Republic of Zambia

Ministry of Health

Zambia
Steps
For Non Communicable Diseases Risk Factors

ZAMBIA REPORT for 2017

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Acronyms and Abbreviations

BMI	Body Mass Index
CSO	Central Statistics Office
CVD	Cardiovascular Disease
DM	Diabetes Mellitus
FI	Field investigator
FCTC	Framework Convention for Tobacco Control
HIV	Human Immunodeficiency Virus
MoH	Ministry of Health
NCD	Non-communicable disease
SEA	Standard Enumeration Area
STEPS	WHO STEPwise approach to Surveillance
UTH	University Teaching Hospital
WHO	World Health Organization

Foreword

Zambia is experiencing an epidemiological transition in its disease burden from communicable to non-communicable conditions resulting in a double burden of disease. Non-communicable diseases are a major public health concern with significant social and economic implications in terms of health care-needs, loss of productivity and premature deaths.

The Zambian Government has taken health as a key economic investment which shall spur socio-economic development and make our country a prosperous middle income country by 2030. This aspiration is in tandem with the Sustainable Development Goal number 3.4 which aims at reducing by one third premature mortality from non-communicable diseases through health promotion, disease prevention and treatment by 2030. However, Non-communicable diseases especially cancers, diabetes mellitus, cardiovascular diseases, trauma particularly road traffic accidents and mental illnesses pose a serious threat to the socio-economic development of our nation.

Government through the Ministry of Health has continued to strengthen health care systems across the continuum of care so as to reduce and halt the spread of non-communicable diseases. However, one of the major challenges faced in the fight against non-communicable diseases is paucity of reliable routine and periodic health information to inform decision making at policy and implementation levels.

It's from this background that Ministry of Health and its development partners undertook the first ever national STEP wise survey on non-communicable diseases risk factors in 2017. The World Health Organisation STEP wise approach to surveillance of Non-communicable disease risk factors survey is part of the global surveillance strategy in response to the growing need for country level trends in Non - communicable diseases. The aim of this survey was to establish a surveillance platform for Zambia that collects baseline and future indicators for policy and planning purposes.

This STEPS survey report include findings on key Non-communicable disease risk factors and their determinants, cervical cancers screening prevalence, mental and oral health assessments among Zambian adults 18-69 years of age. The survey report will therefore serve as a key benchmark of where our country stands and will be a key reference document for Government and various stakeholders in our efforts to prevent and control Non-communicable diseases.

I thank all those who supported and contributed to the successful completion of the STEPS survey. I call upon all stakeholders to fully utilise this report and significantly contribute to the prevention and control of Non-communicable diseases in our country.

Hon Chilufya, MCC, MP.
MINISTER OF HEALTH

Executive Summary

The Zambia STEPS 2017 is the first nationally representative survey to collect comprehensive information on risk factors for NCDs, mental and oral health in adults aged 18 to 69 years. The aim of the survey was to establish an NCD surveillance platform that collects baseline indicators on determinants of NCD and their risk factors for policy and planning purposes.

The key objectives of the NCD STEPS survey were: a) To determine the prevalence and determinants for the four major behavioural risk factors for NCDs in Zambia: tobacco use, harmful use of alcohol, unhealthy diets, and physical inactivity; b) To determine the prevalence and determinants for the four key biological risk factors for NCDs in Zambia: overweight and obesity, raised blood pressure, raised blood glucose and abnormal blood lipids; c) To determine the prevalence cervical cancer screening in reproductive age women in Zambia; d) To determine the prevalence and determinants of oral and mental health in Zambia; and e) To investigate potential links between different risk factors and determinants of health (such as socio-economic status, demographic factors, gender and age).

Zambia STEPS Survey 2017 Findings:

Behavioural Risk factors –STEP 1:

Within STEP 1 of the survey, Socio demographic and behavioural information on age, sex, marital status, education, occupation, housing and social amenities were collected. Behavioural information regarding tobacco use, alcohol consumption, diet, physical activity, history of raised blood pressure, history of diabetes, history of raised total cholesterol, history of cardiovascular diseases, lifestyle advice, history of diabetes, cervical cancer screening, and oral health were collected.

Nearly 16.0% of Zambians currently consume some form of tobacco products with a significantly higher prevalence among men (24.0%) than women (7.8%). 12.3% of Zambians are currently using smoked tobacco products that include manufactured cigarettes, hand rolled cigarettes, pipes and shisha. 9.0% of Zambians are daily tobacco smokers (the vast majority being males at 17.1 against females at 1.3%) with the mean age for starting to smoke being 15.7 years. Up to 4.5% reported being current use of smokeless tobacco, and of these 6.8% were women and 2.2% were men.

Over 63.0% of Zambians reported to be lifetime abstainers with the percentage of abstinence among women being higher (74.7) than that among men (52.1). Approximately 21.7% of Zambians currently drink alcohol with 10.9% engaged in heavy episodic drinking of six or more standard drinks; males significantly contributed more to this proportion at 16.8% versus 5.1% in females. The overall mean number of standard drinks per drinking occasion among individuals who currently drink is 5.8 standard drinks with a significant difference among males than females (6.3 versus 4.3).

Approximately 15.7% of former drinkers reported not taking any drink due to health reasons in the past 12 months. Consumption of unrecorded alcohol including homebrewed alcohol, alcohol brought over the border, (not intended for drinking or other untaxed alcohol), during the past 7 days among current (past 30 days) drinkers was reported by 26.3% of respondents.

On average Fruit is consumed on 2.1 days a week and vegetables on 6.3 days a week among Zambians. The World Health Organization (WHO) recommends fruit daily and at least 5 servings

of vegetables a day. The survey results show that 90.4% of Zambians are consuming less than 5 servings of fruits and vegetables per day.

The mean daily intake of salt was at 9.5 grams per day, which is nearly double the WHO recommended limit of 5 grams. Up to 39.8% of Zambians always add salt often before eating or when eating and 6.0% admitted to always or often consuming processed food high in salt. Only 15.4% of Zambians said they thought that they consumed too much salt.

The vast majority at 83.8% of Zambians reported use of vegetable oil and 14.5% reported actively avoiding foods prepared outside their homes.

More women (15.1%) than men (5.7%) reported insufficient physical activity. WHO recommends that adults should do at least 150 minutes of moderate-intensity physical activity throughout the week, or do at least 75 minutes of vigorous-intensity physical activity throughout the week. The median minutes of total physical activity per day was 188.6. It was established that the median time spent in work-related activity per day was 120 minutes and the median for transport-related activity was 30.0 minutes per day.

More women (45.5%) than men (23.9%) reported no vigorous activity at all; and both sexes reported a similar amount of time per day that is spent on sedentary activities at a median of 180 minutes.

Up to 62.2% of men and 34.9% of women reported to have never ever had their blood pressure measured. Among those who reported to have been previously diagnosed with hypertension, only 26.0% were currently on medication prescribed by a health worker. Among those previously diagnosed as having raised blood pressure, about 6.5% have been to consult traditional healers, and up to 6.9% were taking herbal or traditional remedies.

Overall, 90.8% of respondents had never been measured for raised blood sugar and among those diagnosed with elevated blood sugar, less than half (36.8%) were currently taking medication. The vast majority of Zambians (98.0%) have never been measured for cholesterol levels; and only 9.8% of respondents who reported to have been diagnosed with elevated cholesterol levels were on medication.

Only 3.0% of the respondents reported ever having a heart attack or chest pain from heart disease or a stroke and only 0.7% reported to be currently taking aspirin regularly to prevent or treat heart disease. About 17.3% confirmed receiving advice from the doctor or health worker to quit using tobacco or not to start, while 33.3% had been advised to eat fruit and vegetables.

Approximately 16.4% of women aged 18 to 69 years reported that they had undergone cervical cancer screening at least once in their life. Among the age group 30 to 49 years which is the recommended age for screening, 21.1% reported having been screened for cervical cancer.

Physical Measurements – STEP 2

Physical measurements such as height, weight and blood pressure were collected in Step 2. The mean Body Mass Index (BMI) was 23.2kg/m^2. Overall, 24.2% of adult Zambians are either overweight or obese with BMI greater than 25kg/m^2. Nearly 8 % were obese (BMI greater than 30kg/m^2); and significantly more women (12.3%) than men (3.0%) are obese.

The mean waist circumference for men and women is 78.8 cm and 80.7 cm respectively while hip circumferences were 93.2 cm in men and 97.0 cm in women. Mean waist-hip ratios were 0.8 for both sexes. The Waist–hip ratio (the waist circumference divided by the hip circumference) is an index used to identify individuals at increased risk of obesity related morbidity due to accumulation of abdominal fat (WHO, 2011). Women whose waist hip ratio (WHR) is ≥0.85 and men with a WHR ≥0.9 are considered to be at increased risk of obesity-related morbidity.

Raised blood pressure (defined as having SBP ≥140 mmHg and/or DBP ≥90 mmHg or on medication for raised blood pressure) was found in 19.1% of the respondents. About 7.1% Zambians had severe hypertension (defined as having SBP ≥160 mmHg and/or DBP ≥100 mmHg or on medication).

Biochemical Measurements – STEP 3

The survey results showed that 6.2% of the Zambians have raised fasting blood glucose, defined as capillary whole blood value ≥ 6.1 mmol/L (110 mg/dl), or currently on medication for raised blood glucose. Only 0.7% are currently on medication for diabetes; with no differences observed by sex.

The mean total cholesterol among all respondents including those currently on medication for raised cholesterol was 3.4mmol/L. Approximately 7.4% have cholesterol ≥ 5.0 mmol/L or currently on medication for raised cholesterol.

Levels of sodium and creatinine in spot urine samples are used in STEPS to estimate population 24 hour salt intake. While the WHO recommendation is to consume less than 5 grams of salt per person per day, the Zambian adults had a mean daily intake estimated at 9.5 grams.

The risk of developing cardiovascular disease (CVD) was determined by the combined effect of behavioural and biological risk factors (for instance smoking, or having raised blood sugar), age and sex. 4.2% of the Zambians in the 40-69 age group have a 10-year CVD risk of 30% or above with only 13.0% of them currently receiving drug therapy and counselling to prevent heart attacks and strokes.

Assessment of the risk posed by combined risk factors was also determined. The five common and critical risk factors for NCDs that were used in risk assessment are; current daily smoking, being overweight or obese (BMI>25k), raised blood pressure (SBP>140 and/or DBP>90 mmHg or currently on medication for raised BP), less than 5 servings of fruit and vegetables per day and low level of physical activity. Only 4.6% of Zambians have none of the above risk factors. Among the age group 18 to 44 years, 8.5% have three or more of the above risk factors while among the age group 45 to 69 years, 22.3% have three or more of the above risk factors, which indicates a heightened risk of NCDs and their complications. This scenario warrants interventions ranging from awareness, to treatment and follow-up.

Oral Health

Overall, 95.0% of adults have twenty or more of their natural teeth. 12.0% of Zambians reported to have poor or very poor state of teeth among those having natural teeth and 6.8% reported having poor state of gums among those having natural teeth respectively. Up to 7.8% of the Zambians reported having removable dentures. While a history of oral pain and discomfort in the past 12 months was reported by 31.5%. Only 7.2% visited a dentist in the past

12 months. Overall, 74.5% of Zambians have never visited a dentist, and 63.5% reported they clean their teeth at least twice daily.

Mental Health

Nearly 8.0% of the respondents acknowledged having considered attempting suicide in the last 12 months, with the highest proportion (8.6%) being reported in the 18 to 29 years age band. Of these, only 23.9% confirmed to have sought professional help. Among those who attempted suicide in the past 12 months, the methods used included a razor or other sharp tool (23.5%), overdose of medication (19.8%) and overdose with other substances (2.2%).

Conclusions and Recommendations

This STEPS survey is the first nationally representative survey to collect comprehensive information on risk factors for NCDs, mental health and oral health in Zambia. Besides giving us frequencies on the known risk factors which now constitute a critical baseline for benchmarking trends and progress, it also provides us essential information on these indicators by age group, sex and urban-rural trends. These findings will be critical for informing public health policy and the following recommendations are proposed:

1. There is critical need to create awareness on NCD prevalence, and risk factors in Zambia. Appropriate communication strategies are required to reach all levels of the society from the households, communities, civic leadership and all stakeholders.

2. There is need to prioritize NCD prevention and control at both national and sub-national levels in order to start addressing this emerging threat to health, social and economic development.

3. The health system particularly needs to be reshaped in order to better deal with NCDs. An integrated approach is required so that every contact with the health system becomes an opportunity to detect and tackle NCDs or send preventive messages. For this to be achieved, more health workers will be needed and much retraining emphasizing NCD prevention and care should be provided. This also means procurement and maintenance of basic equipment such as weighing scales, blood pressure machines, glucometers, etc.

4. Integrate NCD indicators in national health surveys to supplement the data collected in periodic STEPS surveys for proper planning and projection of NCD prevention and control.

5. Make plans and budget for periodic (say every 5 to 7 years) STEPS surveys nationally in order to monitor progress and trends. Future surveys could also include other indicators not assessed in this report; such as major causes of premature death, road traffic accidents and injuries in general.

NCD risk factor specific recommendations:

Tobacco

1. Zambia should consider increasing excise taxes and prices on tobacco products to discourage people, especially the youth from taking up smoking habits.
2. Consider introducing standardized packaging of cigarettes, which carry clear warning with graphical pictures on the dangers of smoking and consequences.
3. Enforce the law against smoking in public and indoor to reduce exposure to second-hand tobacco smoke in workplaces, public places, and public transport.
4. Implement an effective mass media campaigns to educate the public about the harms of smoking and second hand smoke

Alcohol

1. The government policy on alcohol should include a commitment to generally increase excise taxes on alcoholic beverages in Zambia.
2. Consider enacting and enforcing restrictions on exposure to alcohol advertising in the public and private media.
3. Consider enacting and enforcing restrictions to reduce physical availability and access to alcohol, and particularly for youths given the finding that age of debut in Zambia is early.

Salt consumption

1. Consider introducing and enforcing laws to control amount of salts in food products being sold to the public.
2. Ensure a supportive environment in public and private institutions with lower sodium options being provided for meals.
3. Promote behaviour change communication and mass media campaigns for reducing salt intake.

Physical activity

1. Consider implementing community wide public education and awareness campaigns for physical activity which includes a mass media campaign combined with other community based education, motivational and environmental programs aimed at supporting behavioural change of physical activity levels in both rural and urban areas.
2. Support physical activity champions especially targeted at encouraging women to increase physical exercises.
3. Enhance physical exercise activities through school curricula across the country

Cervical cancer

1. Promote cervical cancer awareness among women through media and community based awareness programmes.
2. Consider national scale up of the recently piloted vaccination against human papilloma virus (HPV) for young girls 9 to 13 years old; and promote prevention of cervical cancer through availability of screening services for women in the reproductive age group.
3. Promote awareness on the problem of cervical cancer, particularly its devastating outcome if discovered late.

Mental health

1. Expedite enactment of the mental health bill in Zambia to provide a legal framework for mental health interventions.
2. Promote mental health awareness through public and private media campaigns and focus on stigma reduction in mental health.
3. Promote access to information and support for those needing help with mental health in Zambia.

Oral health

1. Raise awareness on the need to promote oral health in schools and communities.
2. Make oral health services available and accessible in all public health facilities in Zambia.

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MINISTRY OF HEALTH

CHAPTER 1: INTRODUCTION

Non-communicable diseases (NCDs) are currently the leading global cause of death worldwide (WHO, 2012a). According to WHO, of the 57 million deaths that occurred globally in 2012, 38 million (almost two thirds) were due to NCDs, with cardiovascular diseases, cancers, diabetes and chronic respiratory diseases accounting for 82.0% of the (NCD related) deaths (WHO, 2014b). The combined burden of these diseases is rapidly increasing in lower income countries. 48.0% of NCD deaths occur in low and middle income countries compared with 28.0% in high income countries and the majority are considered premature deaths (WHO, 2014b).

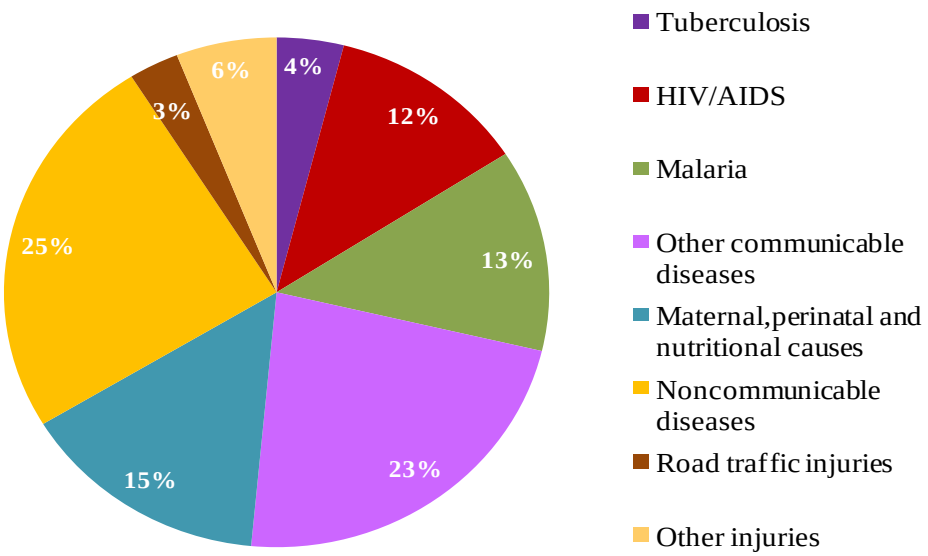
A large proportion of NCDs are preventable. They share modifiable behavioural risk factors such as tobacco use, unhealthy diet, lack of physical activity, and the harmful use of alcohol. These risk factors lead to overweight and obesity, raised blood pressure, and raised cholesterol (WHO, 2011). If no action is taken, over the next three decades, the cost of the NCD burden will amount to trillions of dollars of lost resources (Bloom et al., 2012). Feasible and cost-effective interventions to reduce the burden and impact of NCDs exist, and sustained action to prevent risk factors and improve health care can avert millions of preventable premature deaths (Beaglehole et al., 2011, Mendis and Chestnov, 2013, UN, 2011).

The Ministry of health in Zambia, in collaboration with WHO undertook a STEPS survey in Zambia to document the prevalence of NCD related risks factors across the country. This was the first national survey looking at NCDs and associated risk factors. The results provide baseline information and guide evidence based policy and planning for NCDs in Zambia.

1.1 Background

Non-communicable diseases (NCDs) are a leading cause of mortality globally, accounting for 38 million out of 57 million deaths which occurred in 2012.(WHO, 2012a). About a quarter of the global NCD related deaths occurred before the age of 60 (WHO, 2014b). As per the global estimates, in 2010, the three leading risk factors for global NCD burden are high blood pressure (7.0%), tobacco smoking including exposure to second hand smoke (6.3%) and household air pollution from solid fuels (4.3%) (Lim et al., 2012). Similarly, dietary risk factors and physical inactivity collectively contributed 10.0% of global disability adjusted life years (DALYs) in 2010.
In the report by Marquez and Farrington (Marquez and Farrington, 2013), it was highlighted that for some time, much of the health focus in the sub Saharan Africa (SSA) region has been understandably directed toward communicable diseases, maternal, perinatal and nutrition causes of mortality and morbidity. These all remain among the leading five causes of DALYs for the SSA region in 2010, accounting for 67.0 to 71.0% of DALYs in eastern, western, and central SSA. TB, HIV/AIDS and Malaria were responsible for 29.0% of the all deaths in SSA in 2010, while other communicable disease accounted for 23.0% (Marquez and Farrington, 2013). These figures are already slightly exceeded by the 25.0% share of deaths caused by NCDs and rises to 34.0% including injuries (Figure 1.1).

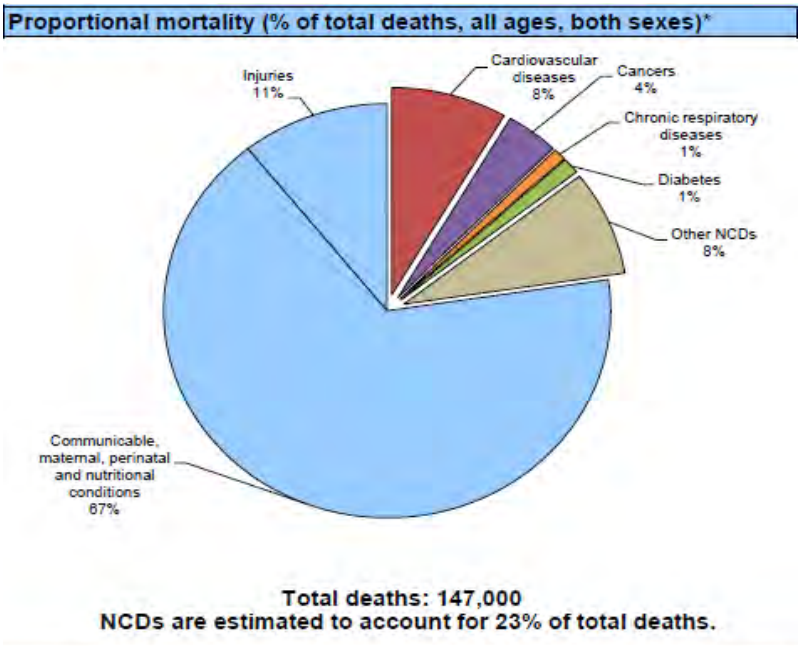
Figure 1.1.1: Proportion of deaths by cause in SSA, 2010



Source of data: Global Health Observatory Data Repository: http:/apps.who.int/ghodata/

In Zambia, according to WHO's Zambia NCD profile, NCDs accounted for 23.0% of total deaths. Cardiovascular diseases accounted for 8.0%, cancers 4.0%, chronic respiratory diseases 1.0%, diabetes 1.0% and other NCDs accounted for 8.0% (WHO, 2014b). This is depicted in figure 2.2 below.

Figure 11.1.1: Proportion of mortality by cause in Zambia in 2014



Source of data: World Health Organization – Zambia Non-communicable Diseases (NCD) Country Profile, 2014 (WHO, 2014b)

Although limited, the Global School-Based Student Health Survey and Global Youth Tobacco Survey enquiring on the lifestyles of adolescents had been conducted in Zambia (GSHS, 2004), but no similar studies or more comprehensive studies had been conducted among the adult population.

In May 2013, the World Health Assembly adopted the Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013-2020 (WHO, 2013a). The Plan is articulated around six objectives and based on nine concrete targets to be achieved by 2025; it includes 25 outcome indicators and nine progress indicators. The intended goal is that by collectively implementing the actions included in the Global Action Plan, member states, WHO and partners should strive to achieve a 25.0% reduction in premature mortality from NCDs by 2025 (WHO, 2013a). Zambia's NCDs Strategic Plan was developed based on the Global Action Plan for the Prevention and Control of Non- communicable Diseases 2013-2020.

1.2 Previous risk factor surveys

Zambia conducted sub-national NCD risk factor surveys in four randomly selected districts (two urban and two rural) in four provinces between 2008 and 2011 to provide population based estimates. The surveys were done in the adult population aged 25 years and over, using WHO STEPS methodology. This study found that both the prevalence of current tobacco smoking and current consumption of alcohol were higher in rural areas than urban areas. It was found that in Lusaka district in 2008, 23.6% of respondents ate fruits 5 to 7 days in a typical week, while 94.8% ate vegetables 5 to 7 days in a typical week. Physical activity was 31.4 % for moderate-intensity recreation-related activities, and 15.1% for vigorous-intensity recreational activities.

Overweight or obese was estimated at 14.2% while hypertension was 34.8%. The prevalence for impaired glucose level or diabetes was 4.0% (Ministry of Health and World Health Organization, 2008, Goma et al., 2011, Nsakashalo-Senkwe et al., 2011, Rudatsikira et al., 2012). The Zambia Global School Health Survey (GSHS) conducted in 2004 among students in grades 7-10, in 47 schools, in all the 9 provinces revealed that 42.6% of the 2,257 students who participated in the survey had taken alcohol on one or more occasion during the previous 30 days. According to the survey, children as young as 13 years had indulged in drinking alcohol. The survey reported that consumption was higher among females (45.5%) than among males (38.9%). In the age group of 16 and above, females (49.9%) drank alcohol one or more times than males (35.9%). Current estimates indicate that Zambia may be one of the countries with a high prevalence of NCDs with 29.0% of all mortality being related to NCDs (WHO, 2017a).

1.3 Infrastructure and capacity

The policy objective for Zambia, in respect to health infrastructure, is to ensure that the population has access to health facilities within a 5 kilometre radius. In this respect, the most significant steps being undertaken by Government include the establishment of the Cancer Diseases Hospital in Lusaka, construction of 650 rural health centres, up-grading of selected first level hospitals to second level while some second level hospitals are also being up-graded to ensure each of the ten provinces has a tertiary hospital. There is also the upgrading of 8,000 kilometres of selected key roads under the Link Zambia project. Upgrading of roads to bituminous standards will improve transportation and patient referral. The sector has

embarked on strengthening the transport system, through procurement of ambulances, utility vehicles, motorbikes and boats for districts, hospitals and training institution, procurement of mobile hospitals, and strengthening maintenance workshops at provincial level.

Generally, total funding to the health sector has continued to be inadequate and far below required levels. This is despite significant and consistent increases in funding recorded over the past 5 years, from both domestic and international sources. As a percentage of the Gross Domestic Product (GDP), health care spending represents between 5.4% and 6.6%, which translates to approximately US$ 28 per capita. The major concern is that both internal and external funding to health has mainly been directed at combating priority communicable diseases, particularly HIV and AIDS, malaria, TB and STIs, with little or no significant improvements in the funding to NCDs. Projected budgetary allocation for NCDs constituted 0.00148% of allocation to the health sector in 2014. This clearly shows that although funding to NCDs is included in the health sector's plans and budgets, funding levels remain far below the needs.

Since 2006, MOH has been implementing a comprehensive Human Resource for Health Strategic Plan (HRH-SP 2006-10). Implementation of this plan has led to positive trends in the numbers, skills-mix and distribution of health workers. The total number of staff increased from 23,176 in 2005 to 29,533 in 2009, representing 57.0% of the approved establishment of 51,414. However, notwithstanding these improvements, there are still shortages of health workers at all levels. As at December 2009, there were less than 50.0% of clinical health workers available, against the approved establishment, leading to high workloads. At community level, only 19.0% of Community Health Workers (CHWs) are active in providing services within their communities. This has implications on the capacities to promote and scale up community awareness and participation in the scaling up of NCDs activities at community level.

1.4 Objectives

The goal of the Zambia STEPS survey was to determine the prevalence of common Non-Communicable Diseases (NCDs) and their associated risk factors in Zambia among Zambian adults aged 18 to 69 years. These behavioural risk factors include:

- Tobacco use
- Alcohol use
- Physical inactivity
- Unhealthy diet
- Over weight and obesity
- Oral health
- Raised blood pressure
- Raised blood glucose
- Abnormal blood lipids
- Mental health (suicidal behaviour)
- Mean population salt intake

1.5 Specific Objectives

Specific objectives of this study were:

1. To identify the current levels of key risk factors for NCDs in the adult population aged 18 to 69 years in Zambia
2. To track the key selected indicators related for mental health in the adult population aged 18 to 69 years in Zambia
3. To track the key selected indicators related to oral health in the adult population aged 18 to 69 years in Zambia
4. To collect data from which to predict likely future demands for health services and support planning and development of NCD policy and programme interventions

CHAPTER 2: SURVEY METHODS AND OPERATION

This section explains the scope of the STEPS survey, the methods used for data collection, and the implementation process. It also describes the sample and analytical methods in sufficient detail to demonstrate that the survey results are reliable and represent the intended population.

2.1 Scope

A cross-sectional national survey was conducted to obtain data that was representative of the adult population, aged 18 to 69 years, in Zambia. The survey included three steps – STEP 1 was an interview of participants to assess behavioural risk factors and health history related to NCDs; STEP 2 involved physical measurements to assess blood pressure, height and weight and waist and hip circumference; and STEP 3 included blood chemistry rapid diagnostic tests to assess fasting blood glucose and total cholesterol. This was done by the use of Cardio-Check spot testing equipment. In addition to this mean sodium intake of the adult population was estimated by measuring urinary sodium via a spot urine test. The survey was expanded to include additional modules on mental health and oral health. A question was also included to assess whether women had ever been screened for cervical cancer.

2.2 Study population

All adults living in Zambia at the time of the survey were included if they were aged 18 to 69 years and resident in the selected households.

2.3 Sample size

The study was designed to estimate prevalence of key risk factors of NCDs with a certain degree of precision. The number of households (n) to be surveyed with 95% confidence was calculated using following formula and assumptions:

$$\mathrm{n} = \frac{Z^2 1 - \alpha\, P(1-P)}{d^2} \qquad \text{Equation 1}$$

Where:

Z= level of confidence measure and it represents the number of standard errors away from the mean. This describes the uncertainty in the sample mean or prevalence as an estimate of the population mean (normal deviate if alpha equals 0.05, Z = 1.96, for 95% confidence level).

P= Baseline level of indicators. Since this estimate was not available, it was recommended that the value of p= 0.5, at maximum variability is used. Generally the greater the variability in the population the lager the sample size in order to achieve the desired level of precision (i.e. the closeness of the sample estimates to the result we could get from a 100% enumeration or census). Since variability was also not known, a conservative value of p=0.5 was used.

d = Margin of error. The expected half width of the confidence interval and taken 0.05 for this study. Substituting this values into equation 1 gives:

$$n = \frac{1.96*1.96}{0.05*0.05}$$

$$n = 384.16$$

This was multiplied by number of domains to ensure enough representation for age sex groups to be reported and allow reporting of some indicators by urban rural disaggregation. The number of domains was decided by considering male and female and 4 age groups (18 to 29, 30 to 44, 45 to 59, and 60 to 69 years), which gives 8 groups of study population. The (n) was further adjusted for design effect of 1.5 to address the issue of cluster sampling, which gives:

$$n = 382.16*8*1.5 = 4609$$

The (n) was adjusted for expected non-response to get the final sample size. An 80% response rate was expected. The above sample size was divided by the expected response rate.

$n = 4609/0.8 = 5762.4$. Therefore, a total of 5791 households were included in the final sample size calculation.

2.4 Sampling

To ensure that the sample reflected the entire country of Zambia, a multi-stage cluster sampling technique was used to select a nationally representative sample of adults in Zambia aged 18 to 69 years. It was decided to utilize the household listing from the Zambia Population-Based HIV Impact Assessment (ZAMPHIA) - a household-based national survey that was conducted between March and August 2016 in order to measure the status of Zambia's national HIV response. ZAMPHIA offered the most pragmatic up to date and accessible national household listing to be used as the sampling frame for this survey. The ZAMPHIA survey included 60,581 households drawn from 1,103 clusters referred to in this report as standard enumeration area (SEA) (Table 2.4.1). Thus the sample drawn for the STEPS survey was a subsample of the households selected for the ZAMPHIA survey.

In the first stage of sampling, SEAs were selected from each province using probability proportional to size (PPS). In the second stage, 15 households in rural SEAs and 20 households in urban SEAs were selected systematically using appropriate sampling interval based on the number of households in that SEA. These households constituted the final list of households for the STEPS survey prepared for the field investigators (FI). In the third stage, while the FI approached the household and sought consent, all eligible members in the household were entered into the Android-based devise used for the survey. The device then selected one member from the eligible members using a simple random sampling technique. The selected member was then interviewed having gone through the ethical process of consent after being provided with information on the survey. If the selected member was not available, a scheduled visit was made. If the selected member could not be reached after two scheduled visits he or she was considered as non-response. There was no replacement strategy so as to maintain the integrity and representativeness of the sample.

Table 2.4.1: Sample size allocation by province

Province	ZAMPHIA 2014		ZAMBIA STEPS 2017	
	EA (SEA)	Households	EA (SEA)	Households
Central	85	4182	36	575
Copperbelt	203	10423	40	750
Eastern	96	5126	40	625
Luapula	66	3196	30	480
Lusaka	221	12204	50	940
Muchinga	97	5128	26	420
North-Western	84	5421	30	415
Northern	78	4986	26	470
Southern	104	6420	44	705
Western	69	3495	25	411
Total	**1103**	**60581**	**347**	**5791**

2.5 Staff recruitment and training

A total of 41 field investigators (FI) were recruited for the survey. They were mainly Master of Public Health (MPH) students from the University of Zambia, School of Public Health. Training was carried out from 10th to 14th July 2017. The training was facilitated by WHO headquarters staff and the Zambia STEPS research team. The training was officially opened by the Director of Health Policy at the MoH and officially closed by the WHO representative. The mode of training comprised of didactic, group discussions, and mock interviews. The areas covered included:

- Workshop objectives
- Overview of STEPS
- Interview tracking and approaching selected households
- Introduction to e-STEPS Android-based data collection tool
- e-STEPS Android-based participants section
- Informing participants and obtaining consent
- Interview skills
- STEPS instrument
- Recording data on the Android devices
- Taking and recording physical measurements
- Taking height and weight with BMI scale
- Procedures for STEPS 3
- Preparing equipment and supplies for the survey
- Conducting the pilot

After the training and the pilot, the FIs were allocated to 10 teams with each team assigned to each province. The number of FIs per team depended on the number of households to survey in that province (Table 2.5.1). Each team included 1 supervisor (for planning and checking the completeness of questionnaires, and undertaking some interviews/measurement), 3 or 4 field investigators (for STEP 1 and STEP 2 and STEP 3) and one driver.

Table 2.5.1: Number of field investigators (FI) per province (team)

Province	Number of households to survey	Number of FIs per team
Central	575	4
Copperbelt	750	5
Eastern	625	5
Luapula	480	4
Lusaka *	940	2
Muchinga	420	4
Northern	470	4
North Western	415	4
Southern	705	5
Western	411	4
Total	**5791**	**41**

* All teams did Lusaka in the first 10 days. 2 FI were left to complete Lusaka Households.

2.6 Pilot study

A one day field pilot survey was conducted immediately after the training of supervisors and FIs on the 14th July 2017. The objectives of the pilot testing were:

- To assess the applicability of the questionnaires to the local communities
- To assess reactions of the respondents to the survey procedures
- To assess whether the instructions in the field manual were relevant and straightforward
- To estimate time needed to administer each questionnaire
- To assess the sequencing/flow of questions
- To check the content validity of the questions after translation.

The pilot was conducted in a SEA situated in Chongwe district. All FIs participated in the pilot. After the pilot, the team reconvened to receive feedback from FIs. All issues identified were addressed and the survey tools were finalized.

2.7 Survey tools

The generic WHO STEPS survey tools were adapted by the Zambia survey team. This included adaptation and translation of any relevant materials into the 7 main local languages. The show-card were also adapted to reflect locally relevant alcoholic drinks, tobacco, fruits, and vegetables. All core modules were included. STEP 1 was expanded to include tobacco policy, oral health, and mental health/suicide, which are relevant areas of concern in Zambia. The contents of the questionnaire were as follows:

STEP 1: included demographic data: - sex, age, education, tribe, marital status, occupation, household income, tobacco use, tobacco policy, alcohol consumption, fruit and vegetable consumption, dietary salt, physical activity, history of raised blood pressure, history of diabetes, history of raised total cholesterol, history of cardiovascular disease, lifestyle advice, uptake of cervical cancer screening, oral health, and mental health and suicide.

STEP 2: included physical measurements: - blood pressure, height, weight, waist circumference, hip circumference, and heart rate.

STEP 3: included biochemical measurements: - blood glucose, blood lipids, urinary sodium, and creatinine.

2.8 Main field work/data collection

The main field work started on 22nd July 2017 in Lusaka province, which ran until 1st August 2017. The entire ten teams were deployed in Lusaka province. This strategy ensured that all technical issues were resolved and a refresher session held before redeployment of teams to respective provinces. The Lusaka experience was useful as it helped troubleshoot some technical issues that were encountered with the Android devices.

Following the Lusaka survey, two members of the Lusaka team remained to complete all households. The other nine teams were redeployed to their respective provinces in turn as and when MoH made vehicles available. The main fieldwork ended on 15th October 2017. Each team was provided with a field kit containing: a carrier bag, letters to the provincial health authorities, tablets for data collection/recording responses, charging cords for tablets, feedback forms for participants, consent forms, checklist, list of the selected standard enumeration area and households, and SEA maps. The team were also provided with field log book, interview tracking forms, operational manual, pens, pencils, clipboards, notebooks, scales for weight and height measurements, tapes for hip and waist measurements, digitalized blood pressure monitors, devices and test strips for STEP 3 (plus lancets, swabs and sharp containers, gloves, pipettes), and urine sample containers. Each member of the survey team had a project bag and identity card.

Each selected participant in the survey was assigned a system generated unique identifier, based on the device ID and number of eligible members in the household as well as the serial number assigned in the household, which appeared on any relevant forms such as consent forms and clinic appointment cards. Each supervisor and FI was also given a unique identification code based on the device ID. Each interview took approximately one and a half hours.

STEP 3 was done in the morning of the following day in most cases. However in some places modifications were made so that participants were prepared beforehand through local leaders and community health workers, who were contact before the research teams arrived. Eligible members from sampled families were asked to come to a central location on a named day and time. Participants were told not to eat until they were seen by the research team. Once on site, the research team explained the purpose of the study to sampled families. Prior to entering the names of those eligible, selection was done and urine was collected immediately after validating that it wasn't the first time to pass urine that morning. For those who had fasted, glucose measurements were taken the same day while those who had not fasted, glucose measurements were done the following morning.

Each team spent an average of 55 days to complete the survey over and above the budgeted 40 days. This was mainly due to the travel time between SEAs, especially in the rural SEAs.

2.9 Data management

Data entry was done on handheld devices used by each member of the survey team to record the respondents' answers to the STEP 1 interview and the physical and biochemical results from STEP 2 and 3, except for the results from the urine analysis of sodium and creatinine, which was separately recorded by a central laboratory. WHO e-STEPS software was used on the handheld devices to capture all survey data. A storage device card was fitted in every PDA to ensure a backup copy of data was stored in case of any device failures. No additional data entry was required as all data was entered at time of interview and measurements on the handheld devices.

Data from handheld devices was periodically uploaded to a central server hosted at the Centre for infectious Diseases Research (CIDRZ) premises in Lusaka, usually every 2 to 3 days as internet connectivity in the field permitted. Data cleaning and weighting was undertaken prior to data analysis, following guidance provided by WHO in the e-STEPS manual. The weighting was done to make the sample representative of the target population (adults in Zambia aged 18 to 69 years). Sample weights, reflecting the inverse of the probability of selection of each participant, were calculated using a combination of the probabilities of selection of the ZAMPHIA SEAs plus the probabilities of selection at each stage of the subsampling process described previously. That is, the probability of selection of the SEA, the household and the participant were each calculated and multiplied by the probability of selection of the SEA in the original ZAMPHIA sample. The final weight was adjusted for the differences between the sample population and target population (population weight) using the UN Population Division population estimates. This adjustment was done separately for Step 3 in light of the substantial difference in response rate for this Step compared to Step 1 and 2.

2.10 Data analysis

Data analysis was conducted using Epi Info 3.5.1, using STEPS tools and analysis commands developed by WHO and adapted for use by the Zambian survey team. This was done during a 4-day workshop for data management and analysis from 22nd to 25th January 2018. Tables were presented using the WHO STEPS factsheet and data book templates. Variables measured on binary or categorical scale were summarized using proportions (percentages) while those measured on continuous scale were summarized using median. Confidence intervals at 95% were presented for all percentages as a measure of precision for the estimated percentages while interquartile range were presented for median. All estimates were presented for each sex group as well as both sexes and disaggregated by age groups. Estimates for which the denominator was less than 50 were not presented and were indicated where appropriate.

2.11 Response rate

The response rate of the Zambia STEPS survey was calculated using two approaches. The first approach which used the WHO STEPS convention gave a response rate of 74.3% (=4302/5791), which simply divided the number of participants included in the analysis by the total number of participants targeted for the survey as per sample size calculation. The second approach gave a response rate of 77.7% (4302/5536), which used the same numerator as the first approach but the denominator was based on the number of eligible members selected for the survey.

CHAPTER 3: SURVEY RESULTS

3.1 Characteristics of survey respondents

Age and sex distribution of respondents

Almost two thirds (62.5%) of the respondents were women (Table 3.1.1) with about 66.9% being female in the 60 to 69 years age group. Regarding both sexes, 37.7% were aged 18 to 29 years (Table 3.1.1).

Table 3.1.1: Age group and sex of respondents

Age Group (years)	**Men**		**Women**		**Both Sexes**	
	N	%	N	%	N	%
18-29	597	36.9	1023	63.1	1620	37.7
30-44	578	38.2	935	61.8	1513	35.2
45-59	312	39.7	473	60.3	785	18.2
60-69	127	33.1	257	66.9	384	8.9
18-69	**1614**	**37.5**	**2688**	**62.5**	**4302**	**100**

Highest level of education

The majority of the respondents (26.1%) had attained at least some primary school education. Nearly a tenth (9.9%) of the respondents had no formal schooling while about a quarter (24.1%) completed primary school and 13.1% had completed senior high secondary school. About one-sixth (16.4%) of male respondents completed senior high school compared to 11.2% of female respondents. The majority of male respondents (23.5%) had completed primary school while the majority of women (28.3%) had only some primary school education Table 3.1.2. indicates the distribution of the respondents age 18 to 69 by the level of education, age group and sex.

Table 3.1.2: Highest level of education by sex and age group

Age Group (years)	n	% No formal schooling	% Less than primary school	% Primary school completed	% Junior Secondary school completed	% Secondary Higher school completed	% College/ University completed	% Post graduate degree completed
				Men				
18-29	597	2.2	18.3	20.3	27.5	22.9	8.7	0.2
30-44	578	5.7	24.2	25.8	18.3	14.9	10.0	1.0
45-59	311	6.4	25.4	25.4	24.8	9.3	8.4	0.3
60-69	127	10.2	25.2	23.6	15.7	9.4	14.2	1.6
1869	**1613**	**4.9**	**22.3**	**23.5**	**22.8**	**16.4**	**9.5**	**0.6**
				Women				
18-29	1023	4.2	22.4	24.6	23.9	19.3	5.6	0.1
30-44	934	14.6	30.5	24.4	15.3	7.3	7.4	0.5
45-59	473	16.5	33.6	27.7	11.6	5.7	4.9	0.0
60-69	256	34.8	34.4	18.0	6.6	3.1	3.1	0.0
18-69	**2686**	**12.9**	**28.3**	**24.5**	**17.1**	**11.2**	**5.8**	**0.2**
				Both Sexes				
18-29	1620	3.5	20.9	23.0	25.2	20.6	6.7	0.1
30-44	1512	11.2	28.1	24.9	16.5	10.2	8.4	0.7
45-59	784	12.5	30.4	26.8	16.8	7.1	6.3	0.1
60-69	383	26.6	31.3	19.8	9.7	5.2	6.8	0.5
18-69	**4299**	**9.9**	**26.1**	**24.1**	**19.2**	**13.1**	**7.2**	**0.4**

Marital status of respondents

Slightly over 60.0% of the total number of respondents (61.1%) were currently married while 21.8% had never been married. More men reported being married (66.3%) compared to women (57.98%). In addition, 17.0% of the respondents were either separated, divorced or widowed. Table 3.1.3 shows the distribution of respondents age 18 to 69 by marital status and sex.

Table 3.1.3: Marital status of respondents

Age Group (years)	**Men**						
	N	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
18-29	596	59.1	38.4	1.0	0.7	0.5	0.3
30-44	578	10.2	81.3	4.3	2.9	1.0	0.2
45-59	312	3.5	84.0	4.2	5.4	2.6	0.3
60-69	127	1.6	85.0	2.4	2.4	8.7	0.0
18-69	**1613**	**26.3**	**66.3**	**2.9**	**2.5**	**1.7**	**0.2**
Age Group (years)	**Women**						
	N	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
18-29	1020	40.1	52.5	2.9	3.8	0.6	0.0
30-44	931	8.1	71.5	4.9	10.0	5.3	0.2
45-59	473	4.9	53.7	5.1	12.3	24.1	0.0
60-69	255	1.2	37.6	0.8	11.0	49.4	0.0
18-69	**2679**	**19.0**	**57.9**	**3.8**	**8.1**	**11.0**	**0.1**
Age Group (years)	**Both Sexes**						
	N	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
18-29	1616	47.1	47.3	2.2	2.7	0.6	0.1
30-44	1509	8.9	75.3	4.7	7.3	3.6	0.2
45-59	785	4.3	65.7	4.7	9.6	15.5	0.1
60-69	382	1.3	53.4	1.3	8.1	35.9	0.0
18-69	**4292**	**21.8**	**61.1**	**3.5**	**6.0**	**7.5**	**0.1**

Employment status of the respondents

The biggest percentage of the respondents (50.0%) were unpaid, while 39.8 percent were self-employed as shown in the table below:

Age group (years)	N	% Government employee	% Non-government employee	% Self-employed	% Unpaid
Men					
18-29	597	2.7	9.5	36.3	51.4
30-44	577	7.3	13.3	55.3	24.1
45-59	312	4.5	8.7	55.8	31.1
60-69	127	0.8	5.5	40.9	52.8
18-69	**1613**	**4.5**	**10.4**	**47.2**	**37.8**
Women					
18-29	1023	1.9	4.5	27.1	66.6
30-44	932	4.5	5.3	42.6	47.6
45-59	473	2.3	4.9	42.3	50.5
60-69	254	0.4	2.4	28.7	68.5
18-69	**2682**	**2.7**	**4.6**	**35.3**	**57.3**
Both sexes					
18-29	1620	2.2	6.4	30.5	61.0
30-44	1509	5.6	8.3	47.4	38.6
45-59	785	3.2	6.4	47.6	42.8
60-69	381	0.5	3.4	32.8	63.3
18-69	**4295**	**3.4**	**6.8**	**39.8**	**50.0**

3.2 Behavioural Risk Factors

3.2.1 Tobacco Use

Tobacco use is a major risk factor for lung cancer and cardiovascular diseases. The 2017 WHO report on the global tobacco epidemic indicated that although the WHO framework Convention on Tobacco Control (WHO FCTC) was ratified on 23rd May 2008, Zambia has not yet signed (WHO, 2017a). The report also indicated that although there is a national agency or technical unit for tobacco control there was no specific national government objectives in tobacco control and that as of 2008 Government's expenditure on tobacco control was USD 37,257 (WHO, 2017c).

Current tobacco users

Current tobacco use is defined as the percentage of daily and non-daily tobacco users, includes smoking and smokeless, among all respondents. The overall prevalence of tobacco use was 15.8% with a significantly higher prevalence among men (24.0%) than among women (7.8%). The age group of 60 to 69 years had the highest prevalence of tobacco use at 25.3%. Table 3.2.1 shows the distribution of current tobacco use by age group, sex and residence.

Table 3.2.1: Current tobacco users by age group and sex

Age Group (years)	Men			Women			Both Sexes		
	n	% Current users	95% CI	N	% Current users	95% CI	n	% Current users	95% CI
18-29	597	19.6	15.6-23.6	1022	6.5	4.4-8.6	1619	13.0	10.6-15.4
30-44	578	25.8	21.7-30.0	932	6.2	4.5-7.9	1510	16.0	13.6-18.3
45-59	312	31.8	25.6-38.1	470	11.7	8.2-15.1	782	21.1	17.6-24.6
60-69	127	34.6	23.9-45.4	257	18.1	11.6-24.6	384	25.3	18.9-31.6
18-69	**1614**	**24.0**	**21.4-26.7**	**2681**	**7.8**	**6.4-9.2**	**4295**	**15.8**	**14.2-17.3**

Current Tobacco Smokers

The overall prevalence of tobacco smoking was 12.3%. There was a significant gender difference in the prevalence of tobacco smoking. Tobacco smoking was more prevalent in men (23.0%) than in women (2.0%). The largest proportion of tobacco smokers were in the 60 to 69 years age group. Tobacco smoking was also higher in rural areas (14.9%) than in urban (9.5%). Table 3.2.2 shows the distribution of tobacco smoking by sex and age group.

Table 3.2.2: Current tobacco smokers

Age Group (years)	Men			Women			Both Sexes		
	n	% Current smoker	95% CI	N	% Current smoker	95% CI	n	% Current smoker	95% CI
18-29	597	18.9	14.9-22.8	1022	1.4	0.5-2.3	1619	10.1	8.0-12.2
30-44	578	24.8	20.7-28.8	933	1.6	0.8-2.5	1511	13.2	10.9-15.4
45-59	312	30.5	24.4-36.6	470	2.9	1.4-4.4	782	15.9	12.8-18.9
60-69	127	30.6	19.9-41.4	257	7.4	3.0-11.8	384	17.5	11.8-23.1
18-69	1614	23.0	20.4-25.6	2682	2.0	1.4-2.6	4296	12.3	10.9-13.6
Residence									
Rural	1057	26.8	23.9-30.0	1600	2.0	1.0-2.9	2657	14.9	13.2-16.7
Urban	557	18.5	15.0-22.6	1082	2.0	1.3-3.1	1639	9.5	7.9-11.6

Smoking status

Overall prevalence of daily smoking among current smokers was 9.0% with men having a significantly higher prevalence (17.1%) than women (1.3%). Most of the respondents (82.0%) had never smoked before while 5.7% where former smokers.

Table 3.2.3 shows the smoking status of respondents categorized as daily smokers, non-daily smokers, former smokers and never smokers.

Table 3.2.3: Smoking status of respondents

Age Group (years)	N	Current smoker						Non-smokers	
		% Daily	95% CI	% Non-daily	95% CI	% Former smoker	95% CI	% Never smoker	95% CI
									Men
18-29	597	13.2	10.0-16.4	5.7	3.2-8.2	11.8	8.3-15.3	69.4	64.5-74.3
30-44	578	18.6	15.1-22.1	6.1	3.8-8.5	6.3	3.8-8.8	69.0	64.4-73.6
45-59	312	25.2	19.5-30.9	5.3	2.7-8.0	15.7	10.8-20.5	53.8	46.6-61.0
60-69	127	22.9	13.7-32.1	7.8	0.0-15.8	13.3	6.3-20.2	56.1	44.5-67.7
18-69	1614	17.1	15.0-19.3	5.9	4.3-7.4	10.5	8.3-12.6	66.6	63.3-69.8
									Women
18-29	1022	0.7	0.0-1.4	0.7	0.2-1.3	0.8	0.2-1.4	97.8	96.7-98.9
30-44	933	1.2	0.4-1.9	0.5	0.0-0.9	1.1	0.2-2.0	97.3	96.0-98.5
45-59	470	2.2	0.9-3.6	0.7	0.0-1.3	1.0	0.2-1.9	96.1	94.4-97.8
60-69	257	4.9	1.8-8.1	2.5	0.0-5.6	2.9	0.1-5.6	89.7	84.8-94.7
18-69	2682	1.3	0.8-1.8	0.7	0.4-1.1	1.0	0.6-1.5	97.0	96.2-97.7
									Both Sexes
18-29	1619	6.9	5.2-8.5	3.2	1.9-4.5	6.3	4.5-8.1	83.7	81.0-86.4
30-44	1511	9.9	7.9-11.8	3.3	2.0-4.6	3.7	2.4-5.0	83.2	80.6-85.8
45-59	782	13.0	10.1-15.9	2.9	1.6-4.2	7.9	5.4-10.4	76.2	72.3-80.2
60-69	384	12.7	8.3-17.1	4.8	0.9-8.7	7.4	4.0-10.8	75.2	69.1-81.3
18-69	4296	9.0	7.9-10.2	3.2	2.4-4.1	5.7	4.6-6.8	82.0	80.3-83.7

Tobacco product use by age group

About two-thirds (67.9%) of the current smokers reported using manufactured cigarettes. Hand rolled cigarettes were used by 48.6% of the respondents while shisha and pipes were used by 3.3% and 5.1% of the respondents respectively. Manufactured cigarettes were used mainly in the 18 to 29 years age group (77.1%). The tobacco products used by current smokers are illustrated in Table 3.2.4

Table 3.2.4: Percentage of current smokers smoking different tobacco products

Age Group (years)	Both Sexes						
	N	% Manuf. cigs.	% Hand-rolled cigs.	% Pipes of tobacco	% Cigars, cheroots, cigarillos	% Shisha	% Other
18-29	130	77.1	39.8	5.2	10.9	3.9	2.7
30-44	175	70.0	48.0	2.3	8.5	3.2	3.2
45-59	120	52.4	68.3	9.5	12.9	2.9	5.4
60-69	50	46.2	47.9	8.8	1.6	2.0	4.7
18-69	**475**	**67.9**	48.6	5.1	9.8	3.3	3.5

Mean age of smoking initiation

Table 3.2.5 highlights the mean age that current daily smokers started smoking. The overall mean age of starting smoking is 21 years with no marked difference between rural and urban areas.

Table 3.2.5: Average age of smoking initiation among daily smokers

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	N	Mean age	95% CI	N	Mean age	95% CI	N	Mean age	95% CI
18-29	72	18.2	17.4-19.0				76	18.3	17.5-19.1
30-44	108	20.3	19.2-21.4				117	20.4	19.3-21.5
45-59	79	25.1	22.3-27.9				84	25.5	22.8-28.3
60-69	27	23.5	19.9-27.0				35	27.4	22.3-32.4
18-69	286	20.7	19.8-21.6	26*			312	21.2	20.2-22.1
Residence									
Rural	215	21.6	20.5-22.6				232	21.9	20.8-23.0
Urban	71	19.1	17.8-20.3				80	19.7	18.3-21.1

*estimates based on less than 50 unweighted cases have been censored.

Smokeless tobacco

The overall prevalence of smokeless tobacco use was 4.5%. Women significantly used more smokeless tobacco (6.8 %) compared to men (2.2%). In both sexes, the use of smokeless tobacco was more in the 60 to 69 years age group (10.5%). Table 3.2.6 shows the distribution of current smokeless tobacco users by age group and sex.

Table 3.2.6: Current use of smokeless tobacco

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% Current users	95% CI	N	% Current users	95% CI	n	% Current users	95% CI
18-29	597	1.8	0.6-3.0	1023	5.8	3.8-7.8	1620	3.8	2.7-4.9
30-44	578	2.5	1.0-4.0	933	5.5	3.8-7.1	1511	4.0	2.9-5.1
45-59	312	1.9	0.4-3.4	473	10.1	6.8-13.5	785	6.3	4.3-8.2
60-69	127	5.5	1.4-9.5	257	14.3	8.0-20.7	384	10.5	6.4-14.6
18-69	**1614**	**2.2**	**1.3-3.1**	**2686**	**6.8**	**5.4-8.2**	**4300**	**4.5**	**3.7-5.3**

Status of smokeless tobacco

Table 3.2.7 shows the smokeless tobacco use status of respondents categorized as daily users, non-daily users, former users and never users. Overall, 93.6% of the respondents have never used smokeless tobacco. Very few respondents (2.1%) are daily users of smokeless tobacco. There was a significant gender difference on the daily users of smokeless tobacco with 3.2% of the women using compared to only 0.9% of the men.

Table 3.2.7: Status of smokeless tobacco use

Age group (years)	N	Current user					Non user		
		% Daily	95% CI	% Non-daily	95% CI	% Past user	95% CI	% Never used	95% CI
Men									
18-29	597	0.6	0.0-1.2	1.2	0.2-2.2	2.0	0.5-3.5	96.2	94.4-98.1
30-44	578	1.2	0.1-2.2	1.3	0.2-2.4	2.1	0.5-3.8	95.4	93.2-97.6
45-59	312	0.6	0.0-1.4	1.3	0.0-2.6	2.4	0.1-4.6	95.7	93.1-98.4
60-69	127	4.1	1.0-7.2	1.4	0.0-4.1	1.2	0.0-2.5	93.4	89.1-97.6
18-69	**1614**	**0.9**	**0.4-1.4**	**1.3**	**0.5-2.0**	**2.1**	**1.1-3.0**	**95.8**	**94.5-97.1**
Women									
18-29	1023	1.9	0.6-3.2	3.9	2.3-5.5	1.4	0.4-2.4	92.8	90.4-95.2
30-44	933	2.9	1.6-4.2	2.6	1.5-3.6	1.5	0.6-2.5	93.0	91.1-94.9
45-59	473	5.9	3.3-8.4	4.2	1.8-6.7	1.7	0.1-3.3	88.2	84.5-91.8
60-69	257	8.5	4.9-12.1	5.8	0.3-11.3	3.7	0.1-7.4	81.9	75.1-88.8
18-69	**2686**	**3.2**	**2.3-4.0**	**3.6**	**2.6-4.6**	**1.6**	**1.0-2.3**	**91.6**	**90.0-93.3**
Both Sexes									
18-29	1620	1.2	0.5-1.9	2.6	1.6-3.5	1.7	0.8-2.6	94.5	93.1-95.9
30-44	1511	2.0	1.2-2.9	1.9	1.2-2.7	1.8	0.9-2.8	94.2	92.8-95.6
45-59	785	3.4	2.0-4.9	2.8	1.4-4.3	2.0	0.7-3.4	91.7	89.3-94.2
60-69	384	6.6	4.2-9.1	3.9	0.5-7.2	2.6	0.5-4.8	86.9	82.4-91.4
18-69	**4300**	**2.1**	**1.6-2.5**	**2.5**	**1.8-3.1**	**1.8**	**1.3-2.4**	**93.6**	**92.7-94.6**

The distribution of current users of smokeless tobacco using various smokeless tobacco products is detailed in Table 3.2.8. 69.1% of the current users of smokeless tobacco used snuff by nose followed by 26.5% use snuff by mouth. Approximately 5.6% of the respondents reported chewing tobacco.

Table 3.2.8: percentage of current users of smokeless tobacco by selected products

Age Group (years)	**Both Sexes**										
	N	% Snuff by mouth	95% CI	% Snuff by nose	95% CI	% Chewing tobacco	95% CI	% Betel, quid	95% CI	% Other	95% CI
18-29	61	19.7	7.2-32.2	62.4	48.2-76.5	6.9	0.0-15.6	0.0	0.0-0.0	2.7	0.0-7.9
30-44	68	28.7	16.4-41.1	66.8	52.5-81.1	5.9	0.0-14.1	0.0	0.0-0.0	0.7	0.0-2.2
45-59	56	43.4	26.6-60.2	81.9	69.6-94.2	3.5	0.0-7.6	3.5	0.0-7.6	5.8	0.0-11.8
60-69	45	13.6	2.6-24.5	76.4	61.5-91.2	4.2	0.0-9.9	0.0	0.0-0.0	0.0	0.0-0.0
18-69	**230**	**26.5**	**19.1-33.8**	**69.1**	**61.1-77.1**	**5.6**	**1.3-10.0**	0.7	0.0-1.5	2.4	0.0-4.9

Tobacco cessation

Overall, 49.3% of current smokers attempted to quit smoking in the last 12 months. Table 3.2.9 shows the distribution of current smokers who have attempted to quit smoking in the past 12 months.

Table 3.2.9: Percentage of current smokers who have tried to stop smoking in the last 12 months

Age Group (years)	Men			Women			Both Sexes		
	N	% Tried to stop smoking	95% CI	N	% Tried to stop smoking	95% CI	n	% Tried to stop smoking	95% CI
18-29	116	55.1	44.4-65.7	14	22.7	0.0-51.4	130	52.9	42.6-63.1
30-44	158	45.0	36.6-53.5	17	41.3	13.7-69.0	175	44.8	36.7-52.9
45-59	104	54.9	43.8-65.9	16	23.4	1.3-45.6	120	51.8	41.5-62.2
60-69	36	52.3	31.1-73.4	14	30.2	4.3-56.0	50	47.0	28.0-66.0
18-69	**414**	**51.1**	**45.2-57.1**	**61**	**29.4**	**15.4-43.5**	**475**	**49.3**	**43.8-54.9**

Table 3.2.10 details the distribution of respondents advised to stop smoking by a doctor or health worker. Overall, almost one-fifth (19.7%) of the respondents had been advised to stop smoking by health workers. The 18 to 29 years age group had the least percentage of respondents advised to stop smoking.

Table 3.2.10: Percentage of current smokers who have been advised by a health worker to stop smoking

Age Group (years)	Men			Women			Both Sexes		
	n	% Advised to stop smoking	95% CI	N	% Advised to stop smoking	95% CI	n	% Advised to stop smoking	95% CI
18-29	96	16.8	8.2-25.4	12	3.9	0.0-12.2	108	15.9	7.8-24.0
30-44	122	21.0	12.7-29.3	15	12.5	0.0-35.7	137	20.4	12.1-28.7
45-59	89	25.1	13.9-36.3	10	14.8	0.0-36.0	99	24.4	13.8-35.0
60-69	30	30.2	6.7-53.8	13	4.2	0.0-12.9	43	24.2	5.5-43.0
18-69	**337**	**20.7**	**15.4-26.1**	**50**	**8.2**	**0.0-17.3**	**387**	**19.7**	**14.6-24.7**

Exposure to second hand smoke

Table 3.2.11 shows the distribution of respondents exposed to second hand smoke in their home. 17.4% of the respondents reported being exposed to second hand smoke in their homes. There was no significant gender difference in the exposure to second hand smoke in the home (17.0% in men compared to 17.9% in women).

Table 3.2.11: Percentage of respondents exposed to second hand smoke in the home

Age Group (years)	Men			Women			Both Sexes		
	n	% Exposed	95% CI	n	% Exposed	95% CI	N	% Exposed	95% CI
18-29	597	19.2	15.3-23.2	1023	17.6	14.3-21.0	1620	18.4	15.6-21.2
30-44	578	14.8	11.2-18.5	934	19.6	16.3-23.0	1512	17.2	14.5-20.0
45-59	312	15.2	10.3-20.2	473	16.0	12.0-19.9	785	15.6	12.4-18.8
60-69	127	15.6	7.6-23.5	257	14.3	8.0-20.6	384	14.8	9.8-19.8
18-69	**1614**	**17.0**	**14.5-19.5**	**2687**	**17.9**	**15.6-20.2**	**4301**	**17.4**	**15.5-19.4**

Slightly over one-fifth of the respondents (21.1%) reported being exposed to second hand smoke in the workplace in the last 30 days. A significantly higher proportion of men (25.7%) than women (16.5%) reported that they have been exposed to second-hand smoke in the workplace. Table 3.2.12 illustrates the distribution of respondents who were exposed to smoke in their workplace.

Table 3.2.12: Percentage of respondents exposed to second hand smoke in the workplace

Age Group (years)	Men			Women			Both Sexes		
	n	% Exposed	95% CI	n	% Exposed	95% CI	n	% Exposed	95% CI
18-29	468	28.3	23.0-33.6	808	16.2	12.9-19.6	1276	22.2	18.9-25.5
30-44	436	25.8	20.9-30.7	705	20.1	16.1-24.0	1141	22.9	19.4-26.5
45-59	230	21.3	14.6-28.1	359	12.8	8.5-17.1	589	16.8	12.6-20.9
60-69	97	9.3	3.3-15.2	202	8.0	3.9-12.2	299	8.6	5.2-11.9
18-69	**1231**	**25.7**	**22.2-29.3**	**2074**	**16.5**	**14.1-19.0**	**3305**	**21.1**	**18.7-23.4**

3.2.2 Tobacco policy

38.0% of respondents reported receiving information on the dangers of tobacco via the radio as compared to 21.0% who saw messages on TV and 17.7% who saw messages in print media (Table 3.2.13).

Table 3.2.13: Percentage of respondents who noticed information in different media about dangers of smoking or that encourages quitting

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
Newspaper/Magazines									
18-29	569	21.9	17.6-26.1	940	18.1	14.4-21.8	1509	20.0	16.7-23.3
30-44	543	19.4	15.1-23.8	866	14.0	10.9-17.2	1409	16.8	14.0-19.5
45-59	289	19.0	13.3-24.8	423	11.1	7.6-14.6	712	14.9	11.6-18.2
60-69	118	11.0	3.4-18.5	232	8.3	3.9-12.6	350	9.4	5.4-13.4
18-69	**1519**	**20.2**	**17.2-23.2**	**2461**	**15.2**	**13.0-17.4**	**3980**	**17.7**	**15.6-19.8**
Television									
18-29	565	25.2	20.6-29.9	933	22.1	18.5-25.8	1498	23.7	20.4-27.0
30-44	534	20.0	15.7-24.4	857	20.7	16.8-24.7	1391	20.4	17.5-23.2
45-59	292	16.8	10.8-22.8	428	16.9	12.9-20.9	720	16.9	13.1-20.6
60-69	116	19.9	10.1-29.7	228	13.2	7.8-18.7	344	16.1	11.0-21.3
18-69	**1507**	**22.1**	**19.0-25.1**	**2446**	**20.4**	**18.0-22.9**	**3953**	**21.2**	**19.1-23.4**
Radio									
18-29	566	40.7	35.5-45.8	948	34.5	30.7-38.3	1514	37.6	34.0-41.2
30-44	538	38.5	32.9-44.0	870	39.1	34.7-43.5	1408	38.8	35.0-42.6
45-59	295	40.8	33.1-48.5	436	34.9	29.5-40.3	731	37.7	32.7-42.7
60-69	119	41.8	29.5-54.0	232	33.6	26.7-40.5	351	37.2	30.2-44.1
18-69	**1518**	**40.0**	**36.2-43.8**	**2486**	**36.1**	**33.3-38.9**	**4004**	**38.0**	**35.2-40.8**

18.4% of respondents reported having seen an advertisement and promotion for cigarettes in the last 30 days (Table 3.2.14). Men were more likely to see advertisements and promotion of cigarettes (22.0%) than women (14.8%)

Table 3.2.14: Promotion and advertisements for cigarettes

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	572	21.1	16.3-26.0	948	16.0	12.8-19.2	1520	18.6	15.5-21.7
30-44	542	24.0	18.2-29.9	849	14.1	10.8-17.4	1391	19.1	15.5-22.7
45-59	290	20.0	13.9-26.1	428	14.5	10.2-18.7	718	17.1	13.3-20.9
60-69	113	22.4	11.5-33.3	226	9.9	5.2-14.6	339	15.4	9.9-20.9
18-69	**1517**	**22.0**	**18.5-25.6**	**2451**	**14.8**	**12.4-17.2**	**3968**	**18.4**	**16.0-20.9**

About two thirds (66.9%) of all the current smokers have thought about quitting smoking after noticing health warnings about the dangers of tobacco smoking (Table 3.2.15)

Table 3.2.15: Percentage of Current smokers who saw health warnings on cigarette packages that thought of quitting

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	62	73.7	59.7-87.7	5			67	70.4	56.4-84.4
30-44	91	67.7	57.2-78.2	6			97	68.2	57.8-78.5
45-59	52	54.2	37.2-71.2	5			57	55.8	39.6-72.1
60-69	16	69.3	38.4-100.0	3			19	63.7	31.5-95.9
18-69	**221**	**68.1**	**59.9-76.2**	**19***			**240**	**66.9**	**58.9-74.9**

The average price for a pack of 20 cigarettes was K20.00 (Table 3.2.16).

Table 3.2.16: Average price paid for 20 manufactured cigarettes

Age Group (years)	Both Sexes		
	n	Mean KWA	95% CI
18-29	99	24.2	17.5-30.9
30-44	121	17.0	14.8-19.1
45-59	66	16.3	11.6-20.9
60-69	26	15.0	10.4-19.7
18-69	**312**	**19.9**	**16.8-22.9**

3.2.2 Alcohol Consumption

There are a number of health hazards associated with alcohol intake in large amounts. This includes alcoholism, malnutrition, alcoholic liver diseases, and cancer among others. The 2014 World Health Organization global alcohol report (WHO, 2014a) indicated that although Zambia has restrictions for on/off-premises sales of alcoholic beverages as well as exercise tax on beer/wine/spirits, there was no written national policy adopted or revised. The Zambia national legal minimum age for off-premise sales of alcoholic beverages was 18 years. The report also indicated that there were no legally binding regulations on alcohol advertising, product placement, sponsorship, and sales promotion.

Distribution of alcohol consumption

Overall, 21.7% of the respondents were current drinkers of alcohol with a significant gender difference (32.0% for men compared to 11.8% for women). In men, the largest proportion of drinkers (37.8%) was among the 30 to 44 years while in women (15.3%) was among the 60 to 69 years age group. 74.7% of the women were lifetime abstainers as opposed to 52.1% of the men.

The percentage of current drinkers was significantly higher among women in urban areas (15.7%) than in rural areas (7.8%). The distribution of alcohol consumption by sex, age group and residence is shown in
Table 3.2.17 below.

Table 3.2.17: Distribution of alcohol consumption among respondents

	N	% Current drinker (past 30 days)	95% CI	% Drank in past 12 months, not current	95% CI	% Past 12 months abstainer	95% CI	% Lifetime abstainer	95% CI
					Men				
18-29	597	27.4	23.2-31.6	7.1	4.5-9.6	8.8	5.9-11.8	56.7	51.7-61.7
30-44	578	37.8	32.8-42.8	3.0	1.5-4.4	11.6	7.2-15.9	47.7	42.9-52.4
45-59	312	33.2	27.0-39.4	5.4	1.7-9.2	13.4	8.6-18.2	48.0	41.2-54.8
60-69	127	32.3	20.8-43.7	3.9	0.9-6.8	14.8	6.1-23.4	49.1	37.1-61.1
18-69	**1614**	**32.0**	**29.2-34.9**	**5.3**	**3.9-6.6**	**10.7**	**8.2-13.1**	**52.1**	**48.7-55.4**
					Women				
18-29	1023	10.1	8.0-12.1	5.8	3.8-7.7	9.0	6.7-11.3	75.2	71.3-79.1
30-44	934	13.6	10.7-16.6	4.1	2.6-5.6	7.4	5.5-9.3	74.9	70.9-78.8
45-59	473	12.1	8.4-15.8	4.3	2.0-6.5	9.6	6.1-13.1	74.0	68.2-79.9
60-69	257	15.3	9.4-21.3	4.7	1.6-7.9	8.9	3.8-14.0	71.0	63.8-78.2
18-69	**2687**	**11.8**	**10.3-13.4**	**4.9**	**3.8-6.0**	**8.5**	**7.0-10.1**	**74.7**	**72.1-77.4**
					Both Sexes				
18-29	1620	18.7	16.1-21.3	6.4	4.8-8.0	8.9	7.0-10.8	66.0	62.5-69.5
30-44	1512	25.7	22.6-28.7	3.5	2.4-4.6	9.5	7.0-11.9	61.3	58.0-64.7
45-59	785	22.0	18.1-25.9	4.8	2.6-7.1	11.4	8.6-14.2	61.8	57.1-66.6
60-69	384	22.7	16.4-29.0	4.4	2.2-6.5	11.4	6.9-16.0	61.5	54.3-68.7
18-69	**4301**	**21.7**	**20.0-23.4**	**5.1**	**4.2-6.0**	**9.6**	**8.0-11.1**	**63.6**	**61.2-66.0**
Residence									
					Men				
Rural	1057	31.0	27.9-34.4	5.9	4.4-7.9	8.7	6.9-10.8	54.4	50.9-57.9
Urban	557	33.2	28.6-38.0	4.5	2.8-7.3	13.0	9.7-17.2	49.3	44.2-54.5
					Women				
Rural	1600	7.8	6.4-9.4	3.6	2.6-4.9	4.5	3.3-6.0	84.2	81.9-86.2
Urban	1087	15.7	13.2-18.5	6.2	4.6-8.3	12.3	10.0-15.1	65.9	62.2-69.3
					Both Sexes				
Rural	2657	19.8	18.0-21.8	4.8	3.8-5.9	6.7	5.6-7.9	68.7	66.5-70.9
Urban	1644	23.7	21.2-26.5	5.4	4.2-7.0	12.6	10.6-15.0	58.2	55.1-61.3

Frequency of alcohol consumption in the last 7 days among current drinkers

The minority of current drinkers (7.6%) consume alcohol daily with little difference between sexes (7.4% for men and 8.0% for women). The majority of the current drinkers (53.4%) consume alcohol 1 to 2 days in the last week. A fifth (19.8%) of the respondents reported not having consumed any alcohol in the past week (Table 3.2.18).

Table 3.2.18: Frequency of alcohol consumption in the last 7 days by current drinkers

Age Group (years)	N	% Daily	95% CI	% 5-6 days	95% CI	% 3-4 days	95% CI	% 1-2 days	95% CI	% 0 days	95% CI
Men											
18-29	162	3.3	0.0-7.5	5.1	1.4-8.9	21.6	13.4-29.7	52.5	43.7-61.3	17.5	10.4-24.7
30-44	217	9.0	4.4-13.6	5.0	1.6-8.4	16.1	9.9-22.3	51.2	42.6-59.8	18.7	12.2-25.2
45-59	103	12.6	4.0-21.3	2.6	0.0-6.1	12.1	5.2-18.9	52.3	41.1-63.6	20.4	9.2-31.6
60-69	39	15.4	2.7-28.1	2.0	0.0-6.1	23.8	1.1-46.6	48.7	27.4-69.9	10.1	1.5-18.7
18-69	**521**	**7.4**	**4.6-10.2**	**4.6**	**2.5-6.7**	**18.1**	**13.7-22.6**	**51.8**	**46.4-57.2**	**18.1**	**13.8-22.3**
Women											
18-29	90	7.9	0.0-16.6	4.6	0.0-9.5	5.3	0.9-9.7	58.5	45.7-71.2	23.8	13.3-34.2
30-44	115	10.4	0.0-22.0	4.6	0.4-8.8	4.0	0.0-8.3	54.2	42.3-66.1	26.8	15.1-38.4
45-59	50	1.7	0.0-4.1	7.3	0.0-17.1	8.9	0.0-18.0	64.5	49.8-79.3	17.6	5.7-29.5
60-69	34	8.0	0.0-18.8	0.9	0.0-2.7	5.2	0.0-11.4	59.0	38.0-80.1	26.9	8.5-45.4
18-69	**289**	**8.0**	**2.1-13.9**	**4.7**	**1.6-7.9**	**5.3**	**2.5-8.2**	**57.7**	**50.8-64.6**	**24.3**	**18.0-30.6**
Both sexes											
18-29	252	4.5	0.7-8.3	5.0	2.0-8.0	17.4	11.2-23.6	54.0	46.8-61.3	19.1	12.8-25.5
30-44	332	9.4	3.8-15.0	4.9	2.2-7.6	12.8	8.2-17.4	52.0	45.2-58.8	20.9	15.2-26.6
45-59	153	9.4	3.5-15.3	4.0	0.2-7.8	11.1	5.8-16.5	55.9	46.2-65.6	19.6	11.0-28.2
60-69	73	12.5	3.8-21.3	1.6	0.0-4.2	16.6	1.5-31.7	52.7	36.7-68.6	16.6	7.4-25.8
18-69	**810**	**7.6**	**4.7-10.4**	**4.6**	**2.9-6.4**	**14.6**	**11.3-17.9**	**53.4**	**49.3-57.5**	**19.8**	**16.2-23.4**

Mean number of drinking occasions in the past 30 days among current drinkers

The mean number of drinking occasions in the last 30 days among current drinkers was 6.7 days, which was significantly higher in males (7.7 days) compared to women (4.0 days). Table 3.2.19 below illustrates the mean number of drinking occasions among current drinkers in the last 30 days.

Table 3.2.19: Mean number of drinking occasions in the last 30 days among current drinkers

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	N	Mean	95% CI	N	Mean	95% CI	n	Mean	95% CI
18-29	138	7.4	5.0-9.9	81	3.5	2.3-4.6	219	6.4	4.5-8.4
30-44	180	8.1	6.4-9.7	93	3.8	2.6-5.0	273	6.8	5.6-8.1
45-59	90	7.1	5.3-8.9	34	5.8	2.1-9.5	124	6.8	5.2-8.3
60-69	28	10.4	5.2-15.7	28	5.7	2.5-8.9	56	8.6	5.0-12.3
18-69	436	7.7	6.5-9.0	236	4.0	3.1-4.9	672	6.7	5.7-7.8

Table *3.2.20* shows the average volume of alcohol consumed during a drinking occasion. The mean number of standard drinks per drinking occasion was 5.8 with a significant difference between males (6.3) and female (4.3).

Table 3.2.20: Mean standard drinks per drinking occasion among current drinkers in the past 30 days

Age Group (years)	Men			Women			Both Sexes		
	N	Mean	95% CI	N	Mean	95% CI	n	Mean	95% CI
18-29	139	5.7	4.8-6.7	82	4.8	3.5-6.2	221	5.5	4.7-6.3
30-44	182	6.6	5.5-7.7	88	3.9	3.3-4.5	270	5.9	5.0-6.7
45-59	84	6.9	5.4-8.3	34	4.6	2.7-6.5	118	6.3	4.8-7.7
60-69	26	7.2	4.2-10.2	27	3.5	2.6-4.3	53	5.7	3.9-7.6
18-69	431	6.3	5.6-6.9	231	4.3	3.7-5.0	662	5.8	5.2-6.3

Table 3.2.21 shows the largest number of drinks consumed during a single drinking occasion. The mean number of standard drinks per drinking occasion was 8.3 with a significant difference between males (9.2) and female (5.7).

Table 3.2.21: Mean maximum number of standard drinks consumed on one occasion in the last 30 days

Age Group (years)	Men			Women			Both Sexes		
	N	Mean maximum number	95% CI	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI
18-29	129	9.0	7.3-10.6	79	6.3	4.9-7.7	208	8.3	6.9-9.6
30-44	179	9.4	7.8-10.9	90	5.1	4.0-6.1	269	8.2	7.0-9.5
45-59	87	9.7	6.2-13.2	35	7.1	3.1-11.1	122	9.0	5.5-12.5
60-69	27	8.2	6.4-9.9	30	3.9	3.0-4.9	57	6.4	5.0-7.7
18-69	**422**	**9.2**	**8.1-10.3**	**234**	**5.7**	**4.8-6.6**	**656**	**8.3**	**7.4-9.2**

About one in ten respondents (10.9%) reported having consumed 6 or more drinks on a single occasion in the last 30 days, with the percentage for men (16.8%) significantly higher than that of women (5.1%). Among women, urban residents were more likely to drink more than 6 drinks (7.5%) than rural women (2.6%) The distribution of the consumption of 6 or more drinks is detailed in Table 3.2.22.

Table 3.2.22: Consumption of six or more drinks on a single occasion among current drinkers

Age Group (years)	Men			Women			Both Sexes		
	N	% ≥ 6 drinks	95% CI	N	% ≥ 6 drinks	95% CI	N	% ≥ 6 drinks	95% CI
18-29	597	14.9	11.4-18.3	1023	4.6	3.0-6.2	1620	9.7	7.6-11.8
30-44	578	18.7	15.0-22.5	934	6.0	4.3-7.7	1512	12.3	10.2-14.5
45-59	312	17.9	12.6-23.3	473	5.4	2.8-7.9	785	11.2	8.1-14.4
60-69	127	19.1	9.8-28.4	257	3.7	0.5-7.0	384	10.4	5.8-14.9
18-69	**1614**	**16.8**	**14.5-19.1**	**2687**	**5.1**	**4.1-6.2**	**4301**	**10.9**	**9.5-12.2**
Residence									
Rural	1057	15.2	12.8-17.9	1600	2.6	1.8-3.7	2657	9.1	7.8-10.6
Urban	557	18.7	15.1-22.9	1087	7.5	5.8-9.6	1644	12.7	10.7-14.9

Consumption of unrecorded alcohol

Slightly over a quarter (26.3%) of the respondents reported having consumed unrecorded alcohol in the last 7 days with little difference among the sexes. The 60 to 69 years age group had the largest percentage (36.1%) of respondents consuming unrecorded alcohol. The distribution of consumption of unrecorded alcohol is given in Table 3.2.23.

Table 3.2.23: Consumption of unrecorded alcohol during the past 7 days

Age Group (years)	Men			Women			Both Sexes		
	n	% consuming unrecorded alcohol	95% CI	n	% consuming unrecorded alcohol	95% CI	N	% consuming unrecorded alcohol	95% CI
18-29	162	19.6	12.8-26.3	95	27.2	16.1-38.3	257	21.7	16.0-27.3
30-44	211	32.7	25.7-39.6	111	21.9	12.8-31.0	322	29.7	23.8-35.7
45-59	108	27.6	17.4-37.7	49	26.7	13.6-39.9	157	27.3	18.7-36.0
60-69	37	32.9	14.1-51.7	33	41.2	18.7-63.7	70	36.1	21.8-50.5
18-69	**518**	**26.5**	**21.9-31.0**	**288**	**26.0**	**19.4-32.6**	**806**	**26.3**	**22.5-30.2**

3.2.3 Diet

A healthy diet helps protect against malnutrition in all its forms, as well as non-communicable diseases (NCDs), including diabetes, heart disease, stroke and cancer. However, the effects of urbanization and changing lifestyles have resulted in changing diet patterns with an increase in the consumption of processed foods high in sugar, salt and fats and reduction in consumption of fruits and vegetables (WHO, 2015).

3.2.3.1 Fruit and vegetable consumption

The WHO recommends eating at least 400g or 5 portions of fruits and vegetables per day reduces the risk of NCDs and helps ensure an adequate daily intake of dietary fibre (WHO, 2015). In Zambia, previous studies have shown that consumption of fruits/vegetables is low with the majority of the population not meeting the recommended 5 portions of fruits and vegetables daily (WHO, 2008).

Mean number of days of fruit consumption in a typical week

Respondents were asked about their fruit and vegetable intake in a typical week and on how many servings of fruit and vegetables they consumed on one of these days.

On average, respondents reported consuming fruits on 2.1 days in a week with little difference between men (2.0 days) and women (2.1 days). However, urban residents consumed fruit one more day than rural residents (2.4 days for urban compared to 1.6 days for rural). Table 3.2.24 show the average number of days of fruit consumption by age group and sex and residence.

Table 3.2.24: Mean number of days of fruits consumption

Age Group (years)	Men			Women			Both Sexes		
	N	Mean number of days	95% CI	N	Mean number of days	95% CI	n	Mean number of days	95% CI
18-29	448	2.1	1.9-2.4	760	2.2	2.0-2.4	1208	2.2	2.0-2.4
30-44	419	2.0	1.7-2.3	658	2.1	1.9-2.3	1077	2.1	1.9-2.2
45-59	220	1.7	1.4-2.1	324	1.8	1.5-2.1	544	1.8	1.5-2.0
60-69	73	2.0	1.4-2.6	165	1.3	0.9-1.7	238	1.6	1.2-2.0
18-69	**1160**	**2.0**	**1.9-2.2**	**1907**	**2.1**	**1.9-2.2**	**3067**	**2.1**	**1.9-2.2**
Residence									
Rural	730	1.6	1.4-1.8	1038	1.7	1.5-1.8	1768	1.6	1.5-1.8
Urban	430	2.5	2.2-2.7	869	2.4	2.2-2.6	1299	2.4	2.3-2.6

Mean number of days vegetables are consumed in a typical week

Respondents reported consuming vegetables on average of 6.3 days in a week. There was no significant difference in the consumption of vegetables among the sexes and the age groups. Urban residents consumed vegetables every day in a week (6.5 days) compared to 6.0 days for rural residents. Table 3.2.25 shows the mean consumption of vegetables by age group, sex and residence.

Table 3.2.25: Mean number of days of vegetable consumption

Age Group (years)	Men			Women			Both Sexes		
	N	Mean number of days	95% CI	N	Mean number of days	95% CI	n	Mean number of days	95% CI
18-29	566	6.0	5.8-6.2	967	6.4	6.2-6.5	1533	6.2	6.1-6.3
30-44	552	6.3	6.1-6.4	880	6.4	6.3-6.5	1432	6.3	6.2-6.4
45-59	297	6.0	5.7-6.3	444	6.5	6.4-6.6	741	6.3	6.1-6.4
60-69	115	6.4	6.1-6.7	236	6.3	6.0-6.5	351	6.3	6.1-6.5
18-69	**1530**	**6.1**	**6.0-6.2**	**2527**	**6.4**	**6.3-6.5**	**4057**	**6.3**	**6.2-6.3**
Residence									
Rural	990	5.9	5.7-6.0	1474	6.2	6.1-6.3	2464	6.0	5.9-6.1
Urban	540	6.4	6.2-6.5	1053	6.5	6.4-6.6	1593	6.5	6.4-6.6

Mean number of servings of fruit on average per day

Respondents reported consuming on average less than one (0.7) serving of fruits per day. This was largely consistent across the age groups and sexes. Table 3.2.26 illustrates the mean number of servings of fruits on average per day.

Table 3.2.26: Mean number of servings of fruits on average per day

Age Group (years)	Men			Women			Both Sexes		
	N	Mean number of servings	95% CI	N	Mean number of servings	95% CI	n	Mean number of servings	95% CI
18-29	440	0.8	0.6-0.9	747	0.7	0.6-0.8	1187	0.7	0.6-0.8
30-44	414	0.7	0.6-0.9	651	0.7	0.6-0.9	1065	0.7	0.6-0.8
45-59	215	0.6	0.4-0.8	320	0.5	0.4-0.7	535	0.6	0.4-0.7
60-69	71	1.1	0.3-1.9	162	0.3	0.2-0.4	233	0.6	0.3-1.0
18-69	**1140**	**0.7**	**0.6-0.8**	**1880**	**0.7**	**0.6-0.7**	**3020**	**0.7**	**0.6-0.8**

Mean number of servings of vegetables on average per day

On average, respondents consume two (2.1) serving of fruits per day with no difference between the sexes. Table 3.2.27 illustrates the mean number of servings of vegetables on average per day.

Table 3.2.27: Mean number of serving of vegetable on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	N	Mean number of servings	95% CI	n	Mean number of servings	95% CI
18-29	555	2.0	1.8-2.2	950	2.0	1.9-2.2	1505	2.0	1.9-2.2
30-44	542	2.3	2.0-2.5	863	2.2	2.0-2.4	1405	2.2	2.1-2.4
45-59	292	1.9	1.7-2.1	437	2.3	2.0-2.7	729	2.1	1.9-2.4
60-69	113	2.4	1.6-3.2	228	2.2	1.8-2.5	341	2.3	1.9-2.7
18-69	**1502**	**2.1**	**2.0-2.3**	**2478**	**2.1**	**2.0-2.3**	**3980**	**2.1**	**2.0-2.3**

Fruit and vegetable servings on average per day

The World Health Organization (WHO) recommends at least 5 servings of fruits and vegetables a day.

Table 3.2.28 below shows the mean number of servings of fruit and vegetables on average per day. Overall, respondents reported an average daily consumption of about three (2.6) servings of fruit and vegetables with no difference across age groups and sexes.

Table 3.2.28: Mean number of servings of fruit and/or vegetables on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of servings	95% CI	N	Mean number of servings	95% CI	n	Mean number of servings	95% CI
18-29	567	2.6	2.3-2.8	969	2.5	2.3-2.7	1536	2.6	2.4-2.7
30-44	554	2.8	2.5-3.0	880	2.7	2.4-3.0	1434	2.7	2.5-2.9
45-59	295	2.3	2.1-2.6	442	2.7	2.3-3.1	737	2.5	2.3-2.8
60-69	114	3.1	2.1-4.1	233	2.3	2.0-2.7	347	2.7	2.2-3.1
18-69	**1530**	**2.6**	**2.4-2.8**	**2524**	**2.6**	**2.4-2.8**	**4054**	**2.6**	**2.5-2.8**

Number of servings of fruit and/or vegetables on average per day

Overall 11.4% of the respondents reported no consumption of fruits and/or vegetables on average per day while only a tenth (9.6%) of the respondents reported consuming more than 5 servings on average per day. Table 3.2.29 details the distribution by sex and age group.

Table 3.2.29: Percentage of respondents taking various numbers of servings of fruits and/or vegetables on average per day

Age group	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
Men									
18-29	567	13.2	9.5-16.8	60.8	54.9-66.6	16.4	11.9-20.8	9.7	6.6-12.8
30-44	554	11.2	8.0-14.5	60.4	55.0-65.9	17.4	12.4-22.3	11.0	7.8-14.1
45-59	295	15.9	10.6-21.3	59.9	53.1-66.8	15.2	10.3-20.1	8.9	5.1-12.8
60-69	114	8.4	3.1-13.7	65.7	55.0-76.5	15.7	6.9-24.4	10.2	2.8-17.6
18-69	**1530**	**12.7**	**10.4-15.0**	**60.7**	**57.0-64.5**	**16.5**	**13.5-19.6**	**10.1**	**7.8-12.3**
Women									
18-29	969	10.3	7.6-13.0	68.0	64.2-71.8	13.4	10.9-15.8	8.3	6.1-10.5
30-44	880	10.1	7.8-12.4	62.1	57.6-66.6	17.6	14.5-20.8	10.1	7.0-13.2
45-59	442	8.5	5.3-11.7	67.0	61.3-72.8	13.7	9.9-17.4	10.8	6.4-15.2
60-69	233	13.8	8.2-19.5	66.0	57.9-74.2	12.8	7.7-17.9	7.3	3.8-10.9
18-69	**2524**	**10.2**	**8.4-11.9**	**65.8**	**63.1-68.5**	**14.8**	**13.1-16.6**	**9.2**	**7.2-11.3**
Both Sexes									
18-29	1536	11.7	9.5-14.0	64.4	60.9-67.8	14.9	12.3-17.4	9.0	7.0-11.0
30-44	1434	10.7	8.6-12.7	61.3	57.6-65.0	17.5	14.6-20.4	10.5	8.0-13.0
45-59	737	12.0	9.0-15.0	63.7	59.3-68.2	14.4	11.3-17.4	9.9	6.7-13.1
60-69	347	11.5	7.6-15.4	65.9	59.1-72.7	14.0	9.2-18.9	8.5	4.8-12.3
18-69	**4054**	**11.4**	**9.9-12.9**	**63.3**	**60.7-65.8**	**15.7**	**13.9-17.5**	**9.6**	**7.8-11.4**

Inadequate intake of fruit and/or vegetables on average per day

Nine out of ten respondents (90.4%) reported consuming less than five portions of fruits and/or vegetables on average per day with no significant sex or age group difference. Table 3.2.30 illustrates the distribution of fruit and vegetable intake among the respondents.

Table 3.2.30: Percentage of respondents who have less than five servings of fruit and/or vegetables on average per day

Age Group (years)	Men			Women			Both Sexes		
	N	% < five servings per day	95% CI	N	% < five servings per day	95% CI	n	% < five servings per day	95% CI
18-29	567	90.3	87.2-93.4	969	91.7	89.5-93.9	1536	91.0	89.0-93.0
30-44	554	89.0	85.9-92.2	880	89.9	86.8-93.0	1434	89.5	87.0-92.0
45-59	295	91.1	87.2-94.9	442	89.2	84.8-93.6	737	90.1	86.9-93.3
60-69	114	89.8	82.4-97.2	233	92.7	89.1-96.2	347	91.5	87.7-95.2
18-69	**1530**	**89.9**	**87.7-92.2**	**2524**	**90.8**	**88.7-92.8**	**4054**	**90.4**	**88.6-92.2**

3.2.3.2 Salt intake

Salt intake is quite high in many countries. High salt consumption and insufficient potassium intake (less than 3.5 g) contribute to high blood pressure, which in turn increases the risk of heart disease and stroke. The WHO recommends less than 5g of iodized salt (equivalent to approximately 1 teaspoon) per day, and it is estimated that 1.7 million deaths could be prevented each year if people's salt consumption were reduced to this recommended level (WHO, 2015). Foods with a high salt content include processed foods like bacon, ham and other salty snacks; stock cubes and sauces. Practises like adding salt at the table also leads to a higher salt intake.

Mean salt intake among all respondents

The average salt intake among respondents was 9.5g/day, almost twice the recommended amount (Table 3.2.31). Salt intake was highest among men (10.5g/day) than among women (8.5g/day)

Table 3.2.31: Mean salt intake (g/day)

Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	N	Mean	95% CI	N	Mean	95% CI
18-29	421	10.4	10.1-10.6	623	8.4	**8.3-8.6**	1044	9.5	**9.3-9.6**
30-44	403	10.7	10.4-10.9	577	8.9	**8.7-9.0**	980	9.8	**9.6-10.0**
45-59	217	10.6	10.3-10.9	313	8.4	**8.3-8.6**	530	9.5	**9.2-9.7**
60-69	83	10.3	9.8-10.8	173	7.2	**7.0-7.4**	256	8.6	**8.2-8.9**
18-69	**1124**	**10.5**	**10.4-10.6**	**1686**	**8.5**	**8.4-8.6**	**2810**	**9.5**	**9.4-9.6**

Respondents who always add salt to their food

Almost two-fifth (39.8%) of the respondents reported adding salt always or often before or when eating. In both sexes, the 18 to 29 years age group had the largest proportion (41.9%) of respondents adding salt always or often before or when eating food. Table 3.2.32 details the distribution by age group and sex.

Table 3.2.32: Percentage of respondents who add salt always or often before eating or when eating

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI

18-29	595	42.9	37.8-48.1	1022	41.0	36.8-45.2	1617	41.9	38.2-45.7
30-44	578	41.4	36.6-46.1	929	37.3	32.9-41.7	1507	39.3	35.8-42.9
45-59	312	40.0	33.2-46.7	471	31.6	25.9-37.2	783	35.5	31.1-39.9
60-69	126	40.8	28.4-53.1	256	29.9	22.7-37.1	382	34.6	27.5-41.6
18-69	**1611**	**41.9**	**38.4-45.4**	**2678**	**37.8**	**34.7-40.8**	**4289**	**39.8**	**37.0-42.5**

Table 3.2.33 shows the percentage of respondents who added salt always or often when cooking or preparing food at home. The vast majority of respondents (81.5%) added salt always or often when cooking or preparing food at home.

Table 3.2.33: Percentage of respondents who add salt always or often when preparing or cooking food at home

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	595	82.9	79.0-86.9	1022	80.3	76.6-84.0	1617	81.6	79.0-84.2
30-44	576	83.7	79.6-87.7	933	79.6	76.1-83.2	1509	81.6	78.7-84.6
45-59	312	84.4	79.7-89.2	473	78.3	72.9-83.7	785	81.2	77.3-85.1
60-69	127	77.7	67.0-88.5	257	82.4	76.3-88.5	384	80.4	74.6-86.1
18-69	**1610**	**83.2**	**80.4-85.9**	**2685**	**79.9**	**77.2-82.6**	**4295**	**81.5**	**79.3-83.7**

Consumption of processed foods high in salt

WHO reports that a major source of dietary salt can be from eating processed foods high in salt (e.g. bacon, ham and salty snacks) or from foods consumed frequently in large amounts such as bread which contain high levels of salt.

Overall, 6.0% of the respondents reported always or often consuming processed food high in salt. The 18 to 29 years age group had the largest proportion (7.4%) of respondents always or often consuming processed foods high in salt, and a decrease in the consumption with age was seen. Table 3.2.34 presents the distribution by sex and age group.

Table 3.2.34: Percentage of respondents who always or often consume processed foods high in salt

Always or often consume processed food high in salt									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	592	6.2	3.8-8.5	1014	8.5	6.1-11.0	1606	7.4	5.7-9.0
30-44	574	5.7	3.4-8.0	922	6.4	4.3-8.5	1496	6.1	4.6-7.5
45-59	309	1.8	0.1-3.5	460	3.8	1.1-6.4	769	2.9	1.0-4.7
60-69	123	0.3	0.0-0.8	249	2.1	0.0-4.8	372	1.3	0.0-2.8
18-69	**1598**	**5.2**	**3.8-6.6**	**2645**	**6.8**	**5.2-8.3**	**4243**	**6.0**	**4.9-7.0**

Respondent's perception and knowledge of salt consumption

Slightly over three quarters (78.0%) of the respondents felt that they consumed just the right amount of salt, with little difference across the age groups. About 15.4% of the respondents felt they consumed far too much salt. The 18 to 29 years age group has the largest percentage (14.7%) of respondents who felt they consumed too much salt while the 60 to 69 years age group had the highest percentage (11.5%) of those who felt that they consumed too little salt. Table 3.2.35 highlights the respondent's perception of salt intake.

Table 3.2.35: Perceptions of the amount of salt consumed

Age Group (years)	Both Sexes										
	n	% Far too much	95% CI	% Too much	95% CI	% Just the right amount	95% CI	% Too little	95% CI	% Far too little	95% CI
18-29	1576	1.8	1.0-2.6	14.7	11.9-17.4	78.0	75.1-80.9	5.2	3.9-6.5	0.3	0.0-0.7
30-44	1465	2.3	1.4-3.2	13.3	11.0-15.5	78.2	75.5-80.8	5.9	4.5-7.2	0.4	0.0-0.7
45-59	751	1.7	0.7-2.8	11.0	8.1-13.8	78.6	75.3-81.8	8.4	6.2-10.6	0.3	0.0-0.7
60-69	363	1.6	0.1-3.2	9.8	5.2-14.4	75.9	70.3-81.4	11.5	7.6-15.4	1.1	0.0-2.4
18-69	**4155**	**2.0**	**1.4-2.6**	**13.4**	**11.7-15.1**	**78.0**	**76.3-79.8**	**6.2**	**5.3-7.0**	**0.4**	**0.1-0.6**

Respondents knowledge of the dangers of high Salt intake

Table 3.2.36 below shows the percentage of respondents who think that too much salt can cause a health problem. 62.2% of all respondents think that consuming too much salt could cause serious health problem with no gender differences.

Table 3.2.36: percentage of respondents with knowledge of the dangers of high salt intake

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	597	60.7	55.0-66.5	1023	62.7	58.5-67.0	1620	61.7	58.1-65.4
30-44	578	59.8	54.8-64.8	934	62.3	58.0-66.7	1512	61.1	57.3-64.8
45-59	312	64.0	57.5-70.5	473	69.1	63.7-74.4	785	66.7	62.5-70.9
60-69	127	57.2	45.3-69.2	257	63.7	56.4-71.0	384	60.9	53.9-68.0
18-69	**1614**	**60.7**	**56.9-64.5**	**2687**	**63.6**	**60.6-66.6**	**4301**	**62.2**	**59.5-64.8**

Strategies to Controlling salt intake

Limit consumption of processed food

Overall 21.7% of respondents controlled their salt intake by limiting the consumption of processed foods with no significant different between the sexes (19.7% for males and 23.6% for females). Table 3.2.37 below shows the percentage of respondents limiting the consumption of processed foods.

Table 3.2.37: Percentage of respondents who limit consumption of processed foods

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	597	20.2	15.8-24.6	1023	22.5	19.1-25.9	1620	21.4	18.2-24.5
30-44	578	18.8	15.0-22.6	934	22.5	19.1-26.0	1512	20.7	17.9-23.4
45-59	312	19.0	13.9-24.1	473	28.0	22.6-33.5	785	23.8	19.9-27.7
60-69	127	25.3	15.4-35.2	257	26.9	20.0-33.8	384	26.2	20.3-32.1
18-69	**1614**	**19.7**	**16.8-22.6**	**2687**	**23.6**	**21.0-26.2**	**4301**	**21.7**	**19.4-24.0**

Look at the salt or sodium content on food labels

Approximately 6.6% of the respondents control salt intake by looking at the salt or sodium content on food labels. Table 3.2.38 highlights the distribution of respondents who look at food labels to establish salt content.

Table 3.2.38: Percentage of respondents who look at the salt or sodium content on food labels

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	597	8.4	5.4-11.5	1023	6.4	4.4-8.4	1620	7.4	5.4-9.4
30-44	578	6.2	3.6-8.7	934	5.9	4.1-7.6	1512	6.0	4.5-7.5
45-59	312	4.7	2.0-7.4	473	7.3	3.8-10.9	785	6.1	3.7-8.5
60-69	127	4.7	0.6-8.7	257	2.7	0.7-4.7	384	3.5	1.5-5.6
18-69	**1614**	**7.0**	**5.1-8.8**	**2687**	**6.2**	**4.8-7.5**	**4301**	**6.6**	**5.2-7.9**

Buying of low salt/sodium alternative

Only 5.2% of the respondents control salt intake by buying low salt/sodium alternatives. Table 3.2.39 highlights the distribution of respondents who buy low salt alternatives.

Table 3.2.39: Percentage of respondents buying low salt/sodium alternatives

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
18-29	597	5.6	3.1-8.1	1023	5.1	3.2-7.1	1620	5.4	3.6-7.1
30-44	578	4.5	2.2-6.9	934	5.5	3.6-7.4	1512	5.0	3.5-6.6
45-59	312	3.7	1.2-6.3	473	8.1	4.5-11.6	785	6.0	3.8-8.3
60-69	127	2.8	0.2-5.3	257	2.5	0.2-4.8	384	2.6	0.9-4.3
18-69	**1614**	**4.8**	**3.2-6.5**	**2687**	**5.6**	**4.1-7.0**	**4301**	**5.2**	**4.0-6.5**

Avoid eating foods prepared outside of home

Nearly fifteen percent (14.5%) of all respondents control salt intake by avoiding eating food prepared outside of the home. Table 3.2.40 highlights the distribution of respondents who avoid eating foods prepared outside the home.

Table 3.2.40: Percentage of respondents who avoid eating foods prepared outside of the home

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	597	15.4	11.5-19.2	1023	14.0	10.8-17.3	1620	14.7	11.9-17.5
30-44	578	14.1	10.3-17.9	934	15.2	12.1-18.3	1512	14.7	12.2-17.2
45-59	312	11.2	6.5-15.9	473	16.7	11.9-21.4	785	14.1	10.7-17.5
60-69	127	13.6	5.9-21.3	257	12.9	7.8-18.0	384	13.2	8.8-17.6
18-69	**1614**	**14.3**	**11.6-17.0**	**2687**	**14.8**	**12.5-17.0**	**4301**	**14.5**	**12.4-16.6**

3.2.3.3 Dietary Fats and oils

Reducing the amount of total fat intake to less than 30.0% of total energy intake helps prevent unhealthy weight gain in the adult population. The risk of developing NCDs is lowered by reducing saturated fats to less than 10.0% of total energy intake, and trans-fats to less than 1.0% of total energy intake, and replacing both with unsaturated fats. Unsaturated fats (such as those found in fish, avocado, nuts and sunflower seed) are preferable to saturated fats (such as those found in fatty meat, butter, palm and coconut oil, cream, cheese, ghee and lard) (WHO,

2002; WHO, 2015). Industrial trans-fats (such as those found in processed food, fast food, snack food, fried food, pies, cookies and margarines) are not part of a healthy diet

Type of oil used most frequently

Over 83.0% of respondents used vegetable oil for cooking. Other types of oil used by respondents include lard (7.0%). Only 1.0% of respondents reported not using any type of oil or fat when cooking.

3.2.4 Physical activity

Physical activity has been associated with reduction in the risk of coronary heart disease, high blood pressure, stroke, type 2 diabetes, metabolic syndrome, colon and breast cancer, and depression (Organization, 2004). WHO recommends that adults should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate and vigorous-intensity activity. These recommendation can be achieved through recreational activities (sports), occupational activities (e.g. manual work) or transport related activities (e.g. walking or cycling). With changing lifestyles, people are less active and more sedentary (WHO, 2006b).
In this report, we calculated the weekly minutes of moderate to vigorous intensity activities in minutes, which were weighted by metabolic equivalent giving a physical activity score. The total physical activity score was used to classify respondent into “does not meet WHO recommendation” and meets WHO recommendation*.

Percentage of respondents not meeting WHO recommendation on physical activity

Overall, 6.6% of respondents did not meet WHO recommendation of at least 150 minutes of moderate-intensity aerobic physical activity throughout the week. Nearly one-tenth (9.9%) of women did not meet the WHO recommendation compared to 3.5% of men. Table 3.2.40 below shows the percentage of respondents not meeting WHO recommendations on physical activity for health.

Table 3.2.41: Percentage of respondents not meeting WHO recommendations on physical activity for health

Age Group (years)	n	% who did not meet WHO recommendation	95% CI
Men			
18-29	523	2.6	1.4-4.6
30-44	494	3.2	1.9-5.3
45-59	277	6.5	3.7-11.1
60-69	103	6.5	3.2-12.7
18-69	**1397**	**3.5**	**2.6-4.7**
Women			
18-29	854	9.6	7.4-12.6
30-44	757	10.1	7.7-13.7
45-59	377	6.9	4.3-11.0
60-69	200	16.0	10.9-22.9
18-69	**2187**	**9.7**	**8.2-11.4**
Both Sexes			
18-29	1377	6.1	4.8-7.8
30-44	1251	6.6	5.2-8.3
45-59	654	6.7	4.7-9.6
60-69	303	11.8	8.4-16.4
18-69	**3585**	**6.6**	**5.7-7.6**

Mean minutes of physical activity on average per day

On average respondents spent 244.5 minutes in a typical day on physical activity with men spending more time (289.4 minutes) than did women (199.5 minutes). Across the sexes, the 60 to 69 years age group spent the least average time (194.6 minutes) on physical activity followed by the 18 to 29 (231.1 minutes). Rural residents had an overall higher level of physical activity across the sexes than the urban residents. Table 3.2.42 below shows the distribution of the mean minutes of total physical activity across all three domains (work, transport and leisure time) in minutes per day by sex, age group and residence.

Table 3.2.42: Mean minutes of total physical activity on average per day by age and sex

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	Mean minutes	95% CI	n	Mean Minutes	95% CI	n	Mean minutes	95% CI
18-29	523	287.5	264.5-310.5	854	174.3	**159.3-189.4**	1377	231.1	**215.8-246.4**
30-44	494	293.8	270.0-317.7	756	223.5	**205.3-241.7**	1250	259.2	**242.7-275.7**
45-59	277	297.5	266.6-328.4	377	241.4	**216.8-266.1**	654	269.3	**250.0-288.6**
60-69	103	240.9	199.4-282.4	200	158.1	**128.8-187.4**	303	194.6	**170.2-218.9**
18-69	**1397**	**289.4**	**273.6-305.1**	**2187**	**199.5**	**188.1-210.9**	**3584**	**244.5**	**233.6-255.3**
Residence									
Rural	928	328.0	311.5-344.4	1263	258.2	246.2-270.2	2191	296.2	285.5-306.8
Urban	469	241.6	216.9-266.2	924	148.8	136.7-160.9	1393	191.0	177.6-204.5

The median time of total physical activity per day was 188.6 minutes with men spending more time (median = 248.6 minutes) than did women (median = 137.1 minutes). Across the sexes, the 60 to 69 years age group spent the least time on physical activity followed by the age group

18 to 29. Table 3.2.43 below shows the distribution of the median minutes of total physical activity across all three domains (work, transport and leisure time) in minutes per day by sex and age group.

Table 3.2.43: Median minutes of total physical activity on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Median minutes	Inter-quartile range (P25-P75)	N	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)
18-29	523	242.1	107.1-437.1	854	120.0	48.6-262.9	1377	162.9	71.4-355.7
30-44	494	257.1	107.1-437.1	756	171.4	51.4-360.0	1250	220.0	72.9-398.6
45-59	277	302.1	111.4-437.1	377	227.1	64.3-377.1	654	257.1	83.6-411.4
60-69	103	235.7	72.9-347.1	200	105.0	17.1-240.0	303	137.1	42.9-311.4
18-69	**1397**	**248.6**	**107.1-437.1**	**2187**	**137.1**	**51.4-316.4**	**3584**	**188.6**	**71.4-375.4**

Domain-specific physical activity- mean minutes per day

Work-related physical activity

Overall respondents reported spending on average 175.6 minutes on work related physical activity on a typical day. Men were more active (196.8 minutes on average) compared to women (154.3 minutes on average). Table 3.2.44 below shows distribution of the mean minutes spent in work-related physical activities by age and sex.

Table 3.2.44: Mean minutes of work-related physical activity on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	523	177.2	**158.6-195.7**	854	130.9	**117.5-144.3**	1377	154.1	**142.1-166.1**
30-44	494	213.0	**190.2-235.8**	756	175.8	**159.6-192.1**	1250	194.7	**179.6-209.8**
45-59	277	226.6	**198.8-254.5**	377	190.6	**166.9-214.4**	654	208.5	**190.3-226.7**
60-69	103	188.3	**150.7-225.9**	200	129.2	**106.1-152.2**	303	155.2	**134.8-175.7**
18-69	**1397**	**196.8**	**183.1-210.6**	**2187**	**154.3**	**144.1-164.6**	**3584**	**175.6**	**166.3-184.9**

Transport-related physical activity

Overall, respondents spent an average of 53.1 minutes in transport related physical activity per day. There was a significant difference in the time spent on transport related physical activity between men (68.1 minutes) and women (38.0 minutes).
Table 3.2.45 below shows the distribution of mean minutes spend on transport-related physical activity by age group and sex.

Table 3.2.45: Mean minutes spent on transport related physical activity on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	523	72.6	**63.2-82.0**	854	33.4	**29.8-36.9**	1377	53.1	**47.6-58.5**
30-44	494	64.9	**56.4-73.5**	756	43.4	**38.1-48.8**	1250	54.3	**48.8-59.9**
45-59	277	65.1	**54.8-75.5**	377	44.5	**37.8-51.3**	654	54.8	**48.4-61.2**
60-69	103	50.5	**38.3-62.6**	200	27.6	**17.4-37.8**	303	37.7	**29.5-45.8**
18-69	**1397**	**68.1**	**62.4-73.8**	**2187**	**38.0**	**35.2-40.9**	**3584**	**53.1**	**49.4-56.7**

Recreation-related physical activities

On an average per day, respondents spent 15.8 minutes on recreation related physical activity with men being significantly more active (24.4 minutes) than women (7.2 minutes). Table 3.2.46 below shows the mean minutes spent on recreation related physical activity on average per day by the respondents.

Table 3.2.46: Mean minutes spent on recreation related physical activity on average per day

Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	**n**	**Mean minutes**	**95% CI**
18-29	523	37.8	**31.2-44.3**	854	10.0	**7.7-12.4**	1377	23.9	**20.3-27.6**
30-44	494	15.9	**11.9-20.0**	756	4.2	**3.0-5.5**	1250	10.2	**8.0-12.3**
45-59	277	5.7	**2.7-8.8**	377	6.2	**0.3-12.2**	654	6.0	**2.6-9.4**
60-69	103	2.1	**0.2-4.0**	200	1.3	**0.0-2.7**	303	1.7	**0.5-2.8**
18-69	**1397**	**24.4**	**20.8-28.1**	**2187**	**7.2**	**5.6-8.7**	**3584**	**15.8**	**13.8-17.8**

No physical activity by domain

Almost one in every 5 respondents (19.8%) did not engage in any work related physical activity with the highest proportion among the 60 to 69 years age group (25.5%). Women had a higher percentage (22.2%) of respondents with no work related physical activity compared to men (17.3%). Table 3.2.47 below shows the percentage of respondents who do not engage in work-related physical activity.

Table 3.2.47: Percentage of respondents with no work related physical activity by age group and sex

Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at work	95% CI	N	% no activity at work	95% CI	n	% no activity at work	95% CI
18-29	523	15.9	12.3-19.6	854	23.0	19.2-26.8	1377	19.5	16.5-22.5
30-44	494	19.1	14.7-23.5	756	20.8	16.3-25.2	1250	19.9	16.5-23.4
45-59	277	17.1	11.8-22.5	377	20.3	14.7-25.9	654	18.7	14.8-22.7
60-69	103	19.4	10.1-28.7	200	30.2	22.3-38.1	303	25.5	19.5-31.4
18-69	**1397**	**17.3**	**14.8-19.9**	**2187**	**22.2**	**19.3-25.1**	**3584**	**19.8**	**17.6-22.0**

No transport-related physical activity

Overall, 14.4% of respondents do not engage in transport-related physical activity. The percentage of women not engaging in transport related physical activity was almost twice

(18.9%) that of men (9.9%). Table 3.2.48 below shows the percentage of respondents who do not engage in transport-related physical activity.

Table 3.2.48: Percentage of respondents with no transport related physical activity by age group

Age Group (years)	Men			Women			Both Sexes		
	n	% no activity for transport	95% CI	N	% no activity for transport	95% CI	n	% no activity for transport	95% CI
18-29	523	9.6	6.7-12.5	854	17.1	13.1-21.0	1377	13.3	10.7-15.9
30-44	494	8.4	5.5-11.2	756	20.1	16.2-24.1	1250	14.2	11.5-16.9
45-59	277	12.7	7.4-18.0	377	18.4	12.9-23.9	654	15.6	11.7-19.4
60-69	103	16.2	8.5-23.9	200	29.4	21.7-37.1	303	23.6	18.0-29.2
18-69	**1397**	**9.9**	**7.9-11.9**	**2187**	**18.9**	**16.0-21.7**	**3584**	**14.4**	**12.4-16.3**

No recreation-related physical activity

More than 73.0% of the respondents reported no recreation-related physical activity with a significantly higher proportion in women (84.4 %) than men (62.3 %). Table 3.2.49 below shows the percentage of respondents who do not engage in recreational-related physical activity.

Table 3.2.49: Percentage of respondents with no recreation related physical activity by age group

Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at recreation	95% CI	N	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI
18-29	523	44.7	38.2-51.3	854	78.8	75.4-82.2	1377	61.7	57.6-65.8
30-44	494	72.6	67.6-77.7	756	88.0	85.4-90.6	1250	80.2	77.3-83.1
45-59	277	88.8	84.6-93.1	377	90.8	86.2-95.4	654	89.8	86.7-93.0
60-69	103	92.3	85.2-99.4	200	96.1	92.2-100.0	303	94.4	90.6-98.2
18-69	**1397**	**62.3**	**58.3-66.2**	**2187**	**84.4**	**82.3-86.5**	**3584**	**73.3**	**70.9-75.7**

Table 3.2.50 below shows the distribution of total physical activity across the three domains. The largest proportion of physical activity is from work related activities (61.0%) followed by transport related activities (30.9%) and recreational activities (8.0%).

Table 3.2.50: Composition of total physical activity by age group and sex

Age Group (years)	Both Sexes						
	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
18-29	1297	57.5	54.9-60.1	30.8	28.7-32.9	11.7	10.1-13.4
30-44	1178	63.0	59.7-66.3	31.3	28.3-34.4	5.6	4.4-6.8
45-59	616	66.2	62.5-69.8	30.7	27.3-34.2	3.1	1.5-4.8
60-69	266	68.8	63.6-73.9	29.4	24.3-34.4	1.9	0.4-3.4
18-69	**3357**	**61.0**	**59.0-63.1**	**30.9**	**29.1-32.7**	**8.0**	**7.1-9.0**

Over one third (34.7%) of all the respondents reported not engaging in vigorous physical activity with a higher percentage among women (45.5%) than men (23.9%). Table 3.2.51 below shows the percentage of respondents who do not engage in vigorous physical activity by age, group and sex.

Table 3.2.51: Percentage of respondents who do not engage in vigorous physical activity by age group

Age Group (years)	Men			Women			Both Sexes		
	n	% no vigorous activity	95% CI	n	% no vigorous activity	95% CI	N	% no vigorous activity	95% CI
18-29	523	18.2	13.8-22.5	854	48.1	43.4-52.8	1377	33.1	29.6-36.5
30-44	494	29.9	23.8-36.0	756	41.2	36.1-46.2	1250	35.5	31.0-39.9
45-59	277	29.5	22.5-36.5	377	41.8	34.9-48.8	654	35.7	31.1-40.3
60-69	103	20.9	11.4-30.3	200	60.2	52.0-68.3	303	42.9	35.9-49.8
18-69	**1397**	**23.9**	**20.4-27.4**	**2187**	**45.5**	**42.0-49.0**	**3584**	**34.7**	**31.9-37.4**

Sedentary behaviour

Table 3.2.52 below shows the mean minutes spent in sedentary activities on a typical day. Overall, respondents spend an average of 189 minutes per day on sedentary time. The median minutes of total sedentary activity per day is 180.

Table 3.2.52: Minutes spent in sedentary time on average per day by age group and sex

Age Group (years)	N	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25-P75)
			Men		
18-29	597	181.6	166.4-196.7	150.0	60.0-240.0
30-44	578	180.7	167.4-194.0	150.0	60.0-240.0
45-59	312	195.0	173.4-216.6	180.0	83.0-240.0
60-69	127	239.1	201.8-276.5	210.0	120.0-300.0
18-69	**1614**	**185.5**	**175.8-195.2**	**180.0**	**60.0-240.0**
			Women		
18-29	1023	189.5	176.6-202.4	180.0	60.0-240.0
30-44	933	191.6	177.1-206.0	150.0	60.0-260.0
45-59	473	193.4	174.9-211.9	180.0	60.0-300.0
60-69	257	223.7	194.6-252.9	180.0	60.0-360.0
18-69	**2686**	**192.5**	**182.5-202.5**	**180.0**	**60.0-270.0**
			Both Sexes		
18-29	1620	185.5	174.8-196.3	165.0	60.0-240.0
30-44	1511	186.1	175.9-196.4	150.0	60.0-240.0
45-59	785	194.1	179.4-208.9	180.0	60.0-260.0
60-69	384	230.4	207.2-253.6	180.0	60.0-360.0
18-69	**4300**	**189.1**	**181.1-197.0**	**180.0**	**60.0-240.0**

3.3 Past medical history

3.3.1 Raised Blood Pressure or Hypertension

WHO defines raised blood pressure (hypertension) as systolic blood pressure >=140 mm Hg and /or diastolic blood pressure => 90 mm Hg (WHO, 2013b).

Respondents were asked if they had ever had their blood pressure measured by a doctor or other health worker and for those previously measured, if they had been diagnosed with hypertension. Almost half of the all the respondents (48.3%) have never had their blood pressure measured, with men having a significantly higher proportion (62.2%) than women (34.9%). Only 7.8% of the respondents had been diagnosed with hypertension in the last 12 months with the 60 to 69 years age group most likely to have been previously diagnosed with hypertension as shown in Table 3.3.1 below.

Table 3.3.1: Previous diagnosis of raised blood pressure or hypertension

Blood pressure measurement and diagnosis									
	Men								
Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
18-29	597	71.7	67.3-76.2	24.2	20.0-28.4	1.5	0.3-2.6	2.6	1.1-4.1
30-44	578	56.2	50.8-61.5	34.5	29.6-39.5	2.4	0.9-3.8	6.9	3.5-10.4
45-59	312	49.7	43.3-56.1	37.1	30.8-43.3	3.0	0.8-5.1	10.2	5.1-15.4
60-69	127	45.9	34.5-57.3	28.5	18.2-38.8	9.8	1.7-17.8	15.8	8.3-23.3
18-69	**1614**	**62.2**	**59.1-65.4**	**29.7**	**26.8-32.7**	**2.3**	**1.5-3.1**	**5.7**	**4.1-7.3**
	Women								
18-29	1023	39.1	35.6-42.5	52.6	49.0-56.3	4.2	2.7-5.8	4.1	2.5-5.6
30-44	933	30.2	25.9-34.6	55.0	50.7-59.3	5.6	3.5-7.7	9.2	6.7-11.7
45-59	473	32.9	27.6-38.1	38.2	32.8-43.6	6.8	3.8-9.7	22.2	16.7-27.6
60-69	257	33.2	26.4-40.0	25.3	19.1-31.4	11.4	6.9-15.8	30.2	23.0-37.4
18-69	**2686**	**34.9**	**32.4-37.3**	**49.9**	**47.3-52.5**	**5.4**	**4.3-6.6**	**9.8**	**8.2-11.5**
	Both sexes								
18-29	1620	55.3	52.1-58.4	38.5	35.5-41.6	2.9	1.9-3.8	3.3	2.2-4.4
30-44	1511	43.2	39.5-46.9	44.8	41.3-48.3	4.0	2.7-5.2	8.1	6.0-10.1
45-59	785	40.8	36.5-45.1	37.7	33.4-42.0	5.0	3.1-6.9	16.6	12.9-20.3
60-69	384	38.7	32.8-44.6	26.7	21.1-32.2	10.7	6.5-14.9	24.0	18.2-29.7
18-69	**4300**	**48.3**	**46.1-50.5**	**40.0**	**37.9-42.1**	**3.9**	**3.2-4.6**	**7.8**	**6.7-9.0**

Currently on hypertension treatment

Slightly over a quarter (26.0%) of all the respondents previously diagnosed with raised blood pressure reported being on medication for raised blood pressure, with no significant difference between the sexes. Table 3.3.2 highlights the distribution of respondents currently taking medication for raised blood pressure.

Table 3.3.2: Percentage of respondents currently taking drugs (medication) prescribed by a doctor or health worker

Age Group (years)	Men			Women			Both Sexes		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
18-29	22	28.2	4.1-52.3	81	7.4	1.7-13.1	103	14.2	4.9-23.5
30-44	45	16.3	2.9-29.6	124	22.7	14.3-31.2	169	20.2	12.7-27.8
45-59	32	49.3	25.2-73.3	124	35.5	25.9-45.0	156	39.4	29.7-49.1
60-69	29	30.6	12.0-49.2	97	39.3	27.3-51.3	126	36.6	26.1-47.1
18-69	**128**	**28.5**	**18.5-38.5**	**426**	**24.8**	**20.1-29.6**	**554**	**26.0**	**21.2-30.9**

A minority of the respondents (6.9%) previously diagnosed with raised blood pressure reported taking traditional or herbal remedies for their raised blood pressure with no significant difference between men (6.6%) and women (7.1%). The 18 to 29 years and 45 to 59 age groups were most likely to take traditional or herbal remedies among men and women respectively as highlighted in Table 3.3.3.

Table 3.3.3: Percentage of respondents currently taking herbal or traditional remedies

Age Group (years)	Men			Women			Both Sexes		
	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI
18-29	22	13.7	0.0-33.8	81	1.1	0.0-2.6	103	5.2	0.0-12.3
30-44	45	2.8	0.0-6.2	124	8.2	2.8-13.7	169	6.2	2.4-9.9
45-59	32	8.1	0.0-18.4	124	10.7	5.2-16.3	156	10.0	5.1-14.9
60-69	29	2.7	0.0-8.0	97	7.6	2.0-13.2	126	6.0	2.0-10.0
18-69	**128**	**6.6**	**0.8-12.4**	**426**	**7.1**	**4.6-9.6**	**554**	**6.9**	**4.3-9.5**

3.3.2 Diabetes Mellitus

Diabetes mellitus (DM) is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. A diagnosis of diabetes mellitus is made based on measurement of a blood sugar either after fasting or as a random measure. A fasting blood glucose level of >7 mmol/l is considered diagnostic of diabetes mellitus while a level of 6.1-7mmol/l is known as impaired fasting glycaemia (pre-diabetic state) (WHO, 2006a).

Respondents were asked if they had ever had their blood glucose measurement taken and if so whether they had been diagnosed with diabetes of raised blood glucose.
Nine in ten respondents (90.8%) have never had their blood glucose measured, with no significant difference between the sexes. Only 1.1% of the respondents had been diagnosed with diabetes in the last 12 months with the 60 to 69 years age group most likely to be diagnosed with diabetes as shown in Table 3.3.4 below.

Table 3.3.4: Percentage of respondents measured for raised blood sugar

Age group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
Men									
18-29	597	95.4	93.5-97.4	4.1	2.3-6.0	0.1	0.0-0.4	0.3	0.0-0.7
30-44	578	91.0	88.1-93.9	7.2	4.4-9.9	0.5	0.0-1.2	1.4	0.1-2.6
45-59	312	84.5	79.2-89.7	12.7	7.7-17.7	0.9	0.0-2.0	2.0	0.4-3.6
60-69	127	80.5	69.6-91.4	9.8	3.9-15.6	3.7	0.0-8.8	6.1	0.5-11.7
18-69	1614	91.8	90.1-93.4	6.6	5.1-8.1	0.5	0.1-0.9	1.1	0.5-1.8
Women									
18-29	1023	92.7	90.5-94.9	6.5	4.4-8.5	0.2	0.0-0.5	0.6	0.0-1.5
30-44	933	89.5	86.7-92.3	9.4	6.9-12.0	0.3	0.0-0.6	0.9	0.0-1.8
45-59	473	83.3	78.8-87.8	13.6	9.6-17.5	1.1	0.1-2.1	2.1	0.5-3.6
60-69	257	84.4	78.7-90.1	8.4	3.8-13.0	1.8	0.1-3.6	5.3	1.4-9.3
18-69	2686	89.8	88.1-91.5	8.6	7.1-10.1	0.4	0.2-0.7	1.1	0.5-1.8
Both sexes									
18-29	1620	94.1	92.6-95.6	5.3	3.9-6.7	0.2	0.0-0.4	0.4	0.0-0.9
30-44	1511	90.2	88.2-92.3	8.3	6.4-10.2	0.4	0.0-0.8	1.1	0.3-1.9
45-59	785	83.8	80.5-87.2	13.1	10.0-16.2	1.0	0.3-1.8	2.0	0.9-3.1
60-69	384	82.7	76.7-88.7	9.0	5.5-12.5	2.6	0.2-5.1	5.7	2.4-9.0
18-69	4300	90.8	89.5-92.0	7.6	6.5-8.8	0.5	0.2-0.7	1.1	0.7-1.6

Currently on treatment for raised blood glucose

Over a third (36.8%) of all the respondents previously diagnosed with raised blood glucose reported being on treatment with the highest proportion in the 60 to 69 years age group.
highlights the distribution of respondents currently taking medication for raised blood glucose. Of the respondent's previously diagnosed with raised blood sugar, 20.9 percent reported being on insulin treatment.

3.3.3 Raised Total Cholesterol

Raised total cholesterol is a major cause of disease burden in both the developed and developing world as a risk factor for Ischemic heart disease and stroke. Studies show a strong association between reduction in serum cholesterol and reduction in risk of ischemic heart disease. Blood cholesterol test profiles is usually categorized into low-density lipoprotein cholesterol (LDL), high-density lipoprotein cholesterol (HDL) and triglycerides (WHO, 2014).

Almost all the respondents (98.0%) had never had their cholesterol measured before, with the highest proportion in the 18 to 29 years age group (99.1%).

Table 3.3.5 shows the distribution of respondents by sex and age group.

Table 3.3.5: Percentage of respondents measured for raised total cholesterol

Age group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
Men									
18-29	597	99.5	98.9-100.0	0.5	0.0-1.1	0.0	0.0-0.0	0.0	0.0-0.0
30-44	578	96.5	94.5-98.5	2.5	0.7-4.3	0.3	0.0-0.9	0.7	0.0-1.5
45-59	312	97.0	94.7-99.3	2.4	0.3-4.6	0.6	0.0-1.5	0.0	0.0-0.0
60-69	127	98.2	95.5-100.0	0.5	0.0-1.4	0.0	0.0-0.0	1.3	0.0-3.9
18-69	**1614**	**98.1**	**97.3-98.9**	**1.5**	**0.7-2.2**	**0.2**	**0.0-0.4**	**0.3**	**0.0-0.6**
Women									
18-29	1023	98.7	97.9-99.4	1.3	0.6-2.1	0.0	0.0-0.0	0.0	0.0-0.0
30-44	933	98.1	97.1-99.1	1.3	0.5-2.1	0.5	0.0-1.0	0.1	0.0-0.4
45-59	473	95.9	93.5-98.4	2.8	0.4-5.1	0.5	0.0-1.1	0.8	0.0-1.6
60-69	257	97.2	94.9-99.4	2.1	0.0-4.2	0.3	0.0-1.0	0.4	0.0-0.9
18-69	**2686**	**98.0**	**97.3-98.6**	**1.6**	**1.0-2.2**	**0.3**	**0.0-0.5**	**0.2**	**0.0-0.3**
Both sexes									
18-29	1620	99.1	98.6-99.6	0.9	0.4-1.4	0.0	0.0-0.0	0.0	0.0-0.0
30-44	1511	97.3	96.2-98.4	1.9	0.9-2.9	0.4	0.0-0.9	0.4	0.0-0.8
45-59	785	96.4	94.7-98.1	2.6	1.0-4.2	0.6	0.0-1.1	0.4	0.0-0.8
60-69	384	97.6	95.9-99.4	1.4	0.2-2.7	0.2	0.0-0.6	0.8	0.0-1.9
18-69	**4300**	**98.0**	**97.5-98.6**	**1.5**	**1.0-2.0**	**0.2**	**0.0-0.4**	**0.2**	**0.1-0.4**

3.3.4 Cardiovascular disease

Respondents were asked if they ever had a heart attack, or if they had a stroke, or if they were currently taking aspirin regularly to prevent or treat heart disease, or if they were currently taking statins regularly to prevent or treat heart disease. Only 3.0% of the respondents reported having a history of cardiovascular diseases with no significant difference between the sexes (2.3% for men and 3.7% for women). The 60 to 69 years age group had the largest percentage (7.4%) of respondents with a history of CVD as shown in Table 3.3.6 below.

Table 3.3.6: Percentage of respondents with history of cardiovascular diseases

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% CVD history	95% CI	N	% CVD history	95% CI	n	% CVD history	95% CI
18-29	597	1.7	0.5-2.8	1023	3.2	1.9-4.4	1620	2.4	1.5-3.3
30-44	578	1.4	0.4-2.5	935	3.8	2.4-5.3	1513	2.6	1.8-3.5
45-59	312	4.7	1.7-7.7	473	4.4	2.3-6.6	785	4.6	2.7-6.4
60-69	127	9.0	1.9-16.1	257	6.3	2.4-10.1	384	7.4	3.5-11.3
18-69	**1614**	**2.3**	**1.4-3.2**	**2688**	**3.7**	**2.8-4.7**	**4302**	**3.0**	**2.4-3.7**

Less than 1% of the respondents reported taking aspirin regularly to prevent CVDs as shown in Table 3.3.7 below.

Table 3.3.7: Percentage of respondents taking aspirin regularly to prevent CVDs

Age Group (years)	Men			Women			Both Sexes		
	n	% taking aspirin	95% CI	n	% taking aspirin	95% CI	n	% taking aspirin	95% CI
18-29	597	0.2	0.0-0.7	1023	0.6	0.1-1.2	1620	0.4	0.1-0.8
30-44	578	0.8	0.0-1.7	933	0.7	0.1-1.3	1511	0.7	0.2-1.3
45-59	312	1.4	0.0-2.8	473	1.0	0.2-1.8	785	1.2	0.4-2.0
60-69	127	2.3	0.0-5.4	257	3.1	0.4-5.7	384	2.7	0.7-4.8
18-69	**1614**	**0.7**	**0.2-1.1**	**2686**	**0.8**	**0.5-1.2**	**4300**	**0.7**	**0.4-1.1**

3.3.4 Cervical Cancer Screening

Awareness of Cervical Cancer Screening

Cancer of the cervix is a leading cause of cancer deaths in developing countries as well as one of the top cancers affecting women in Africa. Early detection has been shown to prevent up to 80.0% of cervical cancers. Screening is therefore recommended for every woman age 30 to 49 at least once in her lifetime and ideally more frequently. Some of the common tests used for cervical cancer screening include Visual Inspection with Acetic Acid (VIA), Visual Inspection under Lugol's Iodine (VILI), Pap smear and the Human Papilloma Virus test (Health et al., 2006)

Life time screening among all the women

The overall prevalence of cervical cancer screening among respondents aged 18 to 69 years was 16.4%, with the highest percentage (22.6%) in the 45 to 59 years sub group. Table 3.3.8 highlights the distribution of cervical cancer screening among the female respondents.

Table 3.3.8: Percentage of female respondents who have ever had a screening test for cervical cancer among all female respondents.

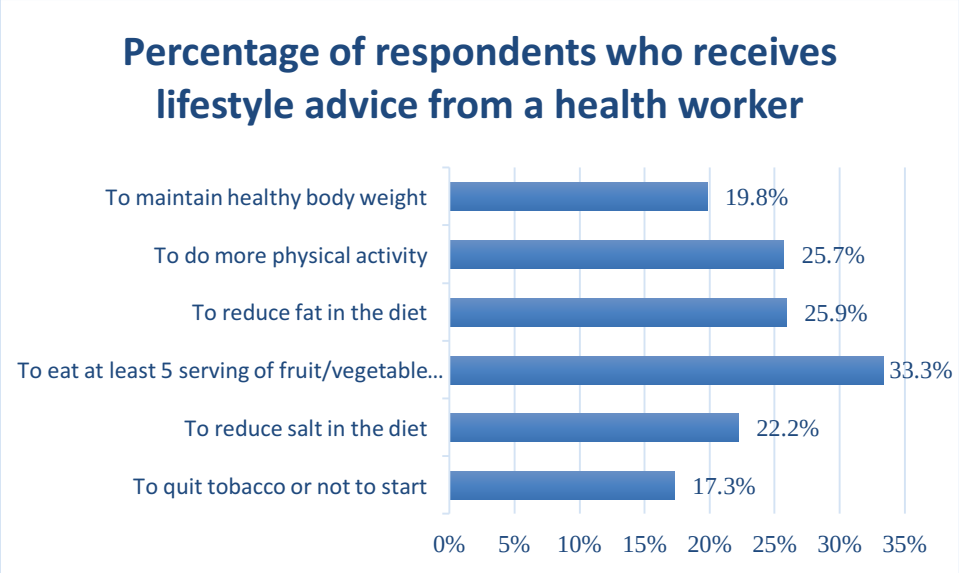
Age Group (years)	Women		
	N	% ever tested	95% CI
18-29	119	12.2	9.7-14.7
30-44	174	20.4	16.6-24.1
45-59	98	22.6	17.8-27.3
60-69	23	9.9	5.0-14.8
18-69	**414**	**16.4**	**14.2-18.5**

3.4 Healthy lifestyle advice

Information and counselling are important tools in promoting healthy lifestyles in the population. Health workers are especially well placed to provide correct and timely information regarding healthy lifestyles that can prevent the development of common NCDs like diabetes and hypertension. In the context of the STEPS survey, counselling was defined as receiving advice from a doctor or other health worker to quit using tobacco or not start, reduce salt in diet, eat at least five servings of fruit and/or vegetables per day, reduce fat in diet, start or do more physical activity, maintain a healthy body weight or lose weight.

Figure 3.4.1 below shows the percentage of respondent's age 18 to 69 years who had been given advice by a health worker relating to the four major NCD behavioural risk factors in the past three years. The most common form of lifestyle advice was to eat fruit and vegetables with 33.3% of respondent advised to eat at least 5 servings of fruit and vegetables. Only 17.3% reported being advised against smoking tobacco.

Figure 3.4.1: Percentage of respondents receiving healthy lifestyle advice



3.5 Physical Measurements

3.5.1 Blood pressure measurement

Elevated blood pressure is one of the major risk factors for development of cardiovascular diseases. According to the STEPS protocol, blood pressure measurements were taken using an automated blood pressure machine. Three readings were taken 3-5 minutes apart with the last two readings averaged to estimate the respondent's blood pressure

Mean blood pressure

The mean systolic blood pressure was 124.4mmHg and the mean diastolic blood pressure was 76.8mmHg (Table 3.5.1)

Table 3.5.1: Men blood pressure of respondents

Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	N	Mean	95% CI	n	Mean	95% CI
Mean systolic blood pressure (mmHg)									
18-29	583	125.9	124.5-127.4	988	118.3	117.3-119.4	1571	122.1	121.2-123.0
30-44	553	127.0	125.6-128.5	894	120.9	119.8-122.0	1447	124.0	123.0-124.9
45-59	301	128.6	126.2-131.1	463	128.0	125.7-130.2	764	128.3	126.6-129.9
60-69	119	134.6	128.9-140.3	252	143.7	139.8-147.5	371	139.8	136.3-143.4
18-69	**1556**	**127.0**	**126.0-128.0**	**2597**	**122.0**	**121.2-122.7**	**4153**	**124.4**	**123.8-125.1**
Mean diastolic blood pressure (mmHg)									
18-29	583	75.0	73.7-76.3	988	73.7	72.8-74.5	1571	74.3	73.6-75.1
30-44	553	78.6	77.4-79.8	894	76.6	75.8-77.5	1447	77.6	76.9-78.3
45-59	301	80.8	78.9-82.8	463	80.6	79.0-82.1	764	80.7	79.5-81.9
60-69	119	81.6	78.3-84.8	252	85.7	83.2-88.1	371	83.9	81.8-86.0
18-69	**1556**	**77.3**	**76.5-78.1**	**2597**	**76.3**	**75.7-76.9**	**4153**	**76.8**	**76.3-77.3**

Prevalence of raised blood pressure

Almost one-fifth of the respondents (19.0%) had raised blood pressure or were currently on medication for raised blood pressure. The 60 to 69 years age group had the highest prevalence of raised blood pressure with 50.5% (38.6% in males and 59.4% in females). In both sexes, the prevalence of raised blood pressure increased with increasing age as shown in Table 3.5.2 below.

Table 3.5.2: Percentage of respondents with raised blood pressure or currently on medication

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	583	16.3	12.4-20.2	988	8.4	6.2-10.6	1571	12.3	10.1-14.6
30-44	553	20.8	17.0-24.7	894	16.7	13.7-19.7	1447	18.8	16.4-21.1
45-59	301	29.4	23.0-35.7	463	33.5	27.8-39.2	764	31.6	27.3-35.9
60-69	119	38.6	26.9-50.2	252	59.4	52.6-66.1	371	50.5	43.5-57.6
18-69	**1556**	**20.5**	**18.1-23.0**	**2597**	**17.6**	**15.8-19.4**	**4153**	**19.1**	**17.5-20.6**

Overall, over 80.0% of the respondents with raised blood pressure were not on medication, with males having a significantly higher percentage (91.0%) than females (77.3%). Only 6.7% of all the respondents had controlled blood pressure and this was significantly higher in females (11.4%) than in males (2.5%).

Table 3.5.3 below highlights the distribution of blood pressure control by sex and age group.

Table 3.5.3: Percentage of respondents with raised blood pressure on medication

Age Group (years)	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/or DBP≥90	95% CI	% Not on medication and SBP≥140 and/or DBP≥90	95% CI
Men							
18-29	94	2.1	0.0-4.5	7.3	0.0-14.7	90.6	82.9-98.3
30-44	115	2.3	0.0-5.8	2.7	0.0-8.0	95.0	88.9-100.0
45-59	80	2.4	0.0-5.2	10.9	0.0-22.1	86.7	75.4-98.0
60-69	55	5.5	0.0-13.4	8.4	1.0-15.8	86.1	75.8-96.4
18-69	**344**	**2.5**	**0.7-4.2**	**6.5**	**2.5-10.5**	**91.0**	**86.8-95.3**
Women							
18-29	76	9.4	2.8-16.1	2.9	0.0-6.8	87.7	80.0-95.3
30-44	136	11.9	5.0-18.8	7.5	2.7-12.2	80.7	72.9-88.5
45-59	156	12.3	4.7-19.9	21.2	13.2-29.2	66.5	57.5-75.5
60-69	145	11.4	4.1-18.7	12.6	6.1-19.0	76.0	67.0-85.0
18-69	**513**	**11.4**	**7.7-15.0**	**11.3**	**8.2-14.4**	**77.3**	**72.6-82.0**
Both sexes							
18-29	170	4.6	1.7-7.5	5.8	0.7-10.9	89.6	83.9-95.3
30-44	251	6.6	3.1-10.1	4.8	1.3-8.3	88.6	82.9-94.3
45-59	236	8.0	3.4-12.6	16.8	10.3-23.3	75.2	68.1-82.2
60-69	200	9.5	4.0-15.0	11.2	6.2-16.2	79.3	72.5-86.1
18-69	**857**	**6.7**	**4.8-8.6**	**8.8**	**6.3-11.2**	**84.6**	**81.5-87.6**

Severe hypertension

Severe hypertension is defined as systolic blood pressure >=160 mm Hg and/or diastolic blood pressure >=100 mm Hg.

Table 3.5.4 shows the distribution of respondents with SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure. Overall the prevalence of severe hypertension was 7.1% with the highest percentage in the 60 to 69 years age group.

Table 3.5.4: Percentage of respondents with severe hypertension

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	583	3.2	1.3-5.0	988	3.3	1.8-4.7	1571	3.2	2.0-4.4
30-44	553	6.2	4.0-8.3	894	6.7	4.8-8.7	1447	6.4	5.0-7.9
45-59	301	10.3	5.6-15.0	463	18.0	13.7-22.2	764	14.4	11.1-17.7
60-69	119	22.5	13.2-31.7	252	33.6	26.7-40.5	371	28.9	22.7-35.0
18-69	**1556**	**5.9**	**4.5-7.4**	**2597**	**8.2**	**7.0-9.5**	**4153**	**7.1**	**6.1-8.1**

3.5.2 Body Mass Index (BMI) and overweight and obesity

Overweight and obesity

Overweight and obesity refer to abnormal accumulation of fat in the body that may impair health and wellbeing. Body mass index (BMI) is a simple index of weight-for-height that provides population-level measure of overweight and obesity as it is the same for both sexes and for all ages of adults. It is defined as a person's weight in kilograms divided by the square of their height in meters (kg/m2). A person whose BMI is greater than or equal to 25 is considered overweight while one with a BMI greater than or equal to 30 is considered obese (WHO, 2017b).

Mean Body Mass Index

The mean BMI for the respondents was 23.8 kg/m^2 with women having a significantly higher mean BMI (24.0kg/m^2 compared to men (22.5 kg/m^2) (Table 3.5.5).

Table 3.5.5: Mean body mass index for respondents

Mean BMI (kg/m^2)									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	583	22.0	21.7-22.3	879	23.2	22.8-23.6	1462	22.6	22.3-22.8
30-44	556	22.9	22.5-23.3	837	24.5	24.1-25.0	1393	23.7	23.4-24.0
45-59	304	23.2	22.4-24.1	464	24.9	24.2-25.7	768	24.1	23.6-24.7
60-69	121	22.1	21.3-23.0	249	25.1	24.2-26.0	370	23.8	23.1-24.5
18-69	**1564**	**22.5**	**22.3-22.7**	**2429**	**24.0**	**23.8-24.3**	**3993**	**23.2**	**23.0-23.5**

Table 3.5.6 shows the percentage of respondents with a BMI of greater than or equal to 25. The results indicated that 16.2% of the respondents were either overweight or obese with no significant difference between men (16.2%) and women (20.2%).

Table 3.5.6: Prevalence of obesity and overweight

Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% BMI≥25	95% CI	n	% BMI≥25	95% CI	n	% BMI≥25	95% CI
18-29	583	11.2	8.0-14.3	879	24.6	20.8-28.5	1462	17.6	14.9-20.2
30-44	556	19.1	15.3-22.9	837	37.3	33.3-41.4	1393	27.9	24.9-30.9
45-59	304	25.1	18.7-31.6	464	41.5	35.1-47.9	768	33.9	29.1-38.7
60-69	121	20.1	11.2-29.0	249	40.4	32.6-48.2	370	31.6	25.3-37.9
18-69	**1564**	**16.2**	**13.8-18.5**	**2429**	**32.5**	**30.0-35.0**	**3993**	**24.2**	**22.3-26.1**

Overall, 7.5% of the respondents were obese while 16.7% were overweight. The percentage of women who were overweight or obese was significantly higher than of men. Obesity was highest in the 45 to 59 years age group (
Table 3.5.7)

Table 3.5.7: Percentage of respondents in each BMI category

Age group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% BMI 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
Men									
18-29	583	5.6	3.0-8.1	83.2	79.2-87.3	9.9	7.0-12.8	1.3	0.0-2.5
30-44	556	4.4	2.4-6.3	76.6	72.7-80.5	15.8	12.4-19.3	3.2	1.6-4.8
45-59	304	9.6	5.9-13.3	65.2	58.7-71.7	17.4	11.8-23.0	7.7	3.0-12.5
60-69	121	8.5	3.5-13.5	71.4	62.3-80.6	15.6	8.0-23.1	4.5	0.0-9.6
18-69	1564	5.8	4.3-7.4	78.0	75.4-80.6	13.2	11.2-15.2	3.0	1.9-4.0
Women									
18-29	879	5.2	3.3-7.1	70.2	66.2-74.1	16.6	13.5-19.8	8.0	5.7-10.4
30-44	837	5.3	3.6-7.0	57.4	53.3-61.4	24.2	20.4-28.0	13.1	10.1-16.2
45-59	464	10.5	7.0-13.9	48.0	41.8-54.3	21.6	16.7-26.4	20.0	14.9-25.0
60-69	249	6.5	3.3-9.7	53.1	45.2-61.0	21.5	15.3-27.7	18.9	12.2-25.6
18-69	2429	6.2	4.9-7.4	61.3	58.8-63.8	20.2	18.1-22.3	12.3	10.5-14.1
Both sexes									
18-29	1462	5.4	3.8-7.0	77.0	74.0-80.0	13.1	10.9-15.3	4.5	3.1-5.8
30-44	1393	4.8	3.5-6.1	67.3	64.4-70.1	19.9	17.3-22.4	8.0	6.2-9.8
45-59	768	10.1	7.6-12.5	56.0	51.3-60.8	19.6	15.8-23.4	14.3	10.6-18.0
60-69	370	7.4	4.5-10.2	61.0	54.8-67.3	19.0	14.1-23.8	12.7	7.9-17.4
18-69	3993	6.0	5.0-7.0	69.8	67.9-71.8	16.7	15.1-18.2	7.5	6.4-8.7

Waist and Hip Measurements

Waist Circumference

The respondent's waist circumference is illustrated in Table 3.5.8. Women had a significantly larger mean waist circumference of 81 centimetres as compared to men whose mean was 79 centimetres.

Table 3.5.8: Mean waist circumference

Age Group (years)	**Men**			**Women**		
	N	Mean	95% CI	n	Mean	95% CI
18-29	582	76.3	75.5-77.0	881	77.4	76.6-78.2
30-44	555	80.1	79.1-81.1	842	82.1	81.0-83.1
45-59	304	83.0	81.1-84.8	465	84.9	83.2-86.6
60-69	121	83.3	81.2-85.3	248	86.2	83.7-88.7
18-69	**1562**	**78.8**	**78.2-79.4**	**2436**	**80.7**	**80.0-81.3**

Hip circumference

The respondent's hip circumference is illustrated in Table 3.5.9. Women had a significantly larger mean hip circumference of 97 centimetres as compared to men whose mean was 93 centimetres.

Table 3.5.9: Mean hip circumference

Age Group (years)	Men			Women		
	n	Mean	95% CI	N	Mean	95% CI
18-29	582	92.0	91.2-92.7	881	94.6	93.7-95.4
30-44	555	94.3	93.4-95.3	842	98.6	97.5-99.6
45-59	304	94.5	93.0-95.9	465	99.5	97.8-101.2
60-69	121	95.1	92.9-97.3	248	100.5	98.4-102.6
18-69	**1562**	**93.2**	**92.7-93.8**	**2436**	**97.0**	**96.4-97.7**

Waist–hip ratio

Waist–hip ratio (the waist circumference divided by the hip circumference) is an index used to identify individuals at increased risk of obesity related morbidity due to accumulation of abdominal fat (WHO, 2011). Women whose waist hip ratio (WHR) is ≥0.85 and men with a WHR ≥0.9 are considered to be at increased risk of obesity-related morbidity (WHO, 2000).

Overall the waist/hip ration for the respondents was 0.8 without any difference between men and women as shown in Table 3.5.10 below.

Table 3.5.10: Mean waist/hip ratio by sex and age group

Age Group (years)	Men			Women		
	n	Mean	95% CI	N	Mean	95% CI
18-29	582	0.8	0.8-0.8	881	0.8	0.8-0.8
30-44	555	0.9	0.8-0.9	842	0.8	0.8-0.8
45-59	304	0.9	0.9-0.9	465	0.9	0.8-0.9
60-69	121	0.9	0.9-0.9	248	0.9	0.8-0.9
18-69	**1562**	**0.8**	**0.8-0.9**	**2436**	**0.8**	**0.8-0.8**

3.6 Biochemical measurements

3.6.1 Blood Glucose Measurement

Blood glucose levels were measured after at least 10 hours of fasting. Testing was performed using a portable rapid diagnostic device (Cardiochek™) machine which used test strips for both blood glucose and lipid profile (total Cholesterol and HDL Cholesterol). Blood sample was collected via a minimally invasive figure prick.

Mean Fasting Glucose

The overall mean fasting blood glucose level was 4.7 mmol/l with no significant difference between men and women and the age groups as shown in Table 3.6.1 below:

Table 3.6.1: mean fasting blood glucose (mmol/l)

Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	511	4.4	4.2-4.6	834	4.7	4.5-4.8	1345	4.5	4.4-4.6
30-44	493	4.6	4.4-4.8	769	4.9	4.8-5.0	1262	4.7	4.6-4.9
45-59	265	5.1	4.7-5.5	402	5.2	4.9-5.5	667	5.2	4.9-5.4
60-69	110	5.3	4.5-6.1	224	5.4	5.1-5.8	334	5.4	5.0-5.8
18-69	**1379**	**4.6**	**4.5-4.7**	**2229**	**4.9**	**4.8-5.0**	**3608**	**4.7**	**4.6-4.8**

Overall, 9.0% of the respondents had impaired fasting blood glucose levels, with the highest percentage among the 45 to 59 years age group as shown in Table 3.6.2 below.

Table 3.6.2: Prevalence of impaired fasting blood glucose

Age Group (years)	Men			Women			Both Sexes		
	N	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	511	6.2	3.9-8.5	834	9.2	6.9-11.5	1345	7.7	6.0-9.3
30-44	493	7.5	5.0-10.1	769	10.5	7.8-13.1	1262	9.0	7.1-10.9
45-59	265	12.2	7.4-17.1	403	12.6	9.0-16.2	668	12.4	9.6-15.3
60-69	110	9.2	2.6-15.8	224	10.7	5.8-15.6	334	10.1	6.0-14.1
18-69	**1379**	**7.6**	**5.9-9.3**	**2230**	**10.2**	**8.7-11.7**	**3609**	**8.9**	**7.7-10.1**

Prevalence of raised blood glucose

Only 6.0% of the respondents had raised blood glucose or were on medication for diabetes with no significant difference between the men and women. The highest prevalence was among the 60 to 69 years age group at 20.0%. Table 3.6.3 highlights the distribution of raised blood glucose among the respondents.

Table 3.6.3: Prevalence of raised blood glucose or currently on medication for diabetes

Age Group (years)	Men			Women			Both Sexes		
	N	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	511	3.3	1.1-5.5	834	3.1	1.9-4.3	1345	3.2	2.0-4.5
30-44	493	6.0	3.8-8.2	769	7.0	4.4-9.6	1262	6.5	4.8-8.2
45-59	265	11.8	6.5-17.0	403	9.8	6.3-13.3	668	10.7	7.6-13.8
60-69	110	17.2	8.9-25.5	224	22.2	15.2-29.2	334	20.0	14.7-25.4
18-69	**1379**	**6.0**	**4.3-7.6**	**2230**	**6.4**	**5.2-7.7**	**3609**	**6.2**	**5.2-7.3**

3.6.2 Blood cholesterol measurement

Mean total cholesterol

The overall mean blood cholesterol level was 3.4 mmol/l with no significant difference between men and women and the age groups as shown in Table 3.6.4 below:

Table 3.6.4: Mean total cholesterol

Age Group (years)	Men			Women			Both Sexes		
	N	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	527	3.0	2.9-3.1	867	3.4	**3.3-3.5**	1394	3.2	3.1-3.3
30-44	503	3.3	3.2-3.4	792	3.6	**3.5-3.7**	1295	3.4	3.4-3.5
45-59	275	3.5	3.4-3.7	419	3.8	**3.7-4.0**	694	3.7	3.6-3.8
60-69	112	3.7	3.4-3.9	232	4.1	**3.9-4.4**	344	3.9	3.8-4.1
18-69	**1417**	**3.2**	**3.2-3.3**	**2310**	**3.6**	**3.5-3.6**	**3727**	**3.4**	**3.3-3.4**

Prevalence of raised total cholesterol

The prevalence of raised blood cholesterol (cholesterol levels above 5.0mmol/l) was 7.4% with women having a significantly higher prevalence (9.3%) than men (4.5%). The 60 to 69 years age group had the highest percentage of respondents with raised cholesterol at 21.0% as shown in Table 3.6.5 below.

Table 3.6.5: Percentage of respondents with total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol

Age Group (years)	Men			Women			Both Sexes		
	N	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	9	1.8	0.3-3.4	50	6.2	4.0-8.3	61	4.0	2.7-5.3
30-44	24	4.3	2.5-6.1	78	9.3	6.8-11.8	108	7.5	5.9-9.2
45-59	29	12.0	6.9-17.2	66	13.5	9.6-17.4	101	13.4	10.3-16.6
60-69	14	12.7	5.9-19.5	56	24.6	17.7-31.5	74	21.0	15.8-26.1
18-69	**76**	**4.5**	**3.3-5.8**	**250**	**9.3**	**7.7-10.8**	**344**	**7.4**	**6.3-8.4**

3.7 Combined risk factors

Population risk of developing cardiovascular disease (CVD)

The total risk of developing cardiovascular disease (CVD) is determined by the combined effect of behavioural and biological risk factors. In the STEPS survey, a 10-year CVD risk of ≥30% was defined according to age, sex, blood pressure, smoking status (current smokers OR those who quit smoking less than 1 year before the assessment), total cholesterol, and diabetes (previously diagnosed OR a fasting plasma glucose concentration >7.0 mmol/l (126 mg/dl)).

Table 3.7.1 below shows the percentage of respondents who had a CVD risk of 30% or above. About 4% of the respondents in the 40-69 age group had a CVD risk of 30 percent or above with no significant difference between women and men.

Table 3.7.1: Percentage of respondents aged 40 - 69 years with a 10-year CVD risk ≥30 percent or with existing CVD

Age Group (years)	Men			Women			Both Sexes		
	N	%	95% CI	N	%	95% CI	n	%	95% CI
40-54	334	2.1	0.5-3.8	512	3.6	2.0-5.3	846	2.9	1.7-4.1
55-69	164	9.2	3.8-14.6	336	6.2	3.0-9.3	500	7.5	4.3-10.7
40-69	**498**	**4.0**	**2.1-5.9**	**848**	**4.4**	**2.8-6.0**	**1346**	**4.2**	**2.9-5.5**

Out of the eligible persons aged 40 to 69 years, 13.0% reported receiving drugs and counselling for CVDs as shown in Table 3.7.2 below.

Table 3.7.2: Percentage of eligible persons receiving drug therapy and counselling to prevent heart attacks and strokes

Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	N	%	95% CI	n	%	95% CI
40-54	9			25			34	8.0	0.2-15.8
55-69	15			22			37	18.0	3.9-32.2
40-69	**24***			**47***			**71**	**13.0**	**4.5-21.6**

From steps 1 and 2 of the survey, respondents were categorized according to the number of the following risk factors they presented with:

- Current daily smoking
- Less than five servings of fruit and/or vegetables per day
- Not meeting WHO recommendations on physical activity for health (<150 minutes of moderate activity per week, or equivalent)
- Overweight or obese (BMI ≥ 25 kg/m^2)
- Raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP).

Table 3.7.3 shows the distribution of respondents according to the number of risk factors they presented with. The majority of respondents (84.0%) had 1-2 risk factors while only 5.3% had no risk factors at all.

Table 3.7.3: Percentage of respondents with 0, 1-2, or 3-5 risk factors

Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
Men							
18-44	949	5.7	3.8-7.7	86.6	84.0-89.2	7.6	5.7-9.6
45-69	346	3.5	1.3-5.6	77.8	72.3-83.3	18.7	13.4-24.1
18-69	**1295**	**5.3**	**3.7-7.0**	**85.1**	**82.7-87.6**	**9.5**	**7.7-11.4**
Women							
18-44	1347	4.0	2.8-5.2	86.5	84.3-88.8	9.4	7.3-11.6
45-69	540	3.1	1.6-4.6	71.5	66.7-76.2	25.5	20.7-30.2
18-69	**1887**	**3.8**	**2.8-4.8**	**83.4**	**81.3-85.5**	**12.8**	**10.8-14.8**
Both Sexes							
18-44	2296	4.9	3.7-6.1	86.6	84.8-88.3	8.5	7.0-10.0
45-69	886	3.3	1.9-4.7	74.4	70.6-78.2	22.3	18.6-26.0
18-69	**3182**	**4.6**	**3.6-5.6**	**84.3**	**82.6-86.0**	**11.1**	**9.7-12.6**

3.8 Oral health

According to WHO, oral health is essential to general health and quality of life and defines it as a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing. Risk factors for oral diseases include an unhealthy diet, tobacco use, harmful alcohol use and poor oral hygiene, and social determinants (WHO, 2012b)

3.8.1 Oral health status

Over 95.0% of the respondents had 20 or more natural teeth, with men having a higher percentage (97.1%) compared to women (94.3%). Table 3.8.1 show the percentage of respondents and the number of natural teeth.

Table 3.8.1: Percentage of respondents with natural teeth

Age Group (years)	n	% No natural teeth	95% CI	% 1 - 9 natural teeth	95% CI	% 10 - 19 natural teeth	95% CI	% ≥ 20 natural teeth	95% CI
Men									
18-29	576	0.0	0.0-0.0	0.0	0.0-0.0	0.4	0.0-0.8	99.6	99.2-100.0
30-44	564	0.0	0.0-0.0	0.0	0.0-0.0	3.2	1.4-4.9	96.8	95.1-98.6
45-59	296	0.0	0.0-0.0	0.0	0.0-0.0	6.2	3.5-8.9	93.8	91.1-96.5
60-69	120	1.6	0.0-4.2	2.4	0.0-4.7	15.0	7.6-22.4	81.0	72.8-89.2
18-69	**1556**	**0.1**	**0.0-0.2**	**0.1**	**0.0-0.2**	**2.7**	**1.9-3.6**	**97.1**	**96.3-98.0**
Women									
18-29	987	0.0	0.0-0.0	0.0	0.0-0.0	0.3	0.0-0.7	99.7	99.4-100.0
30-44	882	0.0	0.0-0.0	0.1	0.0-0.3	5.6	3.3-7.9	94.3	92.0-96.6
45-59	450	0.1	0.0-0.3	1.0	0.1-1.9	14.6	10.1-19.0	84.3	79.7-88.9
60-69	243	0.0	0.0-0.0	3.3	1.0-5.6	22.1	16.0-28.3	74.6	68.1-81.1
18-69	**2562**	**0.0**	**0.0-0.1**	**0.4**	**0.1-0.6**	**5.3**	**4.2-6.4**	**94.3**	**93.2-95.5**
Both Sexes									
18-29	1563	0.0	0.0-0.0	0.0	0.0-0.0	0.3	0.0-0.6	99.7	99.4-100.0
30-44	1446	0.0	0.0-0.0	0.1	0.0-0.2	4.4	2.9-5.9	95.6	94.1-97.0
45-59	746	0.1	0.0-0.2	0.5	0.0-1.0	10.6	7.9-13.4	88.8	86.0-91.6
60-69	363	0.7	0.0-1.8	2.9	1.2-4.6	19.0	14.2-23.9	77.3	72.1-82.6
18-69	**4118**	**0.0**	**0.0-0.1**	**0.2**	**0.1-0.3**	**4.0**	**3.3-4.8**	**95.7**	**94.9-96.5**

Perception of the state of teeth

Approximately 12.0% of the respondents felt that their natural teeth were in poor or very poor state, with women having a significantly higher percentage (15.0%) than men (8.5%). Nearly one third (32.1%) of the respondents in the 60 to 69 years age group felt that their teeth were in poor state as shown in
Table 3.8.2.

Table 3.8.2: Percentage of respondents having poor or very poor state of teeth among those having natural teeth

Age Group (years)	Men			Women			Both Sexes		
	n	% having poor or very poor state of teeth	95% CI	N	% having poor or very poor state of teeth	95% CI	n	% having poor or very poor state of teeth	95% CI
18-29	591	2.9	1.3-4.6	1017	7.9	5.8-10.0	1608	5.5	4.0-6.9
30-44	578	10.8	7.2-14.4	925	17.8	14.5-21.1	1503	14.3	11.7-16.9
45-59	309	14.7	10.0-19.4	471	26.1	21.2-31.0	780	20.8	17.4-24.2
60-69	123	32.4	21.6-43.3	257	31.9	24.7-39.0	380	32.1	25.8-38.4
18-69	**1601**	**8.5**	**6.7-10.3**	**2670**	**15.2**	**13.4-17.0**	**4271**	**11.9**	**10.5-13.3**

Among the respondents with natural teeth, only 6.8% had poor or very poor state of their gums with the highest percentage among the 60 to 69 years age group. Table 3.8.3 illustrates the percentage of respondents who felt they had poor or very poor state gums.

Table 3.8.3: Percentage of respondents having poor or very poor state of gums among those having natural teeth

Age Group (years)	Men			Women			Both Sexes		
	n	% having poor or very poor state of gums	95% CI	n	% having poor or very poor state of gums	95% CI	n	% having poor or very poor state of gums	95% CI
18-29	592	3.2	1.5-5.0	1017	4.1	2.8-5.3	1609	3.7	2.6-4.8
30-44	576	5.8	3.7-7.9	924	7.6	5.7-9.5	1500	6.7	5.2-8.2
45-59	311	9.3	5.6-13.0	471	16.1	12.1-20.1	782	12.9	10.2-15.6
60-69	123	18.6	10.7-26.5	255	21.6	15.7-27.5	378	20.3	15.4-25.3
18-69	**1602**	**5.6**	**4.2-6.9**	**2667**	**8.0**	**6.8-9.2**	**4269**	**6.8**	**5.8-7.8**

Table 3.8.4 shows percentage of respondents who had removable dentures. Overall, 7.8% of the respondents had removable dentures. There was no notable difference in proportion of men and women having removable dentures. The age group of 60 to 69 has a highest percentage of respondents with removable dentures for both men and women at 18.8%.

Table 3.8.4: Percentage of respondents having removable dentures

Age Group (years)	Men			Women			Both Sexes		
	n	% Having removable dentures	95% CI	n	% Having removable dentures	95% CI	n	% Having removable dentures	95% CI
18-29	597	4.4	2.2-6.6	1023	4.1	2.4-5.7	1620	4.2	2.8-5.7
30-44	578	5.8	3.4-8.2	933	9.6	6.9-12.3	1511	7.7	5.7-9.7
45-59	312	15.1	10.1-20.2	473	17.3	12.4-22.2	785	16.3	12.4-20.2
60-69	127	18.1	10.9-25.4	257	19.3	13.1-25.6	384	18.8	13.9-23.8
18-69	**1614**	**6.9**	**5.2-8.6**	**2686**	**8.7**	**6.9-10.4**	**4300**	**7.8**	**6.4-9.2**

History of pain or discomfort

Almost a third (32.0%) of the respondents reported having experienced oral pain or discomfort in the preceding 12 months. Oral pain and discomfort was more common among women (36.4%) than men (26.5%) as illustrated in Table 3.8.5 below.

Table 3.8.5: Percentage having oral pain or discomfort in the last 12 months

Age Group (years)	Men			Women			Both Sexes		
	n	% Having oral pain or discomfort	95% CI	n	% Having oral pain or discomfort	95% CI	N	% Having oral pain or discomfort	95% CI
18-29	597	21.7	17.9-25.5	1023	28.0	24.6-31.4	1620	24.8	22.3-27.4
30-44	578	29.1	24.6-33.6	933	40.9	37.2-44.6	1511	35.0	31.7-38.3
45-59	312	31.9	25.4-38.4	473	47.6	41.9-53.3	785	40.3	35.8-44.7
60-69	127	42.7	32.5-52.9	257	50.0	42.5-57.6	384	46.9	40.7-53.0
18-69	**1614**	**26.5**	**23.8-29.2**	**2686**	**36.4**	**34.0-38.8**	**4300**	**31.5**	**29.6-33.5**

3.8.2 Oral health behaviour/ risk factors

Dental visits

Only 7.2 % of the respondents reported having visited a dentist in the past 12 months with no appreciable difference between the age groups and men and women as shown Table 3.8.6 below.

Table 3.8.6: Percentage of respondents having seen a dentist during the past 12 months

Age Group (years)	Men			Women			Both Sexes		
	n	% having seen a dentist during the past 12 months	95% CI	n	% having seen a dentist during the past 12 months	95% CI	n	% having seen a dentist during the past 12 months	95% CI
18-29	597	5.6	3.3-7.9	1023	6.9	5.0-8.9	1620	6.3	4.8-7.8
30-44	578	6.4	4.1-8.6	933	9.5	6.6-12.5	1511	7.9	6.0-9.9
45-59	312	5.0	2.0-8.0	473	10.0	6.9-13.2	785	7.7	5.4-10.0
60-69	127	12.6	4.6-20.5	257	5.4	2.4-8.4	384	8.5	4.6-12.4
18-69	**1614**	**6.1**	**4.7-7.5**	**2686**	**8.2**	**6.8-9.6**	**4300**	**7.2**	**6.1-8.2**

Almost three quarters (74.5%) of the respondents have never received dental care with men (77.6%) having a higher percentage than women (71.5%). Respondents in the 18 to 29 years age group had the highest percentage (82.3%) for those who have never received dental care among both the women and men as shown in Table 3.8.7 below.

Table 3.8.7: Percentage of respondents who have never received dental care

Age Group (years)	Men			Women			Both Sexes		
	n	% never received dental care	95% CI	N	% never received dental care	95% CI	n	% never received dental care	95% CI
18-29	502	83.5	79.7-87.2	852	81.1	77.4-84.8	1354	82.3	79.4-85.2
30-44	430	74.4	70.3-78.4	654	67.9	63.7-72.2	1084	71.1	68.3-74.0
45-59	223	70.2	63.7-76.6	268	55.0	49.3-60.8	491	62.1	57.8-66.5
60-69	81	62.7	52.8-72.6	144	55.5	47.9-63.1	225	58.6	52.1-65.2
18-69	**1284**	**77.6**	**75.1-80.2**	**1918**	**71.5**	**68.8-74.1**	**3154**	**74.5**	**72.5-76.5**

The most common reason for visiting the dentist was pain or trouble with teeth or gums (74.8%). Only 6.6% of the respondents went to dentist for routine checks while 4.6% of the respondents went for consultations and advice. Table 3.8.8 below shows the distribution for reason dental visit by sex and age group.

Table 3.8.8: Main reason for last visit to the dentist among those who ever visited a dentist

Age Group (years)	N	% Consul-tation/ advice	95% CI	% Pain or trouble with teeth or gums	95% CI	% Follow-up treatment	95% CI	% Routine check-up treatment	95% CI	% Other	95% CI
Men											
18-29	95	6.7	2.6-10.7	68.5	61.3-75.6	14.4	9.8-19.1	9.8	4.6-14.9	0.7	0.0-2.0
30-44	148	5.3	2.8-7.8	76.0	70.9-81.0	12.6	8.4-16.7	5.7	3.1-8.4	0.4	0.0-1.1
45-59	89	0.9	0.1-1.7	81.8	75.9-87.8	13.4	8.3-18.4	3.9	0.4-7.4	0.0	0.0-0.0
60-69	46	2.0	0.0-4.8	76.4	67.8-85.0	16.3	8.6-23.9	4.4	1.1-7.7	1.0	0.0-2.9
18-69	**378**	**4.6**	**2.9-6.2**	**74.8**	**71.0-78.6**	**13.6**	**10.7-16.5**	**6.6**	**3.9-9.2**	**0.5**	**0.0-1.0**
Women											
18-29	171	5.9	0.2-11.5	69.6	61.4-77.9	11.7	6.0-17.3	11.6	5.3-17.8	1.3	0.0-3.8
30-44	279	4.3	1.0-7.6	74.5	68.3-80.7	14.0	8.9-19.2	6.5	3.1-9.9	0.7	0.0-1.9
45-59	205	1.1	0.0-2.2	85.2	79.6-90.8	12.1	6.7-17.5	1.6	0.2-3.1	0.0	0.0-0.0
60-69	113	1.0	0.0-2.3	76.9	66.7-87.0	19.5	9.9-29.1	2.7	0.0-5.7	0.0	0.0-0.0
18-69	**768**	**3.7**	**1.6-5.9**	**75.7**	**71.4-80.0**	**13.3**	**10.0-16.6**	**6.6**	**3.8-9.4**	**0.7**	**0.0-1.6**
Both Sexes											
18-29	266	6.7	2.6-10.7	68.5	61.3-75.6	14.4	9.8-19.1	9.8	4.6-14.9	0.7	0.0-2.0
30-44	427	5.3	2.8-7.8	76.0	70.9-81.0	12.6	8.4-16.7	5.7	3.1-8.4	0.4	0.0-1.1
45-59	294	0.9	0.1-1.7	81.8	75.9-87.8	13.4	8.3-18.4	3.9	0.4-7.4	0.0	0.0-0.0
60-69	159	2.0	0.0-4.8	76.4	67.8-85.0	16.3	8.6-23.9	4.4	1.1-7.7	1.0	0.0-2.9
18-69	**1146**	**4.6**	**2.9-6.2**	**74.8**	**71.0-78.6**	**13.6**	**10.7-16.5**	**6.6**	**3.9-9.2**	**0.5**	**0.0-1.0**

Teeth cleaning

A vast majority (96.0%) of the respondent reported cleaning their teeth at least daily with no difference between men and women and between age groups as shown in Table 3.8.9 below.

Table 3.8.9: Percentage of respondents cleaning their teeth at least once a day

Age Group (years)	Men			Women			Both Sexes		
	n	% cleaning teeth at least daily	95% CI	N	% cleaning teeth at least daily	95% CI	n	% cleaning teeth at least daily	95% CI
18-29	597	94.8	92.5-97.1	1023	97.5	96.1-98.8	1620	96.1	94.8-97.5
30-44	578	96.5	94.9-98.2	933	96.5	94.9-98.1	1511	96.5	95.3-97.7
45-59	312	94.6	91.4-97.8	473	95.1	93.0-97.3	785	94.9	93.0-96.8
60-69	127	94.0	89.8-98.1	257	93.8	90.6-96.9	384	93.9	91.3-96.4
18-69	**1614**	**95.3**	**93.9-96.7**	**2686**	**96.6**	**95.6-97.6**	**4300**	**96.0**	**95.0-96.9**

Nearly two-thirds (63.4%) of respondents reported cleaning their teeth at least twice per day. Women were more likely to clean their teeth at least twice (67.7%) than men (59.1%). The 18 to 29 years age group had the biggest percentage (67.0%) of respondents cleaning their teeth at least twice daily as shown in Table 3.8.10 below.

Table 3.8.10: Percentage of respondents cleaning their teeth at least twice a day

Age Group (years)	Men			Women			Both Sexes		
	n	% cleaning teeth at least twice a day	95% CI	N	% cleaning teeth at least twice a day	95% CI	n	% cleaning teeth at least twice a day	95% CI
18-29	597	61.6	56.3-66.9	1023	72.2	68.3-76.2	1620	67.0	63.6-70.3
30-44	578	58.8	53.6-64.0	933	67.8	63.9-71.6	1511	63.3	60.1-66.5
45-59	312	53.1	46.7-59.5	473	57.9	52.1-63.7	785	55.6	51.3-60.0
60-69	127	51.8	40.2-63.4	257	55.6	48.3-62.9	384	54.0	47.2-60.7
18-69	**1614**	**59.1**	**55.6-62.5**	**2686**	**67.7**	**65.0-70.4**	**4300**	**63.5**	**61.1-65.9**

Table 3.8.11 shows the respondents who used toothpaste to clean their teeth. Over three quarters (77.9%) of the respondents reported using toothpaste to clean their teeth with the highest percentage among the 18 to 29 years age group.

Table 3.8.11: Percentage of respondents using toothpaste among those cleaning their teeth

Age Group (years)	Men			Women			Both Sexes		
	n	% using toothpaste	95% CI	n	% using toothpaste	95% CI	n	% using toothpaste	95% CI
18-29	457	79.2	75.5-82.9	828	83.6	80.6-86.5	1285	81.4	79.0-83.8
30-44	432	78.0	73.9-82.1	678	75.5	72.0-79.1	1110	76.8	73.8-79.7
45-59	217	72.2	66.4-78.1	339	74.4	69.1-79.7	556	73.4	69.3-77.5
60-69	73	64.3	53.6-74.9	144	64.3	57.5-71.0	217	64.3	58.3-70.2
18-69	**1179**	**77.2**	**74.5-80.0**	**1989**	**78.5**	**76.2-80.8**	**3168**	**77.9**	**75.9-79.9**

Table 3.8.12 shows the respondents who used toothpaste containing fluoride to clean their teeth. Overall 73.3% of the respondents reported using toothpaste containing fluoride, with the highest percentage (78.1%) in the 18 to 29 years age group.

Table 3.8.12: Percentage of respondents using toothpaste containing fluoride among those using toothpaste

Age Group (years)	Men			Women			Both Sexes		
	n	% using toothpaste containing fluoride	95% CI	n	% using toothpaste containing fluoride	95% CI	n	% using toothpaste containing fluoride	95% CI
18-29	407	76.0	72.0-80.0	731	78.1	74.6-81.7	1138	78.1	74.6-81.7
30-44	390	72.9	68.3-77.5	590	71.4	67.4-75.3	980	71.4	67.4-75.3
45-59	193	68.0	61.8-74.2	293	67.5	61.6-73.5	486	67.5	61.6-73.5
60-69	64	58.9	47.4-70.4	122	59.2	51.6-66.9	186	59.2	51.6-66.9
18-69	**1054**	**73.1**	**70.2-76.1**	**1736**	**73.3**	**70.7-76.0**	**2790**	**73.3**	**70.7-76.0**

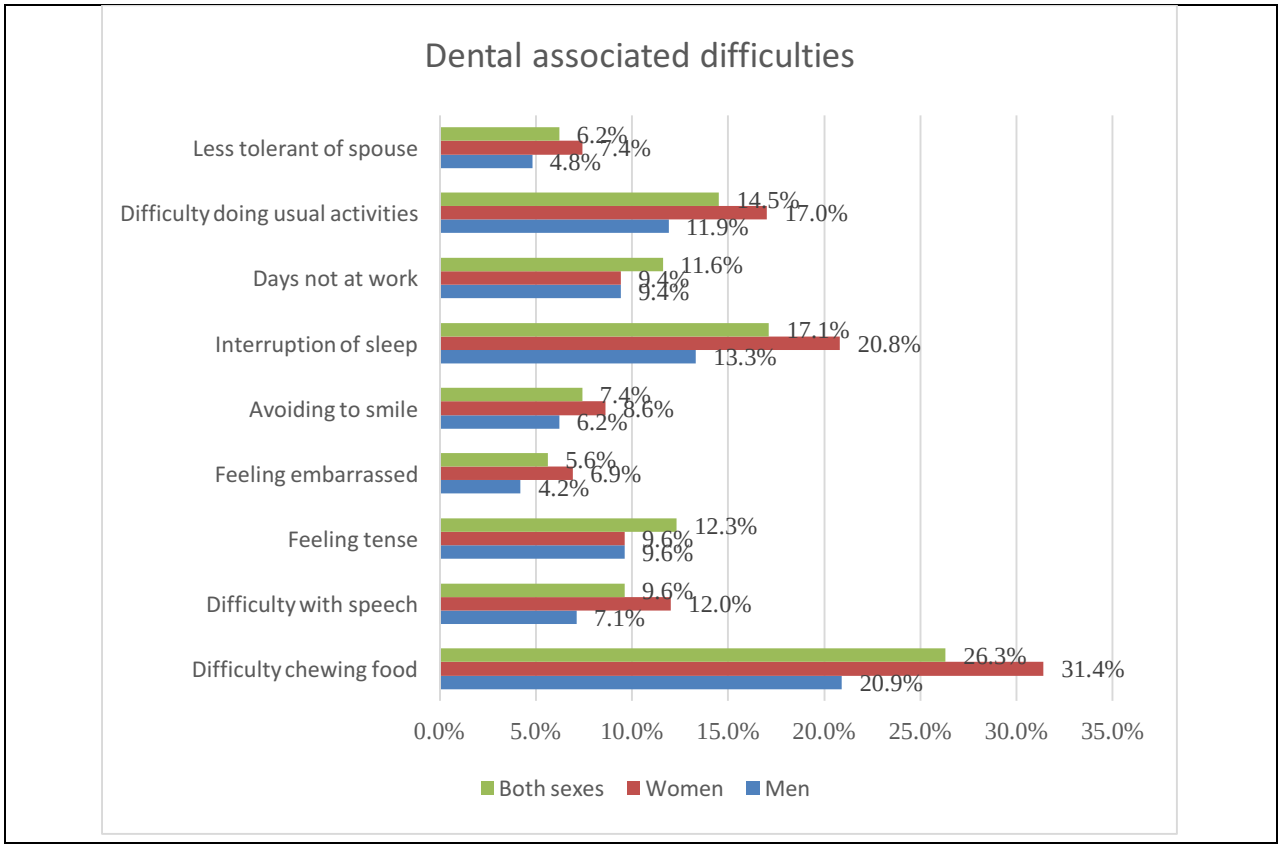
The majority of respondents reported using toothbrushes (90.3%) to clean their teeth followed by wooden toothbrushes (28.4%) and chew sticks (17.5 %). Table 3.8.13 highlights the respondent's choice of tools to clean their teeth.

Table 3.8.13: Percentage of respondents using various tools to clean teeth

Age Group (years)	n	% Tooth-brush	% Wooden tooth-picks	% Plastic tooth-picks	% Thread (dental floss)	*% Charcoal*	% Chewstick/ *miswak*	*%Other*
Men								
18-29	596	90.6	33.1	2.4	2.1	7.4	19.1	14.1
30-44	577	88.9	29.4	3.0	1.6	8.7	20.4	19.9
45-59	310	89.3	25.9	3.0	1.3	8.9	22.9	21.3
60-69	123	86.0	28.0	2.9	3.2	8.3	20.9	17.2
18-69	**1606**	**89.7**	**30.6**	**2.7**	**1.8**	**8.1**	**20.2**	**17.2**
Women								
18-29	596	93.2	24.7	4.3	2.7	8.4	13.9	16.3
30-44	577	90.2	28.5	2.2	2.0	8.1	14.8	19.4
45-59	310	88.6	25.1	2.2	1.9	8.6	17.5	21.6
60-69	123	83.0	26.9	3.1	1.8	11.8	20.0	18.5
18-69	**1606**	**91.0**	**26.2**	**3.2**	**2.3**	**8.5**	**15.0**	**18.3**
Both sexes								
18-29	596	91.9	28.9	3.3	2.4	7.9	16.5	15.2
30-44	577	89.5	28.9	2.6	1.8	8.4	17.6	19.6
45-59	310	88.9	25.5	2.6	1.6	8.7	20.0	21.5
60-69	123	84.3	27.4	3.0	2.4	10.3	20.4	18.0
18-69	**1606**	**90.3**	**28.4**	**3.0**	**2.1**	**8.3**	**17.5**	**17.7**

Figure 3.8.1 below shows the dental associated difficulties reported by the survey respondents. The most commonly reported problem was problems with chewing food (26.3%), followed by interrupted sleep (17.1%) and difficulty doing usual activities (14.5%).

Figure 3.8.1: Percentage of respondents with various dental associated difficulties in the past 12 months



3.9 Mental Health

Mental health/ Suicide

Overall, 7.8% of the population admitted to have considered attempting suicide in the past 12 month with the largest proportion in the 18 to 29 years age group. Women were most likely to consider attempting suicide (10.4%) compared to men (5.1%) as shown in Table 3.9.1 below.

Table 3.9.1: Percentage having considered attempting suicide in the last 12 months

Age Group (years)	Men			Women			Both Sexes		
	n	% considered attempting suicide	95% CI	n	% considered attempting suicide	95% CI	n	% considered attempting suicide	95% CI
18-29	593	6.4	4.2-8.7	1016	10.8	8.4-13.1	1609	8.6	7.0-10.2
30-44	577	4.3	2.6-6.0	924	10.8	8.2-13.3	1501	7.5	5.9-9.1
45-59	311	2.9	1.2-4.7	468	9.3	5.7-12.9	779	6.3	4.2-8.4
60-69	126	5.4	1.3-9.4	256	7.4	3.1-11.7	382	6.5	3.4-9.7
18-69	**1607**	**5.1**	**3.9-6.4**	**2664**	**10.4**	**8.8-12.0**	**4271**	**7.8**	**6.8-8.8**

Table 3.9.2 shows the distribution of respondents who sought professional help among those who considered attempting suicide in the past 12 months. Only 31.0% of men and 20.6% of women sought professional help after considering attempting suicide. Overall, the largest percentage (28.5%) of respondents seeking professional help were in the 18 to 29 years age group.

Table 3.9.2: Percentage having sought professional help

Age Group (years)	Men			Women			Both Sexes		
	n	% sought professional help	95% CI	n	% sought professional help	95% CI	n	% sought professional help	95% CI
18-29				97	26.2	16.3-36.1	140	28.5	19.6-37.4
30-44				97	16.2	7.4-25.0	124	19.4	10.9-27.9
45-59				40	17.5	4.6-30.5	55	21.4	9.1-33.7
60-69				18	0.0	0.0-0.0	26	9.7	0.0-22.7
18-69	**93**	**31.0**	**19.0-42.9**	**252**	**20.6**	**14.6-26.5**	**345**	**23.9**	**18.3-29.6**

Only 2.0% of all respondents reported having attempted suicide with the highest percentage among the 18 to 29 years age group as shown in Table 3.9.3.

Table 3.9.3: Percentage having ever attempted suicide

Age Group (years)	Men			Women			Both Sexes		
	n	% attempted suicide	95% CI	n	% attempted suicide	95% CI	n	% attempted suicide	95% CI
18-29	591	2.5	1.2-3.8	1009	4.0	2.4-5.6	1600	3.3	2.2-4.3
30-44	577	1.4	0.6-2.3	920	1.9	0.8-3.0	1497	1.7	1.0-2.4
45-59	310	1.0	0.1-1.9	467	1.4	0.0-2.8	777	1.2	0.3-2.1
60-69	125	1.1	0.0-2.8	256	1.2	0.0-2.5	381	1.2	0.1-2.2
18-69	**1603**	**1.9**	**1.1-2.6**	**2652**	**2.8**	**1.9-3.6**	**4255**	**2.3**	**1.8-2.9**

Almost half of all the respondents who reported having tried to commit suicide attempted in the past 12 months. The highest percentage was among the 18 to 29 year olds (53.0%).

The most commonly used methods for suicide among those who attempted suicide (Table 3.9.4) were; use of a sharp instrument (23.5%) followed by poisoning with pesticides (20.8%) and poisonous gases from charcoal (20.7%)

Table 3.9.4: Method used last time suicide was attempted

Age Group (years)	Both Sexes							
	N	% razor, knife or other sharp instrument	% overdose of medication	% overdose of other substance	% poisoning with pesticides	% other poisoning	% poisonous gases from charcoal	% other
18-29	40	26.6	13.7	2.6	21.0	12.7	18.1	5.4
30-44	28	23.2	23.8	1.9	25.8	5.4	19.9	0.0
45-59	8	3.9	68.0	0.0	5.2	0.0	22.9	0.0
60-69	5	0.0	0.0	0.0	9.2	0.0	90.8	0.0
18-69	**81**	**23.5**	**19.8**	**2.2**	**20.8**	**9.6**	**20.7**	**3.5**

Among the respondents who had ever attempted suicide, nearly one in four (23.9%) sought care.

Overall 10.7% of respondents reported having a close family member who attempted suicide (Table 3.9.5), with no significant difference between men (10.7%) and women (12.0%).

Table 3.9.5: Percentage of respondents having close family who attempted suicide

Age Group (years)	Men			Women			Both Sexes		
	n	% close family attempt suicide	95% CI	n	% close family attempt suicide	95% CI	n	% close family attempt suicide	95% CI
18-29	594	11.9	8.8-14.9	1018	12.4	9.5-15.3	1612	12.1	9.9-14.3
30-44	576	10.9	7.7-14.0	923	11.2	8.6-13.8	1499	11.0	9.0-13.1
45-59	311	7.9	4.3-11.4	467	13.4	9.9-17.0	778	10.8	8.4-13.3
60-69	126	4.7	0.0-10.4	255	10.1	4.4-15.8	381	7.7	3.7-11.8
18-69	**1607**	**10.7**	**8.7-12.6**	**2663**	**12.0**	**10.3-13.8**	**4270**	**11.4**	**9.9-12.8**

Among those respondents who had a family member attempt suicide, half (54.4%) had a family member who died from suicide with no significant difference between men (51.9%) and women (56.6%) (Table 3.9.6)

Table 3.9.6: Percentage of respondents having close family who died from suicide

Age Group (years)	Men			Women			Both Sexes		
	n	% close family died from suicide	95% CI	N	% close family died from suicide	95% CI	n	% close family died from suicide	95% CI
18-29	68	40.8	26.9-54.7	107	58.7	46.8-70.7	175	50.0	41.4-58.6
30-44	58	62.8	45.7-79.9	103	52.5	40.6-64.3	161	57.5	47.8-67.3
45-59	26	62.8	40.9-84.6	62	55.9	41.6-70.2	88	58.3	45.9-70.7
60-69	5	100.0	100.0-100.0	22	66.6	44.2-89.0	27	75.4	56.5-94.4
18-69	**157**	**51.9**	**41.2-62.6**	**294**	**56.6**	**48.5-64.7**	**451**	**54.4**	**48.2-60.6**

CHAPTER 4: DISCUSSION AND CONCLUSIONS

This is the first national survey of its kind in Zambia and affords the country a national picture of the prevalence of NCD risk factors in Zambia. These finding will be critical in planning national interventions to address growing burden and threat of NCDs in Zambia.

4.1 Tobacco Use

This survey showed that 15.8% of Zambian adults aged between 18 to 69 years currently consume some form of tobacco products. The prevalence of tobacco smoking was higher among males smoking than females. It was also noted that most of those smoking use manufactured cigarettes with majority starting to smoke at about 16 years of age. These findings indicate clearly that men should be targeted in smoking cessation campaigns, as this will help reduce both active and passive smoking. Zambia has laws in place to control smoking in public places but enforcement of these laws has been very weak. In view of the early age at which most people start smoking in Zambia, it is important to target prevention messages to young people in schools and communities before they pick up tobacco smoking habits.

4.2 Alcohol use

The prevalence of alcohol consumption was at 21.7% with a clear difference between men and women. Most concerning was the reported episodes of heavy drinking and drinking of more than recommended 5 standard drinks per drinking episode. Urban respondents consumed twice the amount of alcohol compared to those living in rural areas. This clearly shows that abuse of alcohol is a big problem in Zambia. This has both health and socio-economic implications. In this study we could already observe some health consequences with about 17% of those quitting drinking citing health reasons for stopping. Reports from the Road Traffic Agency (RTSA) indicate that Zambia has seen a rise in road traffic accidents in the past few years and alcohol has been one of the major contributing factors to these accidents. This survey has confirmed the burden of alcohol abuse and the need for a multi-sectoral response in view of the different sources and types of alcohol being consumed. The country has been working on the alcohol policy but this has not been finalised for a number of years now. With these findings, it is important that a national policy on alcohol control is put in place to regulate manufacturing, distribution and consumption.

4.3 Diet

The study looked at the habits of fruit and vegetable consumption in the respondents' diet.
Generally, the study revealed that fruit consumption was low in Zambia with average of 2.1 days out of 7 days reported as constituting of fruits. Although vegetable consumption was higher, generally the amount consumed was lower than the recommended amounts by WHO of 5 servings per day, over 90% consumed less than this recommendation. It is taken for granted that Zambian diet does almost always include vegetables, but this survey has now shown that consuming vegetable every day does not necessarily translate into having sufficient amounts. This requires public sensitisation and changing of mind-sets.
The limitation of the study was that it was done during the dry season when fruits such as mango and traditional vegetables were not in season. It would be expected that daily consumption may go up in the rain season. However, normal consumption must be encouraged

throughout the year as the body cannot store some vitamins for longer periods of time and therefore daily consumption is recommended.

The study has also revealed that consumption of salt is very high in the Zambian population with 39.8% agreeing to adding salt to their diet always. Quantification results confirmed that Zambians consume on-average 9.5 grams per day, which almost is twice the 5grams recommended by WHO. The consequences of over consumption of salt include raised pressure due to fluid retention and this has effect on other body organs such as the heart, brain and kidneys (WHO, 2006b).

It is crucial that right messages are sent to the public in relation to salt consumption and the associated dangers. Interventions should target behaviour change early in childhood. School health programmes targeting reduction in salt consumption for children, could benefit both children and families. Although the study did not show a high prevalence of consumption of processed foods, the trend of fast foods is likely to increase with westernisation of Zambian life styles. Therefore regulation on salt products will be vital to prevent high salt consumption whether intended or untended.

4.4 Physical activity

WHO recommendation are that adults (18-64) should at least have 150 minutes of moderate to intensive physical activity per week or 75minutes of intensive activity per week, the study revealed that 10% of Zambian population do not engage in sufficient physical activities. Significantly more women (45.5%) than men (23.9%) reported no vigorous activity at all.

With the changing life styles, which now includes office work, use of vehicles to drive to work and home sedentary life styles, the lack of adequate physical activities is likely to rise in the Zambia population. This calls for multi-sectoral response to include safe walking paths and parks for exercising. Work place environments which facilitate physical activities must be encouraged. Public sensitization should be an integral part of any intervention that will be aimed at improving physical activities among Zambians.

4.5 Raised blood pressure and blood glucose

Raised blood pressure is a well-known risk factor for cardiovascular diseases. These complications are expensive to manage from both health system and individual/family perspectives. Therefore prevention is the best approach recommended. In this survey, the prevalence of high blood pressure (>140/90) was 19.1%. There was no difference between men and women in the prevalence of hypertension. However, gender differences were clear in terms of who had ever been screened for high blood with two thirds of the men never ever screened for raised blood and one third of the women. Among those found with raised blood pressure just 1 in every 4 patients were on medication for high blood pressure.

This finding is not surprising as the country has reported a rise in complications of hypertension such as heart failure and strokes (MOH, 2014).

The most worrisome observation was that majority of those with raised blood pressure do not even know that they have this condition. Public awareness will be a critical intervention to ensure all Zambians check their blood pressure at least once a year. The country needs to plan services to manage these chronic conditions such as hypertension and associated complications. Integration of other life style interventions to address other risk factors will be much more cost effective than dealing with hypertension alone.

In this study, it was noted that majority of Zambians had never been screened for blood sugar or cholesterol levels. This was expected as most primary care facilities do not routinely screen for cholesterol or diabetes. However, this situation need urgent attention as it is clear primary facilities require capacity and resources to conduct these tests if Zambia is to reach NCD global

targets by 2030 (WHO, 2017a, Aantjes et al., 2014, McKee et al., 2014, Mendis and Chestnov, 2013)

4.6 Cervical cancer screening

Cervical cancer is a leading cause of death among women in Zambia with HIV being a major risk factor for this cancer (Bateman et al., 2015a). Most patients present very late when cure is not possible. Therefore screening women in the reproductive age group and those with HIV will be critical if the country is to reverse this trend. In this survey, only 16.4% of women aged 18 to 69 years had ever undergone cervical cancer screening while among those aged 30 to 49 years, the recommended age for screening only 1 in 5 have ever been screened for cervical cancer. While Zambia has invested in cervical cancer screening countrywide, this has not translated into general screening for most of the women who are at risk of cervical cancer (Bateman et al., 2015b, Bateman et al., 2014, Mwanahamuntu et al., 2014). Strategies to integrate cervical cancer into other services would improve uptake. This should be supported by information dissemination through various platforms to reach all women regardless of age, residence or social status.

4.7 Physical Measurements

Obesity is a known risk factor for NCD diseases such as diabetes and hypertension. In this study data was collected on physical measurements such as height and weight. Overall, 24.2% the Zambian adults are either overweight or obese (BMI greater than 25kg/m^2). Significantly more women were obese than men

These findings collaborate well with other risk factors discussed earlier such as lack of physical activities, which was high among women. These results should raise alarm bells on the growing epidemic of obesity in Zambia and the likely health complications associated with obesity. Responding to this risk factor will require all sectors of the economy to collaborate. Policy harmonisation will be key as conflicting policy directions risk making interventions ineffective.

4.8 Cardiovascular risk

WHO has recommended a measure of risk for cardiovascular disease in the next 10 years. The total risk of developing cardiovascular disease (CVD) was therefore determined by the combined effect of behavioural and biological risk factors (for instance smoking, or having raised blood sugar), age and sex. The finding showed that 4.2% of the Zambians in the 40-69 age group have a 10-year CVD risk of 30%. These findings support reports based on routine health information data, which have reported an increase in patients presenting to outpatient departments with cardiovascular complications, especially in urban areas of Zambia. Life style changes and HIV infection and associated treatment side effects, can contribute to this raised risk but this study did not collect information on HIV, which will be useful to understand the distribution of these risk factors for targeted interventions. Nonetheless, it is important to raise awareness in the general population and among health workers about the changing cardiovascular risk patterns in Zambia and the need to intervene early.

4.9 Mental Health

Mental health is a neglected non-communicable disease in Zambia, which has proved difficult to estimate due to under reporting and lack of national surveys with validated measures to ascertain the burden of mental illness. The study has shown that 7.8% reported attempting suicide with majority being young people between ages 18 to 29. Health seeking behaviour remained poor in this group with less than 23.9% seeking help. This should raise the issue of mental health in Zambia and the need to address cultural beliefs which fuel silence and bad

health seeking behaviour. The health systems and health workers will need capacity building to handle the growing burden of mental health which has seen very little investment since independence. In view of the young age of those at risk, school based programme and peer support systems in colleges can help young people to cope better with mental health issues.

4.10 Oral Health

Oral health is another neglected area of public health importance in Zambia. This is the first national survey to address this area. Overall, 74.5% of Zambians have never visited a dentist and less than 10% visited a dentist in the past 12 months. It was therefore not surprising that 31.5% reported oral pain and discomfort in the past 12 months. Oral hygiene remained poor with most people not cleaning teeth regularly. Oral health interventions are non-existent in Zambia and the survey confirmed this. It will be important to develop a national strategy on oral health and ensure it is fully implemented. School based programmes might be cost-effective and quick win intervention focusing on adopting good oral health behaviour among young people.

CHAPTER 5: POLICY IMPLICATIONS AND RECOMMENDATIONS

Conclusions and Recommendations

This STEPs survey is the first nationally representative survey to collect comprehensive information on risk factors for NCDs, mental health and oral health in Zambia. Besides giving us overall data on the known risk factors which now constitute a critical baseline for benchmarking trends and progress, it also provides us essential information on these indicators by age group, sex and urban-rural trends. These findings will be critical for informing public health policy and the following recommendations are proposed.

5.1 General recommendations:

1. There is critical need to create awareness on NCD prevalence, and risk factors in Zambia. Appropriate communication strategies are required to reach all levels of the society from the households, communities, civic leadership and all stakeholders.

2. There is a need to prioritize NCD prevention and control at both national and sub-national levels in order to start addressing this emerging threat to health, social and economic development.

3. The health system particularly needs to be reshaped in order to better deal with NCDs. An integrated approach is required so that every contact with the health system becomes an opportunity to detect and tackle NCDs or send preventive messages. For this to be achieved, more health workers will be needed and much retraining emphasizing NCD prevention and care should be provided. This also means procurement and maintenance of basic equipment such as weighing scales, blood pressure machines, glucometers, etc.

4. Integrate NCD indicators in national health surveys to supplement the data collected in periodic STEPS survey for proper planning and projection of NCD prevention and control.

5. Make plans and budget for periodic (say every 5 to 7 years) STEPS surveys nationally in order to monitor progress and trends. Future surveys could also include other indicators not assessed in this report; these may be such major causes of premature death as road traffic accidents and injuries in general.

5.2 NCD risk factor specific recommendations

5.2.1. Tobacco

1) Zambia should consider increasing excise taxes and prices on tobacco products to discourage people, especially the youth from taking up smoking habits.
2) Consider introducing large, rotating Pictorial health warnings that comply with WHO FCTC provisions, on all tobacco product packaging and labelling to convey the dangers of tobacco use.

3) Enforce the law against smoking in public and indoor to reduce exposure to second-hand tobacco smoke in workplaces, public places, and public transport.
4) Implement an effective mass media campaigns to educate the public about the harms of smoking and second hand smoke

5.2.2 Alcohol

1) The government policy on alcohol should be consisted with a commitment to generally increase excise taxes on alcoholic beverages in Zambia.
2) Consider enacting and enforcing restrictions on exposure to alcohol advertising in the public and private media.
3) Consider enacting and enforcing restrictions to reduce physical availability and access to alcohol, and particularly for youths given the finding that age of debut in Zambia is early.

5.2.3 Salt consumption

1) Consider introducing and enforcing laws to control amount of salts in food products being sold to the public.
2) Ensure a supportive environment in public and private institutions with lower sodium options being provided for meals.
3) Promote behaviour change communication and mass media campaigns for reducing salt intake

5.2.4 Physical activity

1) Consider implementing community wide public education and awareness campaign for physical activity which includes a mass media campaign combined with other community based education, motivational and environmental programs aimed at supporting behavioural change of physical activity levels in both rural and urban areas.
2) Support physical activity champions especially targeted at encouraging women to increase physical exercises.
3) Enhance physical exercise activities through school curricula across the country

5.2.5 Cervical cancer

1) Promote cervical cancer awareness among women through media and community based awareness programmes.
2) Consider national scale up of the recently piloted vaccination against human papillomavirus for young girls 9 to 13 year old; and promote prevention of cervical cancer through availability of screening services for women in the reproductive age group.
3) Promote awareness on the problem of cervical cancer, particularly its very poor outcomes if discovered late

5.2.6 Mental health

1) Expedite enactment of the mental health bill in Zambia to provide a legal framework for mental health interventions.
2) Promote mental health awareness through public campaigns and focus on stigma reduction in mental health.
3) Promote access to information and support for those needing help with mental health in Zambia.

5.2.7 Oral health

1) Raise awareness on the need to promote oral health in schools and communities.
2) Make oral health services available and accessible in public health facilities in Zambia

BIBLIOGRAPHY

AANTJES, C. J., QUINLAN, T. K. & BUNDERS, J. F. 2014. Practicalities and challenges in re-orienting the health system in Zambia for treating chronic conditions. *BMC Health Serv Res,* 14**,** 295.

BATEMAN, A. C., KATUNDU, K., MWANAHAMUNTU, M. H., KAPAMBWE, S., SAHASRABUDDHE, V. V., HICKS, M. L., CHI, B. H., STRINGER, J. S., PARHAM, G. P. & CHIBWESHA, C. J. 2015a. The burden of cervical pre-cancer and cancer in HIV positive women in Zambia: a modeling study. *BMC Cancer,* 15**,** 541.

BATEMAN, A. C., KATUNDU, K., POLEPOLE, P., SHIBEMBA, A., MWANAHAMUNTU, M., DITTMER, D. P., PARHAM, G. P. & CHIBWESHA, C. J. 2015b. Identification of human papillomaviruses from formalin-fixed, paraffin-embedded pre-cancer and invasive cervical cancer specimens in Zambia: a cross-sectional study. *Virol J,* 12**,** 2.

BATEMAN, A. C., PARHAM, G. P., SAHASRABUDDHE, V. V., MWANAHAMUNTU, M. H., KAPAMBWE, S., KATUNDU, K., NKOLE, T., MULUNDIKA, J., PFAENDLER, K. S., HICKS, M. L., SHIBEMBA, A., VERMUND, S. H., STRINGER, J. S. & CHIBWESHA, C. J. 2014. Clinical performance of digital cervicography and cytology for cervical cancer screening in HIV-infected women in Lusaka, Zambia. *J Acquir Immune Defic Syndr,* 67**,** 212-5.

BEAGLEHOLE, R., BONITA, R., HORTON, R., ADAMS, C., ALLEYNE, G., ASARIA, P., BAUGH, V., BEKEDAM, H., BILLO, N. & CASSWELL, S. 2011. Priority actions for the non-communicable disease crisis. *The Lancet,* 377**,** 1438-1447.

BLOOM, D. E., CAFIERO, E., JANÉ-LLOPIS, E., ABRAHAMS-GESSEL, S., BLOOM, L. R., FATHIMA, S., FEIGL, A. B., GAZIANO, T., HAMANDI, A. & MOWAFI, M. 2012. The global economic burden of noncommunicable diseases. Program on the Global Demography of Aging.

GOMA, F. M., NZALA, S. H., BABANIYI, O., SONGOLO, P., ZYAAMBO, C., RUDATSIKIRA, E., SIZIYA, S. & MUULA, A. S. 2011. Prevalence of hypertension and its correlates in Lusaka urban district of Zambia: a population based survey. *Int Arch Med,* 4.

GSHS. 2004. *Global School-based Student Health Survey: Zambia 2004 Fact Sheet* [Online]. Available: http://www.who.int/chp/gshs/Zambia%20fs%202004.pdf [Accessed 5th August 2016].

HEALTH, W. H. O. R., DISEASES, W. H. O. C. & PROMOTION, H. 2006. *Comprehensive cervical cancer control: a guide to essential practice*, World Health Organization.

LIM, S. S., VOS, T., FLAXMAN, A. D., DANAEI, G., SHIBUYA, K., ADAIR-ROHANI, H., AMANN, M., ANDERSON, H. R., ANDREWS, K. G., ARYEE, M., ATKINSON, C., BACCHUS, L. J., BAHALIM, A. N., BALAKRISHNAN, K., BALMES, J., BARKER-COLLO, S., BAXTER, A., BELL, M. L., BLORE, J. D., BLYTH, F., BONNER, C., BORGES, G., BOURNE, R., BOUSSINESQ, M., BRAUER, M., BROOKS, P., BRUCE, N. G., BRUNEKREEF, B., BRYAN-HANCOCK, C., BUCELLO, C., BUCHBINDER, R., BULL, F., BURNETT, R. T., BYERS, T. E., CALABRIA, B., CARAPETIS, J., CARNAHAN, E., CHAFE, Z., CHARLSON, F., CHEN, H., CHEN, J. S., CHENG, A. T., CHILD, J. C., COHEN, A., COLSON, K. E., COWIE, B. C., DARBY, S., DARLING, S., DAVIS, A., DEGENHARDT, L., DENTENER, F., DES JARLAIS, D. C., DEVRIES, K., DHERANI, M., DING, E. L., DORSEY, E. R., DRISCOLL, T., EDMOND, K., ALI, S. E., ENGELL, R. E., ERWIN, P. J., FAHIMI, S., FALDER, G., FARZADFAR, F., FERRARI, A., FINUCANE, M. M., FLAXMAN, S., FOWKES, F. G., FREEDMAN, G., FREEMAN, M. K., GAKIDOU, E., GHOSH, S., GIOVANNUCCI, E., GMEL, G., GRAHAM, K., GRAINGER, R., GRANT, B.,

GUNNELL, D., GUTIERREZ, H. R., HALL, W., HOEK, H. W., HOGAN, A., HOSGOOD, H. D., 3RD, HOY, D., HU, H., HUBBELL, B. J., HUTCHINGS, S. J., IBEANUSI, S. E., JACKLYN, G. L., JASRASARIA, R., JONAS, J. B., KAN, H., KANIS, J. A., KASSEBAUM, N., KAWAKAMI, N., KHANG, Y. H., KHATIBZADEH, S., KHOO, J. P., KOK, C., LADEN, F., et al. 2012. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet,* 380**,** 2224-60.

MARQUEZ, P. V. & FARRINGTON, J. L. 2013. The challenge of non-communicable diseases and road traffic injuries in Sub-Saharan Africa : an overview. Washington DC World Bank.

MCKEE, M., HAINES, A., EBRAHIM, S., LAMPTEY, P., BARRETO, M., MATHESON, D., WALLS, H., FOLIAKI, S., MIRANDA, J., CHIMEDDAMBA, O., GARCIA-MARCOS, L., VINEIS, P. & PEARCE, N. 2014. Towards a comprehensive global approach to prevention and control of NCDs. *Globalization and Health,* 10**,** 74.

MENDIS, S. & CHESTNOV, O. 2013. Policy reform to realize the commitments of the Political Declaration on noncommunicable diseases. *British Medical Bulletin,* 105**,** 7-27.

MINISTRY OF HEALTH, Z. & WORLD HEALTH ORGANIZATION, C. O. Z. 2008. Prevalence rates of the common non-communicable diseases and their risk factors in Lusaka district, Zambia. Lusaka, Zambia: : Ministry of Health and World Health Organization

MOH 2014. The 2012 Annual Health Statistical Bulletin. Lusaka, Zambia: Directorate of Policy and Planning, Monitoring and Evaluation Unit, Ministry of Health.

MWANAHAMUNTU, M. H., SAHASRABUDDHE, V. V., BLEVINS, M., KAPAMBWE, S., SHEPHERD, B. E., CHIBWESHA, C., PFAENDLER, K. S., MKUMBA, G., VWALIKA, B., HICKS, M. L., VERMUND, S. H., STRINGER, J. S. & PARHAM, G. P. 2014. Monitoring the performance of "screen-and-treat" cervical cancer prevention programs. *Int J Gynaecol Obstet,* 126**,** 88-9.

NSAKASHALO-SENKWE, M., SIZIYA, S., GOMA, F. M., SONGOLO, P., MUKONKA, V. & BABANIYI, O. 2011. Prevalence rate for diabetes and its correlates in Lusaka urban district, Zambia: a population based survey. *Int Arch Med,* 4.

ORGANIZATION, W. H. 2004. Global strategy on diet, physical activity and health.

RUDATSIKIRA, E., MUULA, A. S., MULENGA, D. & SIZIYA, S. 2012. Prevalence and correlates of obesity among Lusaka residents, Zambia: a population-based survey. *International Archives of Medicine,* 5**,** 1-6.

UN 2011. Political declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases. New York: United Nations.

WHO 2000. *Obesity: preventing and managing the global epidemic,* World Health Organization.

WHO 2002. Diet, nutrition, and the prevention of chronic diseases:. *WHO Technical Report Series 916.* Geneva: World Health Organization.

WHO 2006a. Definition and diagnosis of diabetes mellitus and intermediate hyperglycemia: report of a WHO/IDF consultation. *World Hearth Organization*.

WHO 2006b. Global strategy on diet, physical activity and health: a framework to monitor and evaluate implementation.

WHO 2008. Prevalence rates of the common noncommunicable diseases and their risk factors in Lusaka district, Zambia Lusaka, Zambia: Ministry of Health and World Health Organization.

WHO 2011. Global status report on non-communicable diseases 2010. Geneva, Switzerland: World Health Organization.

WHO 2012a. Assessing national capacity for the prevention and control of noncommunicable diseases: report of the 2010 global survey. Geneva: World Health Organization.

WHO. 2012b. *Oral health Information sheet* [Online]. World Health Organization. Available: http://www.who.int/oral_health/publications/factsheet/en/ [Accessed 07 February 2018].
WHO 2013a. GLOBAL ACTION PLAN FOR THE PREVENTION AND CONTROL OF NONCOMMUNICABLE DISEASES 2013-2020.
WHO 2013b. Global action plan for the prevention and control of noncommunicable diseases 2013-2020. Geneva: World Health Organization.
WHO 2014a. *Global status report on alcohol and health, 2014*, World Health Organization.
WHO 2014b. Noncommunicable diseases country profiles 2014. Geneva: World Health Organization.
WHO. 2014 *Gobal Status Report on noncommunicable diseases 2014* [Online]. World Health Organization. Available: http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf?ua=1 [Accessed 08 February 2018].
WHO. 2015. *Healthy diet Fact sheet N°394* [Online]. World Health Organization. Available: http://www.who.int/mediacentre/factsheets/fs394/en/ [Accessed 07 February 2018].
WHO 2017a. Noncommunicable Diseases Progress Monitor, 2017. Geneva: World Health Organization.
WHO. 2017b. *Obesity and overweight Fact sheet* [Online]. World Health Organization. Available: http://www.who.int/mediacentre/factsheets/fs394/en/ [Accessed 07 February 2018].
WHO 2017c. WHO report on the global tobacco epidemic 2017: Monitoring tobacco use and prevention policies.

APPENDIX A: SAMPLE DESIGN

STEPS ZAMBIA 2017

Survey Information

Location and Date	Response	Code
Province		
District		
Constituency & ward		
Enumeration area (CSA_SEA)	⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋	I1
Interviewer ID	⌊_⌊_⌊_⌋	I3
Date of completion of the instrument	⌊_⌊_⌋ ⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋ dd mm year	I4

Consent, Interview Language and Name	Response	Code
Consent has been read and obtained	Yes 1 No 2 If NO, END	I5
Interview Language	English 1 *Nyanja* 2 *Bemba* 3 *Lozi* 4 *Tonga* 5 Luvale 6 Lunda 7 Kaonde 8	I6
Time of interview (24 hour clock)	⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	I7
Family Surname		I8
First Name		I9
Additional Information that may be helpful		
Contact phone number where possible		I10

Participant Identification Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

Step 1 Demographic Information

Demographic Information		
Question	**Response**	**Code**
Sex (*Record Male / Female as observed)*	Male 1 Female 2	C1
What is your date of birth? *Don't Know 77 77 7777*	⌊_⌊_⌋ ⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋ *If known, Go to C4* dd mm year	C2
How old are you?	Years ⌊_⌊_⌋	C3
In total, how many years have you spent at school and in full-time study (excluding pre-school)?	Years ⌊_⌊_⌋	C4

Demographic Information		
What is the **highest level of education** you have completed?	No formal schooling 1 Less than primary 2 Primary school completed 3 Junior Secondary school completed 4 Secondary Higher school completed 5 College/University completed 6 Post graduate degree 7 Refused 88	C5
What tribe do you belong to?	Bemba 1 Ila 2 Kaonde 3 Lala 4 Lamba 5 Lozi 6 Lunda 7 Luvale 8 Chewa 10 Soli 11 Tonga 12 Other 13 Refused 88	C6
What is your **marital status**?	Never married 1 Currently married 2 Separated 3 Divorced 4 Widowed 5 Cohabitating 6 Refused 88	C7
Which of the following best describes your **main work** status over the past 12 months?	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4	C8

(*USE SHOWCARD)*	Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88	
How many people older than 18 years, including yourself, live in your household?	Number of people ⌊__⌋⌊__⌋	C9

Participant Identification Number ⌊__⌋⌊__⌋⌊__⌋ ⌊__⌋⌊__⌋⌊__⌋ ⌊__⌋⌊__⌋⌊__⌋

Demographic Information, Continued		
Question	**Response**	**Code**
Taking the past year, can you tell me what the average earnings of the household have been? *(RECORD ONLY ONE, NOT ALL 3)*	Per week ⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋ *Go to T1*	C10a
	OR per month ⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋ *Go to T1*	C10b
	OR per year ⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋⌊__⌋ *Go to T1*	C10c
	Refused 88	C10d
If you don't know the amount, can you give an estimate of the annual household income if I read some options to you? Is it *(READ OPTIONS)*	≤ 4,000 ZMK 1 More than 4,001, ≤10,000 ZMK 2 More than 10,001, ≤ 15,000 ZMK 3 More than 15,001, ≤ 20,000 ZMK 4 More than 20,000 ZMK 5 Don't Know 77 Refused 88	C11

Participant Identification Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

Step 1 Behavioural Measurements

Tobacco Use

Now I am going to ask you some questions about tobacco use.

Question	Response	Code
Do you **currently** smoke any **tobacco** products, such as cigarettes, Shisha, cigars or pipes? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T8*	T1
Do you currently smoke tobacco products **daily**?	Yes 1 No 2	T2
How old were you when you **first started** smoking?	Age (years) Don't know 77 ⌊_⌊_⌋ *If Known, go to T5a/T5aw*	T3
Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* *Don't know 77*	In Years ⌊_⌊_⌋ *If Known, go to T5a/T5aw*	T4a
	OR in Months ⌊_⌊_⌋ *If Known, go to T5a/T5aw*	T4b
	OR in Weeks ⌊_⌊_⌋	T4c
On average, **how many** of the following products do you smoke **each day/week**? *(IF LESS THAN DAILY, RECORD WEEKLY)* *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 7777*		DAILY↓ WEEKLY↓
	Manufactured cigarettes ⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5a/T5aw
	Hand-rolled cigarettes ⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5b/T5bw
	Pipes full of tobacco ⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5c/T5cw
	Cigars, cheroots, cigarillos ⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5d/T5dw
	Number of Shisha sessions ⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋	T5e/T5ew
	Other ⌊_⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋ *If Other, go to T5other, else go to T6*	T5f/T5fw
	Other (please specify): ⌊_⌊_⌊_⌊_⌊_⌊_⌋	T5other/ T5otherw
During the past 12 months, have you tried to **stop smoking**?	Yes 1 No 2	T6
During any visit to a doctor or other health worker in the past 12 months, were you advised to quit smoking tobacco?	Yes 1 *If T2=Yes, go to T12; if T2=No, go to T9* No 2 *If T2=Yes, go to T12; if T2=No, go to T9* No visit during the past 12 months 3 *If T2=Yes, go to T12; if T2=No, go to T9*	T7
In the past, did you **ever smoke** any tobacco products? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T12*	T8
In the past, did you **ever** smoke **daily**?	Yes 1 *If T1=Yes, go to T12, else go to T10* No 2 *If T1=Yes, go to T12, else go to T10*	T9

Tobacco Use

Question	Response	Code
How old were you when you **stopped** smoking?	Age (years) ⌊_⌋⌊_⌋ *If Known, go to T12* Don't Know 77	T10
How **long ago** did you stop smoking? *(RECORD ONLY 1, NOT ALL 3)* *Don't Know 77*	Years ago ⌊_⌋⌊_⌋ *If Known, go to T12*	T11a
	OR Months ago ⌊_⌋⌊_⌋ *If Known, go to T12*	T11b
	OR Weeks ago ⌊_⌋⌊_⌋	T11c
Do you **currently use** any **smokeless tobacco** products such as *snuff, chewing tobacco*? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T15*	T12
Do you **currently use smokeless tobacco** products **daily**?	Yes 1 No 2 *If No, go to T14aw*	T13
On average, how many **times a day/week** do you use …. *(IF LESS THAN DAILY, RECORD WEEKLY)* *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 7777*	DAILY↓ WEEKLY↓	
	Snuff, by mouth ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T14a/ T14aw
	Snuff, by nose ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T14b/ T14bw
	Chewing tobacco ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T14c/ T14cw
	Betel, quid with tobacco ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T14d/ T14dw
	Other ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *If Other, go to T14other, if T13=No, go to T16, else go to T17*	T14e/ T14ew
	Other (please specify): ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *If T13=No, go to T16, else go to T17*	T14other/ T14otherw
In the **past**, did you **ever use** smokeless tobacco products such as *snuff, chewing tobacco, or betel with tobacco*?	Yes 1 No 2 *If No, go to T17*	T15
In the **past**, did you **ever use** smokeless tobacco products such as *snuff, chewing tobacco, or betel with tobacco* **daily**?	Yes 1 No 2	T16
During the past 30 days, did someone smoke **in your home**?	Yes 1 No 2	T17
During the past 30 days, did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office)?	Yes 1 No 2 Don't work in a closed area 3	T18

Tobacco Policy

Tobacco Policy

You have been asked questions on tobacco consumption before. The next questions ask about tobacco control policies. They include questions on your exposure to the media and advertisement, on cigarette promotions, health warnings and cigarette purchases.

Question	Response	Code
During the past 30 days, have you noticed information about the dangers of smoking cigarettes or that encourages quitting through the following media? *(RECORD FOR EACH)*		
Newspapers or magazines	Yes 1 No 2 Don't know 77	TP1a
Television	Yes 1 No 2 Don't know 77	TP1b
Radio	Yes 1 No 2 Don't know 77	TP1c
During the past 30 days, have you noticed any **advertisements** or **signs** promoting cigarettes in stores where cigarettes are sold?	Yes 1 No 2 Don't know 77	TP2
During the past 30 days, have you noticed any of the following types of cigarette promotions? *(RECORD FOR EACH)*		
Free samples of cigarettes	Yes 1 No 2 Don't know 77	TP3a
Cigarettes at reduced sale prices	Yes 1 No 2 Don't know 77	TP3b
Coupons for cigarettes	Yes 1 No 2 Don't know 77	TP3c
Free gifts or special discount offers on other products when buying cigarettes	Yes 1 No 2 Don't know 77	TP3d
Clothing or other items with a cigarette brand name or logo	Yes 1 No 2 Don't know 77	TP3e
Cigarette promotions in the mail	Yes 1 No 2 Don't know 77	TP3f
The next questions TP4 – TP7 are administered to current smokers only.		
During the past 30 days, did you notice any **health warnings on cigarette packages**?	Yes 1 No 2 *If no, go to TP6* Did not see any cigarette packages 3 *If "did not see any cigarette packages", go to TP6* Don't know 77 *If Don't know, go to TP6*	TP4
During the past 30 days, have warning labels on cigarette packages led you to **think about quitting**?	Yes 1 No 2 Don't know 77	TP5
The last time you bought manufactured cigarettes for yourself, **how many cigarettes** did you buy in total?	Number of cigarettes ⌊_⌊_⌊_⌋ Don't know or Don't smoke or purchase manuf. cigarettes 7777 *If "Don't know or don't smoke or purchase manuf. cig.", end section*	TP6
In total, **how much money** in Zambian Kwacha did you pay for this purchase?	Amount ⌊_⌊_⌊_⌊_⌋ Don't know 7777 Refused 8888	TP7

Participant Identification Number ⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋

Alcohol Consumption

The next questions ask about the consumption of alcohol.

Question	Response	Code
Have you **ever** consumed any alcohol such as beer, wine, spirits or opaque beer, Including; Chibuku, Shake-shake, kachasu, lutuku, katata, Imbote etc.? *(USE SHOWCARD OR SHOW EXAMPLES)*	Yes 1 No 2 *If No, go to A16*	A1
Have you consumed any alcohol within the **past 12 months**?	Yes 1 *If Yes, go to A4* No 2	A2
Have you stopped drinking due to health reasons, such as a negative impact on your health or on the advice of your doctor or other health worker?	Yes 1 *If Yes, go to A16* No 2 *If No, go to A16*	A3
During the past 12 months, **how frequently** have you had at least one standard alcoholic drink? *(READ RESPONSES, USE SHOWCARD)*	Daily 1 5-6 days per week 2 3-4 days per week 3 1-2 days per week 4 1-3 days per month 5 Less than once a month 6	A4
Have you consumed any alcohol within the **past 30 days**?	Yes 1 No 2 *If No, go to A13*	A5
During the past 30 days, on how many **occasions** did you have at least one standard alcoholic drink?	Number ⌊_⌋⌊_⌋ Don't know 77	A6
During the past 30 days, when you drank alcohol, how many **standard drinks on average** did you have during one drinking occasion? *(USE SHOWCARD)*	Number ⌊_⌋⌊_⌋ Don't know 77	A7
During the past 30 days, what was the **largest number** of standard drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number ⌊_⌋⌊_⌋ Don't Know 77	A8
During the past 30 days, how many times did you have **six or more** standard drinks in a single drinking occasion?	Number of times ⌊_⌋⌊_⌋ Don't Know 77	A9
During each of the **past 7 days**, how many standard drinks did you have each day? *(USE SHOWCARD)* *Don't Know 77*	Monday ⌊_⌋⌊_⌋	A10a
	Tuesday ⌊_⌋⌊_⌋	A10b
	Wednesday ⌊_⌋⌊_⌋	A10c
	Thursday ⌊_⌋⌊_⌋	A10d
	Friday ⌊_⌋⌊_⌋	A10e
	Saturday ⌊_⌋⌊_⌋	A10f
	Sunday ⌊_⌋⌊_⌋	A10g

Alcohol Consumption, continued

I have just asked you about your consumption of alcohol during the past 7 days. The questions were about alcohol in general, while the next questions refer to your consumption of homebrewed alcohol, alcohol brought over the border/from another country, any alcohol not intended for drinking or other untaxed alcohol. Please only think about these types of alcohol when answering the next questions.

Question	Response	Code
During the **past 7 days**, did you consume any **homebrewed** alcohol, any alcohol **brought over the border/from another country**, any alcohol **not intended for drinking** or other **untaxed** alcohol *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to A13*	A11
On average, **how many standard drinks** of the following did you consume **during the past 7 days**? (such as kachasu, Lutuku, Katata, Imbote etc.) *(USE SHOWCARD)* *Don't Know 77*	Homebrewed spirits, e.g. Lutuku, Kachasu, ⌊_⌊_⌋	A12a
	Homebrewed beer or wine, e.g. Katata, Imbote, Katube, Ngaankta ⌊_⌊_⌋	A12b
	Alcohol brought over the border/from another country ⌊_⌊_⌋	A12c
	Alcohol not intended for drinking, e.g. Methylated spirits, cough syrup ⌊_⌊_⌋	A12d
	Other untaxed alcohol in the country ⌊_⌊_⌋	A12e

Alcohol Consumption

During the **past 12 months**, how often have you found that you were not able to stop drinking once you had started?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A13
During the **past 12 months**, how often have you failed to do what was normally expected from you because of drinking?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A14
During the **past 12 months**, how often have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A15
During the **past 12 months**, have you had family problems or problems with your partner due to **someone else's** drinking?	Yes, more than monthly 1 Yes, monthly 2 Yes, several times but less than monthly 3 Yes, once or twice 4 No 5	A16

Diet

The next questions ask about the fruits and vegetables that you usually eat. I can show you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.

Question	Response	Code
In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)*	Number of days 5.2.7.1.1.1.1.1.1 /_ Don't Know 77	*5.2.7.1.1.*
How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD)*	Number of servings ⌊_⌊_⌋ Don't Know 77	*5.2.7.1.*
In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)*	Number of days 5.2.7.1.1.1.1.1.4 |_ Don't Know 77	D3
How many **servings** of vegetables do you eat on one of those days? *(USE SHOWCARD)*	Number of servings ⌊_⌊_⌋ Don't know 77	D4

5.2.7.1.1.1.1.1.5 Dietary salt

5.2.7.1.1.1.1.1.6 *With the next questions, we would like to learn more about salt in your diet. Dietary salt includes ordinary table salt, unrefined salt such as locally produced salt, iodized salt, salty stock cubes and powders, and salty sauces such as soya sauce (see showcard). The following questions are on adding salt to the food right before you eat it, on how food is prepared in your home, on eating processed foods that are high in salt such* ***as chips, biltong, salt preserved fish and salted nuts,*** **and** *questions on controlling your salt intake. Please answer the questions even if you consider yourself to eat a diet low in salt.*

How often do you **add salt or a salty sauce such as soya sauce** to your food right before you eat it or as you are eating it? *(SELECT ONLY ONE)* *(USE SHOWCARD)*	Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77	D5
How often is **salt, salty seasoning or a salty sauce added** in cooking or preparing foods in your household?	Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77	D6
How often do you eat **processed food high in salt**? By processed food high in salt, I mean foods that have been altered from their natural state, such as packaged salty snacks, canned salty food including pickles and preserves, salty food prepared at a fast food restaurant, cheese, bacon and processed meat such as polony, Hungarian sausages, biltong, salt preserved fish, etc. *(USE SHOWCARD)*	Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77	D7
How much salt or salty sauce do you think you consume?	Far too much 1 Too much 2 Just the right amount 3 Too little 4 Far too little 5 Don't know 77	D8

Participant Identification Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

Diet

Question	Response	Code
How important to you is **lowering the salt** in your diet?	Very important 1 Somewhat important 2 Not at all important 3 Don't know 77	D9
Do you think that too much salt or salty sauce in your diet could cause a **health problem**?	Yes 1 No 2 Don't know 77	D10
Do you do any of the following on a regular basis to **control your salt intake**? *(RECORD FOR EACH)*		
Limit consumption of processed foods	Yes 1 No 2	D11a
Look at the salt or sodium content on food labels	Yes 1 No 2	D11b
Buy low salt/sodium alternatives	Yes 1 No 2	D11c
Use spices other than salt when cooking	Yes 1 No 2	D11d
Avoid eating foods prepared outside of a home	Yes 1 No 2	D11e
Do other things specifically to control your salt intake	Yes 1 *If Yes,* No 2	D11f
Other (please specify)	⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋	D11other
The next questions ask about the oil or fat that is most often used for meal preparation in your household, about sugar that you eat.		
What type of **oil or fat is most often** used for meal preparation in your household? *(USE SHOWCARD)* *(SELECT ONLY ONE)*	Vegetable/palm oil 1 Lard or suet 2 Butter 3 Margarine 4 Other 5 *If Other, go to D12 other* None in particular 6 None used 7 Don't know 77	D12
	Other ⌊_⌊_⌊_⌊_⌊_⌋_⌊_⌋	D12other

In a typical week on how many days do you take sugary drinks or soda (carbonated drinks) like Fanta, coca cola,7-up etc? *(USE SHOWCARD)*	5.2.7.1.1.1.1.1.7 Number of days ⌊_⌋ Don't Know 77 ⊥	*5.2.*
How may 300ml bottles do you take each time you drink sugary drinks or soda on **one** of those days? (*USE SHOWCARD)*	Number of servings Don't Know 77 ⌊_⌊_⌋	*5.2.*

On a typical day, how many teaspoons of sugar do you add to your drinks and/or your food?	Number Don't know 77 ⌊_⌊_⌋	X2

Participant Identification Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.
Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, or seeking employment. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

Question	Response	Code
Work		
Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like *carrying or lifting heavy loads, digging or construction work* for at least 10 minutes continuously? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 4*	*5.2.7.1.1*
In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days ⌊_⌋	*5.2.7.1*
How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P3 (a-b)
Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking *or carrying light loads* for at least 10 minutes continuously? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 7*	P4
In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ⌊_⌋	P5
How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P6 (a-b)
Travel to and from places		
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship.		
Do you walk or use a bicycle for at least 10 minutes continuously to get to and from places?	Yes 1 No 2 *If No, go to P 10*	P7
In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days ⌊_⌋	P8
How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P9 (a-b)

Participant Identification Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

Physical Activity, Continued		
Question	**Response**	**Code**
Recreational activities		
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities		
Do you do any vigorous-intensity sports, fitness or recreational *(leisure)* activities that cause large increases in breathing or heart rate like *running or football, netball* for at least 10 minutes continuously? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 13*	P10
In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational *(leisure)* activities?	Number of days ⌊_⌋	P11
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P12 (a-b)
Do you do any moderate-intensity sports, fitness or recreational *(leisure)* activities that cause a small increase in breathing or heart rate such as brisk walking, *cycling, swimming,* for at least 10 minutes continuously? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to P16*	P13
In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational *(leisure)* activities?	Number of days ⌊_⌋	P14
How much time do you spend doing moderate-intensity sports, fitness or recreational *(leisure)* activities on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P15 (a-b)

Physical Activity		
Sedentary behaviour		
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping. *(USE SHOWCARD)*		
How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P16 (a-b)

Participant Identification Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

History of Raised Blood Pressure		
Question	Response	Code
Have you ever had your blood pressure measured by a doctor or other health worker?	Yes 1 No 2 *If No, go to H6*	H1
Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?	Yes 1 No 2 *If No, go to H6*	H2a
Have you been told this in the past 12 months?	Yes 1 No 2	H2b
In the past two weeks, have you taken any drugs (medication) for raised blood pressure prescribed by a doctor or other health worker?	Yes 1 No 2	H3
Have you ever seen a traditional healer for raised blood pressure or hypertension?	Yes 1 No 2	H4
Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes 1 No 2	H5

History of Diabetes		
Have you ever had your blood sugar measured by a doctor or other health worker?	Yes 1 No 2 *If No, go to H12*	H6
Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?	Yes 1 No 2 *If No, go to H12*	H7a
Have you been told this in the past 12 months?	Yes 1 No 2	H7b
In the past two weeks, have you taken any drugs (medication) for diabetes prescribed by a doctor or other health worker?	Yes 1 No 2	H8
Are you currently taking insulin for diabetes prescribed by a doctor or other health worker?	Yes 1 No 2	H9
Have you ever seen a traditional healer for diabetes or raised blood sugar?	Yes 1 No 2	H10
Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1 No 2	H11

Participant Identification Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

History of Raised Total Cholesterol		
Question	Response	*5.2.*
Have you ever had your cholesterol (fat levels in your blood) measured by a doctor or other health worker?	Yes 1 No 2 *If No, go to H17*	H12
Have you ever been told by a doctor or other health worker that you have raised cholesterol?	Yes 1 No 2 *If No, go to H17*	H13a
Have you been told this in the past 12 months?	Yes 1 No 2	H13b
In the past two weeks, have you taken any oral treatment (medication) for raised total cholesterol prescribed by a doctor or other health worker?	Yes 1 No 2	H14
Have you ever seen a traditional healer for raised cholesterol?	Yes 1 No 2	H15
Are you currently taking any herbal or traditional remedy for your raised cholesterol?	Yes 1 No 2	H16

History of Cardiovascular Diseases		
Have you ever had a heart attack?	Yes 1 No 2	H17
Have you ever had a stroke?	Yes 1 No 2	H17a
Are you currently taking aspirin regularly to prevent or treat heart disease?	Yes 1 No 2	H18
Are you currently taking statins regularly to prevent or treat heart disease?	Yes 1 No 2	H19

Lifestyle Advice

5.2.7.1.1.1.1.1.13	*During the past three years, have you seen a doctor or other health worker?*	Yes 1 No 2 *If C1=1 go to M1 Else go to CXI*	H19

5.2.7.1.1.1.1.1.14 *During the past three years, has a doctor or other health worker advised you to do any of the following? (RECORD FOR EACH)*

Quit using tobacco or don't start	Yes 1 No 2	H20a
Reduce salt in your diet	Yes 1 No 2	H20b
Eat at least five servings of fruit and/or vegetables each day	Yes 1 No 2	H20c
Reduce fat in your diet	Yes 1 No 2	H20d
Start or do more physical activity	Yes 1 No 2	H20e
Maintain a healthy body weight or lose weight	Yes 1 *If C1=1 go to M1* No 2 *If C1=1 go to M1*	H20f

CORE (for women only): Cervical Cancer Screening

The next question asks about cervical cancer prevention. Screening tests for cervical cancer prevention can be done in different ways, including Visual Inspection with Acetic Acid/vinegar (VIA), pap smear and Human Papillomavirus (HPV) test. VIA is an inspection of the surface of the uterine cervix after acetic acid (or vinegar) has been applied to it. For both pap smear and HPV test, a doctor or nurse uses a swab to wipe from inside your vagina, take a sample and send it to a laboratory. It is even possible that you were given the swab yourself and asked to swab the inside of your vagina. The laboratory checks for abnormal cell changes if a pap smear is done, and for the HP virus if an HPV test is done.

Question	Response	Code
Have you ever had a screening test for cervical cancer, using any of these methods described above?	Yes 1 No 2 Don't know 77	CX1

Oral Health

5.2.7.1.1.1.1.1.15 Oral Health

5.2.7.1.1.1.1.1.16 *The next questions ask about your oral health status and related behaviours.*

Question	Response			5.2.7.1.
How many **natural teeth** do you have?	No natural teeth	1	*If no natural teeth, go to O4*	O1
	1 to 9 teeth	2		
	10 to 19 teeth	3		
	20 teeth or more	4		
	Don't know	77		
How would you describe the **state of your teeth**?	Excellent	1		O2
	Very Good	2		
	Good	3		
	Average	4		
	Poor	5		
	Very Poor	6		
	Don't Know	77		
How would you describe the **state of your gums**?	Excellent	1		O3
	Very Good	2		
	Good	3		
	Average	4		
	Poor	5		
	Very Poor	6		
	Don't know	77		
Do you have any **removable dentures**?	Yes	1		O4
	No	2	*If No, go to O6*	
Which of the following removable dentures do you have? *(RECORD FOR EACH)*				
An upper jaw denture	Yes	1		O5a
	No	2		
A lower jaw denture	Yes	1		O5b
	No	2		
During the past 12 months, did your teeth or mouth cause any **pain or discomfort**?	Yes	1		O6
	No	2		
How long has it been since you last **saw a dentist**?	Less than 6 months	1		O7
	6-12 months	2		
	More than 1 year but less than 2 years	3		
	2 or more years but less than 5 years	4		
	5 or more years	5		
	Never received dental care	6	*If Never, go to O9*	
What was the **main reason for your last visit** to the dentist?	Consultation / advice	1		O8
	Pain or trouble with teeth, gums or mouth	2		
	Treatment / Follow-up treatment	3		
	Routine check-up treatment	4		
	Other	5	*If Other, go to O8other*	
	Other (please specify)			O8other
How **often do you clean** your teeth?	Never	1	*If Never, go to O13a*	O9
	Once a month	2		
	2-3 times a month	3		
	Once a week	4		
	2-6 times a week	5		
	Once a day	6		
	Twice or more a day	7		

5.2.7.1.1.1.1.1.18 Oral Health, Continued

Question	Response	*5.2.7.1.1.1*
Do you use **toothpaste** to clean your teeth?	Yes 1 No 2 *If No, go to O12a*	O10
Do you use **toothpaste** containing **fluoride**?	Yes 1 No 2 Don't know 77	O11
Do you use any of the following to **clean your teeth**? *(RECORD FOR EACH)*		
Toothbrush	Yes 1 No 2	O12a
Wooden toothpicks	Yes 1 No 2	O12b
Plastic toothpicks	Yes 1 No 2	O12c
Thread (dental floss)	Yes 1 No 2	O12d
Charcoal	Yes 1 No 2	O12e
Chew stick / miswak	Yes 1 No 2	O12f
Other	Yes 1 *If Yes, go to O12other* No 2	O12g
Other (please specify) ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋		O12other
Have you **experienced any of the following problems** during the past 12 months because of the **state of your teeth**? *(RECORD FOR EACH)*		
Difficulty in chewing foods	Yes 1 No 2	O13a
Difficulty with speech/trouble pronouncing words	Yes 1 No 2	O13b
Felt tense because of problems with teeth or mouth	Yes 1 No 2	O13c
Embarrassed about appearance of teeth	Yes 1 No 2	O13d
Avoid smiling because of teeth	Yes 1 No 2	O13e
Sleep is often interrupted	Yes 1 No 2	O13f
Days not at work because of teeth or mouth	Yes 1 No 2	O13g
Difficulty doing usual activities	Yes 1 No 2	O13h
Less tolerant of spouse or people close to you	Yes 1 No 2	O13i
Reduced participation in social activities	Yes 1 No 2	O13j

Participant Identification Number |_|_|_| |_|_|_| |_|_|_|

Mental health / Suicide

5.2.7.1.1.1.1.1.20 Mental health / Suicide

5.2.7.1.1.1.1.1.21 *The next questions ask about thoughts, plans, and attempts of suicide. These questions can be difficult to answer. Please answer the questions even if no one usually talks about these issues. We can stop the interview at any point if it is difficult for you to answer any of the following questions.*

Question	Response			5.2.7.1.1
During the **past 12 months**, have you seriously **considered** attempting suicide?	Yes No Refused	1 2 88	*If No, go to MH3*	MH1
Did you seek **professional help** for these thoughts?	Yes No Refused	1 2 88		MH2
During the **past 12 months**, have you made **a plan about how** you would attempt suicide?	Yes No Refused	1 2 88		MH3
Have you **ever attempted suicide**?	Yes No Refused	1 2 88	*If No, go to MH9*	MH4
During the **past 12 months**, have you **attempted suicide**?	Yes No Refused	1 2 88		MH5
What was the main **method you used** the last time you attempted suicide? *(SELECT ONLY ONE)*	Razor, knife or other sharp instrument Overdose of medication (e. g. prescribed, over-the-counter) Overdose of other substance (e.g. heroin, crack, alcohol) Poisoning with pesticides (e.g. rat poison, insecticide, weed-killer) Other poisoning (e.g. plant/seed, household product) Hang on a rope Other Refused	1 2 3 4 5 6 7 88	*If Other, go to MH6other*	MH6
	Other (specify)	|_|_|_|_|_|_|_|_|		MH6other
Did you seek **medical care** for this attempt?	Yes No Refused	1 2 88	*If No, go to MH9*	MH7
Were you **admitted to hospital overnight** because of this attempt?	Yes No Refused	1 2 88		MH8
Has anyone in **your close family** (mother, father, brother, sister or children) ever attempted suicide?	Yes No Refused	1 2 88		MH9
Has anyone in **your close family** (mother, father, brother, sister or children) ever died from suicide?	Yes No Refused	1 2 88		MH10

Participant Identification Number └┘└┘└┘ └┘└┘└┘ └┘└┘└┘

Blood Pressure		
Question	**Response**	**Code**
Interviewer ID	└┘└┘└┘	M1
Device ID for blood pressure	└┘└┘	M2
Reading 1	Systolic (mmHg) └┘└┘└┘	M4a
	Diastolic (mmHg) └┘└┘└┘	M4b
Reading 2	Systolic (mmHg) └┘└┘└┘	M5a
	Diastolic (mmHg) └┘└┘└┘	M5b
Reading 3	Systolic (mmHg) └┘└┘└┘	M6a
	Diastolic (mmHg) └┘└┘└┘	M6b
During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	M7
Height and Weight		
For women: Are you pregnant?	Yes 1 *If Yes, go to M 16* No 2	M8
Interviewer ID	└┘└┘└┘	M9
Device IDs for height and weight	Height └┘└┘ Weight └┘└┘	M10a M10b
Height	in Centimetres (cm) └┘└┘└┘ . └┘	M11
Weight *If too large for scale 666.6*	in Kilograms (kg) └┘└┘└┘ . └┘	M12
Waist		
Device ID for waist	└┘└┘	M13
Waist circumference	in Centimetres (cm) └┘└┘└┘ . └┘	M14

Hip Circumference and Heart Rate		
Hip circumference	in Centimetres (cm) └┘└┘└┘ . └┘	M15
Heart Rate		
Reading 1	Beats per minute └┘└┘└┘	M16a
Reading 2	Beats per minute └┘└┘└┘	M16b
Reading 3	Beats per minute └┘└┘└┘	M16c

Participant Identification Number ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋ ⌊_⌊_⌊_⌋

Blood Glucose		
Question	**Response**	**Code**
During the past 12 hours have you had anything to eat or drink, other than water?	Yes 1 No 2	B1
Technician ID	⌊_⌊_⌊_⌋	B2
Device ID	⌊_⌊_⌋	B3
Time of day blood specimen taken (24 hour clock)	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	B4
Fasting blood glucose	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B5
Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose?	Yes 1 No 2	B6
Blood Lipids		
Total cholesterol	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B8
During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	B9
CORE: Urinary sodium and creatinine		
Had you been fasting prior to the urine collection?	Yes 1 No 2	B10
Technician ID	⌊_⌊_⌊_⌋	B11
Device ID	⌊_⌊_⌋	B12
Time of day urine sample taken (24 hour clock)	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	B13
Urinary sodium	mmol/l ⌊_⌊_⌊_⌋ . ⌊_⌋	B14
Urinary creatinine	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B15