World Health Organization's recommendations for physical activity, which involves engaging in more than 150 minutes of moderate-intensity physical activity per week or equivalent. The prevalence of insufficient physical activity was notably higher among females, with 14.1% (CI: 12.2–16.2) falling short of the guidelines, compared to 7.0% (CI: 5.6–8.8) of males. Additionally, urban residents exhibited lower activity levels than their rural counterparts, with 14.2% (CI: 10.7–18.5) of urban study population not meeting the recommendations, versus 9.8% (CI: 8.5–11.3) of rural study population.

Table 4:Not meeting WHO recommendations on physical activity for health

	Male			Female			Total		
Age Categories (Years)	**n**	**% not meeting recs**	**95% CI**	**n**	**% not meeting recs**	**95% CI**	**n**	**% not meeting recs**	**95% CI**
18-29	526	3.3	1.9 - 5.4	759	f	12.7 - 19.2	1285	9.5	7.8 - 11.5
30-44	593	7.6	5.2 - 10.9	964	12.7	10.0 - 15.9	1557	10.1	8.3 - 12.3
45-59	342	12.4	8.5 - 17.7	537	10.5	7.0 - 15.3	879	11.3	8.6 - 14.8
60-69	159	21.4	14.0 - 31.3	297	20.4	15.2 - 26.7	456	20.8	16.2 - 26.3
Total	**1620**	**7.0**	**5.6 - 8.8**	**2557**	**14.1**	**12.2 - 16.2**	**4177**	**10.6**	**9.4 - 12.0**
Location									
Rural	1269	6.1	4.6 - 8.0	2140	13.1	11.1 - 15.3	3409	9.8	8.5 - 11.3
Urban	351	10.2	6.7 - 15.2	417	19.8	14.7 - 26.2	768	14.2	10.7 - 18.5

The median time spent on daily physical activity was 150 minutes (IQR: 60–330). Males demonstrated a higher median daily activity time of 222.9 minutes (IQR: 96.4–428.6), while females averaged 105 minutes (IQR: 42.9–235.7).

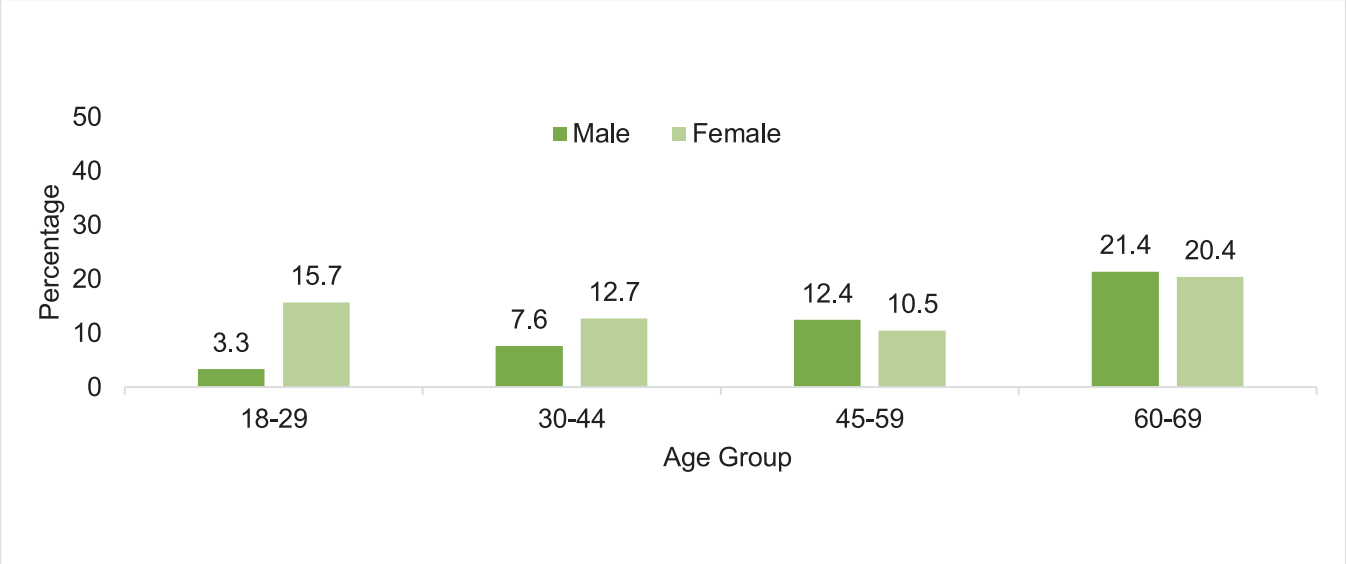

Figure 5: Percentage not meeting WHO recommendations on physical activity for health, by age and sex, 2024

A significant proportion of study population, 54.0% (CI: 51.6–56.3), reported not engaging in vigorous physical activity. This trend was more pronounced among females, with 74.3% (CI: 71.5–76.9) not participating in vigorous activity, compared to 32.8% (CI: 29.7–36.0) of males.

3.10. OVERWEIGHT AND OBESITY

The survey results indicate significant body weight and composition patterns across the population. The mean Body Mass Index (BMI) was calculated to be 26.5 kg/m² (CI: 26.3–26.8). Males reported a lower mean BMI of 24.4 kg/m² (CI: 24.0–24.8), while the mean BMI for females was notably higher at 28.7 kg/m² (CI: 28.3–29.1).

The prevalence of overweight individuals, defined as those with a BMI of 25 kg/m² or more significant, was found to be 51.6% (CI: 49.5–53.7) overall. When analysed by gender, 37.2% (CI: 33.9–40.6) of males were classified as overweight, in stark contrast to 66.2% (CI: 63.6–68.7) of females, highlighting a significant gender disparity.

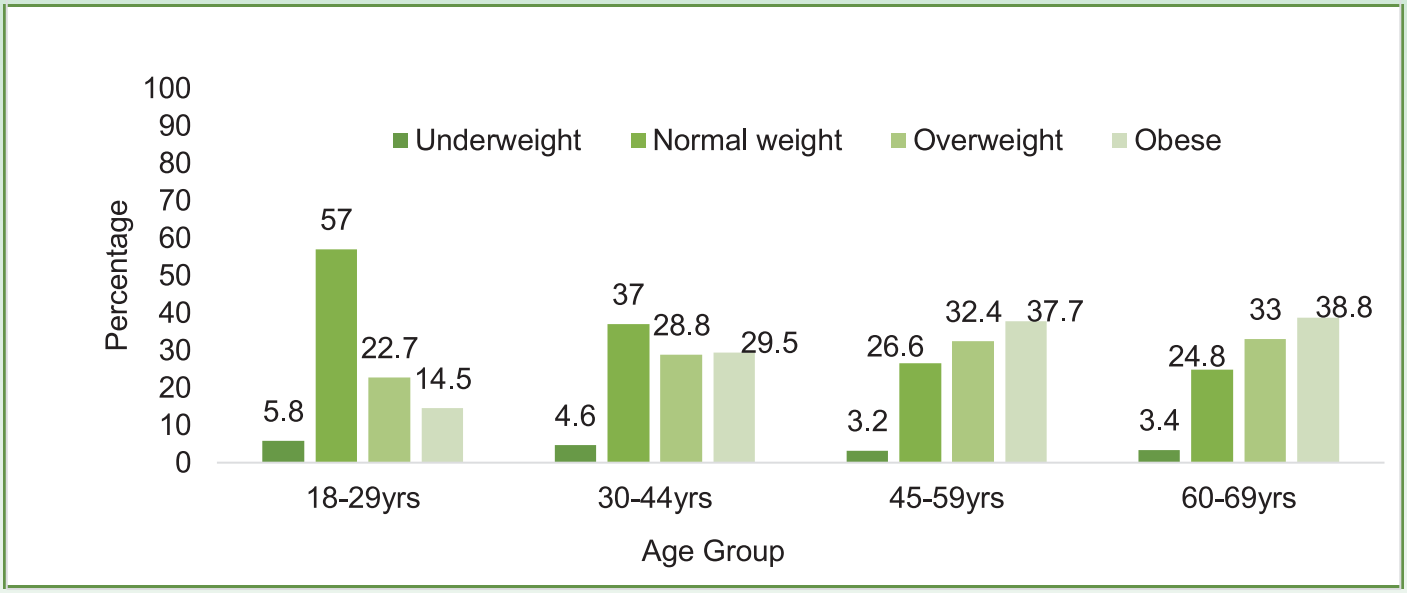

Figure 6: BMI classification by age and sex, 2024

The obesity prevalence, denoted by a BMI of 30 kg/m² or higher, was 24.7% (CI: 23.2–26.3) overall. Among males, 12.1% (CI: 10.2–14.2) were identified as obese, while the obesity rate for females was significantly higher at 37.5% (CI: 35.0–40.0), underscoring the greater burden of excessive weight in women.

Similar trends were observed in waist circumference measurements. The average waist circumference was recorded at 84.7 cm (CI: 84.1–85.4), with males averaging 81.6 cm (CI: 80.6–82.5) and females showing a higher average of 87.9 cm (CI: 87.1–88.8).

3.11. RAISED BLOOD PRESSURE

The findings related to elevated blood pressure provide vital insights into its prevalence, management, and awareness within the surveyed population. The average systolic blood pressure (SBP) was 120.5 mmHg (CI: 119.8–121.2), and the average diastolic blood pressure (DBP) was 79.1 mmHg (CI: 78.6–79.6), factoring in individuals currently receiving treatment for hypertension.

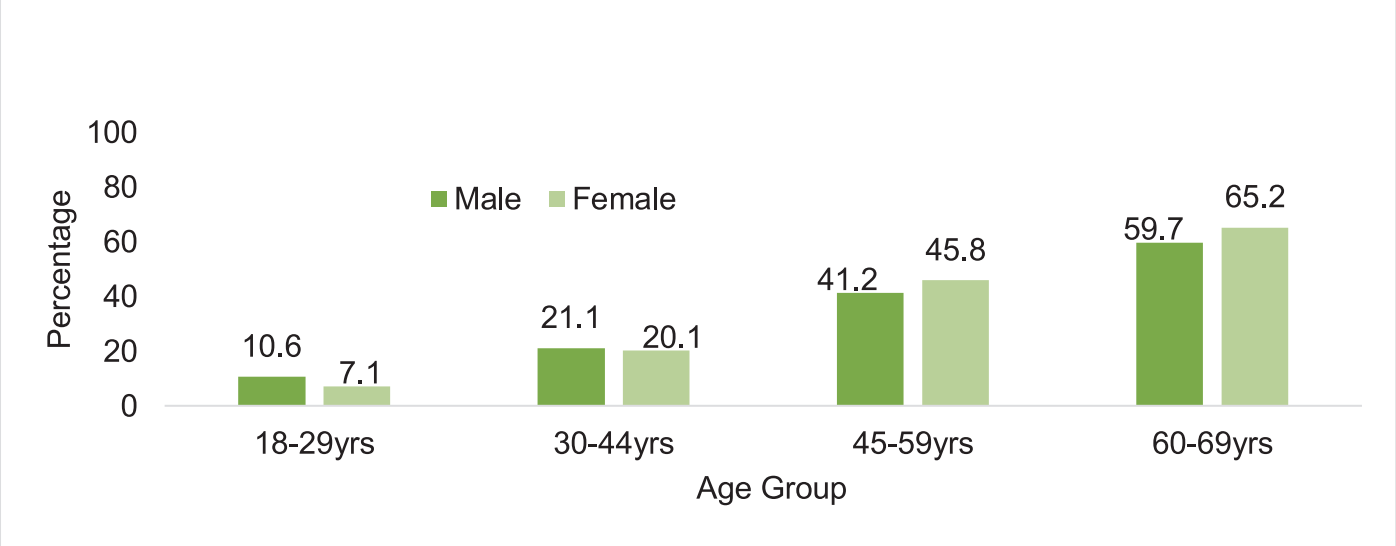

Figure 7: SBP>=and/or DBP>= mmHg or currently on medication for raised blood pressure, by sex and age, 2024

Raised blood pressure was identified in 21.7% (CI: 19.9–23.5) of the target population, attributed to either elevated SBP (≥140 mmHg), elevated DBP (≥90 mmHg), or the use of antihypertensive medication. Among these, 28.6% (CI: 25.4–32.1) were on medication, with significant gender differences: only 16.8% (CI: 13.1–21.5) of males reported being on such medication, compared to 39.8% (CI: 35.3–44.4) of females. Blood pressure control, defined as achieving target levels among those diagnosed or undergoing treatment, was realised by a mere 13.9% (CI: 11.6–16.5), with control rates notably lower in males (6.9%, CI: 4.5–10.3) than in females (20.6%, CI: 17.1–24.6).

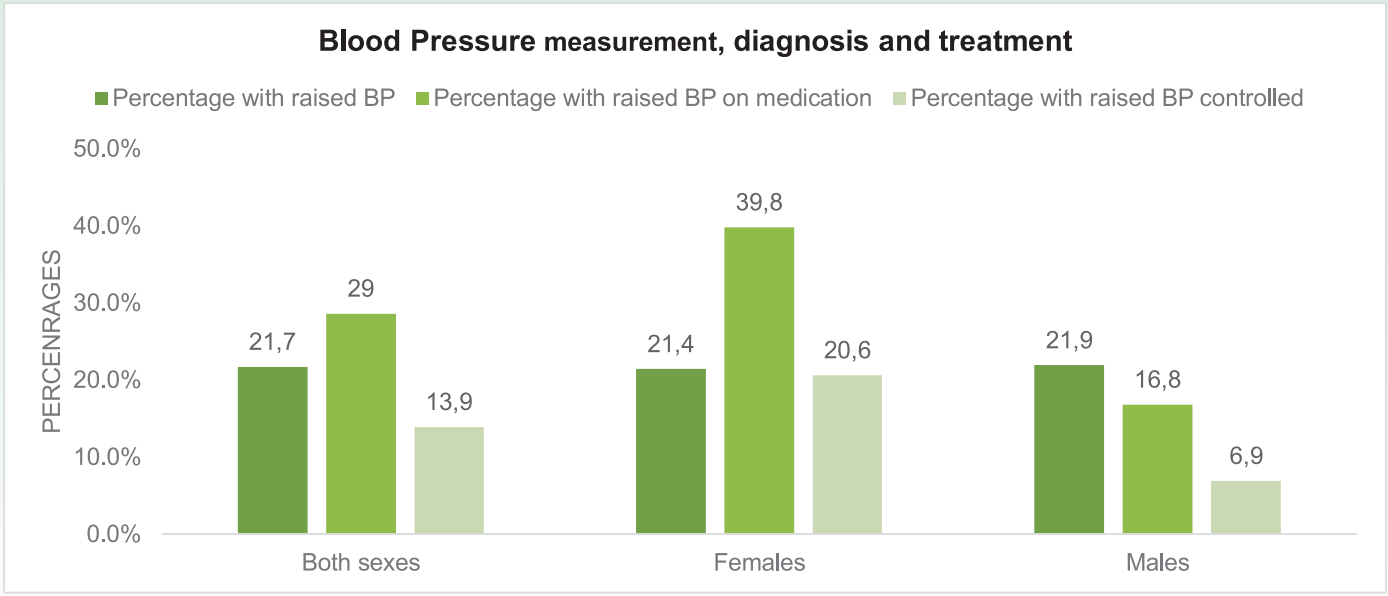

Figure 8: Hypertension cascade

Alarmingly, 28.5% (CI: 26.2–30.8) of the target population indicated that they had never measured their blood pressure. This percentage was higher among males (33.6%, CI: 30.5–37.0) compared to females (23.4%, CI: 21.0–26.0), highlighting potential deficiencies in routine health screenings. Among individuals diagnosed with hypertension, 40.2% (CI: 36.1–44.4) reported being on medication, with lower adherence rates among males (34.1%, CI: 27.1–41.9) compared to females (43.3%, CI: 38.2–48.6).

Interestingly, 11.5% (CI: 9.1–14.4) of those diagnosed with hypertension reported using herbal or traditional remedies to manage their condition, indicating a tendency to rely on alternative therapies either alongside or instead of conventional treatments.

3.12. RAISED BLOOD GLUCOSE

The average fasting blood glucose (FBG) level among the target population, including those currently on medication for elevated blood glucose, was recorded at 4.6 mmol/L (CI: 4.6–4.7). When examining individuals with impaired fasting blood glucose—defined as capillary whole blood values ranging from 5.6 mmol/L to 6.1 mmol/L—the prevalence was found to be 3.8% (CI: 3.1–4.6). This condition was more frequently observed in females, with a prevalence of 4.8% (CI: 3.7–6.2) compared to 2.8% (CI: 2.0–3.9) in males. Additionally, 3.7% (CI: 3.0–4.6) of the target population either had raised fasting blood glucose levels (≥6.1 mmol/L) or were already on medication for elevated glucose, with a higher prevalence in females (4.3%, CI: 3.4–5.5) than in males (3.1%, CI: 2.3_4.3).

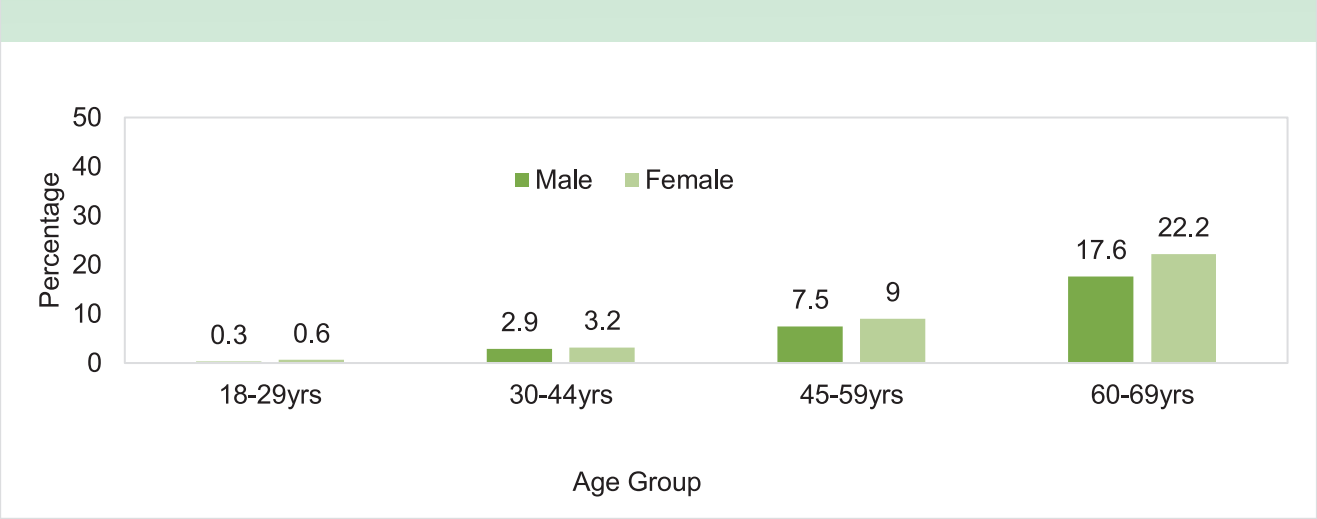

Figure 9: Raised blood glucose or currently on medication for diabetes, by age and sex, 2024

Among individuals diagnosed with diabetes, 47.8% (CI: 37.9–57.8) exhibited elevated blood glucose levels, with males (52.8%, CI: 36.9–68.1) showing slightly poorer control than females (44.2%, CI: 32.8–56.2). Despite these challenges, 40.4% (CI: 31.3–50.2) of target population with elevated blood glucose levels were following a medication regimen, with minimal difference between males (41.6%, CI: 27.5–57.2) and females (39.5%, CI: 29.1–51.0).

There is a significant need for improvement in awareness and regular monitoring of blood glucose levels. Alarmingly, 68.4% (CI: 66.6–70.1) of target population reported never having their blood sugar measured, a trend consistent across genders: 68.9% (CI: 65.9–71.7) for males and 67.9% (CI: 65.7–70.0) for females. Among those diagnosed with raised blood glucose, 8.8% (CI: 4.9–15.4) indicated they utilised herbal or traditional remedies as part of their management strategy.

3.13. ABNORMAL BLOOD LIPIDS.

The findings indicate that the mean total blood cholesterol level among the target population, including those currently on medication for elevated cholesterol, was 3.2 mmol/L (CI: 3.2–3.2). The prevalence of elevated cholesterol, defined as a total blood cholesterol level of 5.0 mmol/L or higher, or those currently taking cholesterol-lowering medication, was found to be 2.9% (CI: 2.2–3.9). A gender-based analysis revealed that 2.3% (CI: 1.2–4.3) of males and 3.6% (CI: 2.8–4.6) of females had elevated cholesterol levels.

Table 5: Total cholesterol measurement

	Both sexes	Males	Females
Mean total blood cholesterol, including those currently on medication for raised cholesterol [choose accordingly: mmol/L or mg/dl]	3.2 *(3.2 - 3.2)*	3.0 *(3.0 - 3.1)*	3.3 *(3.3 - 3.4)*
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	2.9% *(2.2 - 3.9)*	2.3% *(1.2 - 4.3)*	3.6% *(2.8 - 4.6)*

Despite the relatively low prevalence of elevated cholesterol, there was a notable gap in cholesterol screening, with 94.7% (CI: 93.7–95.6) of target population indicating that they had never had their cholesterol levels measured.

3.14. CARDIOVASCULAR RISK

The cardiovascular disease (CVD) risk analysis indicated that among individuals aged 40 to 69 years, 14.1% (CI: 12.1–16.3) had a 10-year risk of CVD of 20% or higher or were living with existing CVD. This condition was notably more prevalent in females (18.2%, CI: 15.3–21.4) than males (9.5%, CI: 7.3–12.3).

In the general population, 11.2% (CI: 9.8–12.7) of study population reported having experienced a heart attack, angina (chest pain due to heart disease), or a stroke. This incidence was higher among females (14.8%, CI: 12.9–17.0) than males (7.4%, CI: 5.9–9.3).

The proportion of study population taking aspirin regularly to prevent or treat heart disease was 1.2% (CI: 0.8–1.7), whereas 0.8% (CI: 0.6–1.2) reported taking statins for the same purpose.

3.15. SUMMARY OF COMBINED RISK FACTORS

The findings from the survey provide significant insights into the combined risk factors and lifestyle counselling related to health. A small percentage of study population, specifically 4.2% (CI: 3.3–5.4), reported having none of the identified risk factors, suggesting that most of the population is impacted by at least one health risk. When examining individuals with three or more risk factors, the percentage varies notably with age. Among study population aged 18 to 44, 12.9% (CI: 11.1–15.0) presented with three or more risk factors; this figure increased to 36.8% (CI: 33.0–40.8) within the 45 to 69-year-old age group. Across all study population aged 18 to 69 years, 18.3% (CI: 16.7–20.0) had three or more risk factors, with a higher prevalence observed in females (21.1%, CI: 18.9–23.4) compared to males (15.4%, CI: 13.2–18.0).

The advice received in terms of lifestyle counselling over the past three years was considerably varied. A notable proportion of study population were encouraged to adopt healthier behaviours, with 57.4% (CI: 54.2–60.6) advised to consume at least five servings of fruits and vegetables daily and 56.9% (CI: 53.7–59.9) urged to increase their physical activity levels.

Recommendations to reduce dietary fat intake were made to 55.8% (CI: 52.7–58.8) of study population, while 44.3% (CI: 41.4–47.3) were advised to cut back on sugary beverages. Furthermore, 48.6% (CI: 45.7–51.6) received guidance to lower their salt consumption, and 47.1% (CI: 43.8–50.4) were encouraged to manage or lose weight. Tobacco cessation was also emphasised, with 35.0% (CI: 32.0–38.2) of study population advised to quit or refrain from smoking.

3.16. EXPANDED MODULES

The extended modules selected were cancer, COVID-19, mental health, violence, and injuries. This section presents findings under these modules.

Cervical Cancer Screening

The findings from the cervical cancer screening survey indicated that nearly half of all female study population 48.6% (CI: 46.0%—51.2%) reported having undergone a screening test for cervical cancer at some point.

Notably, the proportion was significantly higher among women aged 30 to 49, with 65.9% (CI: 62.2%—69.4%) indicating they had been screened.

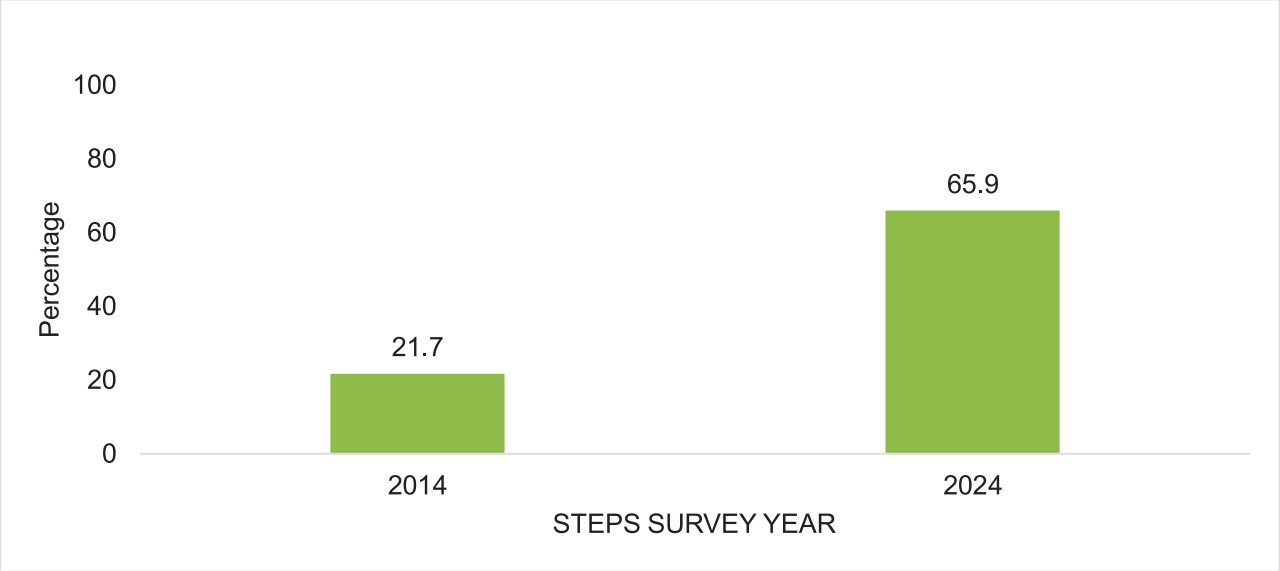

Figure 10: Cervical cancer screening among women aged 30-49 years, 2014-2024

Mental Health – Depression

The survey findings revealed significant mental health challenges within the population, with 21.8% (CI: 19.7% - 24.1%) of study population indicating signs of depression. The prevalence was notably higher among females, at 25.4% (CI: 22.8% - 28.2%), compared to 18.1% (CI: 15.5% - 21.1%) among males.

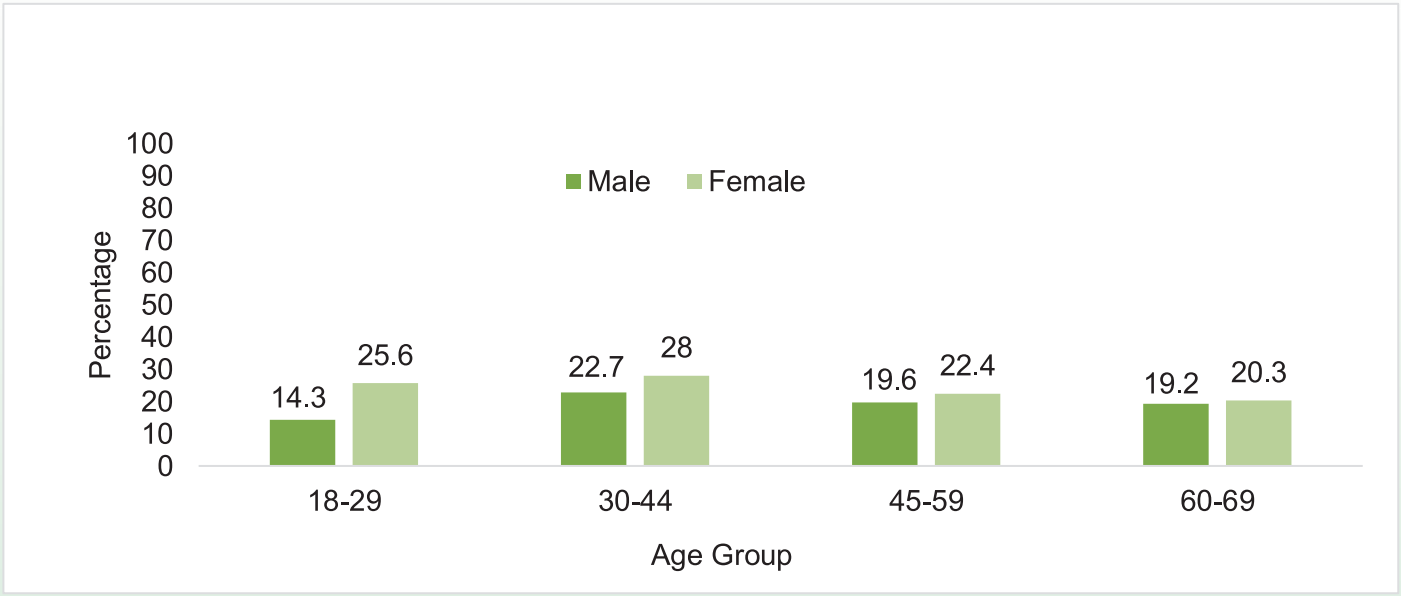

Figure 11: Prevalence of depression by sex and age group, 2024

Despite these findings, a substantial majority of those showing signs of depression were not receiving treatment. Approximately 84.0% (CI: 80.8% - 86.8%) of study population were not on medication, with a greater percentage of males affected (88.8%, CI: 83.4% - 92.6%) than females (80.6%, CI: 76.2% - 84.4%).

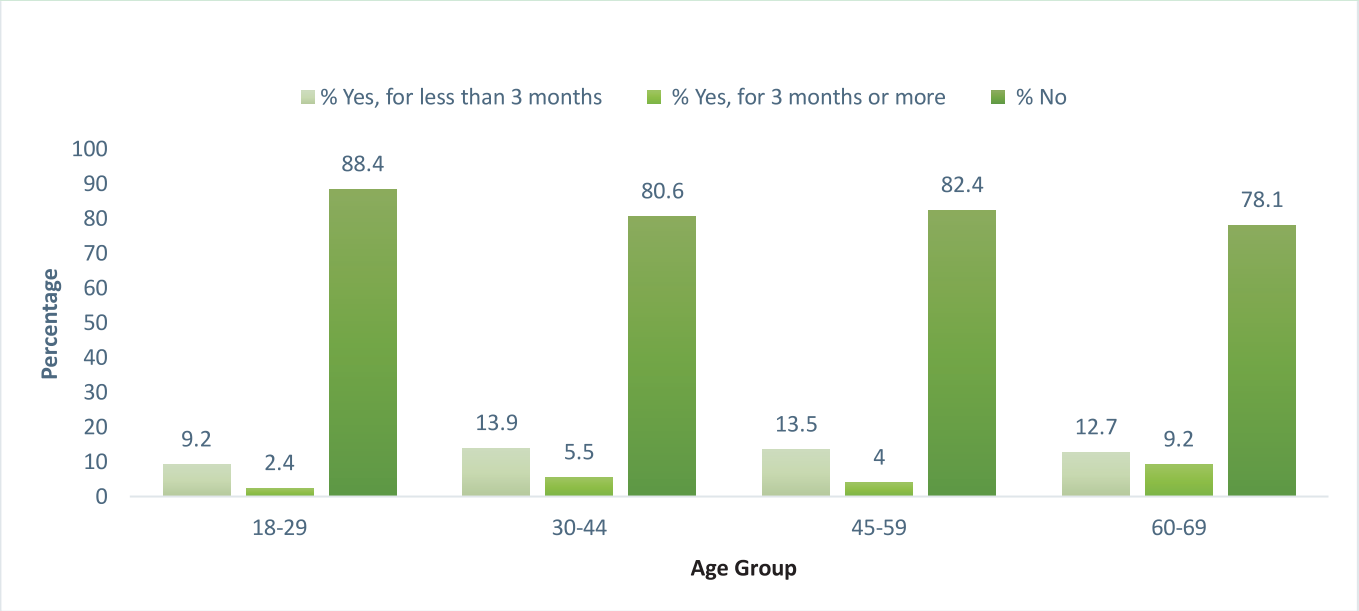

Figure 12: Frequency of medication by age group

In a similar vein, 75.6% (CI: 71.1% - 79.7%) reported not undergoing therapy or counselling, with males again showing a higher proportion at 80.0% (CI: 72.7% - 85.8%) compared to females at 72.5% (CI: 67.1% - 77.4%).

VIOLENCE AND INJURY

The survey provided valuable insights into behaviours and experiences related to violence and injury. Notably, only 42.8% (CI: 40.2% - 45.5%) of study population reported consistently wearing seat belts, indicating a need for improved road safety education and enforcement.

On a positive note, most study population reported not experiencing severe incidents in the past year. Specifically, 95.1% (CI: 94.0% - 95.9%) stated they had not been involved in road traffic accidents, while 95.6% (CI: 94.5% - 96.5%) indicated they had not suffered injuries from violent incidents that required medical attention. However, concerns about personal safety persist, with 19.3% (CI: 17.8% - 21.0%) of study population expressing insecurity.

COVID 19

The survey provided insights into the population's experiences with COVID-19, highlighting both the challenges faced and the achievements made in managing the pandemic. Overall, 10.9% (CI: 9.5% - 12.5%) of study population reported having contracted COVID-19, with a notably higher prevalence in urban areas 15.5%, (CI: 12.4% - 19.2%) compared to rural areas 9.9% (CI: 8.4% - 11.7%). Among those who had the virus, 18.7% (CI: 14.4% - 23.9%) were also diagnosed with a non-communicable disease, underscoring the intersection of COVID-19 with other health conditions.

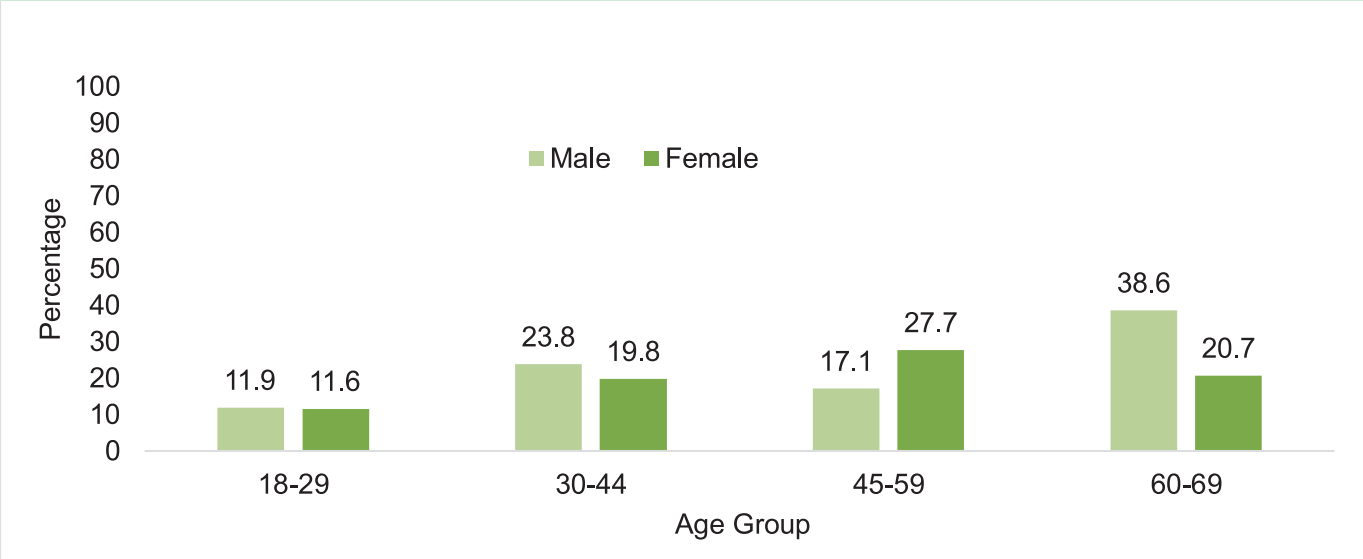

Figure 13: Diagnosed with NCD among those with COVID19

Encouragingly, vaccination coverage was relatively high, with 70.2% (CI: 64.8% - 75.1%) of the population reporting they had been vaccinated against COVID-19. Nevertheless, vaccine hesitancy emerged as a significant hurdle, with 49.9% (CI: 45.9% - 53.8%) of unvaccinated individuals expressing concerns about potential side effects, while 19.8% (CI: 17.3% - 22.5%) cited a lack of knowledge regarding vaccination. Additionally, 6.6% (CI: 4.5% - 9.6%) voiced doubts about the vaccine's efficacy.

Chapter 4: DISCUSSION

The survey on tobacco use in Eswatini highlights alarming gender disparities, with an overall smoking rate of 13.8%. Males (23.9%) are significantly more inclined to smoke than females (4.0%). This trend persists among adults, where 11% of the population are current smokers, predominantly men at 19.8%. Smoking prevalence is higher in urban areas (13.0%) compared to rural areas (10.5%), indicating that urbanization may play a role in increased tobacco consumption.

Among smokers, an overwhelming 97.5% use manufactured cigarettes, averaging 4.4 cigarettes per day, and the average age of initiation is 19.4 years, with males starting earlier. This data suggests a vital opportunity for intervention targeting younger individuals, particularly males, to curb the early onset of smoking.

While smoking rates in Eswatini are lower compared to many other countries, exposure to second-hand smoke presents a significant issue, with 21.3% of study population reporting exposure at home and 16.4% at work. This situation emphasises the urgent need for more robust tobacco control policies and enhanced health education to mitigate the risks associated with second-hand smoke, especially for non-smokers, women, and children.

The survey on alcohol consumption reveals notable gender disparities and raises concerns regarding public health in Eswatini. According to the findings, 22.0% of adults reported engaging in alcohol consumption; however, a significant divergence is observed between male (33.9%) and female (10.3%) study population. Since 2014, overall alcohol consumption has escalated, with heavy episodic drinking being disproportionately prevalent among men (17.8%) compared to women (3.8%). Notably, 64.0% of the population abstains from alcohol entirely, with a more pronounced rate of abstinence among women (77.3%) as opposed to men (50.2%). These findings underscore the necessity for targeted public health initiatives aimed at addressing gender-specific patterns of alcohol consumption and mitigating the increase in heavy drinking, particularly among male individuals.

Additionally, the survey highlights geographical disparities in alcohol consumption, with unrecorded alcohol usage being significantly higher in rural areas (39.5%) compared to urban locales (26.2%). This discrepancy indicates potential gaps in regulatory frameworks and monitoring practices that require attention. The rising levels of alcohol consumption and the prevalence of unrecorded alcohol warrant enhanced regulatory measures and the implementation of comprehensive public health campaigns to alleviate alcohol-related harm.

Furthermore, the dietary habits of Eswatini's adult population present alarming trends. The average adult consumes a mere 1.2 servings of fruit daily, which is substantially below the recommended five servings. Vegetable consumption averages slightly higher at 1.8 servings, yet it still falls short of ideal nutritional standards. A staggering 84.7% of study population do not meet the recommended intake, placing them at an elevated risk for non-communicable diseases (NCDs), including heart disease and stroke. Salt consumption also emerges as a critical issue; nearly 25% of study population reported habitually adding salt or utilizing salty sauces in their meals, while 18.9% consume processed foods high in sodium. These dietary habits, if unaddressed, could contribute to an increase in hypertension and related cardiovascular diseases, as excessive salt intake is a well-established risk factor.

In comparison to global dietary standards, Eswatini's nutritional practices demonstrate a clear need for improvement. Public health interventions that focus on nutrition education, enhanced food access, and

regulation of salt content in food are imperative to addressing these concerning trends and promoting healthier dietary choices among the population.

The survey on alcohol consumption reveals notable gender disparities and raises concerns regarding public health in Eswatini. According to the findings, 22.0% of adults reported engaging in alcohol consumption; however, a significant divergence is observed between male (33.9%) and female (10.3%) study population. Since 2014, overall alcohol consumption has escalated, with heavy episodic drinking being disproportionately prevalent among men (17.8%) compared to women (3.8%). Notably, 64.0% of the population abstains from alcohol entirely, with a more pronounced rate of abstinence among women (77.3%) as opposed to men (50.2%). These findings underscore the necessity for targeted public health initiatives aimed at addressing gender-specific patterns of alcohol consumption and mitigating the increase in heavy drinking, particularly among male individuals.

Additionally, the survey highlights geographical disparities in alcohol consumption, with unrecorded alcohol usage being significantly higher in rural areas (39.5%) compared to urban locales (26.2%). This discrepancy indicates potential gaps in regulatory frameworks and monitoring practices that require attention. The rising levels of alcohol consumption and the prevalence of unrecorded alcohol warrant enhanced regulatory measures and the implementation of comprehensive public health campaigns to alleviate alcohol-related harm.

Furthermore, the dietary habits of Eswatini's adult population present alarming trends. The average adult consumes a mere 1.2 servings of fruit daily, which is substantially below the recommended five servings. Vegetable consumption averages slightly higher at 1.8 servings, yet it still falls short of ideal nutritional standards. A staggering 84.7% of study population do not meet the recommended intake, placing them at an elevated risk for non-communicable diseases (NCDs), including heart disease and stroke. Salt consumption also emerges as a critical issue; nearly 25% of study population reported habitually adding salt or utilizing salty sauces in their meals, while 18.9% consume processed foods high in sodium. These dietary habits, if unaddressed, could contribute to an increase in hypertension and related cardiovascular diseases, as excessive salt intake is a well-established risk factor.

In comparison to global dietary standards, Eswatini's nutritional practices demonstrate a clear need for improvement. Public health interventions that focus on nutrition education, enhanced food access, and regulation of salt content in food are imperative to addressing these concerning trends and promoting healthier dietary choices among the population.

The survey provides a critical analysis of physical activity levels in Eswatini, revealing that an impressive 89.4% of study population meet the World Health Organization's recommendation of engaging in at least 150 minutes of moderate-intensity physical activity per week. However, notable disparities exist across gender and geographic lines. Specifically, women (14.1%) and urban residents (14.2%) were significantly less likely to adhere to these guidelines compared to their male and rural counterparts. This observation aligns with trends observed in various international contexts, where women, particularly in urban areas, exhibit lower levels of physical activity. Further compounded by the data, a substantial 54.0% of study population, predominantly women (74.3%), indicated that they do not engage in vigorous physical activity, which is pivotal for mitigating obesity and the risk of non-communicable diseases (NCDs). Consequently, it is imperative that public health strategies prioritize the promotion of physical activity, particularly targeting women and urban populations. Initiatives such as the Eswatini Obesity Roadmap are instrumental in fostering environments conducive to increased physical activity across different community settings.

The concerning prevalence of obesity and overweight conditions in Eswatini is underscored by the survey findings, which highlight a pronounced gender disparity: 66.2% of women are classified as overweight (37.5% obese) in contrast to 37.2% of men (12.1% obese). With an average Body Mass Index (BMI) of 26.5 kg/m² and larger waist circumferences reported among women (87.9 cm) versus men (81.6 cm), there exists a tangible risk of chronic diseases such as cardiovascular disease and diabetes. When juxtaposed with obesity rates in countries like Rwanda (18.6%) and Uganda (14.7%), Eswatini's statistics are markedly elevated, attributed to factors such as urbanization, dietary shifts, and decreased physical activity. Addressing obesity, particularly among women, necessitates a comprehensive approach that encourages healthier nutrition, enhanced physical activity, and greater public awareness regarding the associated health risks.

The survey also sheds light on hypertension within the population, indicating that 21.7% exhibit elevated blood pressure. Treatment rates were found to be higher in females (39.8%) than in males (16.8%). Alarmingly, only 13.9% of those diagnosed with hypertension report adequate control of their condition, and nearly 29% have never had their blood pressure measured, illuminating a significant gap in routine health monitoring and hypertension management. The tendency to rely on herbal remedies, particularly among men (34.1% adherence to prescribed medication), further complicates effective hypertension management. Therefore, public health strategies aimed at enhancing screening rates, medication adherence, and education regarding hypertension management are critical for addressing the escalating burden of cardiovascular disease.

In the context of blood glucose and cholesterol, the survey revealed a mean fasting blood glucose level of 4.6 mmol/L and a 3.8% prevalence of impaired glucose, with a notable increase in raised blood glucose levels among females (47.8% of diabetics). Alarmingly, 68.4% of study population have never monitored their blood glucose levels, and only 40.4% are receiving medication, indicative of inadequate awareness and management of this vital health aspect. While cholesterol levels appear relatively low, a staggering 94.7% of study population have never undergone cholesterol screening, potentially resulting in unidentified cases of dyslipidaemia, a significant risk factor for cardiovascular disease. Therefore, the implementation of routine screenings for blood glucose and cholesterol, coupled with enhanced awareness about the management of these risk factors, is critical to prevent chronic diseases and reduce the likelihood of cardiovascular events.

The findings from the recent survey illuminate several significant public health challenges in Eswatini, emphasizing the urgency for targeted interventions. Notably, 14.1% of individuals aged 40 to 69 demonstrate a 10-year cardiovascular disease risk of 20% or higher, with particularly elevated rates among females (18.2%) compared to males (9.5%). Alarmingly, preventive measures, including aspirin and statins, remain grossly underutilized; with only 1.2% and 0.8% of study population, respectively, regularly consuming these medications. This gap underscores a critical deficiency in both awareness and accessibility of preventive therapies, necessitating enhanced public education regarding cardiovascular risks and the expansion of treatment access to mitigate the burden of heart disease.

In the realm of cervical cancer, the participation rate in screening programs stands at 48.6%, with a commendable higher uptake (65.9%) among women aged 30–49. However, there exists a pressing need for targeted interventions aimed at younger women and those outside the age group, which would facilitate earlier detection and diminish the incidence of cervical cancer, a largely preventable malady.

Mental health also emerges as a pivotal concern, with 21.8% of study population exhibiting signs of depression. The prevalence is notably higher among females (25.4%) than males (18.1%), yet a striking 84.0% of individuals diagnosed with depression are neither on medication nor receiving therapy. This indicates a considerable gap in mental health care, particularly concerning for male populations. Addressing

this disparity necessitates the expansion of mental health services and the reduction of stigma surrounding mental health issues.

Regarding road safety, 95.1% of study population reported no road traffic crashes over the past year, only 42.8% consistently utilized seat belts. This discrepancy highlights the imperative for stronger road safety measures and public education initiatives emphasizing the critical importance of seat belt usage and injury prevention strategies.

The COVID-19 pandemic has further exacerbated public health challenges, with 10.9% of the population contracting the virus and a vaccination rate of 70.2%. Nonetheless, vaccine hesitancy poses a significant barrier, with nearly 50% of the unvaccinated expressing concerns regarding potential side effects. Addressing this hesitancy through targeted public health campaigns is essential for bolstering future pandemic preparedness.

In summary, these findings illustrate profound health challenges in Eswatini, characterized by distinct gender, geographic, and socio-economic disparities. The urgent need for targeted interventions to address lifestyle factors such as tobacco use, alcohol consumption, diet, physical activity, obesity, hypertension, and blood glucose levels, along with mental health care accessibility, is evident. Strengthening health screenings, enhancing treatment access, and proactively addressing vaccine hesitancy represent key priorities for enhancing public health outcomes in the country.

Chapter 5: CONCLUSIONS AND RECOMMENDATIONS

The STEPs survey in Eswatini reveals significant public health challenges, with notable disparities across gender, urban/rural locations, and socio-economic groups. Tobacco use, alcohol consumption, poor dietary habits, insufficient physical activity, and rising obesity rates are major concerns, contributing to an increased risk of non-communicable diseases (NCDs). While the prevalence of smoking and alcohol consumption is lower in Eswatini compared to global trends, there are critical gaps in awareness and regulation. Additionally, high rates of obesity, hypertension, and undiagnosed health conditions, along with poor mental health care and low participation in health screenings, further highlight the need for urgent interventions. Despite some positive trends, such as widespread physical activity and vaccine uptake during the COVID-19 pandemic, significant gaps in health management and prevention persist.

5.1. Recommendations

1. Tobacco and Alcohol Control:

- Strengthen tobacco and alcohol control policies, including stricter regulations on sales, advertising, and public smoking.
- Increase public awareness campaigns targeting young people, particularly men, to prevent early smoking initiation and heavy episodic drinking.
- Address the high levels of second-hand smoke exposure, especially in homes and workplaces, through stricter enforcement of smoke-free environments.

2. Diet and Nutrition:

- Launch national nutrition education campaigns emphasize the importance of a balanced diet rich in fruits and vegetables.
- Regulate the salt content in processed foods and encourage the reduction of salt intake through public health initiatives.
- Improve access to healthy food options, particularly in rural areas, to promote better dietary habits.

3. Physical Activity Promotion:

- Develop targeted programs to encourage physical activity, especially among women and urban populations, less likely to meet physical activity guidelines.
- Establish safe spaces for physical activity in urban areas and promote active transportation (e.g., walking, cycling).

4. Obesity Prevention and Management:

- Introduce national programs to combat obesity, particularly among women, through public health campaigns, healthier school food programs, and community-based interventions.
- Promote regular BMI screening and raise awareness about the health risks of being overweight or obese.

5. **Hypertension and Diabetes Management:**
    - Improve routine blood pressure and blood glucose monitoring through healthcare provider training and better access to screening facilities.
    - Increase public awareness about hypertension and diabetes management, particularly around medication adherence and the risks of untreated conditions.

6. **Mental Health Support:**
    - Expand access to mental health services, particularly for men, who are less likely to seek treatment.
    - Implement programs to reduce mental health stigma and promote early intervention and support for depression and other mental health conditions.

7. **Screening and Preventive Health:**
    - Increase participation in cervical cancer screening programs by targeting younger women and those outside the typical age groups.
    - Enhance access to cardiovascular disease risk screening and preventive treatments, such as aspirin and statins, to reduce the burden of heart disease.

8. **Road Safety:**
    - Strengthen road safety laws, particularly the enforcement of seat belt use, and launch public education campaigns highlighting the importance of road safety and injury prevention.
    - Develop strategies to reduce road traffic crashes and promote safer driving practices.

9. **COVID-19 Vaccination and Preparedness:**
    - Address vaccine hesitancy through targeted campaigns that focus on educating the public about the safety and efficacy of vaccines.
    - Strengthen preparedness for future pandemics by improving vaccine accessibility and increasing public trust in vaccination programs.

5.2. Conclusion

Eswatini faces significant public health challenges that require urgent attention. Targeted, evidence-based interventions focusing on tobacco and alcohol control, improved nutrition, increased physical activity, and better management of NCDs like obesity, hypertension, and diabetes are critical for reducing the burden of chronic diseases. Additionally, expanding access to mental health services, improving health screenings, and strengthening road safety efforts will improve public health outcomes. Public health campaigns, policy reforms, and more robust healthcare systems are essential to addressing these challenges effectively.

ANNEXURES

Annexure 1: Eswatini 2024 STEPwise survey Fact Sheet

Eswatini STEPS Survey 2024

Fact Sheet

The STEPS survey of noncommunicable disease (NCD) risk factors in Eswatini was carried out from February to March 2024. A total of 4703 carried out Step 1, Step 2 and Step 3 (. Socio demographic and behavioral 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 years. A multi-stage cluster sampling design was used to produce representative data for that age range in Eswatini (targeted sample size was 5762). A total of 4703 adults participated in the survey. The overall response rate was 81.6%. A repeat survey is planned for 2029 if funds permit.

Results for adults aged 18-69 years (incl. 95% CI)	Both Sexes	Males	Females
Step 1 Tobacco Use			
Percentage who currently smoke tobacco	11.0% (9.6 - 12.5)	19.8% (17.3 - 22.6)	2.4% (1.7 - 3.3)
Percentage who currently smoke tobacco daily	7.3% (6.2 - 8.4)	13.4% (11.5 - 15.6)	1.3% (0.8 - 2.0)
Average age started smoking (years)	19.4 (18.6 - 20.2)	19.2 (18.4 - 20.0)	21.7 (18.2 - 25.1)
Percentage of daily smokers smoking manufactured cigarettes	97.5% (95.4 - 98.7)	97.7% (95.3 - 98.9)	96.0% (87.2 - 98.8)
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	4.4 (4.0 - 4.9)	4.4 (4.0 - 4.9)	4.2 (3.3 - 5.0)
Step 1 Alcohol Consumption			
Percentage who are lifetime abstainers	64.0% (61.7 - 66.2)	50.2% (46.9 - 53.5)	77.3% (75.0 - 79.5)
Percentage who are past-12-month abstainers	4.7% (3.9 - 5.6)	4.8% (3.7 - 6.2)	4.5% (3.5 - 5.8)
Percentage who currently drink (drank alcohol in the past 30 days)	22.0% (20.1 - 24.0)	33.9% (30.6 - 37.4)	10.3% (8.9 - 11.9)
Percentage who engage in heavy episodic drinking (6 or more drinks on any occasion in the past 30 days)	10.2% (8.8 - 11.9)	17.8% (15.0 - 21.0)	3.8% (2.9 - 5.1)
Step 1 Diet			
Mean number of days fruit consumed in a typical week	3.7 (3.6 - 3.9)	3.8 (3.6 - 3.9)	3.7 (3.6 - 3.8)
Mean number of servings of fruit consumed on average per day	1.2 (1.2 - 1.3)	1.3 (1.2 - 1.4)	1.2 (1.1 - 1.2)
Mean number of days vegetables consumed in a typical week	5.0 (4.8 - 5.1)	4.8 (4.7 - 5.0)	5.1 (4.9 - 5.2)
Mean number of servings of vegetables consumed on average per day	1.8 (1.7 - 1.9)	1.7 (1.6 - 1.9)	1.9 (1.7 - 2.0)
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	84.7% (82.7 - 86.5)	85.3% (82.5 - 87.7)	84.1% (81.8 - 86.1)
Percentage who always or often add salt or salty sauce to their food before eating or as they are eating	24.7% (22.1 - 27.4)	26.6% (23.3 - 30.1)	22.8% (20.1 - 25.7)
Percentage who always or often eat processed foods high in salt	18.9% (17.5 - 20.4)	18.6% (16.2 - 21.4)	19.1% (17.1 - 21.2)
Step 1 Physical Activity			
Percentage with insufficient physical activity (defined as < 150 minutes of moderate-intensity activity per week, or equivalent)*	10.6% (9.4 - 12.0)	7.0% (5.6 - 8.8)	14.1% (12.2 - 16.2)
Median time spent in physical activity on average per day (minutes) (presented with inter-quartile range)	150.0 (60.0 - 330.0)	222.9 (96.4 - 428.6)	105.0 (42.9 - 235.7)
Percentage not engaging in vigorous activity	54.0% (51.6 - 56.3)	32.8% (29.7 - 36.0)	74.3% (71.5 - 76.9)
Step 1 Cervical Cancer Screening			
Percentage of women aged 30-49 years who have ever had a screening test for cervical cancer	65.9% (62.2 - 69.4)	NA% (NA - NA)	65.9% (62.2 - 69.4)
Step 2 Physical Measurements			
Mean body mass index - BMI (kg/m2)	26.5 (26.3 - 26.8)	24.4 (24.0 - 24.8)	28.7 (28.3 - 29.1)

WHO STEPS noncommunicable disease risk factor surveillance 6-3A-1
https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps fact sheet

Results for adults aged 18-69 years (incl. 95% CI)	Both Sexes	Males	Females
Percentage who are overweight (BMI ≥ 25 kg/m2)	51.6% (49.5 - 53.7)	37.2% (33.9 - 40.6)	66.2% (63.6 - 68.7)
Percentage who are obese (BMI ≥ 30 kg/m2)	24.7% (23.2 - 26.3)	12.1% (10.2 - 14.2)	37.5% (35.0 - 40.0)
Average waist circumference (cm)	84.7 (84.1 - 85.4)	81.6 (80.6 - 82.5)	87.9 (87.1 - 88.8)
Mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised BP	120.5 (119.8 - 121.2)	122.9 (121.8 - 123.9)	118.2 (117.3 - 119.0)
Mean diastolic blood pressure - DBP (mmHg), including those currently on medication for raised BP	79.1 (78.6 - 79.6)	79.8 (79.0 - 80.6)	78.4 (77.8 - 78.9)
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	21.7% (19.9 - 23.5)	21.4% (18.9 - 24.2)	21.9% (19.9 - 24.0)
Percentage with raised BP on medication	28.6% (25.4 - 32.1)	16.8% (13.1 - 21.5)	39.8% (35.3 - 44.4)
Percentage with raised BP controlled	13.9% (11.6 - 16.5)	6.9% (4.5 - 10.3)	20.6% (17.1 - 24.6)
Step 3 Biochemical Measurements			
Mean fasting blood glucose, including those currently on medication for raised blood glucose [choose accordingly: mmol/L or mg/dl]	4.6 (4.6 - 4.7)	4.5 (4.4 - 4.5)	4.8 (4.7 - 4.9)
Percentage with impaired fasting blood glucose (FBG) 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)	3.8% (3.1 - 4.6)	2.8% (2.0 - 3.9)	4.8% (3.7 - 6.2)
Percentage with raised FBG 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)	3.7% (3.0 - 4.6)	3.1% (2.3 - 4.3)	4.3% (3.4 - 5.5)
Percentage with raised FBG diagnosed	47.8% (37.9 - 57.8)	52.8% (36.9 - 68.1)	44.2% (32.8 - 56.2)
Percentage with raised FBG on medication	40.4% (31.3 - 50.2)	41.6% (27.5 - 57.2)	39.5% (29.1 - 51.0)
Mean total blood cholesterol, including those currently on medication for raised cholesterol [choose accordingly: mmol/L or mg/dl]	3.2 (3.2 - 3.2)	3.0 (3.0 - 3.1)	3.3 (3.3 - 3.4)
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	2.9% (2.2 - 3.9)	2.3% (1.2 - 4.3)	3.6% (2.8 - 4.6)
Cardiovascular disease risk			
Percentage aged 40-69 years with a 10-year CVD risk ≥ 20%, or with existing CVD**	14.1% (12.1 - 16.3)	9.5% (7.3 - 12.3)	18.2% (15.3 - 21.4)
Summary of Combined Risk Factors			
Percentage with none of the above risk factors	4.2% (3.3 - 5.4)	5.2% (3.6 - 7.3)	3.3% (2.4 - 4.4)
Percentage with three or more of the above risk factors, aged 18 to 44 years	12.9% (11.1 - 15.0)	11.2% (8.7 - 14.2)	14.7% (12.4 - 17.3)
Percentage with three or more of the above risk factors, aged 45 to 69 years	36.8% (33.0 - 40.8)	32.2% (26.8 - 38.2)	40.4% (36.1 - 45.0)
Percentage with three or more of the above risk factors, aged 18 to 69 years	18.3% (16.7 - 20.0)	15.4% (13.2 - 18.0)	21.1% (18.9 - 23.4)

* 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).

** 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 Coordinators: Ntombifuthi Ginindza, Ministry of Health,ntombiginindza@yahoo.com
Lindiwe Dlamini, Ministry of Health,lbskonela@gmail.com

Annexure 2: List of Investigators

Ministry of Health, Eswatini

1. Lead Principal Investigator: **Ntombifuthi Ginindza**
   Role: Overall leadership and oversight in protocol development, survey design, implementation, survey monitoring, data analysis, report writing and dissemination of survey results.
   Email: ntombiginindza@yahoo.com
2. Principal Investigator: **Lindiwe Dlamini**
   Role: Participated in protocol development, survey design, implementation, survey monitoring, data analysis and report writing
   Email: lbskonela@gmail.com
3. Principal Investigator: **Similo Simelane**
   Role: Participated in protocol development, survey design, implementation, survey monitoring, data analysis, report writing and dissemination of results.
   Email: nyashasimilo@gmail.com
4. Co-Investigator: **Derrick Khumalo**
   Role: Participated in protocol development, survey design, implementation, and dissemination of survey results on laboratory aspects.
   Email: derricktbkhumalo@yahoo.com
5. Co-Investigator: **Nokuthula Mahlalela**
   Role: Participated in protocol development, survey design, implementation, survey monitoring, analysis and report writing
   Email: khopma@rocketmail.com
6. Co-Investigator: **Njeri Nyanja**
   Role: Participated in protocol development, survey design, implementation, survey monitoring, data analysis and report writing
   Email: alexxnyanja@gmail.com
7. Data Manager: **Nqaba Nhlebela**
   Role: Participated in protocol development, survey design, implementation, survey monitoring, data analysis and report writing
   Email: nqaba.nhle@gmail.com
8. Data Manager: **Senzokuhle Dlamini**
   Role: Participated in protocol development, survey design, implementation, survey monitoring, data analysis and report writing
   Email: muudlamini@gmail.com

Central Statistical Office Eswatini

1. Principal Investigator: **Choice Ginindza**
   Role: Leadership and oversight in protocol development, survey design, implementation, report writing and dissemination of survey results, providing statistical expertise.
   Email: cginindza@yahoo.co.uk

World Health Organization Country Office

1. Principal Investigator: **Kevin Makadzange**
   Role: Leadership in resource mobilization and oversight in protocol development, survey design, implementation, report writing and dissemination of survey results, providing local statistical expertise.
   Email: makadzangek@who.int
2. Co-Investigator: **Nomthandazo Lukhele**
   Role: Participated in protocol development, survey design, implementation, survey monitoring, data analysis and report writing
   Email: lukhelen@who.int
3. Data Manager: **Makhoselive Dlamini**
   Role: Participated in protocol development, survey design.
   Email: dlaminim@who.int

The World Health Organization Technical Team

1. **Dr Nomthandazo Lukhele**, National Professional Officer for Noncommunicable Diseases, WHO Eswatini Country Office
2. **Dr Kevin Makadzange**, National Professional Officer for Health Promotion and social determinants of health, WHO Eswatini Country
3. **Dr Stefan Savin**, Technical Officer, Surveillance, Monitoring and Reporting, Department of Noncommunicable Diseases, Rehabilitation and Disabilities, World Health Organization, Geneva, Switzerland
4. **Dr Rarau Patricia**, Technical Officer, Surveillance, Monitoring and Reporting, Department of Noncommunicable Diseases, Rehabilitation and Disabilities, World Health Organization, Geneva, Switzerland
5. **Dr. Cheick Bady DIALLO**, Strategic Information and Surveillance Technical officer, for Non Communicable disease, WHO Regional Office for Africa
6. **Mr TOTAH, Terence Emeric Folly Elom**, Monitoring and Reporting Technical Officer, for Non communicable diseases, WHO Regional Office for Africa.

Annexure 3: List of Data Collection Team

STEPS Survey Staff		
No	**Name and Surname**	**Position**
1.	Khetsiwe Hlatshwako	Data Collector
2.	Ndukenhle M Mndzebele	Data Collector
3.	Phephile T Nkambule	Data Collector
4.	Makgauta A Mkwena	Data Collector
5.	Madoda Dlamini	Data Collector
6.	Sibusiso Zwelibanzi Khanyile	Data Collector
7.	Phumzile Masondo	Data Collector
8.	Sebabonkhe Q Nxumalo	Data Collector
9.	Nosipho Msibi	Data Collector
10.	Nonjabuliso Vilane	Data Collector
11.	Nandipha Nothando Mamba	Data Collector
12.	Senele T Dube	Data Collector
13.	Simile Mbali Matsebula	Data Collector
14.	Andreas Samkelo Simelane	Data Collector
15.	Thandekile Marcia Dlamini	Data Collector
16.	Ncediwe Mavuso	Data Collector
17.	Ngcwele Msibi	Data Collector
18.	Rundford A Laryea	Data Collector
19.	Bhekiwe Nkosephayo Nxumalo	Data Collector
20.	Mpumelelo Bongnkosi Mamba	Data Collector
21.	Bongani Cyril Nhlabatsi	Data Collector
22.	Nontobeko Patience Fakudze	Data Collector
23.	Phumelele Mndzebele	Data Collector
24.	Philani Ntokozo Mncina	Data Collector
25.	Samkelisiwe Tandzile Dlamini	Data Collector
26.	Mcolisi Mavuso	Data Collector
27.	Zandile Faith Shongwe	Data Collector
28.	Shiyindvuku Majahodvwa Radabe	Data Collector
29.	Xoliswa Tengetile Makhanya	Data Collector
30.	Wandile Banele Msibi	Data Collector
31.	Zodwa Phumelele Mkhwanazi	Data Collector
32.	Nelisiwe Masango	Data Collector
33.	Banele Mabuza	Data Collector
34.	Sihlelelo Cassandra Ndwandwe	Data Collector
35.	Gcwelisile S Ndwandwe	Data Collector
36.	Nomvelo Mamba	Data Collector
37.	Vuyo Melusi Nxumalo	Data Collector
38.	Gcinile Ndzinisa	Data Collector

39.	Sibongiile Ncane Nxumalo	Data Collector
40.	Nombulelo Ndlovu	Data Collector
41.	Nomfundo Maseko	Data Collector
42.	Nosimilo Dlamini	Data Collector
43.	Sibahle Zakhele Dlaimini	Data Collector
44.	Nozipho Mabuza	Data Collector
45.	Tholakele Dlamini Tsabedze	Data Collector
46.	Tiphelele Tilungile Simelane	Data Collector
47.	Simile Sizolwethu Mncina	Data Collector
48.	Ndumiso Sabelo Dlamini	Data Collector
49.	Mfanukhona Mxolisi Nxumalo	Data Collector
50.	Nkosinathi Vilakati	Data Collector
51.	Nosipho Tebenguni Nosisa Simelane	Data Collector
52.	Siphelele Portia Maseko	Data Collector
53.	Vuyani Mahlalela	Data Collector
54.	Dale Phiri	Data Collector
55.	Banele Sinaye Fakudze	Data Collector
56.	Thembumenzi Bonginkosi Dlamini	Data Collector
57.	Bandile Nkambule	Data Collector
58.	Sphetfo Kunene	Data Collector
59.	Bongiwe Mkhonta	Data Collector
60.	Philisile Nozipho Dube	Data Collector
61.	Phumelele Zinhle Dube	Data Collector
62.	Noxolo Mdluli	Data Collector
63.	Ncinci Shabangu	Data Collector
64.	Colisile Patience Nxumalo	Data Collector
65.	Siyabonga Simelane	Data Collector
66.	Tiphelele Shongwe	Data Collector
67.	Lungile Maziya	Data Collector
68.	Mayibongwe Sondlo	Data Collector
69.	Fanele Hlungwane	Data Collector
70.	Lunga Mdluli	Data Collector
71.	Nolindo Nonduduzo Ginindza	Data Collector
72.	Ayanda N. Shabangu	Data Collector
73.	Similo Ernest Simelane	National Coordinator
74.	Sibonakaliso Welile Sithole	Sub-Regional Coordinator
75.	Notsile Ayanda Hlophe	Sub-Regional Coordinator
76.	Simangele Simphiwe Dlamini	Sub- Regional Coordinator
77.	Lindelwa Dlamini	Sub-Regional Coordinator
78.	Sandisile Dlamini	Sub-Regional Coordinator
79.	Gcinile Lindelwa Ngwenya	Sub-Regional Coordinator

80.	Tony Siphephiso Vilakati	Sub- Regional Coordinator
81.	Bongiwe Dlamini	Sub- Regional Coordinator
82.	Gcwalisile P Fakudze	Regional Coordinator
83.	Phiwayinkhosi Dlamini	Data Manager
84.	Thulani P Hlatshwayo	Data Manager
85.	Nkosinaye Lindelwe Mncina	Regional Coordinator
86.	Nomacusi Nombekezelo Shongwe	Regional Coordinator
87.	Lindele Felicity Sithole	Regional Coordinator
88.	Sijabulile Dlamini	Hhohho Regional Coordinator
89.	Vusi Shabangu	Manzini Regional Coordinator
90.	Maxwell Manyatsi	Shiselweni Regional Coordinator
91.	Nontobeko Dube	Lubombo Regional Coordinator

Annexure 4: List of Data Analysis Team and Report Writing Team

No.	Name and Surname	Position
1.	Nqaba Nhlebela	Data Manager
2.	Senzokuhle Dlamini	Data Manager
3.	Belinda Mndzebele	Data team
4.	Bongane Zwane	Data team
5.	Senzo Mthembu	Data team
6.	Similo Simelane	Data team
7.	Joy Mavuso	Writing team
8.	Musawenkhosi Mbuli	Writing team
9.	Sindiso S. Bhembe	Writing team
10.	Zinhle Shabangu	Writing team
11.	Nomalanga Hlophe	Writing team
12.	Dumsile Ngwenya	Writing team
13.	Trevor Sithole	Writing team
14.	Lindiwe Dlamini	Writing team
15.	Sijabulile Dlamini	Writing team
16.	Ntombifuthi Ginindza	Writing team
17.	Dr Kevin Makadzange	Writing team
18.	Lisa Rufaro	Writing team
19.	Thobekile Cindzi	Writing team
20.	Vusi Shabangu	Writing team
21.	Dr Thulani Dlamini	Writing team
22.	Sanele Khumalo	Writing team
23.	Derrick Khumalo	Writing team
24.	Nontobeko Dube	Writing team
25.	Dr Njeri Nyanja	Writing team

KINGDOM OF ESWATINI | MINISTRY OF HEALTH

Nationwide Non-Communicable Diseases Risk Factors Assessment Using the World Health Organization's Stepwise Approach in Eswatini