# TANZANIA STEPS SURVEY REPORT
## MINISTRY OF HEALTH AND SOCIAL WELFARE



## &

## NATIONALINSTITUTE FOR MEDICAL RESEARCH



## IN COLLABORATION WITH WORLD HEALTH ORGANISATION

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| AMMP | Adult Morbidity and Mortality Project |
| ANC | Antenatal Clinic |
| BMI | Body Mass Index |
| BP | Blood Pressure |
| CEEMI | Centre for Enhanced Malaria Interventions |
| DANIDA | Danish International Development Agency |
| DBP | Diastolic Blood Pressure |
| DSS | Demographic Surveillance Systems |
| EA | Enumeration Area |
| FTG | Fasting Triglycerides |
| HIV | Human Immunodeficiency Virus |
| IDF | International Diabetes Federation |
| IFG | Impaired Fasting Glycemia |
| IT | Information Technology |
| MD | Medical Doctor |
| MOH | Ministry of Health |
| MOH&SW | Ministry of Health and Social Welfare |
| NBS | National Bureau of Statistics |
| NCD | Non Communicable Diseases |
| NIMR | National Institute for Medical Research |
| PDA | Personal Data Assistant |
| PI | Principal Investigator |
| PSU | Primary Sampling Unit |
| SBP | Systolic Blood Pressure |
| SSU | Secondary Sampling Unit |
| TC | Total Cholesterol |
| TDA | Tanzania Diabetes Association |
| TSU | Tertiary Sampling Unit |
| URT | United Republic of Tanzania |
| WDF | World Diabetes Foundation |
| WHO | World Health Organization |
| WHR | Waist Hip Ratio |

## AKNOWLEDGEMENTS

## STEPS SURVEY COMMITTEE MEMBERS

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# EXECUTIVE SUMMARY

Non communicable diseases (NCDs) are increasing at a steady rate in developing countries such as Tanzania. Studies done in Tanzania and anecdotal evidence have shown that the prevalence NCDs and related risk factors; hypertension, obesity, low physical activity are high especially in urban areas and in certain high risk groups. Primary prevention through targeting the risk factors has been identified as the cost effective intervention for the control of the rising burden of NCDs. The World Health Organization STEPS survey is one of the organizations' strategies to combat NCDs in developing, resource poor countries. Currently there is paucity of data regarding the magnitude of NCDs especially in African countries and therefore priority in terms of resources are being given to other diseases and conditions that are deemed of high importance as NCDs are still regarded as non-priority diseases .

STEPS survey was carried out to collect local up-to-date evidence on the prevalence of selected NCDs and related behavioral and physical risk factors for advocating for resources and planning targeted NCD interventions. This was a national wide survey. Data was collected on the levels of major NCD risk factors included all levels of STEPS , namely STEP 1 questionnaire, STEP 2 physical examination and STEP 3 biochemical measurement.

The STEPS survey was a population-based survey of adults aged 25-64. A multistage cluster sampling design was used to select a representative sample for that age range. A total of 5680 adults participated in the Tanzania STEPS survey. The overall response rate was 94.7%.

The results are weighted to represent the total population of Tanzanians age 25 to 64years.

The key findings suggests that In Tanzania, there is relatively high prevalence of NCD risk factors, below is the prevalence of selected risk factors: current tobacco users (15.9%), current alcohol drinkers (29.3%), ate less than 5 servings of fruit and/or vegetables on average per day (97.2%), overweight and obese (26%), raised cholesterol (26%) and raised triglycerides (33.8%). In this survey, the prevalence of diabetes was found to be 9.1% and 25.9% for hypertension.

A detailed account of the distribution of these risk factors is given in this report.

These findings reveal a significant magnitude of non-communicable diseases risk factors which if left unattended may lead to an increased burden of both morbidity and mortality in the country. These results will be useful in developing policy measures for the prevention and control of NCDs and the current levels will serve as baseline data for evaluating subsequent NCD interventions. Appropriate interventions will need to be put in place to curb the rising burden of NCDs.

## DATA COLLECTION TEAM

**Team A:  Supervisor Eric Mgina**

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**Team C Supervisor: Gibson Kagaruki**

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| Dalia Kamanzi | Research Assistant | F |
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**Supervisor  D : Mathias Kamugisha**

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| Dr. Frank Ipyana | Research Assistant | M |
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| Judith Mahundi | Lab Technician | F |

# INTRODUCTION

## BACKGROUND INFORMATION

Non communicable diseases (NCDs) are increasing at a steady rate in developing countries such as Tanzania. Literature has shown than non-communicable diseases have their origin in various risk factors that are embedded in lifestyle in addition to the genetic predispositions. These risk factors include; sedentary lifestyle, unhealthy diet, excessive alcohol consumption, and smoking.

According to the International Diabetes Atlas the prevalence of diabetes is estimated to be 2-3% (IDF 2011) and higher prevalence of up to 5.7 % has been reported in urban areas of Tanzania (Aspray, et al. 2000). The prevalence of risk factors; hypertension, obesity, low physical activity has also been reported to be high.

Limited information exists from the Adult Morbidity and Mortality (AMMP) Demographic health surveys (DSS sites) i.e Dar es Salaam city, Hai and Morogoro. These sites have demonstrated that the risk of dying from non-communicable diseases during adulthood (15-59 years) is considerably high in Tanzania compared to developed countries. For instance, the contribution of diabetes to all-cause mortality in adult males was 0.7%, 2.1% and 2.6% in Morogoro Rural, Hai and Dar es Salaam respectively (AMMP 1997).

Information on the risk factors has also been scarce. A study done in Dar es Salaam showed that risk factors like obesity, hypertension among the study participants were high (Bovet, et al. 2002). The reported age-adjusted prevalence for BP ≥140/90 mmHg or antihypertensive medication among men and women aged 35–64 years was 27.1% and 30.2 respectively. The prevalence of overweight (BMI of 25.0–29.9 kg/m2) was 28.0% and 27.4% and Obesity (BMI ≥30 kg/m2) was 6.9% and 7.4% for men and women respectively. Furthermore the prevalence of smoking (≥1 cigarette per day) was 22.0% among men and 2.6% women. Other similar studies have also demonstrated high prevalence of cardiovascular risk factors in Tanzania. Although this information is important, it represents only a small part of Tanzania and hence cannot be generalized to the whole country for initiating comprehensive NCDs prevention and control strategies and interventions. In addition this information comes from studies that were done more than a decade ago and therefore highly outdated.

Primary prevention through targeting the risk factors has been identified as an effective intervention for the control of the rising burden of NCDs. In addition to the WHO global strategy for the prevention and control of NCDs, STEPS survey is one of the organisations' strategies to combating NCDs in developing resource poor countries (WHO 2005). Currently there is paucity of data regarding the magnitude of NCDs especially in African countries and therefore priority in terms of resources are given to other diseases and conditions that are deemed of high importance. We proposed to carry out STEPS survey to collect local up-to-date evidence on the prevalence of selected NCDs and related behavioral and physical risk factors for advocating for resources and planning targeted NCD interventions.

In 2006, Tanzania developed a plan approach for assessing risk factors for NCDs using the WHO Steps approach, which covered STEPS 1 and 2 and STEP 3 only in a subset of study participants due to limited resources.

NCDs have their origin in common risk factors that prevail for a while before the diseases themselves occur. The key to controlling the global epidemics of chronic diseases is primary prevention based on comprehensive population-wide programs. The basis of chronic disease prevention is the identification of the major common risk factors and their prevention and control in order to avert these epidemics wherever possible and to control them as quickly as possible where they are already present. The prevention and control programs /intervention should reflect the actual epidemiological pattern existing in the communities concerned (WHO 2005). WHO STEPS NCD surveillance approach (WHO 2008) is a necessary tool in designing prevention and control programs with measurable outcomes. We therefore proposed to carry out STEPS survey in Tanzania to collect data on risk factors to assist with developing targeted programs and monitoring interventions on NCDs. In addition since STEPS survey uses standardized tools the data will be useful to make comparisons over time and across countries and different regions of the Country. The data will also useful in predicting future burden of chronic diseases and also monitoring and evaluating NCD population-wide interventions.The goals and objectives of this survey were to address the need for national data on the burden of NCDs bearing in mind the need to establish an ongoing national NCD risk factor surveillance system. In addition it takes into account the need to conform to the recommended methods to generate comparable data for global surveillance. The goals and objectives of the proposed study are as outlined below

## GOALS AND OBJECTIVES

### GOALS

*To describe the current levels of risk factors for chronic diseases in the Tanzanian population*

*To collect data from which to predict likely future demands for health services*

### OBJECTIVES

1.      To document the national prevalence and patterns of tobacco use, alcohol consumption, dietary behavior, physical activity, body mass index, elevated blood pressure, and biochemical markers such as blood glucose and blood lipids among those aged 25-64 years.

2.      To generate country data on NCDs and related risk factors using WHO recommended approach that can be used to compare with other countries

3.      To provide reliable and valid information for planning and evaluating public health interventions and to collect data from which to predict likely future demands for NCDs

4.      To generate baseline data that will be used to track the direction and magnitude of trends in risk factors

5.      To further adapt the WHO STEPS tools, and to document the process of data collection and field work experiences that can be used to set the benchmark for future surveys

## METHODS

### SCOPE

Step 1 (core and expanded), step 2 (core and expanded) and step 3 (core) were employed used in this survey.  A total of 5762 participants aged 25-64 years old were enrolled for the survey.  Interview, physical measurements and blood tests were done to gather data for Step 1-3. Step 1 involved collection of information on socio-demographic trends, tobacco use, alcohol consumption, dietary behavior and physical activity, history of diabetes, history of high blood cholesterol, and family history of chronic diseases. Step 2 was physical measurements, which were undertaken to determine proportion of overweight and/or obese respondents and raised blood pressure. The physical measurements that were measured included blood pressure, height, and weight and waist circumference. Step 3, was a biochemical measurement step, step 1 and 2 were done at the participant's home. In Step 3 participants were invited to a clinic setting or a common setting that was prepared for the measurement.  Only the core tests that were done i.e. blood sugar and total blood cholesterol.

### STUDY POPULATION

#### ABOUT TANZANIA

The United Republic of Tanzania is a nation in East Africa bordered by Kenya and Uganda to the north, Rwanda, Burundi and the Democratic Republic of the Congo to the west, and Zambia, Malawi and Mozambique to the south. The country's eastern borders lie on the Indian Ocean. The country is spread over 947,300 square kilometers of land.

The United Republic of Tanzania is a unitary republic currently composed of 30 regions. The Capital City is Dodoma and the major commercial city is Dar es Salaam. Official currency is Tanzanian Shilling and the National language is Kiswahili whilst English is widely used in official communication.

The main socio demographic information of Tanzania is listed in **Table 1** below;

**Table 1        Socio demographic information of Tanzania Mainland**

| Demographic Indicator | Estimate | Year |
|---|---|---|
| Total  Population | 44,928,923 | 2012 |
| Population growth rate | 2.82% | 2013 |
| Life expectancy at birth | | |
| Total | 60.76 years | 2013 |
| Male | 59.48 years | 2013 |
| Female | 62.09 years | 2013 |

| Demographic Indicator | Estimate | Year |
|---|---|---|
| Birth rate | 37.25 births/1000 population | 2013 |
| Death rate | 8.41 deaths/1000 population | 2013 |
| Infant mortality rate | 43.74/1000 | 2014 |
| HIV prevalence | 5.6% | 2009 |
| Urbanization | 29.6% of total population | 2013 |
| Adult literacy rate | | |
| Total population | 67.8% | 2010 |
| Male | 75.5% | 2010 |
| Female | 60.8% | 2010 |
| Proportion of population below poverty line | 36% | 2002 |
| GDP per capita | $1700 | 2013 |

## STUDY POPULATION

The study population consisted of the entire population of Tanzania aged 24 to 65 years living in both rural and urban areas. The sampling frame was based on the 2002 census.

## INCLUSION CRITERIA

All permanent residents of the united republic of Tanzania at the time of survey aged 24- 65 years.

## EXCLUSION CRITERIA

All citizens of Tanzania outside the selected age range, temporary residents and those institutionalized at the time of survey.

## SAMPLE SIZE

In order to ensure a sufficient level of precision of the survey results, an adequate sample size must be drawn from the target population. The following factors/variables were used to calculate the sample size:

a)      Confidence level (α) of the survey results = 5%

b)      Margin error (e) of the survey = 0.05

c)      Design effect (Deff.) of the methodology = 1.5

d)      Baseline levels of the prevalence (P) of hypertension = 0.5

e)      Number of age – sex estimates = 8

f)      Anticipated non-response = 20%

Note: The value of e, Deff., prevalence and anticipated non-response are generic because there is no representative previous information for these parameters.

From the simple random formula for sample size calculation:

$$n = Z^2 P (1-P)/e^2$$

By substituting the statistics on the formula; then the sample size is 384.16

Multiply the above value by 8 (the number of age-sex) and 1.5 the (Deff.) then dividing the obtained value by 0.8 (non-response rate)

Then the survey sample size of the individual respondents was 5762≈ 5770.

## SAMPLING PROCEDURES

This study employed both multistage cluster and randomly probability sampling procedures. In this case the districts served as the Primary Sampling Units (PSUs); in Tanzania there 119 districts the recommended sampling frame for PSU is >100 PSUs to ensure that at least 50-100 of them can be selected.  For each selected district a sampling frame comprising a list of EAs (SSU) were created with the target population of each EA. Before making a sampling frame, an EA with less than 50 households was merged with the EA which is nearby. All special (schools, college, hospitals, hotels, barracks, college, temporal camps etc.) EAs were excluded from the sampling frame

For each selected EA, a tertiary sampling frame (TSU) was created; this comprised a list of households in the EA. These EAs and their respective maps were bought from the National Bureau of Statistics (NBS). Sampled EAs were then updated to obtain the actual current number of households per EA. Households listing stage was important because the EAs were last updated during the national census of year 2002, i.e. eight years before this survey. It also helped to identify blanks/empty houses which were then deleted before household sampling; at the same time it helped to identify eligible households. Eligible household for step survey is a household with a member aged 25-64 years. The list of updated households per EA was then subjected to random selection procedure to obtain households for inclusion. Kish method was employed at each selected household to obtain one respondent per household from the list of eligible household members. For each of these steps, the WHO STEPS sampling spreadsheet was used to sample the various units. The sample size for this study was 5770, due to scarce resource a total of 50 PSUs were sampled from a sampling frame of 119 PSUs (districts). Then the number of individuals to be sampled per PSU was 5770/50 = 115, if the number of households (TSU) to be sampled per EA (SSU) is 24 then the number of SSU per PSU will be 115/24 = 5 EAs.  Therefore sample calculation was 50 x 5 x 24 = 6000 individuals.
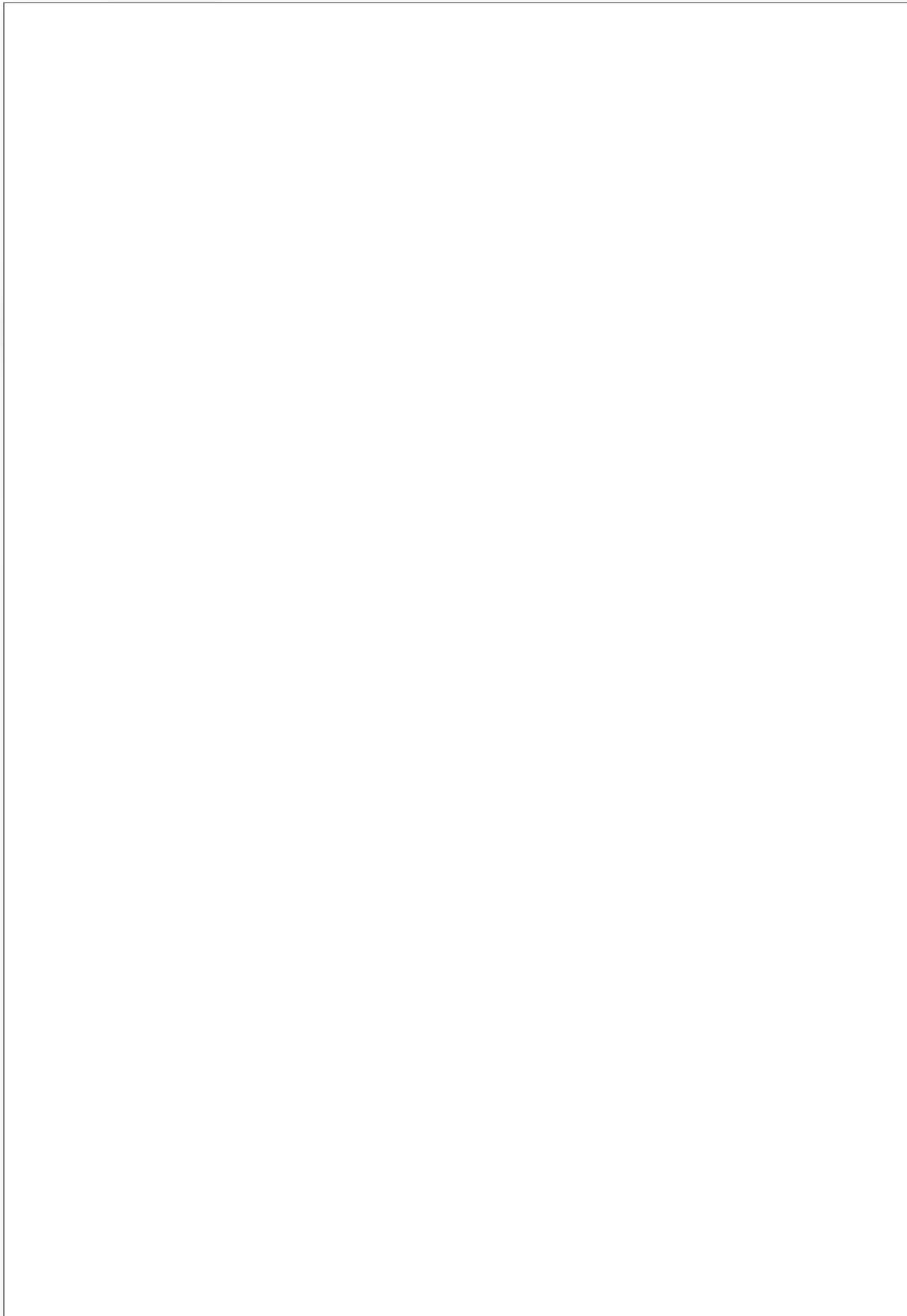
**Figure 1**  **Map of Tanzania Showing Districts Sampled for the STEPS Survey**

## TIMEFRAMES

| Action Plan | TIME FRAME | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2012** | | | | | **2013** | | | | | **2014** |
| **Establish National Committee** | ■ | | | | | | | | | | |
| **Planning and preparation** | | | | | | | | | | | |
| Develop proposal/ implementation plan | ■ | ■ | | | | | | | | | |
| Apply for ethical approval | ■ | ■ | | | | | | | | | |
| Mobilize resources | ■ | ■ | | | | | | | | | |
| Prepare materials | ■ | ■ | | | | | | | | | |
| Design and select sample frame | ■ | ■ | | | | | | | | | |
| Design and translate survey questionnaires | ■ | ■ | | | | | | | | | |
| Schedule data collection | ■ | ■ | | | | | | | | | |
| **Recruitment and training of data collectors** | | | | | | | | | | | |
| Recruit data collection team | | ■ | | | | | | | | | |
| Steps training for data collectors | | ■ | | | | | | | | | |
| Pilot test | | ■ | | | | | | | | | |
| Review data collection process and feedback to the team | | ■ | | | | | | | | | |
| Data collection | | ■ | ■ | | | | | | | | |
| Approach selected regions, districts and households (sampling process) | | ■ | ■ | | | | | | | | |
| Conduct survey | | ■ | ■ | ■ | | | | | | | |
| **Data management** | | | | | | | | | | | |
| Prepare data entry tool | ■ | ■ | | | | | | | | | |
| Enter data | | ■ | ■ | ■ | | | | | | | |
| Clean data | | ■ | ■ | ■ | | | | | | | |
| **Data analysis** | | | | | ■ | ■ | | | | | |
| Training for data analysis | | | | | ■ | ■ | | | | | |
| Preliminary analysis | | | | | | ■ | | | | | |
| Final analysis | | | | | | | | | | | |
| **Reporting and dissemination** | | | | | | | | | | | |
| Produce preliminary report | | | | | ■ | ■ | | | | | |
| Produce final report | | | | | | | | ■ | ■ | ■ | |
| Produce site report | | | | | ■ | ■ | | | | | |
| Hold national symposium for dissemination | | | | | | | | | | | ■ |

## STAFF RECRUITMENT AND TRAINING

The survey drew expertise from various sources

## WHO CONSULTATIONS

Throughout the survey period from planning to data collection and analysis, we were able to consult with

WHO experts from both the country office, WHO AFRO and WHO Headquarters in Geneva.

## LOCAL CONSULTATIONS

The survey team was also in consultation with local survey experts from the major research institutions in Tanzania such as the National Institute for Medical Research (www.nirm.or.tz ). During the sampling process and creation of the sampling frame, experts from the National Bureau of Statistics (www.nbs.go.tz) were consulted and were involved in the whole sampling process.

## SUPERVISORS

- General supervision was carried out by the STEPS committee members which comprised of members from the ministry of health, the national institute for medical research, WHO country office.
- Field supervision was carried out by experienced researchers who were trained on NCD surveillance and have had previous experiences in carrying out field work.
- Central supervision was carried out by the site PI and Co-PI.

## DATA COLLECTION TEAMS

Data collection teams were selected based on prior experience in population surveys, majority were drawn from the research teams of the National Institute for Medical Research (NIMR) and allocation to the various teams and regions were based in prior experience of working in those areas.

At total of 36 personnel were recruited for the data collection (interviewing, physical and laboratory measurements), excluding those who were recruited on site such as drivers and field assistants). Data collection teams received training according to the WHO STEPS training modules before commencing data collection the workshop was delivered by experts from WHO Afro and colleagues from the Zanzibar team who had completed their data collection at the time and were able to share their experience in carrying out the survey.



**Figure 2**      **STEPS Survey Training Workshop for Data Collection Teams at NIMR CEEMI**

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The survey team comprised of

- An experienced research scientist, either an MD, Social Scientist or Statistician as the team lead responsible for interview and confirming sampling of participants with the sampling team
- A medical assistant or nurse for physical measurement
- A laboratory technician for taking blood samples and performing tests
- A sampling staff for tracking identified sampled individual often recruited locally.

## SAMPLING STAFF

Sampling was done in collaboration with experts from the National Bureau of Statistics. The sampling staff were responsible for identification of the enumeration areas, updating the sampling frame for the survey, and identification of the households.

## DATA MANAGEMENT STAFF

Data management was done by team lead/ supervisors, data was collected electronically and submitted daily to the team supervisors who checked for consistency and errors and compiled data for his/ her team, the team lead then forwarded the data electronically to the study PI and Co-PI for compilation. Data analysis were done by the team statistician who received data analysis training and support from WHO Geneva.

## FINANCE STAFF

Finance affairs of the survey were managed by the finance team at the National Institute for Medical Research (NIMR).

## ADMINISTRATIVE STAFF

The administration of the survey was done by NIMR staff, the administration staff were responsible for organizing training activities, preparing the materials printing and sending official letters, follow up and communication with regional and district authorities.

## PILOT STUDY

Before commencing field work the data collection team and supervisory team undertook a pilot study in Dar es Salaam to pilot the tools and the data collection process. The team them met for a feedback meeting and provided feedback which was useful in shaping the data collection process. No changes were made in the data collection tool.

## INSTRUMENTS AND DATA COLLECTION

## DATA COLLECTION INSTRUMENT

Data collection was done using the WHO stepwise approach to NCD risk factors Surveillance Instrument version 2. The survey questionnaire was translated into Kiswahili, and was adapted to suit the local

population. The data collection tool had the following sections;

## SURVEY INFORMATION SECTION

This comprised of information about the survey location and date of completion of interview. This section also contained information about consent, interview language and the name of the interviewee. This part of the questionnaire was kept separate from the main questionnaire to preserve confidentiality. This section also included information on additional contacts for follow up.

## DEMOGRAPHIC INFORMATION

The questionnaire had both core demographic items such as age and sex, as well as expanded items on level of education, marital status, type of work and house hold income levels.

## THE MAIN QUESTIONNAIRE INCLUDED THE FOLLOWING;

**STEP 1**: Questions on behavioral risk factors both core and expanded questions on tobacco use, alcohol consumption, and physical activity, history of raised blood pressure and history of diabetes.

**STEP 2**: Involved physical measurements on core items including; height and weight measurement, waist circumference, Blood Pressure and expanded items such as hip circumference and heart rate.

**STEP 3**: Included only core items where fasting glucose and total cholesterol measurements were done.

## DATA COLLECTION

The questionnaire captured the following; demographic information; behavioral measures on the consumption of tobacco, alcohol, fruits and vegetables and assessment of physical activity. Self-reported information on hypertension, diabetes, dyslipidemia, and family history of cardiovascular diseases was also included. In addition the questionnaire also contained measures of socio economic status, diet and physical activity which were also self-reported.

Blood pressure was taken using an electronic sphygmomanometer (OMRON®). Blood pressure was taken at rest, with patient seated and the arm elevated at the level of the heart. All physical measurements were repeated 3 times.

The weighing was done in kilogram (kg) with a digital weighing scale (SECA®) on a stable and flat surface in a person with light clothing. Height was measured in centimeters, using a portable stadiometer (SECA®). Waist circumference measurements were done using a tape measure using standard methods.

In addition to the questionnaires and physical examination, participant were invited for fasting blood glucose and cholesterol measurements. Participants were instructed to fast for at least 8 hours before the test. All tests were performed by a trained technician. Blood was taken by finger prick, and measured using Hemoque® 201 analyzer. Lipid measurement for Total Cholesterol and Triglycerides were done

using Accutrend® Cholesterol machine.

## DATA COLLECTION PROCEDURES

Data collection commenced in February 2012. Data was collected for a period of six months in a total of 50 districts throughout the country. Data were collected by using structured questionnaire which was adopted from WHO STEPS generic tool. The tool was installed on the PDA under the technical support of WHO IT expert who was also supported by IT from WHO-Geneva. Data collection was done by the trained field interviewers. Updating of household listing in all sampled enumeration was done to identify eligible household. A household was eligible for the study if there was a household member aged 25-64 years. After household listing sampling of households was done by field supervisor and then the supervisors communicated with household enumerators via phone. The enumerators marked the IDs of sampled household on the household listing forms and submitted the list of sample households to the government leaders of respective enumeration areas (EA). Prior arrival of the research team in the respective EA, the field supervisor communicated with the responsible government leaders in the respective EAs; the leaders informed the head of households' members of the arrival of the research team one day before commencing data collection in an EA. All these procedures were done in order to maximize the response rate. Sample substitutions were not allowed as per sampling protocol. A maximum of one respondent per household was selected from households that completed the screening process. Nearly all members of the target population were sampled from their primary place of residence. Some individuals who did not sleep a respective sampled household and who were also not expected to be back on the day of the study were excluded during listing of household members for sampling through using Kish method. The data collection team started work at 6 am daily and stopped at 6pm. However, in case when a sample household member was not found or found but gave appointment, follow up was done till 09 pm. On average a total of 6 participants were enrolled per interviewer per day. The interview and physical measurements were done at the household, and then the participant was invited for biochemical measurements at an identified site after fasting overnight. There were a total of 4 data collection teams each with 8 individuals and a team leader

## ETHICAL CONSIDERATION

First of all, ethical clearance was obtained from the ethical committee of National Institute for Medical Research of Tanzania. The study was conducted maintaining all possible ethical considerations. Before data collection each steps (steps 1, 2 and 3) informed written consent of the study subject was obtained. Detailed study related information was read out and explained in the national language from a printed handout. Informed consent form contained objectives and methods of the study, duration and frequency, clinical examination, risks and benefits of the study. Finger impression was obtained from participants, who do not know how to sign. The respondents had a right to refuse to answer any question without providing the reason for their decisions and could withdraw from the study at any time. The information was dealt with highest confidentiality and used only for this study. Privacy of the respondents was also maintained during data collection.

## QUALITY CONTROL

To ensure quality of data collected the following measures were undertaken;

- The data collection teams were trained on the data collection tools and the survey methods and were involved in piloting the instrument so as to further understand the data collection tools and seek clarifications before going to the field
- Data collection and measurement protocols, show cards were developed and distributed to each of data collectors in addition to the training
- The team members enrolled were those experienced with field data collection
- The instruments were calibrated according to manufacturer's instructions before use
- Physical measurements were repeated 3 times to ensure consistency
- Data collection was done electronically to minimize errors that may arise from data entry
- Data was checked and cleaned daily before compilation from each of the groups
- Data collection tool contained checks and limitations to limit data entry errors

## DATA ENTRY

Data entry was done in the field electronically using an e questionnaire that was developed using Epi-Data software with assistance from WHO Geneva. The software was downloaded to Personal Data Assistant (PDA) devices. After a day in the field the team supervisor downloaded the data to a computer, checked and cleaned the data, compiled and sent to the survey coordinators by email. The survey coordinator then compiled the data by survey teams, the data was finally merged at the end of the survey to obtain the final data base.

## DATA ANALYSIS

### RESPONSE RATE

Targeted size of the sample was 6000 from 50 out of 119 PSUs. That sample size was expected to be collected from 240 SSU however, only 238 SSU were covered dual social and weather problems. Finally 5,680 (94.7%) individual were completed out 6000 individuals where by one participant was randomly selected (using Kish method) from each household. For steps 1 and 2 the response proportions was calculated by dividing the total number of respondents participated in the study to the total number of eligible respondents found in all households. Response proportions of step 3 were obtained by dividing the total number who participated in step 3 to those which participated on steps 1 and 2.

### DATA PROCESSING AND ANALYSIS

The data collected by research assistants was downloaded from the PDA by field supervisors on daily basis. The downloaded data using Epi data Version 3.1 software which was also linked with    was exported on MS-Excel, SPSS Version 18 and STAT Version 11 for cleaning and cross checking inconsistencies and outlier. Cleaned data was sent to the STEPS Survey coordinator on weekly basis for aggregation and back up. There was a top up approach kind of feedback where the field supervisors

organized morning meeting to give feedback to research assistants on the observed data qualities errors for correction purpose. The coordinator together with the survey IT personnel also provided feedback for any observed inconsistent on the data received. After each phase of data collection the data was aggregated into one data base by IT personnel. Before data analysis the MOHSW and WHO nominated one Biostatistician who was also a Co-PI of the survey to attend a four day workshop in Geneva. During that workshop the WHO expert exported all survey data on the Epi Info Version 3.3.4 software for weighting Ψ and analysis purposes. The software consisted special weighted and un-weighted programs for each variable which were formulated on the Epi Info software by WHO data managers. In this study analysis for un-weighted was done on very few variables and the rest majority of variables, weighted variables were used for analysis. Complex survey data analysis was performed to obtain population estimates and their 95% confidence intervals. The collected data used for assessment of prevalence of risk factor of NCD in population of Tanzania. Most analyses were done by using Epi Info Version 3.3.4 and other few were done using SPSS Version 18. Differences or association between variables were considered statistically significant if p-value was <0.05.

**Table 2**          **Steps Survey Data Weighting Information**

| Variables | Descriptions |
|-----------|--------------|
| psu code | Primary sampling unit code |
| Ppsu | Probability of sampling the primary sampling unit (taken from WHO sampling sheet) |
| hhsize | Household size |
| pshhd | Probability of sampling an household member in a particular household(1/n), 'n'=members in the hhd |
| Opr | Product of (ppsu and pshhd) |
| Swt | Sampling weight  which is the a reciprocal of 'opr' |
| popwt 1&2 | Population weight for steps 1 & 2 which was obtained by dividing the "proportion of population sex and age group(extracted from URT, 2006 report*) with proportion of sample size of specific sex and age group |
| wstep1 &2 | Weight for step 1 & 2 data this was obtained as a product of powt1&2 and swt |
| powt3** | Population weight for steps 3 which was obtained by dividing the "proportion of population sex and age group(extracted from URT, 2006 report*) with proportion of sample size of specific sex and age group |
| wstep3 | Weight for step 3 data this was obtained as a product of powt 3 and swt |
| Strata | This stand for four imaginary zones of the country |

*URT, 2006, Analytical Report National, Volume X, Bureau of Statistics Ministry of Planning, Economy and Empowerment Dar es Salaam

** Population weight for steps three was different because not all study participants recruited for steps 1 and 2 were also recruited for step 3

All of the information above was needed for weight data collected

## RESULTS

Results are presented in a descriptive approach for age and sex groups disjointedly and pooled. Data of key variables on age and sex strata are plotted in figures for visual impression. In general the risk factors are highly prevalent in Tanzania in the adult population.

## SOCIOECONOMIC BACKGROUND

Of the 5680 respondents, 2623(46.2%) were men. Mean age was 41.4 years with standard deviation of 11.3 years. The mean and standard deviation of male and female age were 42.3(11.4) and 40.5(11.1) years respectively. The mean difference in age between sex was 1.8 years and the difference was statistically significant (p<0.001). The median time spent in school for the overall population and both sex was seven years; the mean years of schooling being 6.1 years (6.7 years in men and 5.6 years in women) the mean difference between male and female was 1.2 years and the difference was statistically significant (p<0.0001) (**Table 1**). About three fifth of the respondents had primary school level of education and only 10% of the respondents had education above primary school i.e. secondary and high education level. This implies that majority of adult Tanzanians have primary education (**Table 2**). Three quarters of the respondents were married and very few (1.6%) were cohabiting (**Table 3**). Paying occupation of majority (70.4%) of Tanzanians was found to be self-employment (business and farming activities) and only 8.4% were either employed in private or public sectors (**Table 4**). The annual household per capita estimated from 4747 respondents was USD $ 535 at exchange rate of Tshs 1600. About half of 366 respondents who could not mention the actual figure; their annual household income was estimated at USD $ <156.25(first quintile) and the rest half of that group their annual household income was above first quintile.

## TOBACCO

### SMOKING HABIT

The smoking status of the participants were categorized into 'current smoker' those who have smoked tobacco in past 30 days and 'daily smoker' those who smoke any tobacco products every day. Categorization of smoking status in such groups essentially facilitates the addictive characteristics of tobacco. Overall proportion of current smoker was 14.1% (men 26.0% and women 2.9%). Most current smokers were actually daily smoker and the proportion of non-daily smoker in men was 3.8% (26.0%-22.2%). Age specific distribution of smoking prevalence was almost homogeneous across age groups in men but increasing trend was observed in women (**Table5**).

Mean age of initiation of smoking in the adult population was 21.9 years. Women on an average started smoking late (22.4 years) than men (21.8 years). The average duration of smoking in the survey population was 20 years (**Table 6**). Around eight out of ten (79.8%) current smokers used manufactured cigarette. In men the percentage was (81.2%) slightly higher than in women (64.8%). The use of manufactured cigarette in survey population was high and almost similar in all age groups (**Table7**). In

general hand-rolled cigarette was smoked by very few respondents and nobody reported to smoke using pipes of tobacco or other type of tobacco products.

On average the population of adult daily smokers used five cigarettes sticks per day. Smoking to men was at peak at the age group 25-44 and the amount of manufactured product smoked by men was three times that of women. The mean amount of hand rolled cigarettes in both male and women was high at age group of 55-64 (**Table8).**

In the survey population 7.0% were former daily smoker.  The proportion of former daily smoker was much higher in men (12.6%) than in women (1.7%). A generalized increase in the proportion of former daily smoker was manifest transversely age. Proportion of former daily smoker was highest in eldest age group (14.3%). On the other hand the duration since smoking cessation was high at age group of 55-64 **(Table9**).

## SMOKELESS TOBACCO

Overall consumption of smokeless tobacco in survey population was 2.5. More men (2.9%) were found to use smokeless tobacco than women (2.2%). Only 1.1% was previous user of smokeless tobacco and proportion of men quitter was two times that of women group. Majority of both men and women quitter were aged 55-64 (**Table10).** Of the smokeless tobacco users, the mean times per day of women (2.4) used snuff by mouth was higher than men (1.3) while the mean time per day of men (5.3) used snuff by nose was high than women (1.4). Generally, the mean time per day of respondents who chewed tobacco or used Betel or quid were negligible (**Table 11**).

## TOBACCO USE IN ANY FORM

Overall proportion of tobacco users (smokers and or smokeless tobacco product users) was 15.9%; the prevalence figures was little higher for male at age group of 45-55 and women at age group of 55-64. The population of adult men who used tobacco product was about six times that of women (**Figure 1**).
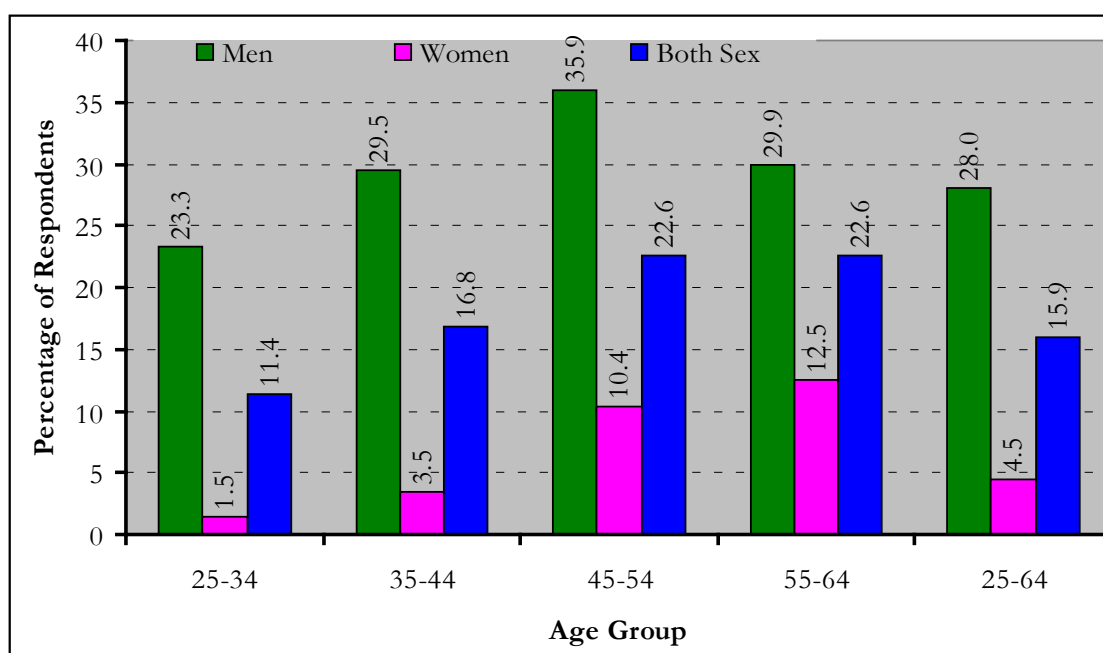
**Figure 3:**      **Prevalence of current tobacco use, smoking or smokeless forms by age and sex**

## EXPOSURE TO SECOND HAND SMOKE

Second hand smoke (SHS) exposure in at least one day in past week in the home was reported by 17.5% population. In general the exposure is reported more by women (19.5%) than men (15.5%). Exposure to SHS in workplace was reported by 24.9% population (men 31.9% women 18.0%) (**Table 12**)

## FRUIT AND VEGETABLES

Eating pattern of the surveyed population was assessed by asking them about frequency of consumption of fruit and vegetables and the amount consumed /serving. Overall the survey population took fruit on an average 2.5 days in a week (men 2.2, women 2.8). Clearly the consumption of fruit was not enough in survey population. However, vegetables consumption was particularly somehow better in Tanzania population. Survey population consumed vegetables in around 4.5 days in a week (men 4.3 days and women 4.7 days) (**Table 13**).

To determine the quantity of fruit and vegetables intake serving size a show card with pictures of vegetables and fruits and cup used for measurements was shown to the respondents. Mean per capita consumption of fruit was 0.7 servings per day. Average daily fruit consumption was extremely low in both men (0.6 servings per day) and in women (0.8 servings per day).

The survey findings underlined a suboptimal intake of fruit in Tanzania population. Although people in Tanzania take vegetables nearly to the optimal requirement days per week, the amount was found to be low. Overall per capita daily consumption of vegetables in the survey population was 1.0 serving (men 1.0 and women 1.0). In combination of fruit or vegetables it was 1.7 servings per day (men 1.6, women 1.8). There was no difference between male and women and on their different age in consumption of fruit or vegetables (**Table 13**).

The results also revealed no difference in mean trend of male and female and in all age groups of respondents who consumed inadequate intake of fruit and/or vegetables (< 5 servings/ day) (**Figure 2**). About 32% of the people did not consume fruit and or vegetables a day. Only 2.8% of the population consumed 5 or more servings either of fruit or vegetables on an average day. The pattern of consumption was similar in both sexes (**Table 14**).

## TYPE OF OIL OR FAT USED FOR MEAL PREPARATION AND MEALS EATEN OUTSIDE HOME:

In considering to the use of the type of oil most often used for food preparation at home, approximately 48% reported to use vegetable oil and 32.8% other type of oil, 11.1% non in particular, 4.7% Lard oil, 2.0% non-used, 1.1% butter and 0.2% used margarine  oil. As regard eating food prepared outside the home, the mean number of meal per week for men (2.4) and women (0.7) and the overall population mean number of meals for Tanzanians was 1.5 and age group of 25-44 was leading in eating outside their homes (**Figure 3**).
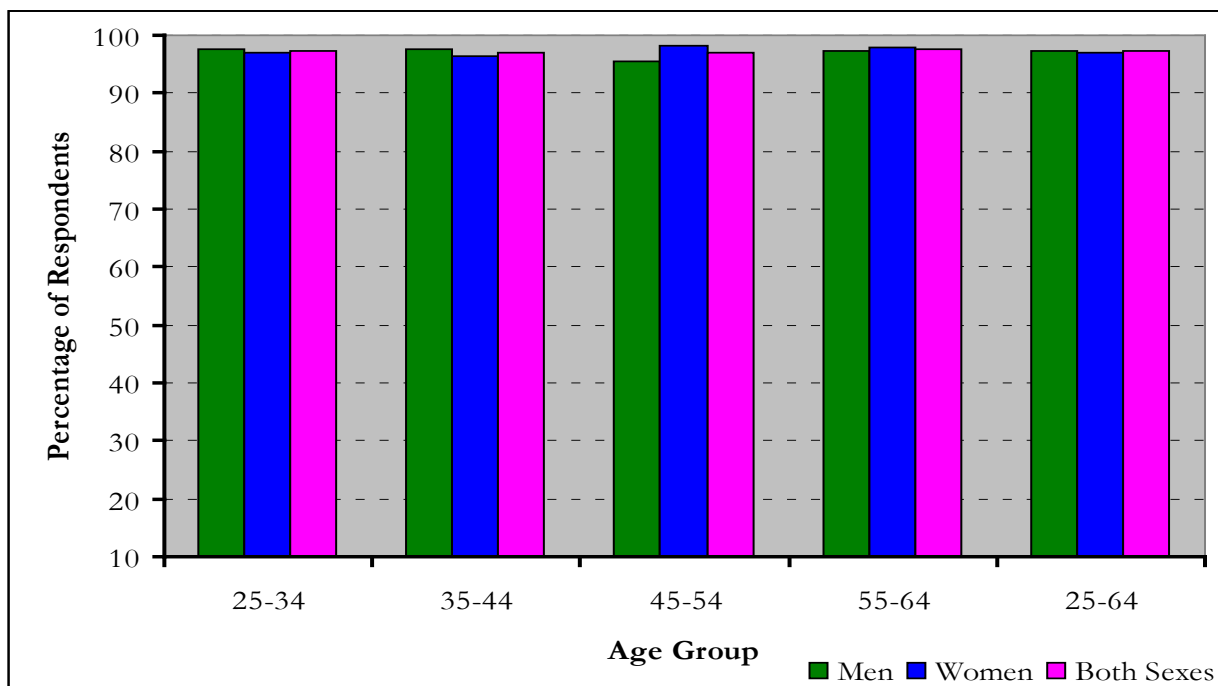
**Figure 4:** **Prevalence of inadequate intake of fruit and/or vegetables (< 5 servings/ day) by age and sex**
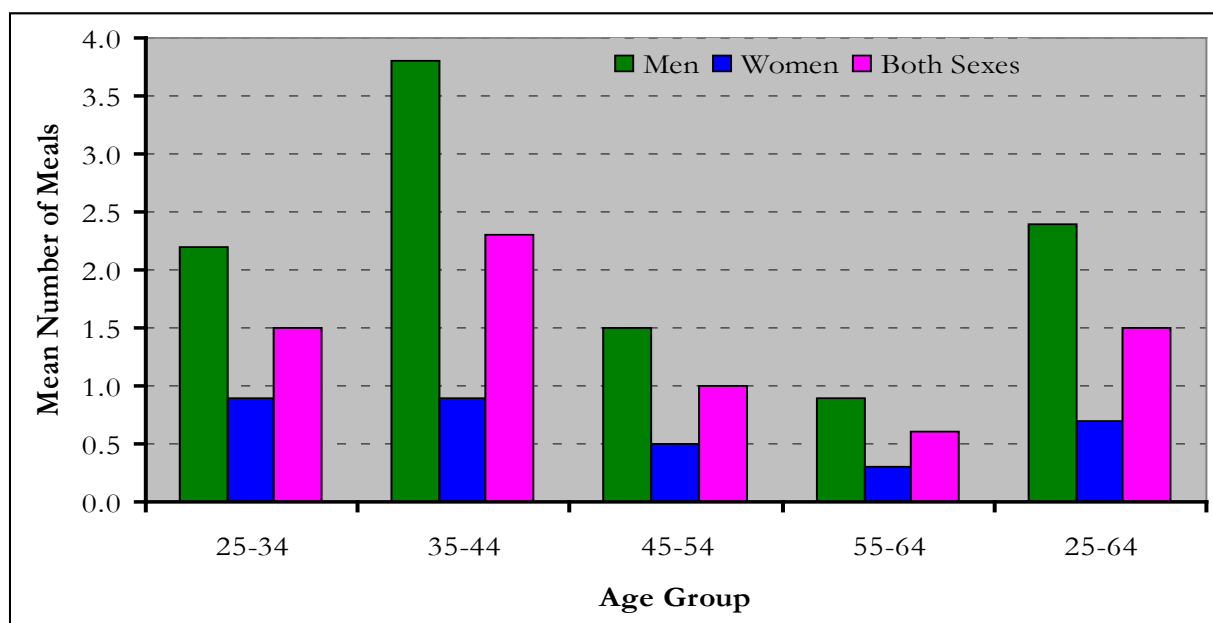


**Figure 5:** **Distribution of respondents mean meals per week eaten outside home by age and sexes**

## PHYSICAL ACTIVITY

On an average a person's total activity time was 351.7 minutes and the amount of time in men (388.5 minutes) was higher than women (316.3minutes) (**Table 15**). The survey population spent 266.7 minutes for work related activity, around 67.2 minutes for travel and 17.9 minutes for leisure time activity. In

general younger age groups were found to spend relatively more time for work related physical activity and the trend is persistent across sexes (**Table 16**). Overall few 7.3 % of the surveyed populations were not engaged in work related physical activity (men 8.3%, women 6.4%), just about 11.0% reported no transport related activity (men 9.7%, women 12.3%) and about 69.2% did not attend in any leisure time physical activity (men 62.7% and women 75.4% (**Table 17**).

The major bulk of the physical activity was usually contributed by work and transport related activity together and very few were contributed from leisure activity. The women (75.3%) were leading in participating in work related activities than men (69.0%). In our sample about three quarters of the total activity (72.2%) was contributed by work related activity, around 21.8% were contributed by transport related activity and around 5.9% were contributed by the leisure time physical activity (**Table 18**). Around 32.4% of the survey participant had never been engaged in vigorous physical activity and women who were not engaging on vigorous physical activity were almost two times than men (**Table 19**). Women (137.4 minutes) spent more amount of time than men (126.9 minutes) although the amount of time spent for sedentary activity sharply increases with age in either sex (**Table 20**).

Activity time (that cause large increase in breathing or heart rate with absence of any definite heart pathology) was measured to assess the amount of individuals' physical activity level.  The results revealed that more than four fifth of the population surveyed their level of physically activities was high and only 7.5% the level was low and 9.2% the level of their physically activities was moderate (**Table 21**) and (**Figure 4**).
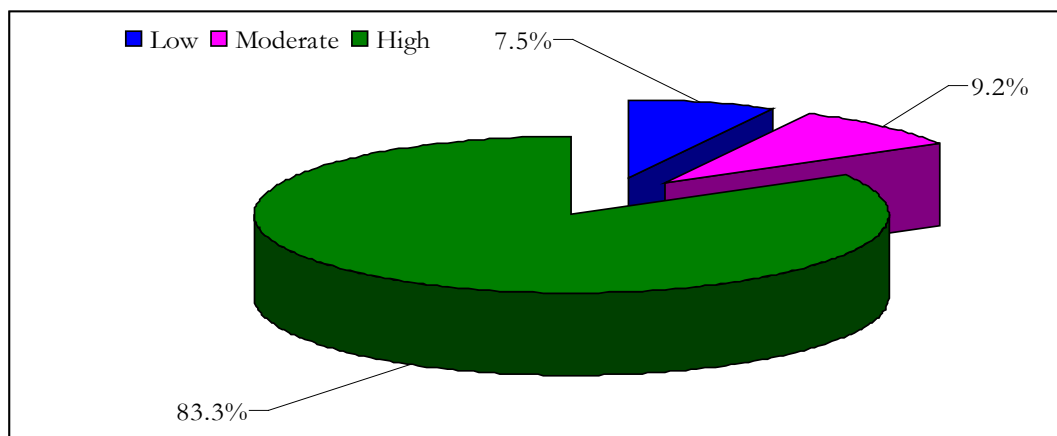


**Figure 6:**      **Population Prevalence of level of physical activity**

## ALCOHOL CONSUMPTION

Prevalence of alcohol consumption was assessed by status of usage and the consumption behavior. The consumption behavior of binge drinking was specially assessed due to its associated cardiovascular risk. In the survey population 29.4% (men 38.3% and women 20.9%) were current drinker (drank in past 30 days). On the other hand 51.0% never took alcohol (men 43.1% and women 58.5%). The distribution of past 12 months' abstainers was equal to the surveyed population (**Table 22**).

Among the consumer of alcohol (who drank in past 12 months), around 11.4% (men 13.6% and women 8.2%) were daily drinker (**Table 23**). The surveyed population revealed an increased trend of daily

drinkers by age group and it reached at the climax at age group of 55-64 (**Figure 5**).Current drinkers on an average had 9.7 (men 10.4 and women 8.5) occasions with at least one drink in past 30 days and consumed on an average 7.5 (men 8.5 and women 5.8) standard drinks on a drinking occasion (**Table 24).** The Mean maximum number of drinks consumed on one occasion in the past 30 days was almost equally distributed in the study population (**Table 25**).

Of the current alcohol consumers; 27.4% men and 13.4% women were binge drinkers (>5 standard drinks/drinking day for men, >4 standard drinks/drinking day for women) and almost all of them were men. The average occasions of binge drinking in the past 30 days to men and women were 4.2 and 3.1 respectively (**Table 26**).
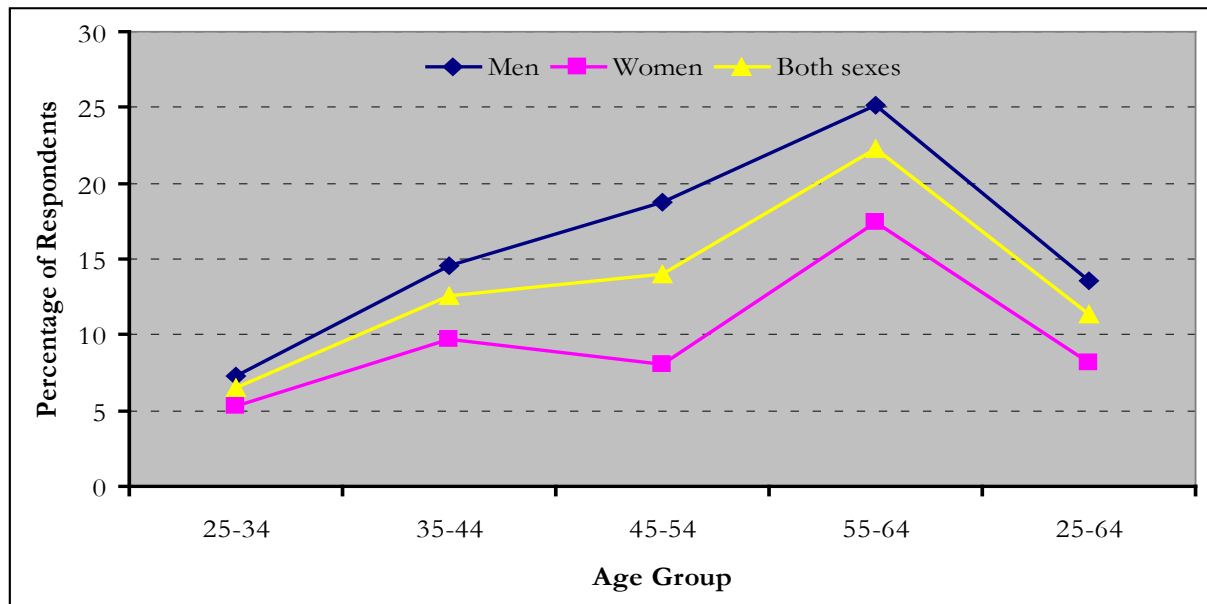


**Figure 7:     Trend of daily drinkers of the surveyed population**

Less than half of the current drinkers were usually drinking alcohol with meals and more than a quarter never drunk with meal (**Table 27**). About half of men drinker had 5+ drinks on any day and about half of women had 4+ drinks on any day (**Table 28**).

# OBESITY

## BODY MASS INDEX (BMI)

BMI reflects generalized obesity of individual, but it doesn't differentiate between solid masses like bones and muscles with fat. The mean BMI of the population surveyed was 22.9 and in general men (mean BMI 21.6) were lighter than women (mean BMI 24.3) (**Figure 6**). About 13% of the populations were underweight (BMI <18.5), 17.3% were overweight (BMI 25-29.9) and 8.7% were obese (BMI >30). Proportion of both overweight (men 12.6%, women 22.1%) and obesity (men 2.5%, women 15.0%) in women exceeded those in men (**Table 29**). Prevalence of overweight and obesity together constituted 26.0% of the population; the prevalence was much higher in women (37.1%) than in men (15.1%). Majority of overweight and obesity was actually high in the age group of 45-54 years in either sex (**Figure 7**).
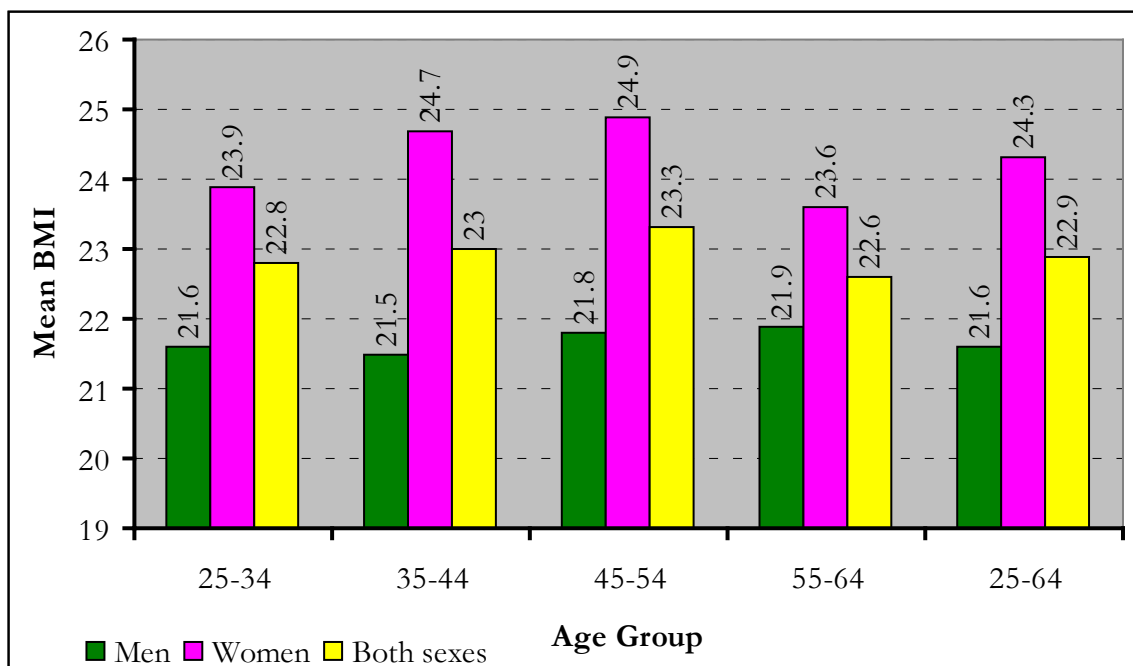


**Figure 8:**      **Distribution of Mean Body Mass Index of the study population by age and sex**
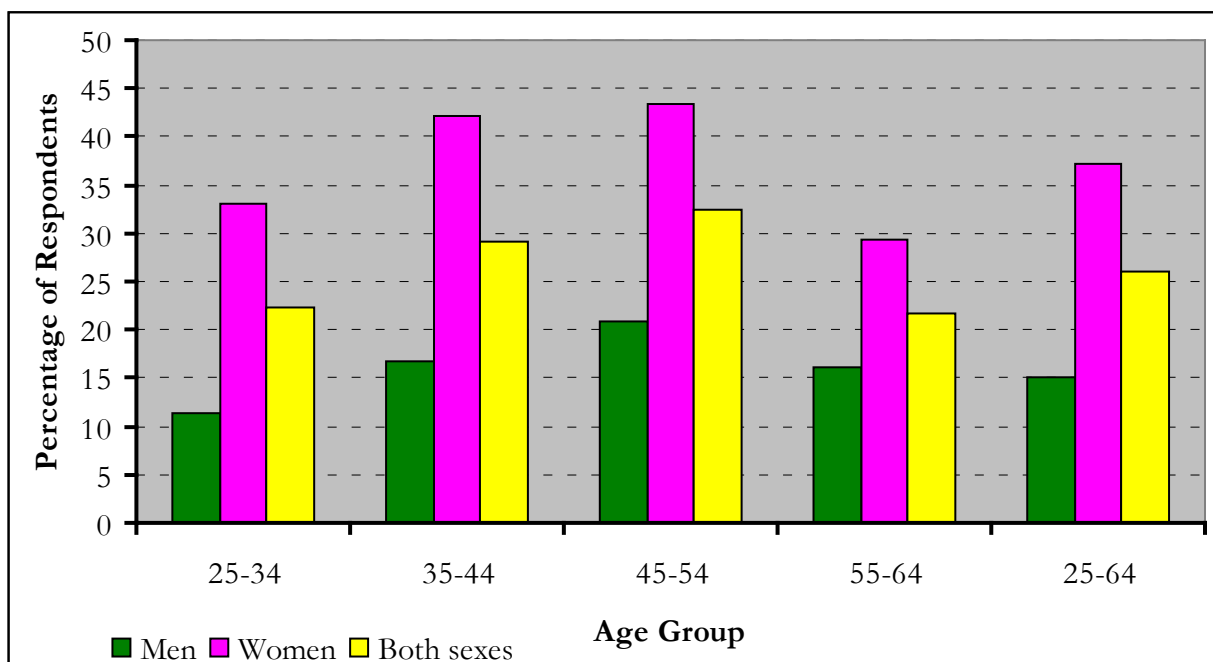
**Figure 9:** **Distribution of Percentage of people having BMI 25 (kg/m2) or above by age and sex**

## WAIST CIRCUMFERENCE

The measurement of waist circumference was done to assess the central obesity in survey population. Average waist circumference in men was 80.6 cm and in women 84.9 cm. Overall, the mean waist circumference of men were with the normal ranges across all age groups while for women the mean was abnormal across the all age groups (men >94 cm, women >80 cm) and 8.9% had substantially increased (men >102 cm, women >88 cm) waist circumference (**Figure 8**).
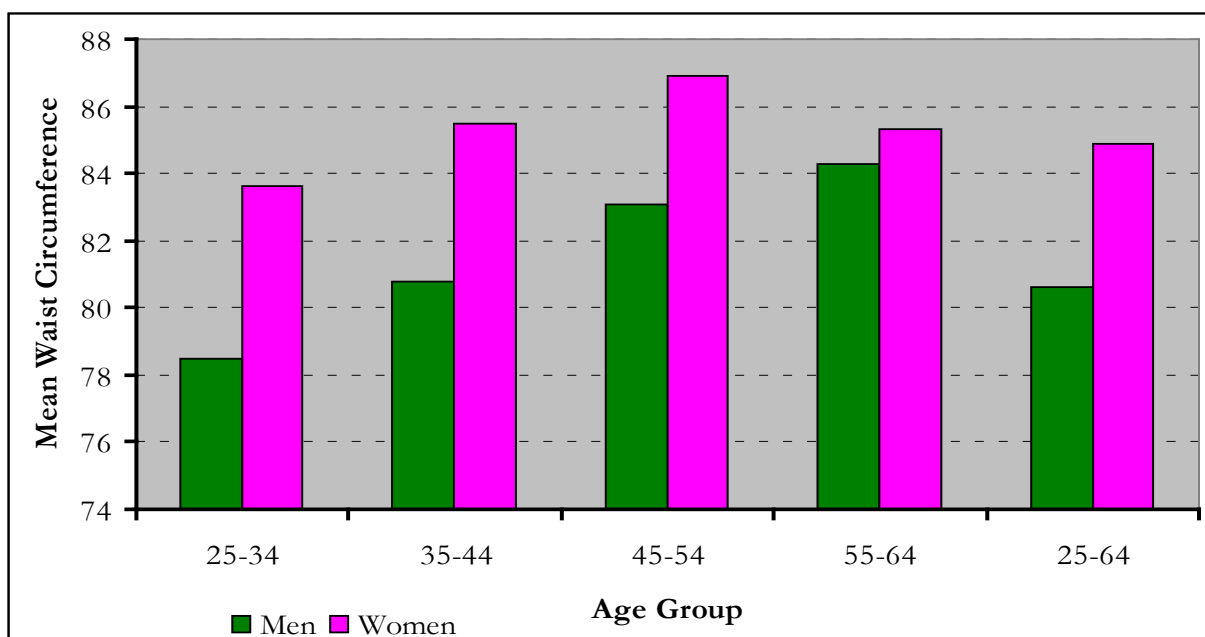


**Figure 10:** **Distribution of mean waist circumference by age and sex**

Results showed that about two fifth of the study population had increased waist circumference. The proportion of women with increased waist circumference was five times that of male (**Figure 9)**.
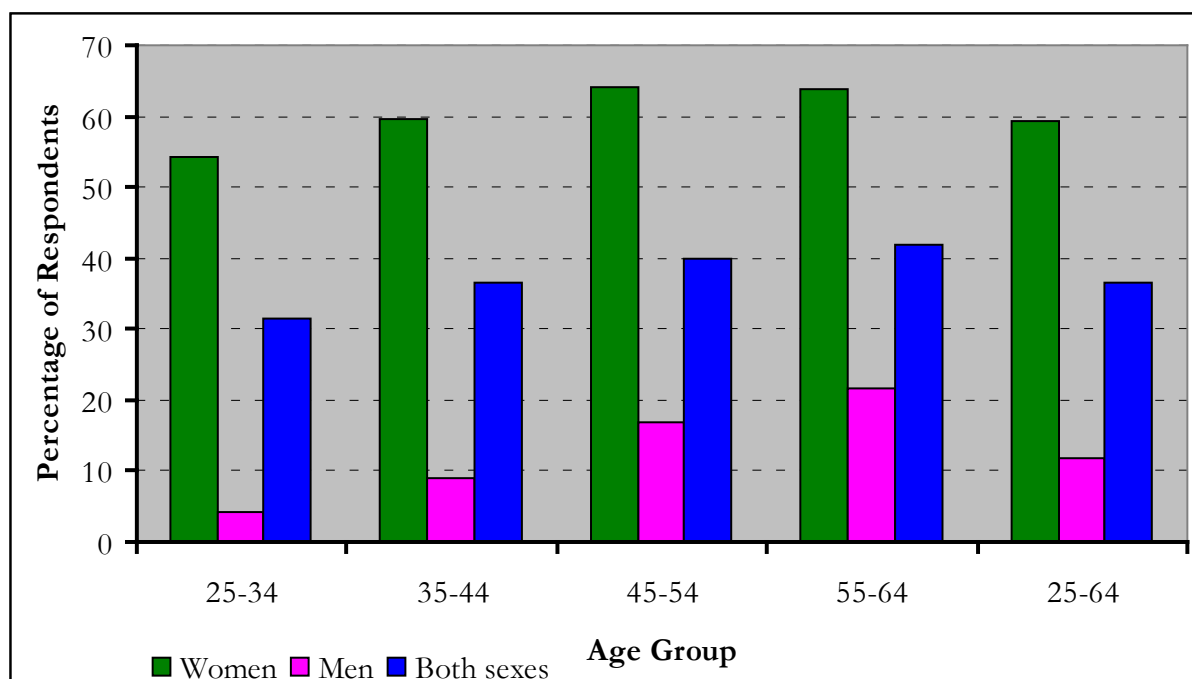


**Figure 11:       Percentage of respondents with increased waist circumference (men >94 cm, women >80 cm) by age and sex**

## WAIST HIPS RATIO (WHR)

The ration waist and hip circumferences are used to capture aspects of body shape that are poorly detected by body mass index (BMI). However, in Africa there is no standardized cut off points for waist circumference and WHR this is because there is no study done on those aspects. In this survey we adopted the ranges from Europe and waist circumference the ranges were categorized as follows: <94cm and ≥94cm as normal and abnormal ranges for men and <80cm and ≥80cm as normal and abnormal ranges for women respectively. For WHR the normal and abnormal ranges for men were categorized as follows ≤1 and >1 while <0.8 and ≥0.8 were the normal and abnormal ranges for women respectively. An overall prevalence of abnormal WHR was 43.1% (men 2.6% and women 80.1%).  In both sexes there was an increased prevalence by age and reached at the climax at age group of 55-64 however, that increase was extremely low to men and high to women (**Figure 10**).

24
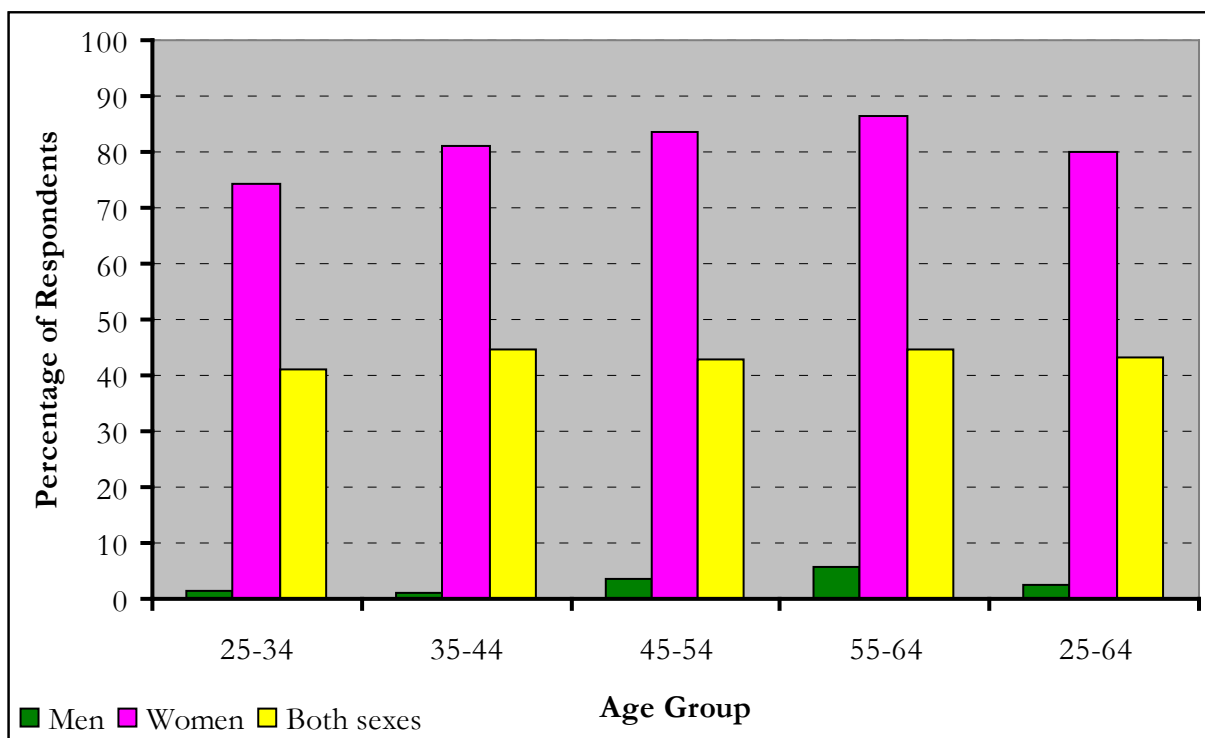
**Figure 12:** **Distribution of Waist Hips Ratio by Age and Sex**

## BLOOD PRESSURE (BP)

More than three fifth (68.4%) of the population never had their blood pressure measured (men 83.1% and women 54.7%). Among survey population 24.5% (men 24.8% and women 24.2%) were having hypertension (BP >140/90 mmHg) excluding those on medication) on measurement during survey. When subjects with medication were included the prevalence rose to 25.9 %( men 25.4% and women 26.4%). Prevalence of hypertension tended to increase with age irrespective of whether subjects were on medication or not and this trend was persistent in both sexes. Upon measurement 9.0% (men 8.6% and women 9.5%) of the survey populations were having hypertension (BP>160/100 mmHg excluding those on medication for raised blood pressure).

25
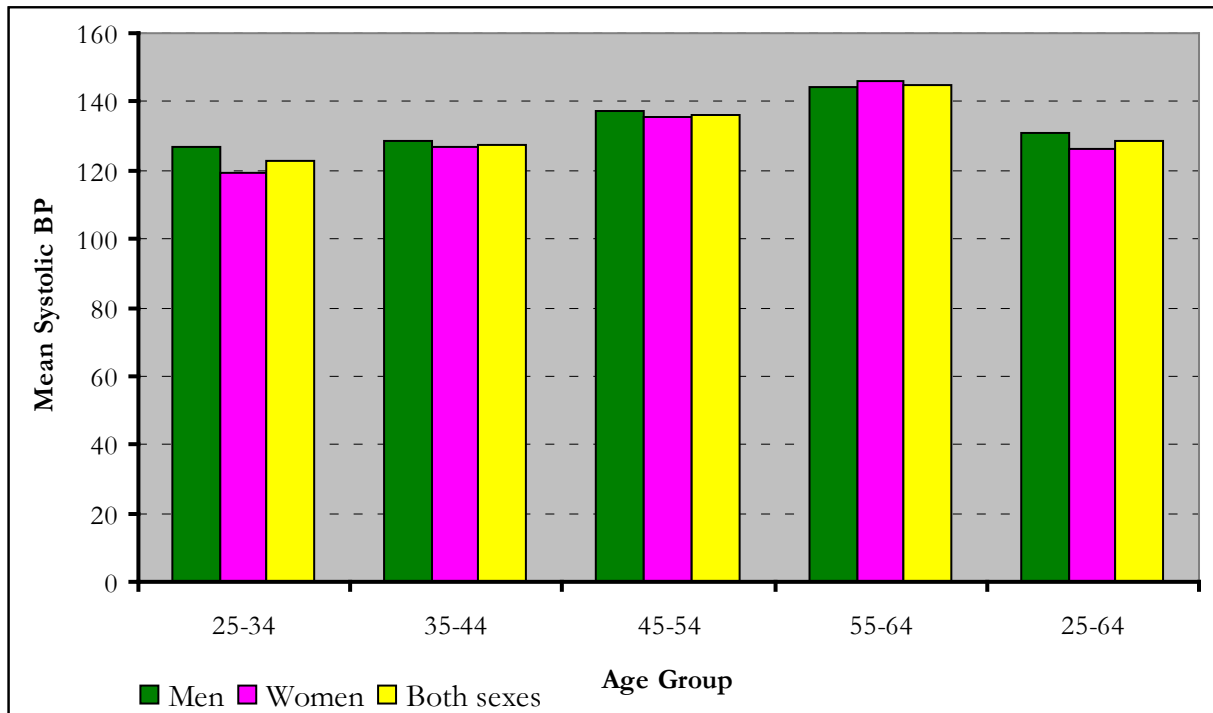
Figure 13:     Mean Systolic BP of the study population by age and sex

When subjects with medication were included the prevalence of respondents with hypertension (BP>160/100 mmHg) rose to 10.8 %( men 9.3% and women 12.1%) (**Table30)**. The mean Systolic BP of the population was 128.6 mmHg (men 131.1mmHg and women 126.3mmHg) and the mean diastolic BP for the population was 80.4mmHg (men 79.8mmHg and women 80.8mmHg). The magnitude of both mean systolic and diastolic blood pressure of the study population was noted to increase with increase in age of the respondent (**Figure 11 and 12**). Only 23.4% of the previously diagnosed hypertensive respondents were taking ant-hypertensive medication and on an average the proportions of men (23.4 %%) and women (22.7%) who were taking antihypertensive medication were almost equal.  More than three quarters 77.1% (men 76.6% and women 77.3%) of the old diagnosed hypertensive respondents reported not using medication for the illness (**Figure 13**).
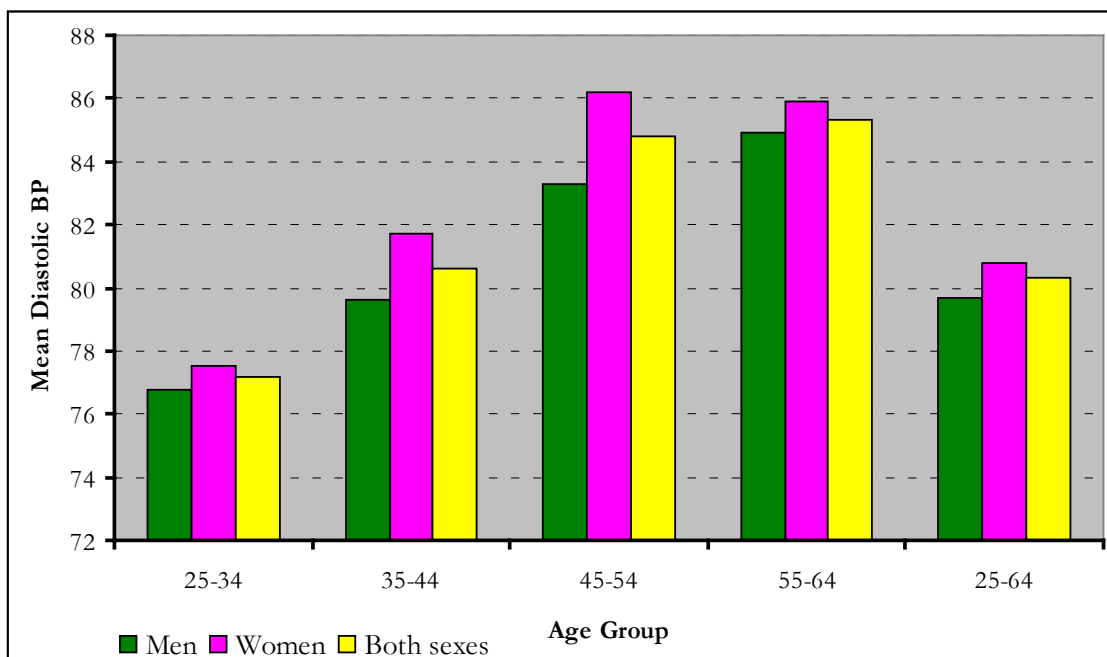
**Figure 14:**　　　**Mean Diastolic BP of the study population by age and sex**
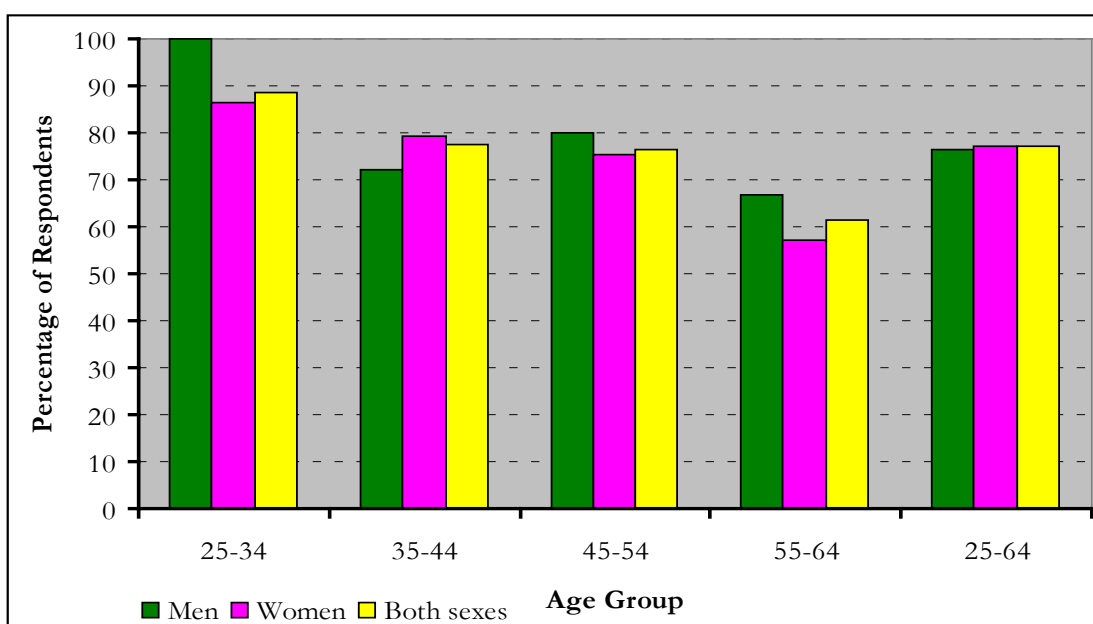


**Figure 15:**　　　**Distribution of old diagnosed hypertensive respondents not taking medication by age and sex**

BP ADVISES FROM MEDICAL DOCTOR, HEALTH SERVICE PROVIDERS OR TRADITIONAL HEALER:

Of those who were previously diagnosed to be hypertensive reported that they have never received the following advises from the doctor or health worker: reduce salt intake 47.2% (men 60.2% and women 56.9%), lose weight 67.7%(men 80.6% and women 77.3%), stop smoking 68.8%(men 87.6% and women 82.8%) and start or do more exercise 64.0%(men 73.6% and women 71.2%) (**Table31**). Among the known hypertensive patients 15.1% (men 16.7% and women 14.5%) sought advice or remedy from traditional healers and 10.0% (men 14.2% and women 8.6%) receiving herbal or traditional remedy. Men were found

to seek both treatment from traditional healer and use herbal or traditional remedy more than women (**Table 32**).

## BP CONTROL STATUS AMONG OLD DIAGNOSED RESPONDENTS:

Only 3.1 %( men 1.6% and women 4.5%) respondents who were on medication were found with good (SBP<140 and DBP<90) control of their BP during the survey measurement. On the other hand few 4.2 %( men 1.7% and women 6.6%) who were on medication had poor (SBP≥140 and/orDBP≥90) control of their blood pressure. The survey revealed that majority 92.6 %( men 96.7% and women 88.9%) of the old diagnosed respondents who were not on medication had abnormal (SBP≥140 and/orDBP≥90) BP during the survey measurements (**Table33).**

## DIABETES MELLITUS

Results revealed that 91.1% (men 93.4% and women 89.1%) of the survey population never measured their blood glucose. Prevalence of self-reported diabetes was found to be 1.7% (men 1.4% and women 2.0%) (**Table34**). The prevalence of self-reported diameter form men, women and both sexes was high at age group of 55-64, 35-44 and 55-64 respectively (**Figure 14**). Among diabetic patients, 28.7% seemingly taking insulin and 52.2% were taking oral ant-hypoglycemic drug (**Table 35**).
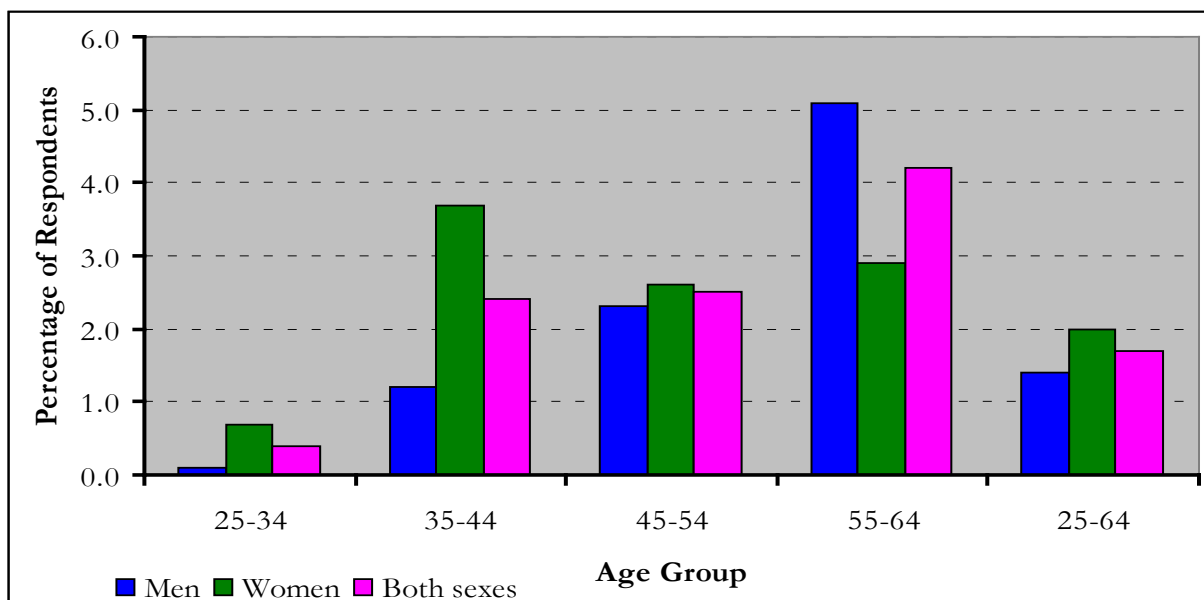


**Figure 16:** **Prevalence of self-reported diabetes by age and sex**

Among the participants with a previous diagnosis of diabetes, along with drug treatment, most (71.6%) received advice on diet, about three fifth(57.5%) were advised to lose some weight, 44.8% were asked to quit smoking, and 66.2% were advised to start or increase the amount of physical exercise (**Table 34**). Of all participants with known diabetes around 33.5% (men 45.9% and women 25.3%) sought advice or remedy from traditional healers for diabetes, and 17.6%(men 29.3% and women 9.8%) were currently taking herbal or traditional remedy. Men were leading in seeking advice or remedy from traditional healers for diabetes and taking herbal or traditional remedy (**Table 35**).

The results showed that among the participants with a previous diagnosis of diabetes, along with drug treatment, 71.6%(men 72.8% and women 70.8%) received advice on diet, about three fifth 57.5%(men 57.7% and women 57.3%) were advised to lose some weight, 44.8% (men 40.5% and women 47.7%) advised on quitting smoking behavior, and 66.2%(men 78.0% and women 58.4%) were advised to start or increase the amount of physical exercise (**Table36**). Of all participants with known diabetes around 28.7 %( 19.8% and women 34.5%) sought advice or remedy from traditional healers for diabetes, and 52.2 %( men 52.9% and women 51.8%) were currently taking herbal or traditional remedy (**Table37**).

## BIOCHEMICAL MEASUREMENTS

### FASTING BLOOD GLUCOSE (FBG)

Overall mean fasting blood glucose (mmol/L) was equal for men, women and both sex however it term of

age group the mean was slightly high in the age group of 45-54 in both men and women and the overall mean(**Table 38**). Impaired Fasting Glycaemia(IFG) was defined as Capillary whole blood value: ≥5.6mmol/L (100mg/dl) and <6.1mmol/L (110mg/dl).

The mean IFG was 10.6(men 11.3 and women 10.0). In men and both sexes the mean was high 13.8mmol/L and 11.4mmol/L at age group of 25-34 respectively while in women it was high(12.1mmol/L) at age group of 35-44 years(**Table 39**). The prevalence of Raised blood glucose or currently on medication for diabetes was 9.1% (men 8.0% and women 10.0%).

The prevalence was revealed to increase with age (**Figure 15**).
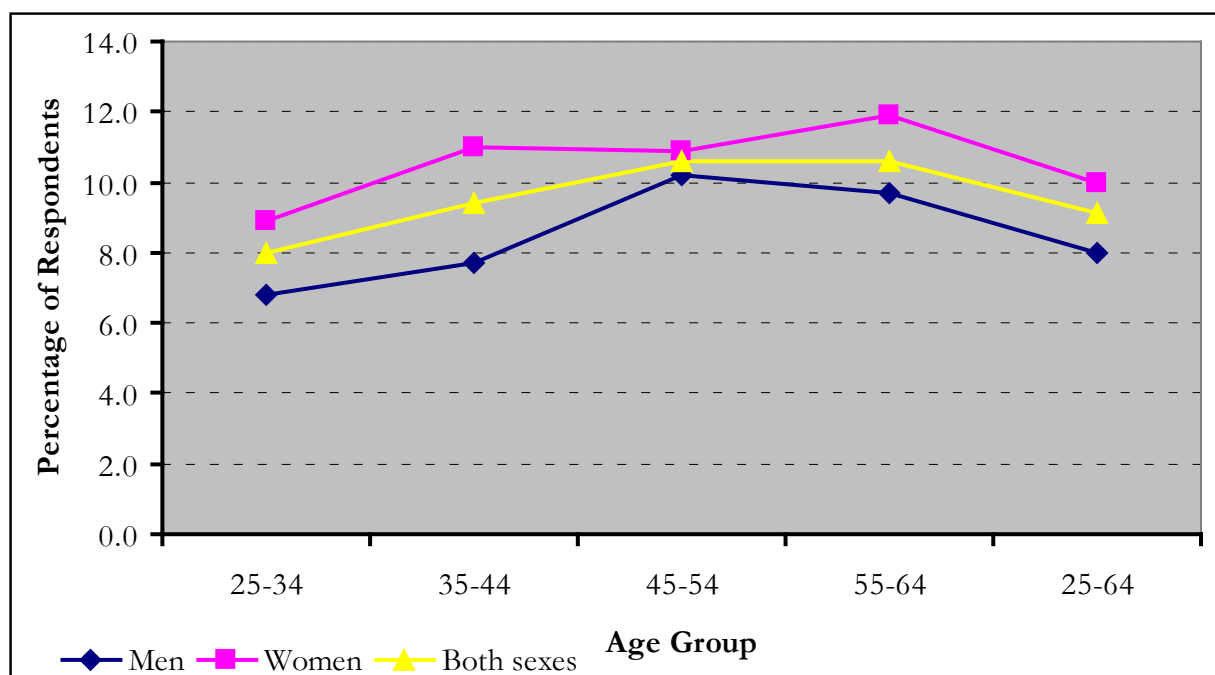


**Figure 17:    Distribution of Raised blood glucose or currently on medication for diabetes**

Overall mean total cholesterol (mmol/L) was 4.6(men 4.4 and women 4.7). For women the mean was slightly high at age group of 45-54 while in men the mean was a bit high at age group of 55-64 year and the overall mean was a bit high at age group of 45-54(**Table 38**).

The proportion of women respondents with Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol was two times that of men and in strata the proportion increase with increase in age. The prevalence of Total cholesterol ≥6.2 mmol/L or ≥ 240 mg/dl or currently on medication for raised cholesterol was 4.4% (men 2.6% and women 5.9%) (**Table40**).

The results showed an increased prevalence at age group of 45-54(**Figure 16**).
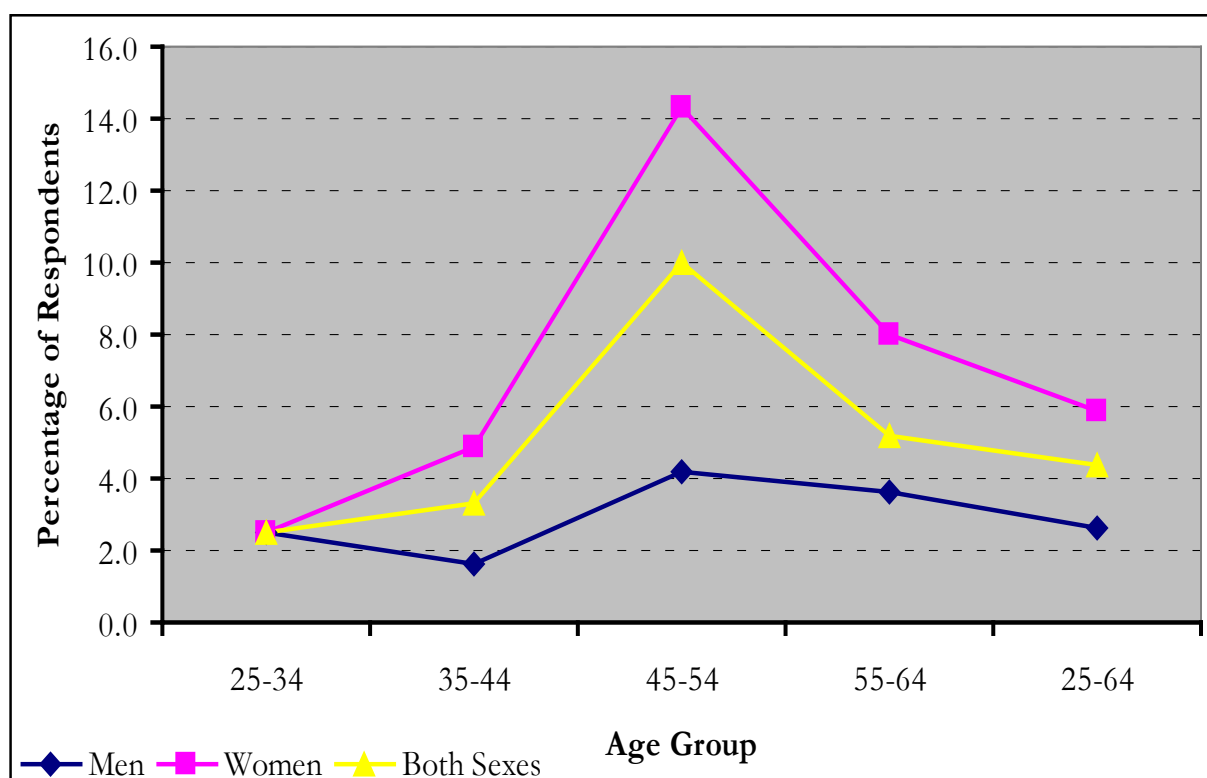


**Figure 18:** **Total cholesterol ≥ 6.2 mmol/L or ≥ 240 mg/dl or currently on medication for raised cholesterol**

## FASTING TRIGLYCERIDES (FTG)

The overall mean of fasting triglycerides (mmol/L) was equal in men, women and both sexes. However, results revealed increase in age group of 45-54 in all sexes and both sexes (**Table 38**). The percentage of respondents with fasting triglycerides ≥1.7 mmol/L or ≥ 150 mg/dl was 33.8% (men 31.3% and women 36.0%). A trend of increase with age was observed to the study respondents however, in women there was a decrease at age group of 55-64 (**Table40**). On the other hand the percentage of respondents with fasting triglycerides ≥ 2.0 mmol/L or ≥ 180 mg/dl was 25.8%(men 25.6% and women 26.0%) an increase was observed with increase in age but a big drop was observed in women at age group of 55-64 (**Figure 17**).
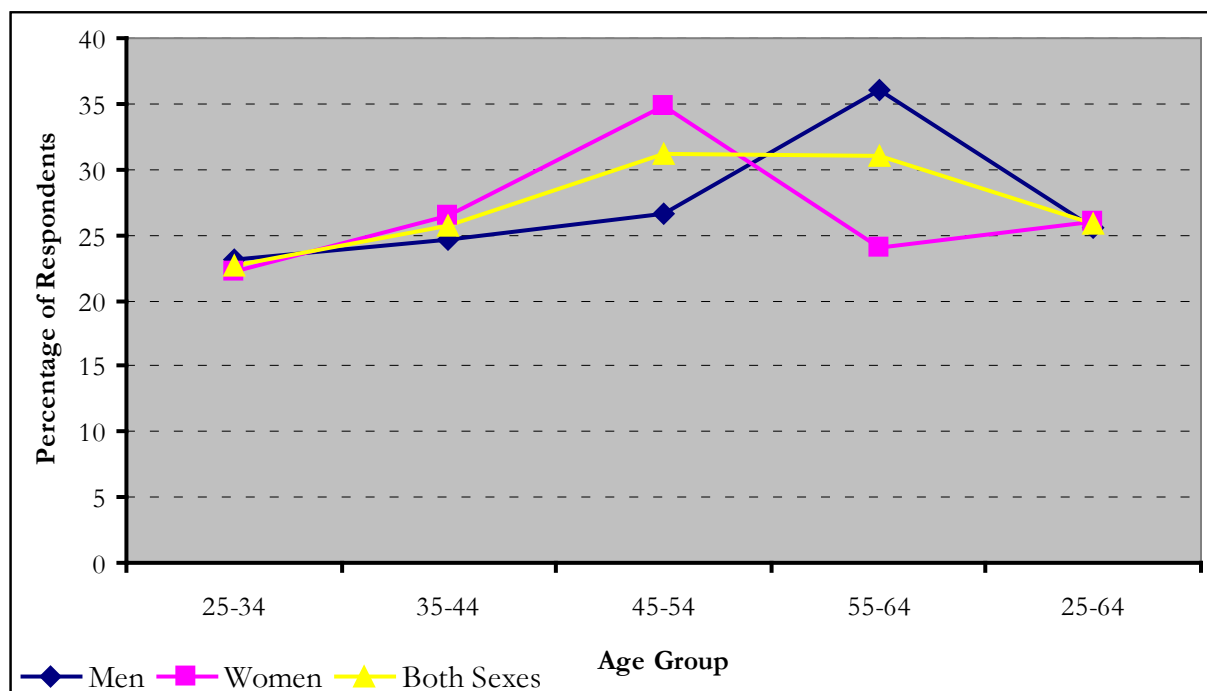


**Figure 19:** **Percentage of respondents with fasting triglycerides ≥2.0 mmol/L or ≥ 180 mg/dl**

## COMBINED NCD RISK FACTORS

The following were the selected risk factors for combination: current daily smokers, less than 5 servings of fruits & vegetables per day, low level of activity overweight (BMI ≥ 25 kg/m$^2$) and raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP). Around 82.6%(men 84.5% and women 80.8%) of the survey population has one to two risk factor of NCD, around 16.6%(men 14.9% and women 18.2%) had at least three risk factors.

Less than one percent 0.8% (men 0.6% and women 1.0%) of the respondents had no any risk factor (**Table41**). The proportion of respondents with at least three NCD risk factors was observed to increase with age (**Figure18**).
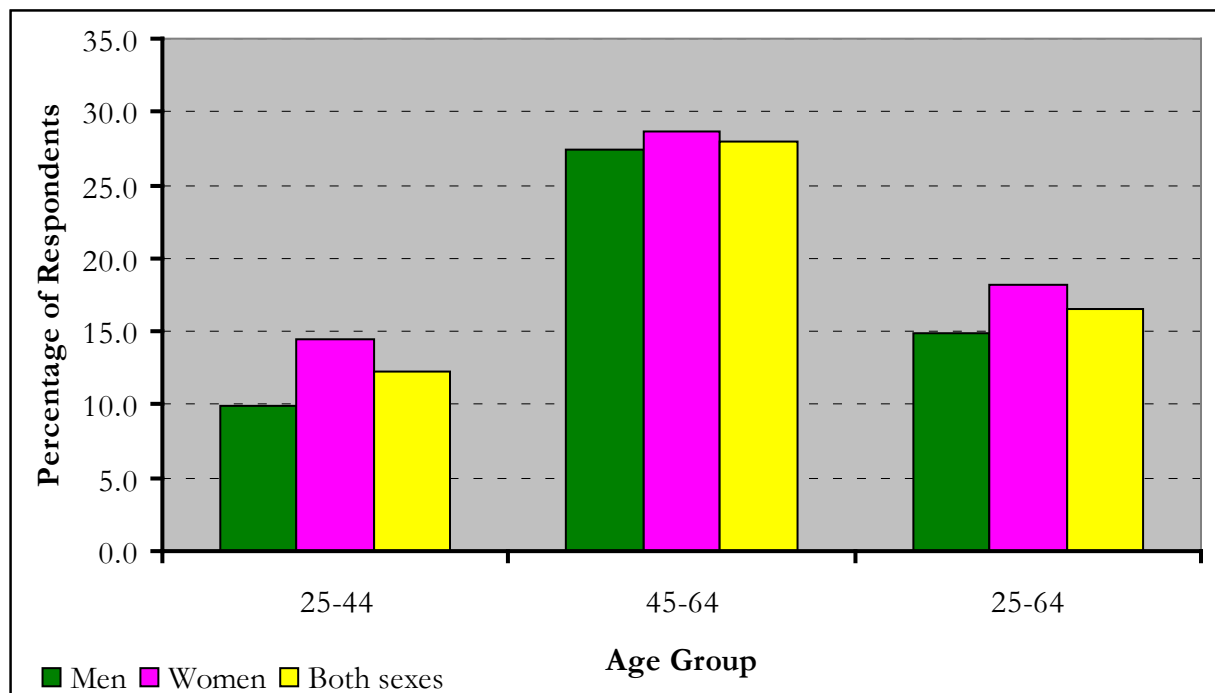


**Figure 20:** **Respondents with at least three NCD risk factors by age and sex**

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## DISCUSSION

This is the first ever steps survey in Tanzania generating nationally representative data on the burden and magnitude of non-communicable diseases risk factors. Studies on risk factors especially on diabetes and hypertension had been conducted in Tanzania, but none had nationally representative sample. The results presented in this report are weighted using national population census data (NBS 2013).

The discussion for this report will be inclined on the above findings. However, as it has been reported before that; this study is the first national survey on NCD risk factors in Tanzania which means there are no comparative national representative results. Throughout the discussion; comparison will be made using available results from local studies as well as previous steps survey reported from other African countries conducted between 2006 and 2012 (WHO STEPS n.d.).

In this study, we found high prevalence risk factors for non-communicable diseases in the population such as poor diet (people eating less than 5 servings of fruit and/or vegetables on average per day), those with raised triglycerides, total cholesterol and blood pressure, overweight, not engaging in vigorous activity, current tobacco product users and current tobacco smokers. We also document high prevalence of impaired fasting glycaemia, raised fasting blood glucose and of individuals who were overweight or obese.

Tobacco product use (smoked and smokeless) is among of the leading cause of preventable morbidity and mortality around the world. Smoking is a risk factor for six of the eight leading causes of deaths in the world, kills up to half of all users. For example 100 million deaths were caused by tobacco in the 20th century and estimates indicate that if the current trends persist, there will be up to one billion deaths in the 21st century .Tobacco use was also reported to be negatively associated with quality of life and increase the chance of getting depression problem (Goldenberg, Danovitch and IsHak 2014) (WHO 2008). The prevalence of tobacco use among male and female aged 25-64 observed in this survey is high as compared with the one which was documented in Temeke district of Dar es Salaam Tanzania (Bovet, et al. 2002). However, the prevalence is quite low as compared with the one which was observed in Ilala district of Tanzania (Jagoe, et al. 2002). Another study conducted in urban, rural and semi-rural areas in three districts located in eastern, central and northern Tanzania indicated high prevalence of tobacco use as compared with the one observed in this survey (Mori, Kaale, and Haule 2013). At Africa, regional level, the prevalence of smoking documented in the survey (14.1%) is comparable to that of Malawi (14.1%), Gambia (15.6%), and Mali (14%). Countries with higher prevalence of smoking than what we report in this study include Lesotho (24.5%), Sierra Leone (25.8) and Botswana (19.7%). Ghana had surprisingly low prevalence of smoking of 2% compared to other African countries followed by Zambia (6.5%) and Swaziland (7.1%) (WHO STEPS). These differences in prevalence of smoking across countries could be explained by differences in background characteristics of the population including culture and religious beliefs.

Regarding physical activity Overall about a quarter of the participants were not involved on vigorous intensity activities; by sex more than two third of women were not engaging in vigorous activities. Physical inactivity is one of cluster of NCD risk factors which increase the risk of or cause most NCDs.

Physical inactivity also contribute to the four key metabolic/physiological changes that increase the risk of NCDs: raised blood pressure, overweight/obesity, hyperglycemia (high blood glucose levels) and hyperlipidemia (high levels of fat in the blood) (WHO 2013). In summary, physical inactivity increase the risk of dying early, risk of heart diseases, risks of: stroke, type 2 diabetes, depression and some cancers. Estimates show that about 3.2 million global annual deaths are caused by insufficient physical activity. Worldwide in year 2008 physical inactivity caused 6% deaths (ranging from 3·2% in Southeast Asia to 7·8% in the eastern Mediterranean region). Diseases burden including 7% (3·9—9·6) of type 2 diabetes, 10% (5·6—14·1) of breast cancer and 10% (5·7—13·8) of colon cancer are linked with physical inactivity. Inactivity also caused 9% (range 5·1—12·5) of premature mortality, or more than 5·3 million of the 57 million deaths that occurred worldwide in 2008. Estimates from that study indicated that elimination of physical inactivity would increase the life expectancy of the world's population by 0·68 (range 0·41—0·95) years (Lee, et al. 2012). In our survey we noted that the prevalence of physical in activities was high among women as compared to men. Similar findings have been also reported from various surveys (Go, et al. 2013) (Taylor, et al. 2014) (McCarty, et al. 2014) and (Jasvindar, et al. 2014). However, the prevalence of physical inactivity documented from Tanzanian STEPs survey is low as compared with the ones which were observed from other African region countries [Ghana (85.7%), Mali (59.0%), and Botswana (34.7%, Swaziland (33.1%), Gambia (22.6%), Ivory Coast (19.4%), Zambia (17.2%), Sierra Leone (16.4%), Lesotho (11.1%) and Malawi (9.5%)] as reported in their Country STEPS survey reports (WHO STEPS n.d.). This may be due to the fact that the survey included many people from the rural settings than urban and about 80% of Tanzanians live in rural areas which are characterized with vigorous intensity activities and active transportation. However, the rural settings of Tanzania are no devoid of NCDs burden because of change in life styles including urbanization, simplified transport and mechanization of agriculture (Mayige, et al. 2012) (Kagaruki, et al. 2015).

Worldwide, 3.3 million (5.9%) deaths every year result from harmful use of alcohol .Overall 5.1 % of the global burden of disease and injury is attributable to alcohol, as measured in disability- adjusted life years. In the age group 20 – 39 years approximately 25 % of the total deaths are alcohol attributable (WHO 2014). Evidence also indicates a causal relationship between harmful use of alcohol and a range of mental and behavioral disorders. In this survey about 30% of Tanzanians aged 25-64 were current alcohol drinkers and 27.4% of males engaged in binge drinking which was two times than female (13.4%). The prevalence of current drinkers increased with age and reached at peak at age group of 45-55 in men (48.1%), women (29.3%) and both sex (38.3%). On the other hand, heavy drinking in the last 7 days was high in men at age group of 45-64 while in women (36.9%) and in both sex (43.1%) the was at age group of 55-64.The prevalence of alcohol consumption is high as compared with the ones which was observed from small studies conducted from various sites in the Tanzania (Mbatia, et al. 2009) (WHO 2010). However, the prevalence is low as compared with what was observed by different studies conducted at small scale in Tanzania (WHO 2014). The big proportion of daily drinkers in both men (25.1%) and women (17.4%) was noted at age group of 55-64. It was also noted that the mean number of occasional drinking alcohol was high in both men (14.2) and female (10.9) at age group of 55-64 too. Furthermore, it was observed that a big proportion of female (46.6%) and men (40.1%) didn't not take their alcohol with a meal which increases their risk of alcohol related complications. This age group is at high risk of non-communicable diseases like cardiovascular diseases, diabetes, hypertension etc., therefore increasing the health care burden due to alcohol related ailments. Lastly, the prevalence of current alcohol drinkers

(29.3%) documented in this survey was high compared to similar surveys from Africa; Gambia (1.0%), Mali (3.1%), Malawi (16.9%), Sierra Leone (17.2%), Swaziland (11.8%) and Botswana (18.8%). Other countries had alcohol consumption (current drinkers) of more than 20% including Zambia (20.8%), Liberia (24.0%), Lesotho (30.7%), and Ghana (30.9%). Of all the studies reported from Africa, Ivory Coast reported the highest prevalence of current alcohol drinkers of about 40% (WHO STEPS n.d.).

Consumption of adequate amounts of fruit and vegetables is suggested as part of a daily healthy diet. Various studies have revealed that fruit and vegetable consumption is inversely associated with the risk non communicable diseases (NCDs) such as cardiovascular disease, diabetes, and many forms of cancer (Dauchet, et al. 2006) (Dauchet, Amouyel and Dallongeville 2005) (He, Nowson and MacGregor 2006), 2006; He et al, 2006). The risk of CHD decreases with an additional consumption of fruits and vegetables portion per day (Dauchet, Amouyel and Hercberg, et al. 2006). Conversely, diets with high diffusion of fat and salt, and low in fruit and vegetables are likely to be associated with the increased risk of heart disease, stroke, obesity and some cancers (Department of Health UK 1994).Therefore, with such causal relationship, strategies aimed at improving dietary habits especially those insisting eating fruits and vegetables at least five days per week at the recommended quantity and types can play a key part in reducing early deaths from these diseases. In this survey, it was noted that no any age group of either men or women which consumed fruits within or above the recommended mean days (5) per week. On the other hand, except women aged 35-44 years, the rest groups consumed vegetables below the recommended mean days (5) per week. In addition, there was no any age group of either men or women which consumed at least one unit of fruits serving on average per day. However, except the age group of 25-34 for both men and women, the rest age groups consumed on average at least one unit of vegetable serving per day. It was generally observed that in this survey majority of men (97.3%) and women (97.1%) and the overall population (97.2%) consumed less than five servings of fruit and/or vegetables on average per day. Such kind of results indicates lack of information regarding the health benefits of eating fruits and vegetables in the community, therefore a missed opportunity for NCDs prevention. The high rate of low consumption of recommended serving standards of fruits/vegetable observed in this survey is like what has been reported from surveys in other African countries (Country STEPS survey reports)

Overweight and obesity are also associated with significantly increased risk of later cardiometabolic morbidity (diabetes, hypertension, ischemic heart disease, and stroke) in adult life (Reilly and Kelly 2011) (Reilly JJand Kelly J, 2011). According to WHO report (WHO 2008), more than 1.4 billion adults, 20 and older, were overweight and over 200 million men and nearly 300 million women were obese and 65% of the world's population live in countries where overweight and obesity kills more people than underweight. Around 3.4 million adults die each year as a result of being overweight or obese. Furthermore, 44% of the diabetes burden, 23% of the ischemic heart disease burden and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity (WHO 2013), 2013).

According to the data from this survey more than a quarter of the national population aged 25-64 years was overweight and about ten percent were obese. The magnitude of overweight to both men (20.9%) and women (43.3%) was at peak at age group of 45-54 years, the same age group also was the peak for both sex (32.4%). Similarly, the climax for obese men (3.1%), women (16.6%) and both sex (10.0%) was recorded at the same age group. This implies that, interventions for lowering body weight should have to target that risky age group. The prevalence of overweight and obesity was noted to be high among

women than men. For example a study (Muhihi, et al. 2012) indicated that the prevalence of obesity was 13% and 36% among men and women, respectively. Another study conducted in Dar es Salaam (Shayo and Mugusi 2011) revealed a significant high prevalence of obesity in women (24.7%) than men (9%). Similar results were also documented by another study (Njelekela, et al. 2009) in Dar es Salaam too, in that study the prevalence of obesity was also high in women than men 35% and 13% respectively.

The overall prevalence of overweight and obesity in Tanzania is high but lower than average of what has been reported from other STEPS surveys (WHO STEPS n.d.). Malawi, Sierra Leone and Botswana had somewhat comparable levels of overweight and obesity with prevalence rates of 21.9%, 22.4% and 23% respectively. Ghana has the highest levels of overweight and obesity with prevalence of 60.2%, followed by Swaziland (52.9%), Liberia (49.9%), Lesotho (41.5%), Gambia (39.5), Zambia (39.6%) and Mali (34.6%). The high prevalence of overweight and obesity correlates with the prevalence of high levels of physical inactivity in the countries.

Worldwide, raised blood pressure is estimated to cause about 12.8% of the total deaths. Raised blood pressure is a major risk factor for coronary heart disease and ischemic as well as hemorrhagic stroke. Evidence indicates that cardiovascular disease doubles for each increment of 20/10 mmHg of blood pressure. In addition to coronary heart diseases and stroke, complications of raised blood pressure include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage and visual impairment. Treating systolic blood pressure and diastolic blood pressure until they are less than 140/90 mmHg is associated with a reduction in cardiovascular complications (WHO, GHO 2008). The prevalence of high blood pressure in African region is estimated at 46% and the region is leading in having high prevalence as compared with other world's regions (WHO 2013).

In this survey, a linear trend of mean systolic and diastolic Blood pressure as well as the prevalence of systolic, diastolic and both systolic blood pressure increased with an increase in age and it reached at peak at age group of 55-64 years. An overall prevalence of raised blood pressure was 26% and it was slightly higher among women (26.5%) than men (25.4%). About 93% of those were not on medication for raised BP and almost all men (97%) were not on treatment for that problem. It was also noted that, majority (83.1%) of male and more than half (54.7%) of female participants were never measured for their blood pressure in their lifetime. This indicate that practice of personal check up in the community is low and for the female the proportional of those who ever measured their blood pressure is high may be because of attending antenatal care clinic (ANC) as checking for blood pressure is compulsory to pregnant women  otherwise even to them the rate could also be high as well.  Observed high prevalence of raised blood pressure may be linked with risk factors document in this survey. Those risks include heavy episodes of alcohol drinking, Overweight/obese, raised cholesterol and eating less than 5 servings of fruit and/or vegetables on average per day. Moreover, with exception of  Mali and Gambia (hypertension prevalence 15.9% and 26.3 respectively) , the prevalence of raised blood pressure documented in this survey was lower as compared with those reported from other African countries (WHO STEPS n.d.) that conducted similar surveys from 2006-2012 with Ghana (36.7%), Lesotho (31%), Malawi (32.9%), Sierra Leone (34.8%), Zambia (33.3%), Liberia (30.7%), Ivory Coast (38.7%), Swaziland (36%) and Botswana (33.1%). However, that prevalence may increase and catch up other countries if the documented risk factors are not acted upon.

Regarding diabetes, it was observed that only 1.7% of study subjects were previously diagnosed with

raised blood glucose. The overall prevalence of diabetes was found to be, 9.1% (Men=8.0% and female =10%) defined as those with raised fasting blood glucose or currently on medication for diabetes.

For the men the prevalence increased with age and reached at the peak at age group of 45-54 while for women the prevalence was high at age group of 55-64. On the other hand, for both sex the prevalence revealed a liner trend with age and it reached at the culmination at age group of 45-54. Moreover, the prevalence documented from this survey was higher than what was reported previously from Tanzania (Aspray, et al. 2000), where they reported a prevalence of about 5.7% in Urban and less than 2% in the rural area. The prevalence in this study is also slightly higher than the IDF projections where it was estimated that the prevalence of diabetes would rise to 8% in 2030 (Whiting, et al. 2011). The prevalence of diabetes in other African countries is variable with Ivory Coast reporting a high prevalence of 25.6%, followed by Liberia 14.9%. Other countries reported diabetes prevalence of less than 10%, including Lesotho (6.3%), Zambia (4.6%) and Swaziland (3.7%) (WHO STEPS n.d.). It was also noted that in this survey majority (91.1%) of the surveyed population had never had their blood sugar measured. This finding indicates the reason why a big proportion (up to 80%) of diabetes cases are not yet diagnosed in low and middle countries like Tanzania (Whiting et al, 2011, IDF, 2011). The findings also call for the need of primary prevention interventions including early detection of diabetes cases for early management and minimize late stage complications. In this survey, a gaps of advises on special diet, weight reduction, stopping smoking, and starting or doing more exercise by doctor or health worker among those previously diagnosed was noted. Practices of seeking alternative medicine was also noted among previous diagnosed subjects, where 33.5% declared to seek advises from traditional healers and 17.6% reported that they were using traditional medicine for diabetes management. There is a need for continuous health education to diabetes patients so as to improve access to care and subsequent quality of life.

Twenty six percent of the population had raised Total cholesterol or were currently on medication for raised cholesterol and the proportion of women with abnormal results was two times more than men. In both sex the prevalence was at peak at age group of 55-64 years. In that age group the prevalence in both sexes was 40%. The prevalence raised cholesterol documented in this survey is higher as compared with the previous studies conducted in Tanzania (AMMP 1997) (WHO 2010).

About 34% of the population had raised fasting triglycerides. The prevalence was high among women than men by about 5%. For the men the prevalence revealed a linear trend and it reached at the climax at age 55-64 years (45.7%) while in women the peak was at age group of 45-54 years (41.8%). High cholesterol is a documented risk factor for cardiovascular diseases, therefore the high cholesterol levels in the population would result in increasing burden of cardiovascular diseases if the current trend remains.

Only one percent of the study subject had no any risk factor for NCDs. Twenty eight percent of the study subjects aged 45 to 64 had at least three risk factors and about 17% of all study subjects had at least three risks. The proportion of women with at least three risks factors was high than that of men by 3%. Such situation indicates an increased risk of metabolic syndrome which is the risk factors for cardiovascular diseases. This also may explain the high prevalence of hypertension and diabetes observed in this study. However, the prevalence of combined risks factors observed in this survey is low

as compared with what was documented from other African countries (WHO STEPS n.d.).

## CONCLUSIONS AND RECOMMENDATIONS

The key findings suggest that In Tanzania, there is relatively high prevalence of NCD risk factors, below is the prevalence of selected risk factors: current tobacco users (15.9%), current alcohol drinkers (29.3%), ate less than 5 servings of fruit and/or vegetables on average per day (97.2%), overweight and obese (26%), raised cholesterol (26%) and raised triglycerides (33.8%). In this survey, the prevalence of diabetes was found to be 9.1% and 25.9% for hypertension. The rise of non-communicable diseases is noted when communicable diseases still contributes significantly to the disease burden hence creating a double burden of diseases especially among the adult population to the health system which is yet to respond effectively to communicable diseases.

These findings reveal a significant magnitude of non-communicable diseases risk factors which if left unattended may lead to an increased burden of both morbidity and mortality in the country. These results will be useful in developing policy measures for the prevention and control of NCDs and the current levels will serve as baseline data for evaluating subsequent NCD interventions.

The results of this survey should stimulate appropriate intervention at all levels in line with the WHO strategy / action plan for the prevention and control of non-communicable diseases (WHO 2013).

More efforts are needed at the country level to increase the capacity for prevention and control of NCDs, there is need to; raise priority accorded to NCD, to establish and or strengthen national policies for NCDs, implement interventions to reduce shared NCD risk factors, promote research to generate evidence for policy, promote multisectoral action and to monitor NCD determinants and evaluate progress.

The focus of the interventions should be in primary prevention but interventions are needed along the continuum from primary to tertiary prevention and a scope of interventions from the community level up to the national level.

This STEPS survey has highlighted the situation regarding risk factors for NCDs; there is limited data on the burden of NCDs on the population and on the health service system. There is need for further research in this area and also to continuously monitor NCD risk factors and disease trends by setting up systems and providing resources for NCD surveillance.

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# WHO STEPS Instrument
## (Core and Expanded)



## The WHO STEPwise approach to chronic disease risk factor surveillance (STEPS)

World Health Organization
20 Avenue Appia, 1211 Geneva 27,
Switzerland

*For further information:*www.who.int/chp/steps

# STEPS Instrument

## Overview

**Introduction**
This is the generic STEPS Instrument which sites/countries will use to develop their tailored instrument. It contains the:

CORE items (unshaded boxes)
EXPANDED items (shaded boxes).

**Core Items**
The Core items for each section ask questions required to calculate basic variables. For example:

current daily smokers
mean BMI.

**Note:** All the core questions should be asked, removing core questions will impact the analysis.

**Expanded items**
The Expanded items for each section ask more detailed information. Examples include:

use of smokeless tobacco
sedentary behaviour.

**Guide to the columns**
The table below is a brief guide to each of the columns in the Instrument.

| Column | Description | Site Tailoring |
|---|---|---|
| Number | This question reference number is designed to help interviewers find their place if interrupted. | Renumber the instrument sequentially once the content has been finalized. |
| Question | Each question is to be read to the participants | Select sections to use. Add expanded and optional questions as desired. |
| Response | This column lists the available response options which the interviewer will be circling or filling in the text boxes. The skip instructions are shown on the right hand side of the responses and should be carefully followed during interviews. | Add site specific responses for demographic responses (e.g. C6). Change skip question identifiers from code to question number. |
| Code | The column is designed to match data from the instrument into the data entry tool, data analysis syntax, data book, and fact sheet. | This should never be changed or removed. The code is used as a general identifier for the data entry and analysis. |

# WHO STEPS Instrument
## for Chronic Disease
## Risk Factor Surveillance

## <Tanzania>

| Survey Information | | |
|---|---|---|
| **Location and Date** | **Response** | **Code** |
| 1 District ID | ⌞__⌟__⌟__⌟ | X1 |
| 2 Cluster/Centre/Village ID | ⌞__⌟__⌟__⌟ | I1 |
| 3 Cluster/Centre/Village name | | I2 |
| 4 Interviewer ID | ⌞__⌟__⌟__⌟ | I3 |
| 5 Date of completion of the instrument | ⌞__⌟__⌟__⌟ ⌞__⌟__⌟__⌟ ⌞__⌟__⌟__⌟<br>dd   mm   year | I4 |

✂ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - ✂

| | Participant Id Number ⌞__⌟__⌟__⌟ ⌞__⌟__⌟__⌟ ⌞__⌟__⌟__⌟ | |
|---|---|---|
| **Consent, Interview Language and Name** | **Response** | **Code** |
| 6 Consent has been read and obtained | Yes  1<br>No   2   **If NO, END** | I5 |
| 7 Interview Language *[Insert Language]* | English  1<br>*[Add others]*  2<br>*[Add others]*  3<br>*[Add others]*  4 | I6 |
| 8 Time of starting interview (24 hour clock) | ⌞__⌟__⌟ : ⌞__⌟__⌟<br>hrs<br>mins | X2 |
| 9 Time of completing interview (24 hour clock) | ⌞__⌟__⌟ : ⌞__⌟__⌟<br>hrs<br>mins | X3 |
| 10 Time of interview<br>(24 hour clock) | ⌞__⌟__⌟ : ⌞__⌟__⌟<br>hrs     mins | I7 |
| 11 Family Surname | | I8 |
| 12 First Name | | I9 |

| **Additional Information that may be helpful** | | | | |
|---|---|---|---|---|
| 13 | Contact phone number where possible | | | I10 |
| 14 | Mention, Whose phone is it | Office phone | 1 | X4 |
| | | Home | 2 | |
| | | Neighbours' | 3 | |
| | | Other | 4 | |
| | | Other(please specify) | └─┴─┴─┴─┴─┴─┘ | X5 other |

Record and file identification information (I5 to I10) separately from the completed questionnaire.

## Step 1   Demographic Information
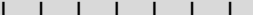
### CORE: Demographic Information

| | Question | Response | Code |
|---|---|---|---|
| 15 | Sex (*Record Male / Female as observed*) | Male  1 <br> Female  2 | C1 |
| 16 | What is your date of birth? <br><br> *Don't Know 77 77 7777* | └─┴─┘ └─┴─┘ └─┴─┴─┴─┘ *If known, Go to C4* <br> dd      mm         year | C2 |
| 17 | How old are you? | Years  └─┴─┘ | C3 |
| 18 | In total, how many years have you spent at school or in full-time study (excluding pre-school)? | Years  └─┴─┘ | C4 |

### EXPANDED: Demographic Information

| | Question | Response | | Code |
|---|---|---|---|---|
| 19 | What is the **highest level of education** you have completed? <br><br> *[INSERT COUNTRY-SPECIFIC CATEGORIES]* | No formal schooling | 1 | C5 |
| | | Less than primary school | 2 | |
| | | Primary school completed | 3 | |
| | | Secondary school completed | 4 | |
| | | High school completed | 5 | |
| | | College/University completed | 6 | |
| | | Post graduate degree | 7 | |
| | | Refused | 88 | |
| 20 | What is your **marital status**? | Never married | 1 | C7 |
| | | Currently married | 2 | |
| | | Separated | 3 | |
| | | Divorced | 4 | |
| | | Widowed | 5 | |
| | | Cohabitating | 6 | |
| | | Refused | 88 | |
| 21 | Which of the following best describes your **mainwork** status over the past 12 months? <br><br><br> (*USE SHOWCARD*) | Government employee | 1 | C8 |
| | | Non-government employee | 2 | |
| | | Self-employed | 3 | |
| | | Non-paid | 4 | |
| | | Student | 5 | |
| | | Homemaker | 6 | |
| | | Retired | 7 | |
| | | Unemployed (able to work) | 8 | |
| | | Unemployed (unable to ) | 9 | |
| | | Refused | 88 | |
| 22 | How many people older than 18 years, including yourself, live in your household? | Number of people  └─┴─┘ | | C9 |

| EXPANDED: Demographic Information, Continued | | | |
|---|---|---|---|
| **Question** | | **Response** | **Code** |
| 23 | 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 ⌞_I_I_I_I_I_I⌟ *Go to T1* | C10a |
| | | OR per month ⌞_I_I_I_I_I_I⌟ *Go to T1* | C10b |
| | | OR per year ⌞_I_I_I_I_I_I⌟ *Go to T1* | C10c |
| | | Refused 88 | C10d |
| 24 | If you don't know the amount, can you give an **estimate** of the annual household income (In Tanzanian shillings) if I read some options to you? Is it *(READ OPTIONS)* | ≤ 250,000 1<br>More than 250,000, ≤ 2<br>More than 500,000, ≤ 3<br>More than 750,000, ≤ 4<br>More than 1,000,000 5<br>Don't Know 77<br>Refused 88 | C11 |

## Step 1 Behavioural Measurements

| CORE: Tobacco Use | | | |
|---|---|---|---|
| Now I am going to ask you some questions about various health behaviours. This includes things like smoking, drinking alcohol, eating fruits and vegetables and physical activity. Let's start with tobacco. | | | |
| **Question** | | **Response** | **Code** |
| 25 | Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes? *(USE SHOWCARD)* | Yes 1<br>No 2 *If No, go to T6* | T1 |
| 26 | Do you currently smoke tobacco products **daily**? | Yes 1<br>No 2 *If No, go to T6* | T2 |
| 27 | How old were you when you **first started** smoking daily? | Age (years)<br>Don't know 77 ⌞_I_⌟ *If Known, go to T5a* | T3 |
| 28 | Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* Don't know 77 | In Years ⌞_I_⌟ *If Known, go to T5a* | T4a |
| | | OR in Months ⌞_I_⌟ *If Known, go to T5a* | T4b |
| | | OR in Weeks ⌞_I_⌟ | T4c |
| 29 | On average, **how many** of the following do you smoke each day? *(RECORD FOR EACH TYPE, USE SHOWCARD)* Don't Know 77 | Manufactured cigarettes ⌞_I_⌟ | T5a |
| | | Hand-rolled cigarettes ⌞_I_⌟ | T5b |
| | | Pipes full of tobacco ⌞_I_⌟ | T5c |
| | | Cigars, cheroots, cigarillos ⌞_I_⌟ | T5d |
| | | Other *T5other,* ⌞_I_⌟ *If Other, go to T5other, else go to T9* | T5e |

| | | Other (please specify): ⌞⌞⌞⌞⌞⌞⌟ *Go to T9* | T5other |
|---|---|---|---|

## EXPANDED: Tobacco Use

| **Question** | | **Response** | **Code** |
|---|---|---|---|
| 30 | In the past, did you **ever** smoke **daily**? | Yes   1<br><br>No   2   *If No, go to T9* | T6 |
| 31 | How old were you when you **stopped** smoking **daily**? | Age (years)<br><br>Don't Know  77   ⌞⌞⌞⌟ *If Known, go to T9* | T7 |
| 32 | How **long ago** did you stop smoking daily?<br><br>*(RECORD ONLY 1, NOT ALL 3)*<br><br>*Don't Know  77* | Years ago   ⌞⌞⌞⌟ *If Known, go to T9* | T8a |
| | | OR   Months ago   ⌞⌞⌞⌟ *If Known, go to T9* | T8b |
| | | OR   Weeks ago   ⌞⌞⌞⌟ | T8c |
| 33 | Do you **currently use** any **smokeless tobacco** such as *[snuff, chewing tobacco, betel]*? *(USE SHOWCARD)* | Yes   1<br><br>No   2   *If No, go to T12* | T9 |
| 34 | Do you **currently usesmokeless tobacco** products **daily?** | Yes   1<br><br>No   2   *If No, go to T12* | T10 |
| 35 | On average, how many **times a day** do you use ....<br><br>*(RECORD FOR EACH TYPE, USE SHOWCARD)*<br><br>*Don't Know 77* | Snuff, by mouth   ⌞⌞⌞⌟ | T11a |
| | | Snuff, by nose   ⌞⌞⌞⌟ | T11b |
| | | Chewing tobacco   ⌞⌞⌞⌟ | T11c |
| | | Betel, quid   ⌞⌞⌞⌟ | T11d |
| | | Other   ⌞⌞⌞⌟ *If Other, go to T11other,* e*lse go to T13* | T11e |
| | | Other (specify)   ⌞⌞⌞⌞⌞⌞⌞⌟ *Go to T13* | T11other |
| 36 | In the **past**, did you **ever use** smokeless tobacco such as *[snuff, chewing tobacco, or betel]***daily**? | Yes   1<br><br>No   2 | T12 |
| 37 | During the past 7 days, on how many days did someone **in your home** smoke when you were present? | Number of days<br><br>Don't know 77   ⌞⌞⌞⌟ | T13 |
| 38 | During the past 7 days, on how many days did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office) when you were present? | Number of days<br><br>Don't know or don't work in a closed area 77   ⌞⌞⌞⌟ | T14 |

## CORE:  Alcohol Consumption

The next questions ask about the consumption of alcohol.

| **Question** | | **Response** | **Code** |
|---|---|---|---|
| 39 | Have you **ever** consumed an alcoholic drink such as beer, wine, spirits, fermented cider or | Yes   1 | A1a |

| | | | |
|---|---|---|---|
| | [add other local examples]?<br>(USE SHOWCARD OR SHOW EXAMPLES) | No 2 *If No, go to D1* | |
| 40 | Have you consumed an alcoholic drink within the **past 12 months**? | Yes 1<br>No 2 *If No, go to D1* | A1b |
| 41 | During the past 12 months, **how frequently** have you had at least one alcoholic drink?<br><br>(READ RESPONSES, USE SHOWCARD) | Daily 1<br>5-6 days per week 2<br>1-4 days per week 3<br>1-3 days per month 4<br>Less than once a month 5 | A2 |
| 42 | Have you consumed an alcoholic drink within the **past 30 days**? | Yes 1<br>No 2 *If No, go to D1* | A3 |
| 43 | During the past 30 days, on how many **occasions** did you have at least one alcoholic drink? | Number<br>Don't know 77 └──┴──┘ | A4 |
| 44 | During the past 30 days, when you drank alcohol, **on average**, how many **standardalcoholicdrinks** did you have during one drinking occasion?<br>(USE SHOWCARD) | Number<br>Don't know 77 └──┴──┘ | A5 |
| 45 | During the past 30 days, what was the **largest number** of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together? | Largest number<br>Don't Know 77 └──┴──┘ | A6 |
| 46 | During the past 30 days, how many times did you have<br>for **men**: **five or more**<br>for **women**: **four or more**<br>standard alcoholic drinks in a single drinking occasion? | Number of times<br>Don't Know 77 └──┴──┘ | A7 |
| **EXPANDED:  Alcohol Consumption** | | | |
| 47 | During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks. | Usually with meals 1<br>Sometimes with meals 2<br>Rarely with meals 3<br>Never with meals 4 | A8 |
| 48 | During each of the **past 7 days**, how many standard alcoholic drinks did you have each day?<br><br>(USE SHOWCARD)<br><br>Don't Know 77 | Monday └──┴──┘ | A9a |
| | | Tuesday └──┴──┘ | A9b |
| | | Wednesday └──┴──┘ | A9c |
| | | Thursday └──┴──┘ | A9d |
| | | Friday └──┴──┘ | A9e |
| | | Saturday └──┴──┘ | A9f |
| | | Sunday └──┴──┘ | A9g |
| **CORE: Diet** | | | |

The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows

you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.

| | Question | Response | Code |
|---|---|---|---|
| 49 | In a typical week, on how many days do you **eat fruit**? | Number of days ⌊_⌊_⌊ *If Zero days, go to D3*<br>Don't Know 77 | D1 |
| 50 | How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD*) | Number of servings<br>Don't Know 77 ⌊_⌊_⌊ | D2 |
| 51 | In a typical week, on how many days do you **eat vegetables**?(*USE SHOWCARD*) | Number of days ⌊_⌊_⌊ *If Zero days, go to D5*<br>Don't Know 77 | D3 |
| 52 | How many **servings** of vegetables do you eat on one of those days? (*USE SHOWCARD*) | Number of servings<br>Don't know 77 ⌊_⌊_⌊ | D4 |

| **EXPANDED: Diet** | | | |
|---|---|---|---|
| 53 | What type of **oil or fat is most often** used for meal preparation in your household?<br><br>(*USE SHOWCARD*)<br>(*SELECT ONLY ONE*) | Vegetable oil 1<br>Lard or suet 2<br>Butter or ghee 3<br>Margarine 4<br>Other 5 *If Other, go to D5 other*<br>None in particular 6<br>None used 7<br>Don't know 77 | D5 |
| | | Other ⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊ | D5other |
| 54 | On average, how many meals per week do you eat that were not prepared at a home? By meal, I mean breakfast, lunch and dinner. | Number<br>Don't know 77 ⌊_⌊_⌊ | D6 |

| **CORE:  Physical Activity** | | | |
|---|---|---|---|
| Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.<br>Think first about the time you spend doing work.  Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment.  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** | | | |
| 55 | Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like lifting heavy loads, manual construction work, digging etc for at least 10 minutes continuously? | Yes 1<br><br>No 2 *If No, go to P 4* | P1 |
| 56 | In a typical week, on how many days do you do vigorous-intensity activities as part of your work? | Number of days ⌊_⌊ | P2 |

| 57 | How much time do you spend doing vigorous-intensity activities at work on a typical day? | Hours : minutes   └─┴─┘ : └─┴─┘<br>hrs        mins | P3 (a-b) |
|---|---|---|---|
| 58 | Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking, *carrying light loads, doing chores like cleaning, washing or ironing clothes etc* ,for at least 10 minutes continuously? | Yes   1<br><br>No   2   *If No, go to P 7* | P4 |
| 59 | In a typical week, on how many days do you do moderate-intensity activities as part of your work? | Number of days   └─┘ | P5 |
| 60 | How much time do you spend doing moderate-intensity activities at work on a typical day? | Hours : minutes   └─┴─┘ : └─┴─┘<br>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.

| 61 | Do you walk or use a bicycle *(pedal cycle)* for at least 10 minutes continuously to get to and from places? | Yes   1<br><br>No   2   *If No, go to P 10* | P7 |
|---|---|---|---|
| 62 | 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 |
| 63 | How much time do you spend walking or bicycling for travel on a typical day? | Hours : minutes   └─┴─┘ : └─┴─┘<br>hrs        mins | P9 (a-b) |

## CORE:  Physical Activity, Continued

| Question | Response | Code |
|---|---|---|
| **Recreational activities** | | |

The next questions exclude the work and transport activities that you have already mentioned.
Now I would like to ask you about sports, fitness and recreational activities (leisure), *[Insert relevant terms]*.

| 64 | Do you do any vigorous-intensity sports, fitness or recreational *(leisure)* activities that cause large increases in breathing or heart rate like *running, playing football  etc,* for at least 10 minutes continuously? | Yes   1<br><br>No   2   *If No, go  to P 13* | P10 |
|---|---|---|---|
| 65 | In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational *(leisure)* activities? | Number of days   └─┘ | P11 |
| 66 | How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day? | Hours : minutes   └─┴─┘ : └─┴─┘<br>hrs        mins | P12 (a-b) |
| 67 | 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, dancing* etc  for at least 10 minutes continuously? | Yes   1<br><br>No   2   *If No, go to P16* | P13 |

| 68 | In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational *(leisure)* activities? | Number of days ⌞⌟ | P14 |
|---|---|---|---|
| 69 | How much time do you spend doing moderate-intensity sports, fitness or recreational *(leisure)* activities on a typical day? | Hours : minutes  ⌞⌞⌞⌟ : ⌞⌞⌟<br>hrs          mins | P15 (a-b) |

## EXPANDED:  Physical Activity

**Sedentary behavior**

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)*

| 70 | How much time do you usually spend sitting or reclining on a typical day? | Hours : minutes  ⌞⌞⌟ : ⌞⌞⌟<br>hrs          mins | P16 (a-b) |
|---|---|---|---|

## CORE: History of  Raised Blood Pressure

| **Question** | | **Response** | **Code** |
|---|---|---|---|
| 71 | Have you ever had your blood pressure measured by a doctor or other health worker? | Yes   1<br>No   2     *If No, go to H6* | H1 |
| 72 | Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension? | Yes   1<br>No   2     *If No, go to H6* | H2a |
| 73 | Have you been told in the past 12 months? | Yes   1<br>No   2 | H2b |

## EXPANDED: History of  Raised Blood Pressure

| 74 | Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker? | | |
|---|---|---|---|
| | Drugs (medication) that you have taken in the past two weeks | Yes   1<br>No   2 | H3a |
| | Advice to reduce salt intake | Yes   1<br>No   2 | H3b |
| | Advice or treatment to lose weight | Yes   1<br>No   2 | H3c |
| | Advice or treatment to stop smoking | Yes   1<br>No   2 | H3d |
| | Advice to start or do more exercise | Yes   1<br>No   2 | H3e |
| 75 | Have you ever seen a traditional healer for raised blood pressure or hypertension? | Yes   1<br>No   2 | H4 |

| 76 | Are you currently taking any herbal or traditional remedy for your raised blood pressure? | Yes    1 <br> No    2 | H5 |

## CORE: History of Diabetes

| Question | | Response | Code |
|---|---|---|---|
| 77 | Have you ever had your blood sugar measured by a doctor or other health worker? | Yes    1 <br> No    2    *If No, go to M1* | H6 |
| 78 | Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes? | Yes    1 <br> No    2    *If No, go to M1* | H7a |
| 79 | Have you been told in the past 12 months? | Yes    1 <br> No    2 | H7b |

## EXPANDED: History of Diabetes

| 80 | Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker? | | |
|---|---|---|---|
| | Insulin | Yes    1 <br> No    2 | H8a |
| | Drugs (medication) that you have taken in the past two weeks | Yes    1 <br> No    2 | H8b |
| | Special prescribed diet | Yes    1 <br> No    2 | H8c |
| | Advice or treatment to lose weight | Yes    1 <br> No    2 | H8d |
| | Advice or treatment to stop smoking | Yes    1 <br> No    2 | H8e |
| | Advice to start or do more exercise | Yes    1 <br> No    2 | H8f |
| 81 | Have you ever seen a traditional healer for diabetes or raised blood sugar? | Yes    1 <br> No    2 | H9 |
| 82 | Are you currently taking any herbal or traditional remedy for your diabetes? | Yes    1 <br> No    2 | H10 |

## Step 2　Physical Measurements

### CORE:  Height and Weight

| Question | | Response | Code |
|---|---|---|---|
| 83 | Interviewer ID | L__I__I__I__I | M1 |
| 84 | Device IDs for height and weight | Height  L__I__I<br>Weight  L__I__I | M2a<br>M2b |
| 85 | Height | in Centimetres (cm)  L__I__I__I . L__I | M3 |
| 86 | Weight<br>*If too large for scale 666.6* | in Kilograms (kg)  L__I__I__I . L__I | M4 |
| 87 | **For women:** Are you pregnant? | Yes　1  *If Yes, go to M 8*<br>No　2 | M5 |

### CORE:  Waist

| | | | |
|---|---|---|---|
| 88 | Device ID for waist | L__I__I | M6 |
| 89 | Waist circumference | in Centimetres (cm)  L__I__I__I . L__I | M7 |

### CORE:  Blood Pressure

| | | | | |
|---|---|---|---|---|
| 90 | Interviewer ID | | L__I__I__I__I | M8 |
| 91 | Device ID for blood pressure | | L__I__I__I | M9 |
| 92 | Cuff size used | | Small　1<br>Medium　2<br>Large　3 | M10 |
| 93 | Reading 1 | Systolic ( mmHg)  L__I__I__I__I | M11a |
| | | Diastolic (mmHg)  L__I__I__I__I | M11b |
| 94 | Reading 2 | Systolic ( mmHg)  L__I__I__I__I | M12a |
| | | Diastolic (mmHg)  L__I__I__I__I | M12b |
| 95 | Reading 3 | Systolic ( mmHg)  L__I__I__I__I | M13a |
| | | Diastolic (mmHg)  L__I__I__I__I | M13b |
| 96 | 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<br>No　2 | M14 |

| EXPANDED: Hip Circumference and Heart Rate | | | |
|---|---|---|---|
| 97 | Hip circumference | in Centimeters (cm) └─┴─┴─┘ . └─┘ | M15 |
| 98 | Heart Rate | | |
| | Reading 1 | Beats per minute └─┴─┴─┘ | M16a |
| | Reading 2 | Beats per minute └─┴─┴─┘ | M16b |
| | Reading 3 | Beats per minute └─┴─┴─┘ | M16c |

## Step 3    Biochemical Measurements

### CORE:  Blood Glucose

| Question | | Response | Code |
|---|---|---|---|
| 99 | During the past 12 hours have you had anything to eat or drink, other than water? | Yes    1<br>No    2 | B1 |
| 100 | Technician ID | └─┴─┴─┘ | B2 |
| 101 | Device ID | └─┴─┘ | B3 |
| 102 | Time of day blood specimen taken (24 hour clock) | Hours : minutes    └─┴─┘ : └─┴─┘<br>hrs         mins | B4 |
| 103 | Fasting blood glucose: *mmol/l* | mmol/l    └─┴─┘ . └─┴─┘ | B5 |
| 104 | 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<br>No    2 | B6 |

### CORE: Blood Lipids

| 105 | Device ID | └─┴─┘ | B7 |
|---|---|---|---|
| 106 | Total cholesterol*: mmol/l* | mmol/l    └─┴─┘ . └─┴─┘ | B8 |
| 107 | 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<br>No    2 | B9 |

### EXPANDED:  Triglycerides and HDL Cholesterol

| 108 | Triglycerides *mmol/l* | mmol/l    └─┴─┘ . └─┴─┘ | B10 |
|---|---|---|---|

DRAFT 2

# WHO STEPS Instrument
## for Chronic Disease
## Risk Factor Surveillance

## TANZANIA

| Maelezo kuhusu eneo la Utafiti |
|---|

| **Mahali na Tarehe** | **Jibu** | **Code** |
|---|---|---|
| 1 | Alama ya Wilaya | ⌞_⌞_⌟ | X1 |
| 2 | Alama ya Kijiji/Mtaa | ⌞_⌞_⌞_⌟ | I1 |
| 3 | Jina la Kijiji/Mtaa | | I2 |
| 4 | Utambulisho wa Mhojaji | ⌞_⌞_⌞_⌟ | I3 |

| 5 | Tarehe ya kukamilisha dodoso | ⌞_⌞_⌟ ⌞_⌞_⌟ ⌞_⌞_⌞_⌟<br>tarehe　　mwezi　　mwaka | I4 |
|---|---|---|---|

**Namba ya Mhojiwa**
⌞_⌞_⌞_⌟ ⌞_⌞_⌞_⌟ ⌞_⌞_⌞_⌟

| **Ridhaa, Lugha ya mahojiano na Jina la Mhojiwa** | | **Jibu** | | **Code** |
|---|---|---|---|---|
| 6 | Mhojiwa amesomewa fomu ya Ridhaa na ridhaa imepatikana | Ndio | 1 | I5 |
| | | Hapana | 2 **Kama Hapana, MWISHO** | |
| | | Hapana | 2　　**Kama Hapana, MWISHO** | |
| 7 | Lugha iliyotumika kwa mahojiano | Kiswahili | 1 | I6 |
| | | [Add others] | 2 | |
| | | [Add others] | 3 | |
| | | [Add others] | 4 | |
| 8 | Muda wa kuanza mahojiano | | ⌞_⌞_⌞_⌟ : ⌞_⌞_⌟<br>masaa　　dakika | X2 |
| 9 | Muda wa kumaliza mahojiano | | ⌞_⌞_⌞_⌟ : ⌞_⌞_⌟<br>masaa　　dakika | X3 |

| 10 | Muda wa mahojiano (masaa 24) | └─┴─┘ : └─┴─┘ <br> masaa     dakika | | | I7 |
|----|------------------------------|------|---|---|-----|
| 11 | Jina la ukoo/ mwisho la mhojiwa | | | | I8 |
| 12 | Jina la kwanza la mhojiwa | | | | I9 |
| **Maelezo ya ziada** | | | | | |
| 13 | Namba ya simu ya mhojiwa inapowezekana | | | | I10 |
| 14 | Taja simu ni ya nani | **Kazini** | 1 | | X4 |
| | | Nyumbani | 2 | | |
| | | Jirani | 3 | | |
| | | Nyingine (elezea) | 4 | | |
| | | Nyingine | └─┴─┴─┴─┴─┴─┴─┘ | | X5 other |

Taarifa za swali (I5 mpaka I10 pia X1 hadi X8) zihifadhiwe tofauti na dodoso

| STEP 1 | Maelezo ya Demografia |
|---|---|

## CORE: Maelezo ya demografia

| | Maswali | Jibu | Code |
|---|---|---|---|
| 15 | Jinsi (*Andika Mume/Mke kama inavyoonekana*) | Mume    1 <br> Mke    2 | C1 |
| 16 | Tarehe yako ya kuzaliwa ni ipi? <br> *Sijui 77 777 7777* | ⌊⌊⌋ ⌊⌊⌋ ⌊⌊⌊⌋  *Kama inafahamika, nenda C4* <br> tarehe    mwezi    mwaka | C2 |
| 17 | Una miaka mingapi? | Miaka   ⌊⌊⌊⌋ | C3 |
| 18 | Kwa ujumla, ni miaka mingapi umetumia ukiwa shuleni au kwa masomo ya kutwa nzima full time (ukiondoa shule ya awali)? | Miaka   ⌊⌊⌋ | C4 |

| Maswali ya nyongeza : maelezo ya demografia | Jibu | Code |
|---|---|---|
| 19   Ni kiwango gani cha elimu cha juu zaidi ulichofikia? | Sijasoma   1 <br> Sikumaliza elimu ya   2 <br> Nimemaliza elimu ya   3 <br> Nimemaliza elimu ya   4 <br> Nimemaliza elimu ya juu va sekondari   5 <br> Nimemaliza Chuo/Chuo Kikuu   6 <br> Elimu baada ya shahada ya kwanza(uzamili/uzamivu)   7 <br> Amekataa kujibu   88 | C5 |
| 20   Question omitted | | C6 |
| 21   Hali ya Ndoa | Sijawahi kuoa/ kuolewa   1 <br> Nimeoa/ nimeolewa   2 <br> Tumetengana   3 <br> Mtalaka   4 <br> Mjane   5 <br> Tunaishi pamoja bila   6 <br> Amekataa kujibu   88 | C7 |
| 22   Ni ipi kati ya haya yafuatayo yanaelezea vizuri kazi ambayo umekuwa ukifanya katika miezi 12 iliyopita? <br><br> (*TUMIA kadi ya kielelezo*) | Mtumishi wa Serikali   1 <br> Mtumishi asiye wa Serikali   2 <br> Nimejiajiri mwenyewe   3 <br> Kazi/shughuli bila malipo   4 <br> Mwanafunzi   5 <br> Shughuli za nyumbani   6 <br> Mstaafu   7 <br> Sina kazi (ana uwezo wa kufanya kazi)   8 <br> Sina kazi (hana uwezo wa kufanya kazi)   9 <br> Amekataa kujibu   88 | C8 |

| 23 | Ni watu wangapi wenye umri wa zaidi ya miaka 18 ukijumuhisha na wewe mwenyewe wanaoishi katika kaya yako? | Idadi ya watu ⌴⌴⌴ | C9 |
|---|---|---|---|
| 24 | Katika mwaka mmoja uliopita, naomba unitajie wastani wa mapato ya kaya yako ni kiasi gani? <br><br> *(JIBU MOJA TU)* | Kwa juma ⌴⌴⌴⌴⌴⌴⌴ *Nanda* <br> *swali T1* | C10a |
| | | AU Kwa mwezi ⌴⌴⌴⌴⌴⌴⌴ *Nenda* <br> *swali T1* | C10b |
| | | AU Kwa mwaka ⌴⌴⌴⌴⌴⌴⌴ *Nenda* <br> *swali T1* | C10c |
| | | Amekataa kujibu 88 | C10d |
| 25 | Ikiwa hufahamu ni kiasi gani , unaweza kutoa **makisio/makadirio** ya jumla ya mapato ya kaya yako kwa mwaka (kwa shilingi za kitanzania) ikiwa nitakusomea majibu yafuatayo? Je ni, <br><br> *(MSOMEE MAJIBU YOTE)* | ≤ 250,000  1 <br> Zaidi ya 250,000 ≤  2 <br> Zaidi ya 500,000 ≤  3 <br> Zaidi ya 750,000 ≤  4 <br> Zaidi ya 1,000,000  5 <br> Sifahamu  7 <br> Amekataa kujibu  88 | C11 |

## Step 1    Kipimo cha mwenendo wa tabia

### CORE: Utumiaji wa Tumbaku

Sasa nitakuuliza maswali yanayohusiana na tabia/mazoea mbalimbali yanayohusu afya. Haya yanahusisha masuala ya uvutaji sigara/tumbaku, unywaji wa pombe, ulaji wa matunda ma mbogamboga na mazoezi ya mwili. Tuanze na sigara/tumbaku.

| **Maswali** | | **Jibu** | **Code** |
|---|---|---|---|
| 26 | Je, kwa sasa unavuta aina yoyote ya tumbaku kama vile sigara, kiko, sigara ya kusokota n.k? | Ndio  1 <br> Hapana  2 *Kama Hapana, nenda T6* | T1 |
| 27 | **Kama Ndio,** <br> Kwa sasa unavuta sigara au tumbaku **kila siku**? | Ndio  1 <br> Hapana  2 *Kama Hapana, nenda T6* | T2 |
| 28 | Ulikuwa na umri gani ulipoanza kuvuta sigara kila siku **kwa mara ya kwanza**? | Umri (miaka) <br> Sikumbuki  777 ⌴⌴⌴ *Kama inafahamika, nenda T5a* | T3 |
| 29 | Unakumbuka ni muda gani uliopita? <br><br> *(JIBU MOJA TU)* <br><br> Sikumbuki  77 | Kwa miaka <br> ⌴⌴⌴ *Kama inafahamika, nenda T5a* | T4a |
| | | AU    kwa miezi <br> ⌴⌴⌴ *Kama inafahamika, nenda T5a* | T4b |
| | | AU    kwa majuma <br> ⌴⌴⌴ | T4c |
| 30 | Kwa wastani, unavuta **kiasi gani** kwa siku cha kila moja ya aina zifuatazo za tumbaku? | Sigara zinazotengenezwa viwandani ⌴⌴⌴ | T5a |

| | | | |
|---|---|---|---|
| | Sigara /tumbaku za kusokota kwa mikono | ⎣_⎦_⎦_⎦ | T5b |
| *(JAZA KWA KILA MOJA)* | Kiko kilichojazwa tumbaku/sigara | ⎣_⎦_⎦_⎦ | T5c |
| | Biri(Cigars) | ⎣_⎦_⎦_⎦ | T5d |
| Sikumbuki 77 | Aina nyingine ⎣_⎦_⎦_⎦ *Kama aina nyingine, nenda T5 other* | | T5e |
| | Aina nyingine (zitaje tafadhali): ⎣_⎦_⎦_⎦_⎦_⎦_⎦_⎦ | | T5 other |

| | |
|---|---|
| **Maswali ya nyongeza: Utumiaji wa Tumbaku** | |

| **Maswali** | | **Jibu** | **Code** |
|---|---|---|---|
| 31 | Hapo zamani, **ulishawahi** kuvuta sigara/tumbaku **kila siku**? | Ndio 1 <br> Hapana 2 *Kama Hapana, nenda T9* | T6 |
| 32 | **Kama Ndio**, ulikuwa na miaka mingapi **ulipoacha** kuvuta sigara/tumbaku **kila siku**? | Umri (miaka) <br> ⎣_⎦_⎦_⎦ *Kama inafahamika, nenda T9* <br> Sikumbuki 77 | T7 |
| 33 | **Ni muda gani umepita** tangu ulipoacha kuvuta sigara/tumbaku kila siku? <br><br> *(JIBU MOJA TU)* <br><br> Sikumbuki 77 | Miaka ⎣_⎦_⎦_⎦ *Kama inafahamika, nenda T9* | T8a |
| | | AU Miezi ⎣_⎦_⎦ *Kama inafahamika, nenda T9* | T8b |
| | | AU Majuma ⎣_⎦_⎦ | T8c |
| 34 | **Kwa sasa** unatumia aina yoyote ya tumbaku **isiyo ya kuvuta** kama vile ugoro, 'kuber' n.k.? | Ndio 1 <br> Hapana 2 *Kama Hapana, nenda* | T9 |
| 35 | **Kwa sasa, unatumia tumbaku isiyo ya kuvuta kila siku?** | Ndio 1 <br> Hapana 2 *Kama Hapana, nenda T12* | T10 |
| 36 | Kwa wastani, ni **mara ngapi kwa siku** unatumia | Ugoro wa kuweka kinywani ⎣_⎦_⎦_⎦ | T11a |
| | | Ugoro wa kunusa/kuvuta kwa pua ⎣_⎦_⎦_⎦ | T11b |
| | | Tumbaku ya kutafuna ⎣_⎦_⎦_⎦ | T11c |
| | *(JAZA KWA KILA MOJA)* | 'Kuber' ... ⎣_⎦_⎦_⎦ | T11d |
| | Sifahamu 77 | Aina nyingine ⎣_⎦_⎦_⎦ *Kama aina nyingine, nenda T11 other,kama sivyo nenda T13* | T11e |
| | | Aina nyingine (zitaje tafadhali) ⎣_⎦_⎦_⎦_⎦_⎦_⎦_⎦ *Nenda T13* | T11other |
| 37 | Hapo zamani, **ulishawahi** kutumia aina yoyote ya tumbaku isiyo ya kuvutakama vile ugoro, 'kuber' n.k. **kila siku**? | Ndio 1 <br> Hapana 2 | T12 |

| 38 | Ndani ya siku saba zilizopita, ni siku ngapi mtu mnayeishi naye ndani ya nyumba amevuta sigara ukiwepo? | Siku  |__|__| <br> Sijui 77 | T13 |
|----|----|----|----|
| 39 | Ndani ya siku saba zilizopita, ni siku ngapi mtu amevuta sigara kwenye eneo lisilo la wazi kazini ukiwepo? | Siku  |__|__| <br> Sijui au nafanya kazi kwenye eneo la wazi 77 | T14 |

## CORE:  Utumiaji wa Pombe/Vileo

Maswali yafuatayo yanauliza kuhusu utumiaji wa pombe/Vileo

| **Maswali** | **Jibu** | | **Code** |
|----|----|----|----|
| 40 | Je, umewahi kutumia kinywaji chenye kilevi (kama vile bia, mvinyo, pombe kali au pombe ya kienyeji) katika **miezi 12 iliyopita**? <br> *(TUMIA kadi ya kielelezo AU TOA MIFANO)* | Ndio | 1 <br><br> Hapana  2   *Kama Hapana, nenda D1* | A1a |
| 41 | Je umekunywa kinywaji chenye kilevi ndani ya miezi 12 iliyopita? | Ndio | 1 <br><br> Hapana  2   *Kama Hapana, nenda D1* | A1b |
| 42 | Katika miezi 12 iliyopita, **ni mara ngapi** umekunywa angalau kinywaji kimoja chenye kilevi? <br> *( MSOMEE MAJIBU, TUMIA kadi ya kielelezo)* | Kila siku <br> Siku 5-6 kwa juma <br> Siku 1-4 kwa juma <br> Siku 1-3 kwa mwezi <br> Chini ya mara 1 kwa mwezi | 1 <br> 2 <br><br> 3 <br><br> 4 <br><br> 5 | A2 |
| 43 | Umetumia kinywaji chenye kilevi (kama vile bia, mvinyo, pombe kali au pombe ya kienyeji) katika **siku 30 zilizopita**? <br><br> *(TUMIA kadi ya kielelezo AU TOA MIFANO)* | Ndio | 1 <br><br> Hapana  2   *Kama Hapana, nenda  D1* | A3 |
| 44 | Katika **siku 30** zilizopita, **ni mara ngapi** umekunywa angalau kinywaji kimoja chenye kilevi? | Mara | |__|__| <br> Sijui 77 | A4 |
| 45 | Katika siku 30 zilizopita, ulipokunywa kinywaji chenye kilevi, kwa makisio ulikunywa vinywaji vingapi (standard drinks) kwa mkupuo <br> (*TUMIA KADI YA KIELELEZO)* | Mara | |__|__| <br> Sijui 77 | A5 |
| 46 | Katika siku 30 zilizopita , ulipokunywa kinywaji chenye kilevi , ni kiasi gani **kikubwa** ulichokunywa (standard drink) siku uliyokunywa zaidi kwenye mkupuo mmoja ukijumlisha vinywaji vyote? | Idadi kubwa zaidi ya vinywaji | |__|__| <br> Sijui 77 | A6 |
| 47 | Katika siku 30 zilizopita, ni mara ngapi umekunywa Kinywaji chenye kilevi (standard drink); | Mara | |__|__| <br> Sijui 77 | A7 |

| | **Kwa wanaume**: 5 au zaidi<br>**Kwa wanawake**: 4 au zaidi ; kwenye mkupuo mmoja? | | |
|---|---|---|---|

| **EXPANDED: Alcohol Consumption** | | | |
|---|---|---|---|
| 48 | Katika siku 30 zilizopita ulipokunywa kinywaji chenye kilevi, ni mara ngapi ulikunywa pamoja na chakula? Tafadhali usihesabu milo ya katikati | Karibu mara zote   1<br><br>Mara chache   2<br><br>Kwa nadra   3<br><br>Sijawahi   4 | A8 |
| 49 | Katika **siku 7 zilizopita**, umekunywa vinywaji vingapi (standard drinks) vyenye kilevi katika kila siku ya wiki?<br><br><br>*(JAZA KWA KILA SIKU, TUMIA kadi ya kielelezo)*<br><br>Sifahamu 77 | Jumatatu ⌐_⌐_⌐ | A9a |
| | | Jumanne ⌐_⌐_⌐ | A9b |
| | | Jumatano ⌐_⌐_⌐ | A9c |
| | | Alhamisi ⌐_⌐_⌐ | A9d |
| | | Ijumaa ⌐_⌐_⌐ | A9e |
| | | Jumamosi ⌐_⌐_⌐ | A9f |
| | | Jumapili ⌐_⌐_⌐ | A9g |

| CORE:  Lishe |
| --- |

Maswali yafuatayo yanauliza kuhusu matunda na mbogamboga ambazo unakula mara kwa mara. Hapa nina kadi ya maelezo ya lishe yenye mifano ya matunda na mbogamboga zinazopatikana katika maeneo yako. Kila picha inawakilisha kipimo kimoja. Unapojibu maswali haya tafadhali fikiria wiki moja ya kawaida katika mwaka uliopita.

| **Maswali** | | **Jibu** | **Code** |
| --- | --- | --- | --- |
| 50 | Kwa kawaida ni siku ngapi ndani ya wiki moja unakula **matunda**? *(TUMIA SHOWCARD)* | Idadi ya siku   └─┴─┘   *Kama siku 0, nenda D3*  <br> Sifahamu 77 | D1 |
| 51 | Unakula matunda kipimo gani katika moja ya siku hizo? *(TUMIA SHOWCARD)* | Idadi ya vipimo   └─┴─┘  <br> Sifahamu 77 | D2 |
| 52 | Kwa kawaida ni siku ngapi ndani ya wiki moja unakula **mbogamboga**? *(TUMIA SHOWCARD)* | Idadi ya siku   └─┴─┘ *Kama siku 0, nenda  D5*  <br> Sifahamu 77 | D3 |
| 53 | Unakula mbogamboga kipimo gani katika moja ya siku hizo? *(TUMIA SHOWCARD)* | Idadi ya Vipimo   └─┴─┘  <br> Sifahamu 77 | D4 |

| EXPANDED: Lishe |
| --- |

| | | | |
| --- | --- | --- | --- |
| 54 | Ni aina gani ya **mafuta ya kupikia chakula** ambayo mnatumia mara kwa mara katika kaya yenu?  <br><br> *(TUMIA SHOWCARD ACHAGUE JIBU MOJA TU)* | Mafuta ya mimea   1 <br> Mafuta ya   2 <br> Mafuta yanayotokana na   3 <br> Margarine(Majarini)   4 <br> Aina nyingine   5   *Kama aina nyingine, nenda D5* <br> Hakuna aina   6 <br> Hatutumii mafuta   7 <br> Sifahamu   7 7 | D5 |
| | | Aina nyingine   └─┴─┴─┴─┴─┴─┴─┘ | D5other |
| 55 | Kwa wastani huwa unakula milo mingapi kwa wiki ambayo haijaandaliwa nyumbani? Mlo hapa ni kifungua kinywa, mlo wa mchana na ule wa jioni | Idadi ya milo  <br><br> └─┴─┘  <br><br> Sifahamu 77 | D6 |

| **CORE: Mazoezi ya viungo** |
|---|

Sasa nitaendelea kukuuliza kuhusu muda unaotumia kufanya shughuli mbalimbali zinazohusu mazoezi ya viungo katika wiki moja ya kawaida. Tafadhali ujibu maswali haya hata kama unadhani wewe si mtu wa kufanya mazoezi mara kwa mara.

Kwanza tafakari kuhusu muda unaotumia kufanya kazi. Tunaposema kazi tunamaanisha shughuli zozote unazofanya zikiwemo zinazokuingizia kipato na zisizokuingizia kipato, mfano kuvua samaki, masomo, shughuli za nyumbani, kilimo, kuvuna mazao, kutafuta kazi n.k. Katika kujibu maswali haya 'shughuli za kutumia nguvu – kasi sana ni shughuli ambazo zinahitaji nguvu nyingi na husababisha ongezeko kubwa katika kupumua au mapigo ya moyo, shughuli za kutumia nguvu-kasi kiasi ' ni shughuli zinazohitaji nguvu ya kiasi na husababisha ongezeko dogo katika kupumua na mapigo ya moyo

| **Maswali** | **Jibu** | **Code** |
|---|---|---|
| **Mazoezi wakati wa kazi** | | |
| 55 | Je, kazi yako inahusisha shughuli za kutumia nguvu ambazo zinaongeza kasi ya kupumua na mapigo ya moyo kama vile kubeba mizigo mizito, kumwaga zege, kupiga kokoto, kuchota maji, kusomba mazao, kilimo au kazi za ujenzi kwa angalau dakika 10 mfululizo? *(TUMIA SHOWCARD)* | Ndio  1 <br><br> Hapana  2  *Kama Hapana, nenda P 4* | P1 |
| 56 | Katika wiki ya kawaida, ni kwa siku ngapi unafanya shughuli hizo za kutumia nguvu nyingi katika kazi yako? | Idadi ya siku  └─┘ | P2 |
| 57 | Unatumia muda gani kufanya shughuli za nguvu katika siku moja ya kazi? | Masaa : dakika  └─┴─┴─┘ : └─┴─┴─┘ <br> masaa       dakika | P3 (a-b) |
| 58 | Kazi yako inahusisha shughuli za kutumia nguvu kiasi ambazo zinaongeza kidogo kasi ya kupumua na mapigo ya moyo kama vile kutembea kwa haraka, kubeba mizigo isiyo mizito, kudeki, kufagia, kuosha vyombo, kufua, kupika, kupiga pasi, kuvuna mazao kwa angalau dakika 10 mfululizo? *(TUMIA SHOWCARD)* | Ndio  1 <br><br> Hapana  2  *Kama Hapana, nenda  P 7* | P4 |
| 59 | Katika wiki ya kawaida, ni kwa siku ngapi unafanya shughuli hizo za kutumia nguvu kiasi katika kazi yako? | Idadi ya siku  └─┘ | P5 |
| 60 | Unatumia muda gani kufanya shughuli za nguvu kiasi katika siku moja ya kazi? | Masaa : dakika  └─┴─┴─┘ : └─┴─┴─┘ <br> masaa       dakika | P6 (a-b) |
| **Safari ya kwenda na kurudi toke sehemu moja hadi nyingine** | | |
| Maswali yafuatayo hayahusishi shughuli unazofanya wakati wa kazi ambazo umeshazitaja. <br> Sasa ningependa kukuuliza kuhusu aina ya usafiri unaotumia kwenda sehemu mbalimbali kama vile sokoni, shambani, kanisani, msikitini n.k. | | |
| 61 | Una kawaida ya kutembea kwa miguu au kwa kutumia baiskeli kwa angalau dakika 10 mfululizo wakati unapokwenda mahali fulani? | Ndio  1 <br> Hapana  2  *Kama Hapana, nenda P 10* | P7 |

| 62 | Katika wiki ya kawaida, unatumia siku ngapi kutembea kwa miguu au kwa kutumia baiskeli kwa angalau dakika 10 mfululizo wakati unapokwenda mahali fulani? | Idadi ya siku ⌊_⌋ | P8 |
|---|---|---|---|
| 63 | Unatumia muda gani kutembea kwa miguu au kwa kutumia baiskeli katika siku moja ya kawaida? | Masaa : dakika ⌊_⌋_⌋ : ⌊_⌋_⌋ <br> masaa     dakika | P9 (a-b) |

**Mazoezi wakati wa mapumziko**

Sasa nitakuuliza maswali yahusuyo shughuli mbalimbali unazofanya wakati wako wa mapumziko, kwa mfano mazoezi ya viungo, michezo mbalimbali n.k. Usijumuishe shughuli unazofanya wakati wa kazi au kusafiri ambazo umeshajitaja hapo awali.

| 64 | Una kawaida ya kushiriki katika shughuli za michezo au mazoezi ambazo zinaongeza kwa kiasi kikubwa kasi ya kupumua au mapigo ya moyo kama vile kukimbia, kuruka kichura, kuinama na kuinuka, kuruka viunzi, kucheza nmpira kwa angalau dakika 10 mfululizo? <br> *(TUMIA SHOWCARD)* | Ndio    1 <br><br> Hapana    2    *Kama Hapana, nenda P13* | P10 |
|---|---|---|---|
| 65 | Katika wiki ya kawaida, unatumia siku ngapi kufanya shughuli hizo za michezo au mazoezi? | Idadi ya siku ⌊_⌋ | P11 |
| 66 | Katika siku ya kawaida, unatumia muda gani kufanya shughuli hizo za michezo au mazoezi? | Masaa : dakika ⌊_⌋_⌋ : ⌊_⌋_⌋ <br> Masaa     Dakika | P12 (a-b) |

## CORE:  Mazoezi ya Viungo (Mazoezi wakati wa mapumziko) inaendelea....

| Maswali | | Jibu | Code |
|---|---|---|---|
| 67 | Una kawaida ya kushiriki katika shughuli za michezo au mazoezi ambazo zinaongeza kwa kiasi kidogo kasi ya kupumua au mapigo ya moyo kama vile kuendesha, baiskeli, kutembea, kuogelea, kuimba kwa vitendo kwa angalau dakika 10 mfululizo? <br> *(TUMIA SHOWCARD)* | Ndio    1 <br><br> Hapana    2    *Kama Hapana, nenda P16* | P13 |
| 68 | Katika wiki ya kawaida, unatumia siku ngapi kufanya shughuli hizo za michezo au mazoezi? | Idadi ya siku ⌊_⌋ | P14 |
| 69 | Katika siku ya kawaida, unatumia muda gani kufanya shughuli hizo za michezo au mazoezi? | Masaa : dakika ⌊_⌋_⌋ : ⌊_⌋_⌋ <br> Masaa Dakika | P15 (a-b) |

**EXPANDED: Physical Activity**

**Tabia ya kukaa pasipo kujishughulisha**

Swali lifuatalo linahusu muda uliotumia kukaa au kujinyoosha/kujiegemeza kujilaza wakati wa kazi, katika usafiri, kukaa na marafiki, kuangalia televisheni n.k. lakini bila kujumuisha muda uliotumia kulala. *(TUMIA SHOWCARD)*

| 70 | Kwa kawaida unatumia muda gani kukaa au kujinyoosha kujilaza katika siku moja mfano ukiwa unaangalia TV, unasikiliza redio, unasoma gazeti au vitabu nk? | Masaa : dakika ⌞_⌐_⌐_⌐⌟ : ⌞_⌐_⌐_⌐⌟<br>Masaa<br>Dakika | P16 (a-b) |
|---|---|---|---|

## CORE: Historia ya Ongezeko la Shinikizo la Damu

| Question | | Jibu | Code |
|---|---|---|---|
| 71 | Je umeshawahi kupimwa na daktari au mtaalam wa afya? | Ndiyo 1<br>Hapana 2 *kama hapana, nenda H6* | H1 |
| 72 | Je umeshawahi kuambiwa na daktari au mtaalam wa afya kuwa una shinikizo la damu, au presha yako iko juu kuliko | Ndiyo 1<br>Hapana 2 *kama hapana, nenda H6* | H2a |
| 73 | Je umeambiwa hivyo ndani ya miezi 12 iliyopita? | Ndiyo 1<br>Hapana 2 | H2b |

## EXPANDED: Historia ya Ongezeko la Shinikizo la Damu

| Maswali | | Jibu | Code |
|---|---|---|---|
| 74 | Kwa sasa unapata matibabu au ushauri kwa ajili ya ongezeko la shinikizo la damu kutoka kwa daktari au mtaalamu mwingine wa afya? | | |
| | Dawa au matibabu ambayo umetumia katika wiki 2 zilizopita | Ndio 1<br>Hapana 2 | H3a |
| | *Masharti maalum ya chakula* | Ndio 1<br>Hapana 2 | H3b |
| | Ushauri au matibabu ya kupunguza uzito | Ndio 1<br>Hapana 2 | H3c |
| | Ushauri au matibabu ya kuacha kuvuta sigara | Ndio 1<br>Hapana 2 | H3d |
| | Ushauri wa kuanza mazoezi au kufanya mazoezi zaidi | Ndio 1<br>Hapana 2 | H3e |
| 75 | Je umeshawahi kupata ushauri au kutibiwa na mganga wa jadi kuhusu ongezeko la shinikizo la damu? | Ndio 1<br>Hapana 2 | H4 |
| 76 | Kwa sasa unatumia aina yoyote ya mitishamba kwa ajili ya ongezeko la shinikizo la damu? | Ndio 1<br>Hapana 2 | H5 |

## CORE: Historia ya Kisukari

| Maswali | | Jibu | Code |
|---|---|---|---|
| 77 | Umewahi kupimwa kiwango cha sukari katika damu? | Ndio 1<br>Hapana 2 | H6 |
| 78 | Katika miezi 12 iliyopita, umewahi kuambiwa na daktari au mtaalamu mwingine wa afya kuwa una ugonjwa wa kisukari? | Ndio 1<br>Hapana 2 | H7a |
| 79 | Je umeambiwa hivyo ndani ya miezi 12? | Ndio 1<br>Hapana 2 | H7b |

## EXPANDED: Historia ya Kisukari

| 80 | Kwa sasa unapata matibabu au ushauri kwa ajili ya ugonjwa wa kisukari kutoka kwa daktari au mtaalamu mwingine wa afya? | | |
|---|---|---|---|
| | Insulini | Ndio 1 | H8a |
| | | Hapana 2 | |
| | Vidonge ambavyo umetumia katika wiki 2 zilizopita? | Ndio 1 | H8b |
| | | Hapana 2 | |
| | Masharti maalum ya chakula | Ndio 1 | H8c |
| | | Hapana 2 | |
| | Ushauri au matibabu ya kupunguza uzito | Ndio 1 | H8d |
| | | Hapana 2 | |
| | Ushauri au matibabu ya kuacha kuvuta sigara | Ndio 1 | H8e |
| | | Hapana 2 | |
| | Ushauri wa kuanza mazoezi au kufanya mazoezi zaidi | Ndio 1 | H8f |
| | | Hapana 2 | |
| 81 | Je umeshawahi kupata ushauri/kutibiwa na mganga wa jadi kuhusu kisukari? | Ndio 1 | H9 |
| | | Hapana 2 | |
| 82 | Kwa sasa unatumia aina yoyote ya mitishamba kwa ajili ya kisukari? | Ndio 1 | H10 |
| | | Hapana 2 | |

| Step 2 | Vipimo vya mwili visivyohusisha kutoa damu |
|---|---|

| CORE: Urefu na Uzito | | Jibu | Code |
|---|---|---|---|
| 83 | Utambulisho wa Mhojaji | └─┴─┴─┘ | M1 |
| 84 | Utambulisho wa vifaa vya kupimia Urefu na Uzito | Urefu └─┴─┘ | M2a |
| | | Uzito └─┴─┘ | M2b |
| 85 | Urefu | kwa Sentimeta(sm) └─┴─┴─┴─┘ . └─┘ | M3 |
| 86 | Uzito *Ikiwa uzito umezidi uwezo wa mizani andika 666.6* | kwa Kilogramu (kg) └─┴─┴─┘ . └─┘ | M4 |
| 87 | *(Kwa Wanawake)* Wewe ni mjamzito? | Ndio *1 Kama Ndio, nenda M 8* <br> Hapana *2* | M5 |

| CORE: Kiuno | | | |
|---|---|---|---|
| 88 | Utambulisho wa kifaa cha kupimia kiuno | └─┴─┴─┘ | M6 |
| 89 | Mzunguko wa Kiuno | kwa Sentimeta(sm) └─┴─┴─┴─┘ . └─┘ | M7 |

| CORE: Shinikizo la Damu | | | |
|---|---|---|---|
| 90 | Utambulisho wa Mhojaji | └─┴─┴─┘ | M8 |
| 91 | Utambulisho wa kifaa cha kupimia BP | └─┴─┘ | M9 |
| 92 | Ukubwa wa cuffitakayotumika | Ndogo 1 <br> Ya kati 2 <br> Kubwa 3 | M10 |
| 93 | Kipimo cha 1 | Sistoliki ( mmHg) └─┴─┴─┘ | M11a |
| | | Diastoliki (mmHg) └─┴─┴─┘ | M11b |
| 94 | Kipimo cha 2 | Sistoliki( mmHg) └─┴─┴─┘ | M12a |
| | | Diastoliki (mmHg) └─┴─┴─┘ | M12b |
| 95 | Kipimo cha 3 | Sistoliki ( mmHg) └─┴─┴─┘ | M13a |
| | | Diastoliki (mmHg) └─┴─┴─┘ | M13b |
| 96 | Katika wiki 2 zilizopita, umetumia dawa yoyote ya ongezeko la shinikizo la damu kama ulivyoandikiwa na daktari au mtaalamu mwingine wa afya? | Ndio 1 <br> Hapana 2 | M14 |

| EXPANDED: Mzunguko wa Nyonga na Kasi ya mapigo ya moyo | | | |
|---|---|---|---|
| 97 | Mzunguko wa Nyonga | kwa Sentimeta(sm) └─┴─┴─┴─┘ . └─┘ | M15 |
| 98 | Kasi ya mapigo ya moyo (Jaza ikiwa unatumia mashine ya BP ya automatiki) | | |
| | Kipimo cha 1 | Mapigo kwa dakika └─┴─┴─┘ | M16a |
| | Kipimo cha 2 | Mapigo kwa dakika └─┴─┴─┘ | M16b |

| | | | |
|---|---|---|---|
| | Kipimo cha 3 | Mapigo kwa dakika ⎿_⎿_⎿_⏌ | M16c |

## Step 3      Vipimo vya mwili vinavyohusisha kutoa damu

| **CORE: Sukari katika Damu** | **Jibu** | **Code** |
|---|---|---|
| 99 | Ndani ya masaa 12 yaliyopita, umekula au kunywa kitu chochote zaidi ya maji? | Ndio   1<br>Hapana   2 | B1 |
| 100 | Utambulisho wa Mpimaji | ⎿_⎿_⎿_⏌ | B2 |
| 101 | Utambulisho wa kifaa cha kupimia | ⎿_⎿_⏌ | B3 |
| 102 | Muda kipimo kilipochukuliwa (kwa masaa 24) | Masaa : dakika   ⎿_⎿_⎿_⏌ : ⎿_⎿_⎿_⏌<br>           masaa     dakika | B4 |
| 103 | Kiwango cha sukari katika damu kabla ya kula | mmol/l   ⎿_⎿_⎿_⏌ . ⎿_⎿_⏌ | B5 |
| 104 | Kwa siku ya leo, je umetumia dawa yeyote ya kisukari uliyopewa na mtumishi wa afya kama insulin au vidonge vya kushusha sukari? | Ndiyo   1<br><br>Hapana   2 | B6 |
| **CORE: Mafuta katika damu** | | |
| 105 | Utambulisho wa kifaa cha kupimia | ⎿_⎿_⎿_⏌ | B7 |
| 106 | Lehemu | mmol/l   ⎿_⎿_⎿_⏌ . ⎿_⎿_⏌ | B8 |
| 107 | Katika wiki mbili zilizopita, je umetumia dawa yeyote ya vidonge uliyopewa na mtumishi wa afya vya kushusha kiasi cha lehemu kwenye damu? | Ndiyo   1<br><br>Hapana   2 | B9 |
| **Expanded: Mafuta katika damu** | | |
| 108 | Triglycerides: *mmol/l* | mmol/l   ⎿_⎿_⎿_⏌ ⎿_⎿_⎿_⏌ | B10 |

## TOBACCO SHOW CARDS

Manufactured cigarettes- Sigara

Roll-your-own (RYO) cigarettes- Sigara ya kusokota mwenyewe

Snuff, available in wet and dry form- Ugoro wenye maji au mkavu

Cigars, e.g., cigarillos, double coronas, cheroots, stumpen, chutts and dhumtis- (biri)
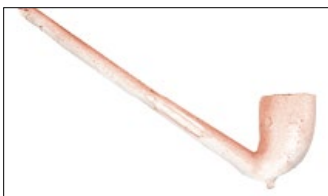
Pipe- Kiko

## Alcohol Consumption-(Matumizi ya Pombe)

Chupa  moja ya bia ya kawaida (285ml)) kwa mfano bia ya Heineken  = kipimo 1



Chupa moja ya bia kwa (500mls) = Vipimo 2          lita moja ya pombe ya kienyeji = Vipimo  4





Chupa moja ya Konyagi(500msl)          Gilasi moja ya ujazo wa kati  (120mls)

ya mvinyo= kipimo 1

= Vipimo 17

One bag of
Konyagi= 3 units

1 Single of spirits or gongo (30ml)= One "Toti" =1 unit

| VEGETABLES ARE CONSIDERED TO BE: | 1 SERVING (STANDARD) | EXAMPLES |
|---|---|---|
| Raw green leafy vegetables |   **1 cup** | Spinach, salad, etc. |
| Other vegetables, cooked or chopped raw | **½ Cup** | Tomatoes, carrots, pumpkin, corn, Chinese cabbage, fresh beans, onion, etc. |
| Vegetable juice (undiluted) | **½ Cup** | |
| **FRUIT** **Is considered to be:** | | |
| Cucumber (Matango) | **1 medium size piece** |  |
| Banana (Ndizi) | **1 medium size piece** **or 2 small bananas(ndizi kisukari)** |  |
| Orange (Chungwa) | **1 medium size piece** |  |

| | | |
|---|---|---|
| Mango (Embe) | **1 medium size piece** |  |
| Watermelon (Tikiti maji) | **¼ Kipande cha tikiti maji (134g)** |  |
| Avocado (Parachichi) | **1 small size (parachichi dogo) (110 g)** |  |
| Paw paw (Papai) | **¼ piece (¼ kipande) (120g)** |  |
| Pineapple (Nanasi) | **¼ piece** |  |
| Chopped, cooked, canned fruit | **½ cup** | |
| Fruit juice | **½ cup** | Juice from fruit, not artificially flavoured |

Standard serving = 80 grams (translated into different units of cups depending on type of vegetable and standard cup measures available in the country).

**WHO Recommendation** at least: • 400 grams of vegetables and fruits per day, or • Five servings of 80 grams each.

**Note:** Tubers such as potatoes and cassava should not be included.
**Kumbuka**: vyakula vya mizizi kama viazi na mihogo visijumuishwe kama matunda

**Physical Activity (Mazoezi ya viungo)**

VIGOROUS PHYSICAL ACTIVITY AT WORK- MAZOEZI WAKATI WA KAZI (SHUGHULI ZINAZOTUMIA NGUVU NYINGI). EXAMPLES FOR VIGOROUS ACTIVITIES AT WORK(MFANO WA KAZI ZINAZOTUMIA NGUVU NYINGI)





OTHER EXAMPLES FOR VIGOROUS

**VIGOROUS Intensity Activities(shughuli zinazotumia nguvu nyingi)**

Make you breathe <u>much</u> harder than normal (shughuli hizi hufanya mtu apumue sana kuliko kawaida)

- Forestry (cutting, chopping, carrying wood)- Misituni (kukata miti, kupasua kuni na kubeba mbao)
- Sawing hardwood- Kuranda mbao
- Ploughing-kulima/kupalilia
- Cutting crops (sugar cane)-kukata mazao kama miwa
- Gardening (digging)- kulima bustani
- Grinding (with pestle) – kutwanga kwenye kinu
- Labouring (shovelling sand)- kazi za ujenzi kama kuchota / kusomba mchanga, kubeba matofali , mifuko ya sementi nk, kuponda kokoto
- Loading furniture (stoves, fridge)- kubeba mizigo mzito, mfano kubeba samani, magunia mazito
- Shughuli za majini- Kupiga kasia

MODERATE PHYSICAL ACTIVITY AT WORK- SHUGHULI ZA KAZI ZINAZOTUMIA NGUVU KIASI.    EXAMPLES FOR MODERATE ACTIVITIES AT WORK (MFANO WA SHUGHULI ZA KAZI ZINAZOTUMIA NGUVU KIASI

**MODERATE Intensity Activities(kazi zinazotumia nguvu kiasi)**
Make you breathe somewhat harder than normal (shughuli hizi humfanya mtu apumue kuliko kawaida)

• Cleaning (vacuuming, mopping, polishing, scrubbing, sweeping, ironing)- kazi za usafi kama kufagia, kupiga deki, kusugua sakafu au kuta, kunyoosha nguo, kufua

• Gardening- Kazi za bustani

• Milking cows (by hand)- kukamua ng'ombe

• Planting and harvesting crops- Kupanda au kuvuna mazao

• Digging dry soil (with spade)-

• Weaving – kusuka mkeka

• Woodwork (chiselling, sawing softwood)- Kazi ndogo ndogo za useremala

• Mixing cement (with shovel)- Kuchanganya sementi

• Labouring (pushing loaded wheelbarrow, operating jackhammer)- kusukuma mkokoteni

• Walking with load on head- Kubeba mizigo yenye uzito kiasi

• Drawing water- kuchota maji

Tending animals- kuchunga mifugo

Shughuli za uvuvi

VIGOROUS PHYSICAL ACTIVITY DURING LEISURE TIME- MAZOEZI YA KUTUMIA NGUVU NYINGI WAKATI WA MUDA WA KUPUMZIKA.

## EXAMPLES FOR VIGOROUS ACTIVITIES DURING LEISURE TIME

Mifano ya mazoezi ya kutumia nguvu nyingi wakati wa muda wa kupumzika

**VIGOROUS Intensity Activities(Mazoezi ya kutumia nguvu nyingi)**

Make you breathe <u>much</u> harder than normal (michezo hii hufanya mtu apumue sana kuliko kawaida)

- Soccer – mpira wa miguu
- Rugby- mpira wa ragbi
- Tennis- mpira wa tenis
- Netball-Mpira wa netiboli
- Fast swimming- kuogelea kwa kasi
- Running- Kukimbia

Moderate Physical Activity during Leisure Time - mazoezi ya kutumia nguvu kidogo wakati wa muda wa kupumzika

**MODERATE Intensity Activities(Mazoezi ya kutumia nguvu kidogo)**
Make you breathe <u>somewhat</u> harder than normal (michezo hii hufanya mtu apumue zaidi kuliko kawaida)

- Cycling- Kuendesha baiskeli
- Jogging – kukimbia mchaka mchaka
- Dancing – kucheza muziki
- Kucheza mchezo wa pool
- Kucheza bao
-

**Low Physical Activity during Leisure Time**



**LOW INTENSITY activities during LEISURE TIME**

Ni kukaa au kujinyosha kwa mfano:

- Watching TV- kuangalia TV
- Sitting- kukaa tu
- Laying down- kulala
- Playing cards- kucheza karata, bao
- Reading- kusoma
- Plaiting/braiding hair- kusuka nywele
- Decorating with henna- kuapaka hina
- Weaving (tradition mats and baskets)- kushona mikeka

# STEPS SURVEY PROPOSAL
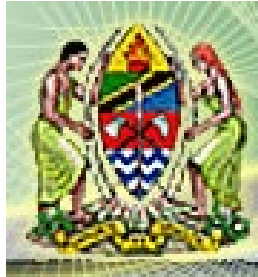


# MINISTRY OF HEALTH AND SOCIAL WELFARE TANZANIA

# November 2010

# Executive Summary

**Introduction**   Non communicable diseases (NCDs) are increasing at a steady rate in developing countries such as Tanzania. Studies done in Tanzania and anecdotal evidence have shown that the prevalence NCDs and related risk factors; hypertension, obesity, low physical activity are high especially in urban areas and in certain high risk groups. Primary prevention through targeting the risk factors has been identified as the cost effective intervention for the control of the rising burden of NCDs. The World Health Organization STEPS survey is one of the organisations' strategies to combat NCDs in developing, resource poor countries. Currently there is paucity of data regarding the magnitude of NCDs especially in African countries and therefore priority in terms of resources are being given to other diseases and conditions that are deemed of high importance as NCDs are still regarded as diseases of the western countries. We propose to carry out STEPS survey to collect local up-to-date evidence on the prevalence of selected NCDs and related behavioural and physical risk factors for advocating for resources and planning targeted NCD interventions. Presented below is the proposed scope of work, aims and objectives, and the resources needed for carrying out the survey

**Current Situation**   Tanzania has already done steps survey in 4 out of the 5 planned districts from 2007. However data is currently unavailable as the survey is not yet complete

**Goals**   The goal of carrying out this survey is to collect national representative data on the major NCD risk factors. The data will highlight factors that need to be targeted for NCD prevention and control. Also to provide information on the levels of these risk factors which can be used as indicators in evaluating NCD prevention interventions.

**Scope**   It is envisaged that a national representative national wide survey will be carried out. Data on the levels of major NCD risk factors will be carried out up to level three of STEPS

**Resources**   A number of people including 2 statisticians have been trained on STEPS survey methodology. The Country has implemented a STEPS survey before although incomplete. The experience gained and the lessons learnt through the implementation of the previous STEPS study

will be invaluable in the implementation of the proposed survey. Currently there are no funds that have been committed for carrying out the proposed survey. There is also limited capacity in terms of equipments for carrying out the survey.

**Budget**   The Total estimated budget is **177,785 USDs**

# Current Situation

**Introduction**   Non communicable diseases (NCDs) are increasing at a steady rate in developing countries such as Tanzania. Literature has shown than non communicable diseases have their origin in various risk factors that are embedded in lifestyle in addition to the genetic predispositions. These risk factors include; sedentary lifestyle, unhealthy diet, excessive alcohol consumption, and smoking.

According to the International Diabetes Atlas[1] the prevalence of diabetes is estimated to be 2-3% and higher prevalence of up to 5% has been reported in urban areas of Tanzania[2]. The prevalence of risk factors; hypertension, obesity, low physical activity has also been reported to be high[2].

Limited information exists from the Adult Morbidity and Mortality (AMMP) Demographic health surveys (DSS sites) i.e Dar es salaam city, Hai and Morogoro. These sites have demonstrated that the risk of dying from non-communicable diseases during adulthood (15-59 years) is considerably high in Tanzania compared to developed countries. For instance, the contribution of diabetes to all-cause mortality in adult males was 0.7%, 2.1% and 2.6% in Morogoro Rural, Hai and Dar es Salaam respectively[3, 4].

Information on the risk factors has also been scarce. A study done in Dar es Salaam in 1999 showed that risk factors like obesity, hypertension among the study participants were high. The reported age-adjusted prevalence for BP ≥140/90 mmHg or antihypertensive medication among men and women aged 35–64 years was 27.1% and 30.2 respectively. The prevalence of overweight (BMI of 25.0–29.9 kg/m2) was 28.0% and 27.4% and Obesity (BMI ≥30 kg/m2) was 6.9% and 7.4% for men and women respectively. Furthermore the prevalence of smoking (≥1 cigarette per day) was 22.0% among men and 2.6% women [5]. Other similar studies have also demonstrated high prevalence of cardiovascular risk factors in Tanzania[6, 7]. Although this information is important, it represents only a small part of Tanzania and hence can not be generalized to the whole country for initiating comprehensive NCDs prevention and control strategies and

interventions. In addition this information comes from studies that were done more than a decade ago and therefore highly outdated.

Primary prevention through targeting the risk factors has been identified as an effective intervention for the control of the rising burden of NCDs[8-11]. In addition to the WHO global strategy for the prevention and control of NCDs[12], STEPS survey is one of the organisations' strategies to combating NCDs in developing resource poor countries. Currently there is paucity of data regarding the magnitude of NCDs especially in African countries and therefore priority in terms of resources are given to other diseases and conditions that are deemed of high importance. We propose to carry out STEPS survey to collect local up-to-date evidence on the prevalence of selected NCDs and related behavioral and physical risk factors for advocating for resources and planning targeted NCD interventions.

In 2006, Tanzania developed a plan approach for assessing risk factors for NCDs using the WHO Steps approach, which covered STEPS 1 and 2 and STEP 3 only in a subset of study participants due to limited resources. The study was planned to be carried out in five districts, but only 4 districts were covered by 2010. The planned sample size was 2200 and was deemed insufficient and could not be completed in time. It was recommended to plan for a new round of STEPS survey at a WHO meeting in Zanzibar.

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**Previous risk factor surveys**

A previous survey has been done in the following region of Tanzania shown in Table below. How ever the survey has not yet been completed to date in the last proposed district of Lindi due to various challenges including lack of funding as there were no funds already committed for the completion of the survey.

| Region | Scope | Sample | Source of funds |
|---|---|---|---|
| Tanga | STEPS 1&2 | 419 | WHO country office |
| Iringa - Kilolo | STEPS 1&2 and subset STEP 3 | 383 | MOH Tanzania |
| Mwanza-Nyamagana | STEPS 1&2 and subset STEP 3 | 529 | DANIDA |
| Kigoma | STEPS 1&2 and subset | | WDF |

| | STEP 3 | | |
|---|---|---|---|
| Lindi | | | |

**Data availability**

No representative data. Previous survey had inadequate sample size and not
Yet completed

**Infrastructure and capacity**

A team has already been trained on steps survey methodology including 2 statisticians. Part of the trained team carried out the first round of STEPS in the country therefore has experience with carrying out such kinds of studies. The ministry has also identified a STEPS coordinator and plans are underway to form a STEPS committee to ensure successful coordination and implementation of the survey. In addition, the STEPS questionnaire and other tools like the show cards have already been adapted and translated to the local language. However there is little capacity in terms of the other equipments need

**Rationale**

NCDs have their origin in common risk factors that prevail for a while before the diseases themselves occur. The key to controlling the global epidemics of chronic diseases is primary prevention based on comprehensive population-wide programmes. The basis of chronic disease prevention is the identification of the major common risk factors and their prevention and control in order to avert these epidemics wherever possible and to control them as quickly as possible where they are already present. The prevention and control programs /intervention should reflect the actual epidemiological pattern existing in the communities concerned. WHO STEPS
NCD surveillance approach is a necessary tool in designing prevention and control programs with measurable outcomes. We therefore propose to carry out STEPS survey in Tanzania to collect data on risk factors to assist with developing targeted programs and monitoring interventions on NCDs. In addition since STEPS survey uses standardized tools the data will be useful to make comparisons over time and across countries and different regions of the Country. The data will also useful in predicting future burden of chronic diseases and also monitoring and evaluating NCD population-wide interventions.

# Goals and Objectives

**Introduction** The goals and objectives of this survey are to address the need for national data on the burden of NCDs bearing in mind the need to establish an ongoing national NCD risk factor surveillance system. In addition it takes into account the need to conform to the recommended methods to generate comparable data for global surveillance. The goals and objectives of the proposed study are as outlined below

**Goals** To Describe the current levels of risk factors for chronic diseases in the Tanzanian population

To Collect data from which to predict likely future demands for health services

**Objectives**
1. To document the national prevalence and patterns of tobacco use, alcohol consumption, dietary behavior, physical activity, body mass index, elevated blood pressure, and biochemical markers such as blood glucose and blood lipids among those aged 25-64 years.
2. To generate country data on NCDs and related risk factors using WHO recommended approach that can be used to compare with other countries
3. To provide reliable and valid information for planning and evaluating public health interventions and to collect data from which to predict likely future demands for NCDs
4. To generate baseline data that will be used to track the direction and magnitude of trends in risk factors
5. To further adapt the WHO STEPS tools, and to document the process of data collection and field work experiences that can be used to set the benchmark for future surveys

# Scope

**Introduction** It is proposed that the survey include the three different levels of steps from assessment of behavioural risk factors, physical measurements and

biochemical measurements. It should be noted that the coverage of STEP 3 in the survey will depend on the availability of resources

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**Overview of scope**

Step 1 (core and expanded) , step 2 (core and expanded) and step 3 (core) are expected to be used in this survey.  A total of 5762 participants aged 25-64 years old will be enrolled for the survey. Interview, physical measurements and blood tests will be done to gather data for Step 1-3. Step 1 will be used to    collect information on socio-demographic trends, tobacco use, alcohol consumption, dietary behaviour and physical activity history of diabetes, history of cholesterol, and family history of chronic diseases. Step 2 is for physical measurements,    is undertaken to determine proportion of overweight and/or obeserespondents and raised blood pressure. The physical measurements that will be measured are blood pressure, height, and weight and waist circumference. Step 3, a biochemical measurement step. It will be undertaken in clinic setting. The core tests that will be done are blood sugar and total blood cholesterol, if the resources allow the following expanded measurements will be undertaken triglycerides, HDL Cholesterol (low level). The following equipments will be used to collect data for step 2 and 3: BP machine, tape measures, HB machine, beam balance, ruler and blood glucose and cholesterol meters and strips

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**Sample size**

In order to ensure a sufficient level of precision of the survey results, an adequate sample size must be drawn from the target population. The following factors/variables were used to calculate the sample size:
  a) Confidence level($\alpha$) of the survey results = 5%
  b) Margin error(e)of the survey = 0.05
  c) Design effect (Deff.) of the methodology = 1.5
  d) Baseline levels of the prevalence(P) of hypertension = 0.5
  e) Number of age – sex estimates = 8
  f) Anticipated non-response = 20%
  **Note:** The value of e, Deff., prevalence and anticipated non-response are generic because there is no representative previous information for these parameters.

From the simple random formula for sample size calculation:
n =$Z^2$ P (1-P)/$e^2$
By substituting the statistics on the formula; then the sample size is 384.16
Multiply the above value by 8 (the number of age-sex) and 1.5

the (Deff.) then divide the obtained value by 0.8 (non-response rate)
Then the survey sample size of the individual respondents is 5762≈ 5770.

**Sampling Procedures**
This study will employ both multistage cluster and randomly probability sampling procedures. In this case the districts will serve as the PSU; in Tanzania there 119 districts the recommended sampling frame for PSU is >100 PSU to ensure that at least 50-100 of them can be selected. For each selected district a sampling frame comprising a list of EAs (SSU) will be created with the target population of each EA. Before making a sampling frame, an EA with less than 50 households will be merged with the EA which is nearby. All special (schools, college, hospitals, hotels, barracks, college, temporal camps etc) EAs will be excluded from the sampling frame

For each selected EA, a tertiary sampling frame will be created, which will comprise a list of households in the EA. These EAs and their respective maps will be bought from the National Bureau of Statistics (NBS). Sampled EAs will be then updated to obtain the actual current number of households per EA. Households listing stage is important because the EAs were last updated during the national census of year 2002, i.e. eight years ago. It will also help to identify blanks/empty houses that will be deleted before household sampling; at the same time it will help to identify eligible households. Eligible household for step survey is a household with a member aged 25-64 years. The list of updated households per EA will be then subjected to random selection procedure to obtain households for inclusion. Kish method will be employed at each selected household to obtain one respondent per household from the list of eligible household members. The household will be treated as the secondary sampling units (SSU). In this steps survey they will be no tertiary sampling unit (TSU).

For each of these steps, the WHO STEPS sampling spreadsheet will be used to sample the various units. The sample for this study is 5770, due to scarce resource a total of 50 PSUs will be sampled from a sampling frame of 119 PSUs (districts). Then the number of individuals to be sampled per PSU is 5770/50 = 115, if the number of households (TSU) to be sampled per EA (SSU) is 24 then the number of SSU per PSU will be 115/24 = 5 EAs. Therefore sample calculation will be 50 x 5 x 24 = 6000 individuals[13].

| PSU - District | | SSU- Enumeration area | | Household |
|---|---|---|---|---|
| •50 out of 119 will be selected | → | •5 EAs will be selected per district | → | •24 households will be selected per EA |
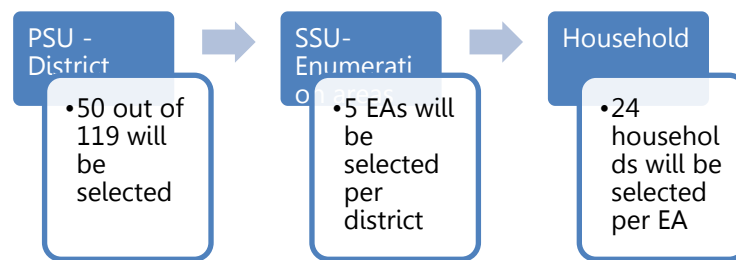
**Figure 21: Sampling process**

**Geographical coverage**

The survey will have a National coverage

**Timeframe**

| Activity | Estimated duration for the activity |
|---|---|
| Planning | 2 weeks |
| Recruitment and training | 4 weeks |
| Data collection | 12 weeks |
| Data entry | 6 weeks |
| Analysis and Report writing | 4weeks |

**Sustainability and future surveys**

Currently there is no funding yet secured for future surveys, however the Ministry of Health and Social Welfare plans to make the surveillance of NCD risk factors an ongoing process. The implementation of this survey is seen as an opportunity to secure funding for future STEPS studies, since the results will be used to advocate for more resources to be allocated in this area. Once the capacity for STEPS is established (workforce and infrastructure) it is envisaged that the Ministry will be able to attract potential collaborators for future surveys. The plan is to conduct STEPS surveys every 4 to 5 years.

# Resources

**Introduction**

The resources needed were suggested based on the recommendations made by WHO and bearing in mind the proposed scope of work. The number of the research team was calculated based on the proposed sample size. Laboratory requirements were estimated given the assumption that dry biochemistry methods will be used to measure blood sugar and lipids.

**Personnel required**

With the proposed sample size an estimated total number of supervisors and research assistants is 36

**Equipment**

The following equipments will be used to collect data for step 2 and 3: BP machine, tape measures, HB machine, beam balance, ruler and blood glucose and cholesterol meters and strips. In addition the following standard WHO tools for steps survey will be also used in ensuring that quality of data is collected in the field: shows cards, two consent forms (one for step 1&2 and the second for step 3), interview tracking form, participant information form, clinic appointment card, fasting instruction form, Kish household coversheet, clinic registration form, biochemical measurement form (step 3), blood collection form (step 3), BMI classification chart, clinic appointment card (step 3), notification of WHO steps surveillance visit, participant feedback form (step 2 & 3).

**Facilities**    It is proposed that STEP 3 measurements will be carried out at a local health facility.

**Resources already committed**    Currently there are no resources yet committed for    implementation of the survey how ever WHO had expressed willingness to support the proposed study

**Resources required from other organizations**    The planning assistance from WHO is needed for successful implementation of the study. Technical assistance will also be sought especially at the data management stage. Financial assistance from WHO is also crucial as there are no funds yet committed in the country for the survey

# Action Plan

**Introduction**    The action plan provides an estimated start dates and timeframes for completion of each phase. Will be used as a guide to monitor achievements against the planned milestones during implementation of the survey

**Plan**

| Activity | Month 1 | | | | Month 2 | | | | Month 3 | | | | Month 4 | | | | Month 5 | | | | Month 6 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Weeks | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Planning | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | |
| Recruitment and training | | | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | |
| Data collection | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| Data entry | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| Analysis and reporting | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | |

# Communication Strategy and Publicity

**Introduction**

It is important to raise public awareness of Non communicable diseases, and the rationale for carrying out the survey to improve the response rate and ensure their full participation of respondents in the study

**Publicity plan**

The public sensitization plan will involve media campaigns (TVs and Radio) and using local community leaders including religious leaders, local administrative personnel eg Village Executive Officers (VEO) and respected community elders. The sensitization messages will cover the following;

- NCDs and associated risk factors
- The burden of NCDs
- The consequences if the problem is not addressed
- The STEPS survey
- The process of selection of subjects
- The need of household lists
- Methods of data collection
- The benefits of taking part in the survey

# Reporting and Disseminating Results

**Introduction**

The information from the study will be disseminated to ensure that the results of and the recommendations can be utilized. Once the data has been analyzed the results will be disseminated to the intended stakeholders. The structure and format used for the dissemination will depend on the intended audience. Different dissemination strategies are outlined below.

**Reporting**

Data entry will be done on Epidata templates which will be downloaded from WHO website. Later the data will exported either on Epi-info Version 3.1.1 or SPSS Version 15 for data cleaning and analysis. The results will present on tables and graphs. The level of significance testing difference or relationship between variables will be 5%. Probability distribution like chi-squire and F-test will also applied during testing association between variables. Standard outputs like

national fact sheets and data books will be produced. In addition to the standard STEPS report, dissemination of findings will be done using these strategies;

- Dissemination of the STEPS findings and recommendations to the policy-makers will be done by production of policy briefs using less technical language to reach a wider audience
- Dissemination of the STEPS findings and recommendations to the public through the media and community forums to raise awareness of NCDs and their related risk factors
- Dissemination of the STEPS findings to the scientific community through presentations at key national and international scientific meetings and through peer-reviewed publications

# Budget

**Introduction**     This section provides the estimation of the total funds required to implement all STEPS activities as identified in the scope, source of funds, funds already committed and the funding gap. Below is the summary of the total estimated costs if we conduct up to STEP 3 survey, alternative budgets is also provided for the different levels of STEPS incase we fall short of resources. For detailed budget and item breakdown, refer to the attached budget in the appendix.

**Budget**

| Proposed scope of survey | Cost (USD) | Available (USD) | Deficit (USD) |
|---|---|---|---|
| STEP 3 | 177,785 | 0 | 177,785 |

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    Section 2: Preparing the sample WHO STEPS Surveillance

# TANZANIA STEPS Survey-2012

## Fact Sheet

The STEPS survey of chronic disease risk factors in Tanzania was carried out in phases from February to October 2012 .Tanzania carried out Step 1, Step 2 and Step 3. Socio demographic and behavioral information was collected in Step 1. Physical measurements such as height, weight, waist and hips circumference and blood pressure were collected in Step 2. Biochemical measurements were collected to assess blood glucose and cholesterol levels (TC and TG) in Step 3. The STEPS survey in Tanzania was a population-based survey of adults aged 25-64. A multistage cluster sampling design was used to select representative sample for that age range. A total of 5680 adults participated in the Tanzania STEPS survey. The overall response rate was 94.7%. A repeat survey is planned for 2016 if funds permit.

| Results for adults aged 25-64 years (incl. 95% CI) | Both Sexes | Males | Females |
|---|---|---|---|
| **Step 1   Tobacco Use** | | | |
| Percentage who currently smoke tobacco | 14.1% (12.4%-15.8%) | 26.0% (23.1%-28.9%) | 2.9% (1.7%-4.1%) |
| Percentage who currently smoke tobacco daily | 11.8% (10.2%-13.4%) | 22.2% (19.7%-24.7%) | 2.0% (0.7%-3.2%) |
| Percentage of current tobacco users (smoke and smokeless tobacco) | 15.9% (14.0%-17.9%) | 28.0% (25.1%-30.9%) | 4.5% (3.3%-5.6%) |
| *For those who smoke tobacco daily* | | | |
| Average age started smoking (years) | 21.9(21.0-22.8) | 21.8(21.1-22.5) | 22.4(17.8-27.0) |
| Percentage of daily smokers smoking manufactured cigarettes | 79.8% (72.6%-87.0%) | 81.2% (74.9%-87.5%) | 64.8% (32.6%-96.9%) |
| Mean number of manufactured cigarettes smoked per day (by smokers of          manufactured cigarettes) | 5.1(4.0-6.1) | 4.9(4.3-5.5) | 6.7(0.0-13.8) |
| **Step 1   Alcohol Consumption** | | | |
| Percentage who are lifetime abstainers | 51.0% (47.6%-54.4%) | 43.1% (37.9%-48.3%) | 58.5% (55.0%-62.0%) |
| Percentage who are past 12 month abstainers | 8.1% (6.7%-9.7%) | 11.3% (8.4%-14.2%) | 11.6% (9.8%-13.3%) |
| Percentage who currently drink (drank alcohol in the past 30 days) | 29.3% (26.8%-31.9%) | 38.3% (35.1%-41.6%) | 20.9% (18.2%-23.6%) |
| Percentage who engage in heavy episodic drinking (men who had 5 or more / women who had 4 or more drinks on any day in the past 30 days) | – | 27.4% (23.7%-31.1%) | 13.4% (11.4%-15.4%) |
| **Step 1   Fruit and Vegetable Consumption (in a typical week)** | | | |
| Mean number of days fruit consumed | 2.5(2.2-2.8) | 2.2(2.1-2.4) | 2.8(2.3-3.2) |
| Mean number of servings of fruit consumed on average per day | 0.7(0.6-0.8) | 0.6(0.5-0.7) | 0.8(0.6-0.9) |
| Mean number of days vegetables consumed | 4.5(4.3-4.7) | 4.3(4.0-4.7) | 4.7(4.5-4.8) |
| Mean number of servings of vegetables consumed on average per day | 1.0(0.97-1.1) | 1.0(0.9-1.1) | 1.0(0.96-1.1) |
| Percentage who ate less than 5 servings of fruit and/or vegetables on average per day | 97.2% (96.3%-98.1%) | 97.3% (96.0%-98.6%) | 97.1% (96.0%-98.3%) |
| **Step 1   Physical Activity** | | | |

| | Both Sexes | Males | Females |
|---|---|---|---|
| Percentage with low levels of activity (defined as < 600 MET-minutes per week)* | 7.5% (6.0%-9.0%) | 7.2% (5.6%-8.7%) | 7.8% (5.5%-10.1%) |
| Percentage with high levels of activity (defined as ≥ 3000 MET-minutes per week)* | 83.3% (80.1%-86.0%) | 86.3% (83.2%-89.3%) | 80.5% (77.2%-83.7%) |
| Median time spent in physical activity on average per day (minutes) (presented with inter-quartile range) | 330.0 (180.0-492.9) | 370.0 (214.3-527.1) | 287.1 (137.1-462.9) |
| Percentage not engaging in vigorous activity | 32.4% (29.1%-35.7%) | 23.1% (20.1%-26.0%) | 41.4% (36.8%-46.0%) |
| **Results for adults aged 25-64 years (incl. 95% CI)** | **Both Sexes** | **Males** | **Females** |
| **Step 2    Physical Measurements** | | | |
| Mean body mass index - BMI (kg/m$^2$) | 22.9 (22.7-23.2) | 21.6 (21.3-22.0) | 24.3 (23.8-24.8) |
| Percentage who are overweight (BMI ≥ 25 kg/m$^2$) | 26.0% (22.5%-28.4%) | 15.1% (12.7%-17.6%) | 37.1% (31.6%-42.6%) |
| Percentage who are obese (BMI ≥ 30 kg/m$^2$) | 8.7% (7.3%-10.1%) | 2.5% (1.5%-3.5%) | 15.0% (12.4%-17.7%) |
| Average waist circumference (cm) | – | 80.6 (79.9-81.3) | 84.9 (84.0-85.8) |
| Mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised BP | 128.6 (127.8-129.4) | 131.1 (129.4-132.8) | 126.3 (125.0-127.7) |
| Mean diastolic blood pressure - DBP (mmHg), including those currently on medication for raised BP | 80.3 (79.8-80.8) | 79.7 (78.9-80.4) | 80.8 (80.2-81.5) |
| Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP) | 26.0% (23.8%-28.1%) | 25.4% (22.1%-28.7%) | 26.5% (24.3%-28.6%) |
| Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg) who are not currently on medication for raised BP | 92.6% (89.8%-95.4%) | 96.7% (94.6%-98.8%) | 88.9% (83.9%-94.0%) |
| **Step 3    Biochemical Measurement** | | | |
| Mean fasting blood glucose, including those currently on medication for raised blood glucose [mmol/L] | 4.8(4.7-4.9) | 4.8(4.6-4.9) | 4.9(4.8-5.0) |
| **Percentage with impaired fasting glycaemia as defined below** Capillary whole blood value ≥5.6 mmol/L (100 mg/dl) and <6.1 mmol/L (110 mg/dl) | 10.6% (8.3%-12.9%) | 11.3% (9.4%-13.1%) | 10.0% (6.5%-13.5%) |
| **Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose** Capillary whole blood value ≥ 6.1 mmol/L (110 mg/dl)/currently on medication | 9.1% (7.8%-10.3%) | 8.0% (5.6%-10.5%) | 10.0% (7.8%-12.2%) |
| **Mean total blood cholesterol,** including those currently on medication for raised cholesterol **[mmol/L]** | 4.6(4.5-4.7) | 4.4(4.4-4.5) | 4.7(4.6-4.8) |
| **Percentage with raised total cholesterol**  (≥ 5.0 mmol/L or currently on medication for raised cholesterol) | 26.0% (21.4%-30.7%) | 17.0% (12.0%-22.0%) | 33.9% (27.2%-40.6%) |
| Mean blood triglycerides, including those currently on medication for raised cholesterol [mmol/L] | 1.7(1.6-1.9) | 1.7(1.5-1.8) | 1.8(1.6-2.0) |
| Percentage with raised triglycerides (≥ 1.7 mmol/L or currently on medication for raised triglycerides) | 33.8% (25.7%-41.9%) | 31.3% (22.1%-40.5%) | 36.0% (27.9%-44.1%) |
| **Summary of combined risk factors** | | | |
| • current daily smokers <br>• less than 5 servings of fruits & vegetables per day <br>• low level of activity | • overweight (BMI ≥ 25 kg/m$^2$) <br>• raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP) | | |
| Percentage with none of the above risk factors | 0.8% (0.5%-1.1%) | 0.6% (0.3%-1.0%) | 1.0% (0.52%-1.5%) |

| | | | |
|---|---|---|---|
| Percentage with three or more of the above risk factors, aged 25 to 44 years | 12.2% (10.7%-13.6%) | 9.9% (7.4%-12.4%) | 14.4% (11.9%-16.8%) |
| Percentage with three or more of the above risk factors, aged 45 to 64 years | 28.0% (22.9%-33.0%) | 27.4% (20.8%-34.1%) | 28.6% (24.1%-33.1%) |
| Percentage with three or more of the above risk factors, aged 25 to 64 years | 16.6% (14.7%-18.4%) | 14.9% (12.9%-16.9%) | 18.2% (15.8%-20.7%) |

**For additional information, please contact:**

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**Table 3:**     **Distribution of the respondents by age and sex**

| Age Group | Age group and sex of respondents | | | | | |
|-----------|------|------|-------|------|-------------|------|
| | **Men** | | **Women** | | **Both Sexes** | |
| | **N** | **%** | **N** | **%** | **N** | **%** |
| 25-34 | 794 | 42.5 | 1073 | 57.5 | 1867 | 32.9 |
| 35-44 | 730 | 44 | 928 | 56 | 1658 | 29.2 |
| 45-54 | 633 | 50.6 | 619 | 49.4 | 1252 | 22 |
| 55-64 | 466 | 51.6 | 437 | 48.4 | 903 | 15.9 |
| **25-64** | **2623** | **46.2** | **3057** | **53.8** | **5680** | **100** |

| Age Group | Mean number of years of education | | | | | |
|-----------|------|--------|------|--------|------|--------|
| | **N** | **Mean** | **N** | **Mean** | **N** | **Mean** |
| 25-34 | 793 | 7.3 | 1068 | 6.3 | 1861 | 6.7 |
| 35-44 | 730 | 6.9 | 924 | 6.2 | 1654 | 6.5 |
| 45-54 | 629 | 6.7 | 616 | 5.3 | 1245 | 6.0 |
| 55-64 | 463 | 5.7 | 428 | 2.8 | 891 | 4.3 |
| **25-64** | **2615** | **6.7** | **3036** | **5.6** | **5651** | **6.1** |

**Table 4:**        **Level of education of respondents**

| Age Group (years) | N | % No formal schooling | % Less than primary school | % Primary school completed | % Secondary school completed | % High school completed | % College/University completed | % Post graduate degree completed |
|---|---|---|---|---|---|---|---|---|
| | | | | **Highest level of education for Men** | | | | |
| **Men** | | | | | | | | |
| 25-34 | 794 | 9.4 | 12.7 | 59.9 | 11.3 | 1.5 | 5.0 | 0.0 |
| 35-44 | 730 | 7.7 | 9.3 | 72.9 | 6.2 | 0.8 | 3.0 | 0.1 |
| 45-54 | 633 | 9.5 | 11.2 | 68.2 | 7.9 | 0.6 | 2.5 | 0.0 |
| 55-64 | 466 | 16.5 | 25.3 | 42.9 | 8.8 | 1.1 | 4.9 | 0.4 |
| 25-64 | 2623 | 10.2 | 13.6 | 62.5 | 8.6 | 1.0 | 3.9 | 0.1 |
| **Women** | | | | | | | | |
| 25-34 | 1072 | 16 | 10.6 | 64.1 | 6.3 | 0.7 | 2.2 | 0.0 |
| 35-44 | 928 | 16.8 | 11 | 65.4 | 5.4 | 0.4 | 0.9 | 0.1 |
| 45-54 | 619 | 25.4 | 15.3 | 50.9 | 5.8 | 0 | 2.6 | 0.0 |
| 55-64 | 436 | 54.6 | 19.3 | 22.7 | 1.6 | 0 | 1.8 | 0.0 |
| 25-64 | 3055 | 23.7 | 12.9 | 55.9 | 5.3 | 0.4 | 1.8 | 0.0 |
| **Both Sex** | | | | | | | | |
| 25-34 | 1866 | 13.2 | 11.5 | 62.3 | 8.5 | 1 | 3.4 | 0.0 |
| 35-44 | 1658 | 12.8 | 10.3 | 68.7 | 5.7 | 0.6 | 1.8 | 0.1 |
| 45-54 | 1252 | 17.3 | 13.3 | 59.7 | 6.9 | 0.3 | 2.6 | 0.0 |
| 55-64 | 902 | 34.9 | 22.4 | 33.1 | 5.3 | 0.6 | 3.4 | 0.2 |
| 25-64 | 5678 | 17.5 | 13.3 | 59.0 | 6.8 | 0.7 | 2.8 | 0.1 |

**Table 5:** **Marital Status of the respondents**

| Age Group(years) | N | % Never married | % Currently married | % Separated | % Divorced | % Widowed | % Cohabiting |
|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | |
| 25-34 | 793 | 19.0 | 74.8 | 3.4 | 0.0 | 2.3 | 0.0 |
| 35-44 | 730 | 3.3 | 87.8 | 4.4 | 1.4 | 2.2 | 1.4 |
| 45-54 | 633 | 2.2 | 88.0 | 6.0 | 2.1 | 0.9 | 2.1 |
| 55-64 | 465 | 1.5 | 85.6 | 5.4 | 5.4 | 0.4 | 5.4 |
| **25-64** | **2621** | **7.5** | **83.5** | **4.7** | **1.8** | **1.6** | **1.8** |
| **Women** | | | | | | | |
| 25-34 | 1069 | 11.5 | 74.8 | 6.8 | 2.4 | 1.7 | 2.7 |
| 35-44 | 927 | 5.0 | 72.6 | 9.8 | 4.9 | 6.8 | 1.0 |
| 45-54 | 619 | 3.2 | 60.1 | 12.1 | 4.7 | 19.1 | 0.8 |
| 55-64 | 436 | 1.6 | 47.0 | 9.6 | 3.0 | 37.8 | 0.9 |
| **25-64** | **3051** | **6.4** | **67.2** | **9.2** | **3.7** | **11.9** | **1.5** |
| **Both sex** | | | | | | | |
| 25-34 | 1862 | 14.7 | 74.8 | 5.4 | 1.6 | 1.0 | 2.5 |
| 35-44 | 1657 | 4.2 | 79.3 | 7.4 | 3.1 | 4.4 | 1.5 |
| 45-54 | 1252 | 2.7 | 74.2 | 9.0 | 2.7 | 10.5 | 0.9 |
| 55-64 | 901 | 1.6 | 66.9 | 7.4 | 2.3 | 21.1 | 0.7 |
| **25-64** | **5672** | **6.9** | **74.7** | **7.1** | **2.4** | **7.3** | **1.6** |

**Table 6:** **Distribution of respondents by occupations**

| Age Group(years) | N | % Government employee | % Non-government employee | % Self-employed | % Unpaid |
|---|---|---|---|---|---|
| **Men** | | | | | |
| 25-34 | 794 | 6.2 | 6.7 | 77.8 | 9.3 |
| 35-44 | 729 | 5.9 | 4.1 | 81.5 | 8.5 |
| 45-54 | 633 | 8.5 | 5.2 | 78.2 | 8.1 |
| 55-64 | 466 | 5.4 | 3.6 | 69.3 | 21.7 |
| **25-64** | **2622** | **6.5** | **5.1** | **77.4** | **11.0** |
| **Women** | | | | | |
| 25-34 | 1073 | 2.3 | 2.9 | 62.8 | 32 |
| 35-44 | 928 | 3.3 | 3.1 | 69.6 | 23.9 |
| 45-54 | 619 | 5.3 | 2.1 | 66.6 | 26 |
| 55-64 | 436 | 1.8 | 1.1 | 54.6 | 42.4 |
| **25-64** | **3056** | **3.2** | **2.6** | **64.5** | **29.8** |
| **Both sex** | | | | | |
| 25-34 | 1867 | 4 | 4.5 | 69.2 | 22.3 |
| 35-44 | 1657 | 4.5 | 3.6 | 74.8 | 17.1 |
| 45-54 | 1252 | 6.9 | 3.7 | 72.4 | 16.9 |
| 55-64 | 902 | 3.7 | 2.4 | 62.2 | 31.7 |
| **25-64** | **5678** | **4.7** | **3.7** | **70.4** | **21.1** |

**Table 7:** Current smoking status (daily and non-daily) of the respondents

| Age Group (years) | N | Daily smoker | | Daily or non-daily smoker | |
|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI |
| **Men** | | | | | |
| 25-34 | 794 | 16.9 | 12.5-21.3 | 20.4 | 15.4-25.4 |
| 35-44 | 729 | 25.1 | 20.9-29.3 | 28.7 | 23.0-34.4 |
| 45-54 | 633 | 29.3 | 16.2-42.4 | 33.7 | 21.2-46.1 |
| 55-64 | 466 | 23.6 | 15.0-32.3 | 28.0 | 18.2-37.8 |
| **25-64** | **2622** | **22.2** | **19.7-24.7** | **26.0** | **23.1-28.9** |
| **Women** | | | | | |
| 25-34 | 1073 | 0.4 | 0.0-0.9 | 1.0 | 0.3-1.7 |
| 35-44 | 927 | 0.8 | 0.2-1.5 | 2.3 | 1.0-3.5 |
| 45-54 | 619 | 6.8 | 0.0-14.7 | 7.5 | 0.0-15.4 |
| 55-64 | 436 | 4.2 | 1.2-7.1 | 6.4 | 2.7-10.0 |
| **25-64** | **3055** | **2.0** | **0.7-3.2** | **2.9** | **1.7-4.1** |
| **Both Sex** | | | | | |
| 25-34 | 1867 | 7.9 | 5.5-10.3 | 9.8 | 6.9-12.7 |
| 35-44 | 1656 | 13.2 | 10.9-15.4 | 15.7 | 12.8-18.6 |
| 45-54 | 1252 | 17.5 | 7.4-27.7 | 20.0 | 10.2-29.8 |
| 55-64 | 902 | 15.4 | 10.9-19.9 | 18.9 | 13.7-24.1 |
| **25-64** | **5677** | **11.8** | **10.2-13.4** | **14.1** | **12.4-15.8** |

**Table 8:** Age of initiation and duration of smoking (in years) of the daily smokers

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | N | Mean age | 95% CI | N | Mean age | 95% CI | N | Mean age | 95% CI |
| **Age of Initiation** | | | | | | | | | |
| 25-34 | 141 | 20.1 | 18.9-21.3 | 6 | 20.7 | 17.3-24.1 | 147 | 20.1 | 18.9-21.3 |
| 35-44 | 179 | 21.8 | 20.6-23.0 | 9 | 28.2 | 19.7-36.6 | 188 | 22.0 | 20.7-23.2 |
| 45-54 | 145 | 23.7 | 21.4-26.0 | 15 | 22.6 | 15.3-29.8 | 160 | 23.5 | 20.3-26.7 |
| 55-64 | 120 | 23.1 | 21.2-24.9 | 13 | 19.3 | 14.9-23.8 | 133 | 22.6 | 20.9-24.4 |
| **25-64** | **585** | **21.8** | **21.1-22.5** | **43** | **22.4** | **17.8-27.0** | **628** | **21.9** | **21.0-22.8** |
| **Duration of smoking (in years)** | | | | | | | | | |
| 25-34 | 141 | 9.4 | 7.8-11.0 | 6 | 8.3 | 4.9-11.8 | 147 | 9.4 | 7.8-10.9 |
| 35-44 | 179 | 18.2 | 16.5-20.0 | 9 | 12.8 | 4.5-21.0 | 188 | 18.1 | 16.3-19.8 |
| 45-54 | 145 | 25 | 23.5-26.5 | 15 | 29.4 | 19.0-39.8 | 160 | 25.9 | 22.6-29.1 |
| 55-64 | 120 | 36.8 | 34.8-38.7 | 13 | 40.8 | 36.1-45.4 | 133 | 37.2 | 35.3-39.1 |
| **25-64** | **585** | **19.3** | **17.3-21.2** | **43** | **27.3** | **19.0-35.6** | **628** | **20.0** | **17.4-22.5** |

**Table 9:** Distribution of respondents smoking manufactured cigarettes

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| 25-34 | 143 | 94.2 | 89.6-98.8 | 6 | 56.0 | 2.2-100.0 | 149 | 93.1 | 88.4-97.7 |
| 35-44 | 183 | 81.2 | 72.6-89.9 | 10 | 69.0 | 31.9-100.0 | 193 | 80.9 | 72.2-89.5 |
| 45-54 | 152 | 75.8 | 58.9-92.6 | 15 | 74.5 | 32.8-100.0 | 167 | 75.5 | 55.5-95.5 |
| 55-64 | 121 | 58.2 | 44.9-71.4 | 15 | 34.0 | 10.0-58.0 | 136 | 55.4 | 42.8-68.0 |
| **25-64** | **599** | **81.2** | **74.9-87.5** | **46** | **64.8** | **32.6-97.0** | **645** | **79.8** | **72.6-87.0** |

**Table 10:** Mean amount of tobacco used by daily smokers by type

| Age Group (years) | Manufactured cigarette | | | Hand-rolled cigarette | | |
|---|---|---|---|---|---|---|
| | N | Mean # | 95% CI | N | Mean # | 95% CI |
| **Men** | | | | | | |
| 25-34 | 141 | 5.7 | 4.5-6.9 | 139 | 1.1 | 0.5-1.6 |
| 35-44 | 177 | 5.4 | 3.8-7.0 | 170 | 1.9 | 0.9-2.9 |
| 45-54 | 146 | 3.7 | 3.1-4.4 | 147 | 1.6 | 0.5-2.8 |
| 55-64 | 114 | 3.8 | 2.8-4.9 | 113 | 3.0 | 2.0-4.0 |
| **25-64** | **578** | **4.9** | **4.3-5.6** | **569** | **1.7** | **1.1-2.3** |
| **Women** | | | | | | |
| 25-34 | 6 | 0.6 | 0.1-1.2 | 6 | 3.0 | 0.0-7.1 |
| 35-44 | 10 | 1.8 | 0.6-3.0 | 9 | 0.3 | 0.0-0.8 |
| 45-54 | 15 | 2.2 | 1.9-2.9 | 14 | 0.3 | 0.0-1.0 |
| 55-64 | 13 | 1.3 | 0.0-2.6 | 11 | 3.7 | 0.5-7.0 |
| **25-64** | **44** | **1.5** | **1.2-2.2** | **40** | **1.1** | **0.0-2.3** |
| **Both sex** | | | | | | |
| 25-34 | 147 | 5.5 | 4.4-6.7 | 145 | 1.1 | 0.6-1.7 |
| 35-44 | 187 | 5.3 | 3.7-6.8 | 179 | 1.9 | 0.9-2.8 |
| 45-54 | 161 | 6.3 | 2.9-9.8 | 161 | 1.4 | 0.3-2.5 |
| 55-64 | 127 | 3.6 | 2.6-4.6 | 124 | 3.1 | 2.2-4.0 |
| **25-64** | **622** | **5.4** | **3.8-6.9** | **609** | **1.7** | **1.0-2.3** |

**Table 11: Distribution of the respondents by ex-daily smoking status and duration since cessation**

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| **Ex-daily smokers among all respondents** | | | | | | | | | |
| 25-34 | 792 | 11.3 | 7.4-15.1 | 1068 | 1.0 | 0.2-1.7 | 1860 | 5.6 | 4.1-7.2 |
| 35-44 | 726 | 10.0 | 5.6-14.5 | 920 | 1.5 | 0.7-2.3 | 1646 | 5.8 | 3.8-7.9 |
| 45-54 | 627 | 15.3 | 11.0-19.6 | 607 | 1.5 | 0.5-2.6 | 1234 | 8.1 | 5.8-10.5 |
| 55-64 | 459 | 19.8 | 13.1-26.6 | 424 | 6.6 | 3.9-9.3 | 883 | 14.3 | 10.7-17.9 |
| **25-64** | **2604** | **12.6** | **10.5-14.7** | **3019** | **1.7** | **1.0-2.3** | **5623** | **7.0** | **5.9-8.1** |
| **Mean years since cessation** | | | | | | | | | |
| 25-34 | 33 | 9.2 | 7.4-10.9 | 5 | 9.1 | 6.6-11.6 | 38 | 9.2 | 7.6-10.8 |
| 35-44 | 62 | 14.7 | 13.4-16.0 | 12 | 16.6 | 11.3-21.8 | 74 | 14.9 | 13.6-16.3 |
| 45-54 | 85 | 21.7 | 19.9-23.4 | 10 | 29.5 | 24.9-34.1 | 95 | 22.4 | 20.7-24.0 |
| 55-64 | 93 | 25.4 | 22.3-28.5 | 25 | 27.1 | 20.7-33.4 | 118 | 25.7 | 22.9-28.5 |
| **25-64** | **273** | **17.6** | **15.0-20.2** | **52** | **21.6** | **18.7-24.5** | **325** | **18.1** | **15.7-20.5** |

**Table 12:** **Prevalence of current and ex-use of smokeless tobacco among all respondents**

| Age Group(years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| **Current users of smokeless tobacco** | | | | | | | | | |
| 25-34 | 792 | 3.7 | 0.1-7.2 | 1069 | 0.6 | 0.0-1.3 | 1861 | 2 | 0.5-3.5 |
| 35-44 | 727 | 1.5 | 0.5-2.6 | 924 | 1.4 | 0.6-2.3 | 1651 | 1.5 | 0.8-2.2 |
| 45-54 | 627 | 2.8 | 1.2-4.4 | 610 | 4.4 | 1.8-6.9 | 1237 | 3.6 | 2.0-5.3 |
| 55-64 | 456 | 3.5 | 1.4-5.5 | 425 | 8.8 | 4.4-13.2 | 881 | 5.7 | 3.4-8.1 |
| **25-64** | **2602** | **2.9** | **1.6-4.1** | **3028** | **2.2** | **1.3-3.0** | **5630** | **2.5** | **1.8-3.2** |
| **Ex-daily smokeless tobacco users** | | | | | | | | | |
| 25-34 | 791 | 0.9 | 0.3-1.5 | 1069 | 0.4 | 0.0-0.7 | 1860 | 0.6 | 0.3-1.0 |
| 35-44 | 727 | 1.8 | 0.5-3.0 | 924 | 0.9 | 0.2-1.6 | 1651 | 1.3 | 0.6-2.1 |
| 45-54 | 627 | 1.4 | 0.3-2.4 | 609 | 0.5 | 0.0-1.2 | 1236 | 0.9 | 0.3-1.6 |
| 55-64 | 456 | 2.6 | 0.5-4.7 | 425 | 2.4 | 1.0-3.9 | 881 | 2.5 | 1.2-3.9 |
| **25-64** | **2601** | **1.4** | **0.9-2.0** | **3027** | **0.7** | **0.4-1.0** | **5628** | **1.1** | **0.7-1.4** |

**Table 13:** **Mean times per day smokeless tobacco used by daily smokeless tobacco users by type**

| Age Group (years) | Snuff by mouth | | | Snuff by nose | | | Chewing tobacco | | | Betel, quid | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | Mean | 95% CI | n | Mean | 95% CI | n | Mean | 95% CI | n | Mean | 95% CI |
| **Men** | | | | | | | | | | | | |
| 25-34 | 13 | 1.6 | 0.0-4.8 | 12 | 6.8 | 1.8-11.7 | 11 | 0.0 | 0.0-0.1 | 12 | 0.2 | 0.0-0.7 |
| 35-44 | 15 | 0.8 | 0.0-1.5 | 15 | 4.9 | 3.1-6.6 | 15 | 0.0 | _ | 15 | 0.0 | _ |
| 45-54 | 17 | 1.4 | 0.4-2.5 | 15 | 2.6 | 0.9-4.4 | 17 | 0.1 | 0.0-0.4 | 17 | 0.3 | 0.0-0.9 |
| 55-64 | 13 | 0.7 | 0.0-1.6 | 13 | 2.3 | 0.4-4.2 | 12 | 2.1 | 0.0-6.3 | 13 | 0.0 | _ |
| **25-64** | **58** | **1.3** | **0.0-3.1** | **55** | **5.3** | **2.8-7.8** | **55** | **0.3** | **0.0-0.8** | **57** | **0.2** | **0.0-0.4** |
| **Women** | | | | | | | | | | | | |
| 25-34 | 7 | 0.3 | 0.0-1.1 | 7 | 3.4 | 0.4-6.5 | 7 | 1.1 | 0.7-1.5 | 7 | 0.3 | 0.0-0.7 |
| 35-44 | 16 | 1.3 | 0.1-2.4 | 17 | 2.5 | 0.1-5.0 | 17 | 0.2 | 0.0-0.5 | 17 | 0.0 | _ |
| 45-54 | 24 | 2.2 | 1.0-3.4 | 23 | 1.3 | 0.0-3.0 | 22 | 0.2 | 0.0-0.4 | 22 | 0.0 | _ |
| 55-64 | 37 | 3.7 | 2.5-5.0 | 35 | 0.1 | 0.0-0.4 | 37 | 0.5 | 0.1-0.9 | 35 | 0.0 | _ |
| **25-64** | **84** | **2.4** | **1.8-3.0** | **82** | **1.4** | **0.1-2.7** | **83** | **0.4** | **0.2-0.6** | **81** | **0.0** | **0.0-0.1** |
| **Both Sex** | | | | | | | | | | | | |
| 25-34 | 20 | 1.4 | 0.0-4.0 | 19 | 6.3 | 2.3-10.3 | 18 | 0.2 | 0.0-0.5 | 19 | 0.3 | 0.0-0.7 |
| 35-44 | 31 | 1 | 0.3-1.7 | 32 | 3.7 | 2.1-5.3 | 32 | 0.1 | 0.0-0.2 | 32 | 0.0 | _ |
| 45-54 | 41 | 1.9 | 1.0-2.8 | 38 | 1.7 | 0.2-3.3 | 39 | 0.2 | 0.0-0.4 | 39 | 0.1 | 0.0-0.3 |
| 55-64 | 50 | 3 | 2.3-3.7 | 48 | 0.7 | 0.0-1.4 | 49 | 0.9 | 0.0-2.0 | 48 | 0.0 | _ |
| **25-64** | **142** | **1.8** | **0.8-2.9** | **137** | **3.4** | **1.7-5.1** | **138** | **0.3** | **0.1-0.6** | **138** | **0.1** | **0.0-0.2** |

**Table 14:** **Exposure to secondhand tobacco smoke of smokers and non-smokers on one or more days in the past 7 days**

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| **In the Home** | | | | | | | | | |
| 25-34 | 749 | 17.8 | 12.2-23.3 | 998 | 18.1 | 14.4-21.7 | 1747 | 17.9 | 14.3-21.6 |
| 35-44 | 673 | 13.5 | 9.7-17.3 | 871 | 20.8 | 16.0-25.6 | 1544 | 17.1 | 13.9-20.3 |
| 45-54 | 590 | 16.1 | 8.7-23.5 | 579 | 22.5 | 16.2-28.9 | 1169 | 19.5 | 12.9-26.1 |
| 55-64 | 432 | 11.3 | 5.9-16.7 | 405 | 17.0 | 11.8-22.2 | 837 | 13.7 | 9.7-17.7 |
| **25-64** | **2444** | **15.5** | **12.5-18.5** | **2853** | **19.5** | **17.5-21.5** | **5297** | **17.5** | **15.7-19.4** |
| **In the workplace** | | | | | | | | | |
| 25-34 | 653 | 33.8 | 26.6-40.9 | 845 | 18.3 | 14.6-22.0 | 1498 | 25.5 | 20.6-30.3 |
| 35-44 | 585 | 33.0 | 25.7-40.3 | 729 | 19.9 | 16.2-23.7 | 1314 | 26.7 | 22.8-30.6 |
| 45-54 | 505 | 32.7 | 25.9-39.5 | 475 | 14.8 | 10.2-19.3 | 980 | 23.3 | 20.0-26.6 |
| 55-64 | 379 | 21.4 | 12.7-30.2 | 348 | 17.3 | 12.0-22.6 | 727 | 19.7 | 13.9-25.5 |
| **25-64** | **2122** | **31.9** | **26.8-36.9** | **2397** | **18.0** | **15.3-20.8** | **4519** | **24.9** | **21.7-28.1** |

**Table 15:     Mean number of days and servings\* of fruit and vegetables consumption**

| Age Group(years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | Mean | 95% CI | n | Mean | 95% CI | n | Mean | 95% CI |
| *Number of days in a typical week* | | | | | | | | | |
| **Fruits** | | | | | | | | | |
| 25-34 | 758 | 2.2 | 2.0-2.5 | 1013 | 3.1 | 2.3-3.9 | 1771 | 2.7 | 2.2-3.1 |
| 35-44 | 684 | 2.1 | 1.9-2.4 | 866 | 2.6 | 2.2-2.9 | 1550 | 2.3 | 2.1-2.6 |
| 45-54 | 585 | 2.2 | 1.9-2.5 | 573 | 2.4 | 2.1-2.7 | 1158 | 2.3 | 2.1-2.5 |
| 55-64 | 432 | 2.6 | 2.1-3.1 | 393 | 2.4 | 2.0-2.8 | 825 | 2.5 | 2.1-2.9 |
| **25-64** | **2459** | **2.2** | **2.0-2.4** | **2845** | **2.8** | **2.3-3.2** | **5304** | **2.5** | **2.2-2.8** |
| **Vegetables** | | | | | | | | | |
| 25-34 | 784 | 4 | 3.7-4.2 | 1054 | 4.4 | 4.3-4.6 | 1838 | 4.2 | 4.1-4.4 |
| 35-44 | 716 | 4.7 | 4.2-5.2 | 915 | 5 | 4.7-5.3 | 1631 | 4.9 | 4.5-5.2 |
| 45-54 | 618 | 4.4 | 4.1-4.7 | 604 | 4.7 | 4.1-5.3 | 1222 | 4.5 | 4.2-4.9 |
| 55-64 | 452 | 4.6 | 3.8-5.3 | 420 | 4.9 | 4.5-5.3 | 872 | 4.7 | 4.2-5.2 |
| **25-64** | **2570** | **4.3** | **4.0-4.7** | **2993** | **4.7** | **4.5-4.8** | **5563** | **4.5** | **4.3-4.7** |
| *Number of servings per day* | | | | | | | | | |
| *Fruits* | | | | | | | | | |
| 25-34 | 754 | 0.6 | 0.5-0.7 | 1011 | 0.8 | 0.7-1.0 | 1765 | 0.7 | 0.6-0.9 |
| 35-44 | 683 | 0.6 | 0.5-0.7 | 865 | 0.7 | 0.6-0.8 | 1548 | 0.7 | 0.5-0.8 |
| 45-54 | 581 | 0.7 | 0.5-0.8 | 570 | 0.7 | 0.5-0.9 | 1151 | 0.7 | 0.6-0.8 |
| 55-64 | 432 | 0.7 | 0.5-0.9 | 392 | 0.6 | 0.5-0.7 | 824 | 0.7 | 0.5-0.8 |
| **25-64** | **2450** | **0.6** | **0.5-0.7** | **2838** | **0.8** | **0.6-0.9** | **5288** | **0.7** | **0.6-0.8** |
| *Vegetables* | | | | | | | | | |
| 25-34 | 778 | 0.8 | 0.8-0.9 | 1046 | 0.9 | 0.9-1.0 | 1824 | 0.9 | 0.8-1.0 |
| 35-44 | 708 | 1.1 | 0.9-1.2 | 908 | 1.2 | 1.1-1.3 | 1616 | 1.1 | 1.0-1.2 |
| 45-54 | 612 | 1.0 | 0.9-1.2 | 601 | 1.0 | 0.9-1.2 | 1213 | 1.0 | 0.9-1.2 |
| 55-64 | 452 | 1.1 | 0.9-1.4 | 418 | 1.2 | 1.0-1.3 | 870 | 1.2 | 1.0-1.3 |
| **25-64** | **2550** | **1.0** | **0.9-1.1** | **2973** | **1.0** | **1.0-1.1** | **5523** | **1.0** | **1.0-1.1** |
| *Fruit and / or vegetables* | | | | | | | | | |
| 25-34 | 787 | 1.4 | 1.3-1.6 | 1060 | 1.7 | 1.6-1.9 | 1847 | 1.6 | 1.5-1.7 |
| 35-44 | 719 | 1.6 | 1.4-1.9 | 920 | 1.8 | 1.6-2.0 | 1639 | 1.7 | 1.6-1.9 |
| 45-54 | 619 | 1.7 | 1.5-1.9 | 604 | 1.7 | 1.5-1.8 | 1223 | 1.7 | 1.6-1.8 |
| 55-64 | 453 | 1.8 | 1.4-2.2 | 419 | 1.8 | 1.5-2.0 | 872 | 1.8 | 1.5-2.0 |
| **25-64** | **2578** | **1.6** | **1.4-1.7** | **3003** | **1.8** | **1.6-1.9** | **5581** | **1.7** | **1.5-1.8** |

*\*One standard serving = 80 grams*
*• For raw green leafy vegetables, 1 serving = one cup*
*• For cooked or chopped vegetables, 1 serving = ½ cup*
*• For fruit (Apple, banana, orange), 1 serving = 1 medium size piece*
*• For chopped, cooked and canned fruit, 1 serving = ½ cup, for juice from fruit, 1 serving = ½ cup*

**Table 16:    Consumption of fruit and/or vegetables on an average day (in servings)**

| Age Group(years) | n | No fruit and/or vegetables % | 95% CI | 1-2 servings % | 95% CI | 3-4 servings % | 95% CI | ≥5 servings % | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | | |
| 25-34 | 787 | 38.0 | 32.2-43.7 | 54.1 | 48.8-59.4 | 5.7 | 3.6-7.8 | 2.3 | 0.0-4.5 |
| 35-44 | 719 | 31.4 | 19.1-43.8 | 59.5 | 44.1-74.9 | 6.7 | 3.6-9.8 | 2.4 | 0.9-3.9 |
| 45-54 | 619 | 28.5 | 21.6-35.4 | 58.0 | 49.0-67.0 | 9.0 | 4.9-13.2 | 4.5 | 2.4-6.6 |
| 55-64 | 453 | 32.8 | 22.2-43.5 | 48.7 | 42.4-55.0 | 16.0 | 3.3-28.6 | 2.6 | 0.7-4.4 |
| **25-64** | **2578** | **33.9** | **27.1-40.6** | **55.7** | **49.0-62.4** | **7.7** | **6.1-9.4** | **2.7** | **1.4-4.0** |
| **Women** | | | | | | | | | |
| 25-34 | 1060 | 32.4 | 27.7-37.2 | 54.3 | 50.6-58.0 | 10.2 | 6.9-13.6 | 3.0 | 1.5-4.6 |
| 35-44 | 920 | 28.6 | 23.7-33.4 | 57.0 | 53.1-60.9 | 10.9 | 7.3-14.5 | 3.5 | 1.6-5.4 |
| 45-54 | 604 | 23.6 | 15.7-31.5 | 60.2 | 53.8-66.7 | 14.5 | 7.7-21.3 | 1.7 | 0.7-2.6 |
| 55-64 | 419 | 28.1 | 22.2-34.1 | 57.3 | 51.2-63.4 | 12.5 | 8.1-16.9 | 2.1 | 0.8-3.3 |
| **25-64** | **3003** | **29.5** | **25.4-33.6** | **56.3** | **53.9-58.7** | **11.3** | **8.1-14.6** | **2.9** | **1.7-4.0** |
| **Both Sexes** | | | | | | | | | |
| 25-34 | 1847 | 34.9 | 30.9-39.0 | 54.2 | 51.0-57.4 | 8.2 | 6.2-10.1 | 2.7 | 1.4-4.0 |
| 35-44 | 1639 | 30.0 | 22.9-37.2 | 58.3 | 49.9-66.7 | 8.8 | 6.6-11.0 | 2.9 | 1.5-4.4 |
| 45-54 | 1223 | 26.0 | 19.4-32.5 | 59.1 | 54.5-63.8 | 11.9 | 8.6-15.2 | 3.0 | 2.0-4.1 |
| 55-64 | 872 | 30.9 | 24.2-37.5 | 52.3 | 47.1-57.5 | 14.5 | 6.6-22.4 | 2.3 | 1.1-3.6 |
| **25-64** | **5581** | **31.6** | **26.7-36.5** | **56.0** | **52.3-59.7** | **9.6** | **7.6-11.6** | **2.8** | 1.9-3.7 |

**Table 17:    Distribution of mean minutes of total physical activity on average per day**

| Age Group (years) | Men n | Mean | 95% CI | Women n | Mean | 95% CI | Both Sexes n | Mean | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| 25-34 | 775 | 392.9 | 364.5-421.3 | 1027 | 307.3 | 281.0-333.6 | 1802 | 346.8 | 322.2-371.4 |
| 35-44 | 713 | 425.1 | 387.7-462.6 | 902 | 348.4 | 310.8-385.9 | 1615 | 387.8 | 350.0-425.5 |
| 45-54 | 613 | 376.3 | 347.0-405.7 | 591 | 304.2 | 250.2-358.2 | 1204 | 338.8 | 304.8-372.9 |
| 55-64 | 447 | 298.7 | 223.5-373.8 | 412 | 288.2 | 257.7-318.6 | 859 | 294.3 | 246.5-342.0 |
| **25-64** | **2548** | **388.5** | **371.6-405.5** | **2932** | **316.3** | **297.8-334.8** | **5480** | **351.7** | **336.1-367.4** |

**Table 18:** Time (in minutes) spent in work, transport and leisure-related physical activity on an average day*

| Age Group (years) | Men | | | | Women | | | | Both Sexes | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | Median | IQR** | N | Mean | Median | IQR** | N | Mean | Median | IQR** |
| *Work-related physical activity on average per day* | | | | | | | | | | | | |
| 25-34 | 775 | 279.4 | 282.9 | 120.0,385.7 | 1027 | 245.2 | 222.9 | 90.0,372.9 | 1802 | 260.9 | 257.1 | 102.9,377.1 |
| 35-44 | 713 | 324.2 | 334.3 | 154.3,462.9 | 902 | 281.1 | 270.0 | 111.4,415.7 | 1615 | 303.2 | 300.0 | 128.6,428.6 |
| 45-54 | 613 | 262.5 | 240.0 | 120.0,368.6 | 591 | 237.2 | 205.7 | 68.6,360.0 | 1204 | 249.4 | 231.4 | 88.6,360.0 |
| 55-64 | 447 | 218.9 | 180.0 | 60.0,342.9 | 412 | 218.5 | 201.4 | 47.1,347.1 | 859 | 218.7 | 188.6 | 60.0,342.9 |
| **25-64** | **2548** | **282.6** | **274.3** | **107.1,410.0** | **2932** | **251.3** | **231.4** | **85.7,377.1** | **5480** | **266.7** | **257.1** | **102.9,385.7** |
| *Transport-related physical activity on average per day* | | | | | | | | | | | | |
| 25-34 | 775 | 80.5 | 51.4 | 17.1,90.0 | 1027 | 50.4 | 30.0 | 10.0,60.0 | 1802 | 64.3 | 34.3 | 14.3,77.1 |
| 35-44 | 713 | 83.4 | 51.4 | 25.7,102.9 | 902 | 57.3 | 30.0 | 12.9,77.1 | 1615 | 70.7 | 42.9 | 17.1,102.9 |
| 45-54 | 613 | 89.5 | 60.0 | 25.7,107.1 | 591 | 53.5 | 25.7 | 9.1,68.6 | 1204 | 70.8 | 38.6 | 14.3,100.0 |
| 55-64 | 447 | 65.3 | 51.4 | 17.1,77.1 | 412 | 62.6 | 30.0 | 8.6,68.6 | 859 | 64.1 | 38.6 | 12.9,77.1 |
| **25-64** | **2548** | **81.0** | **51.4** | **17.1,77.1** | **2932** | **53.8** | **30.0** | **10.0,60.0** | **5480** | **67.2** | **38.6** | **15.0,90.0** |
| *Recreation-related physical activity on average per day* | | | | | | | | | | | | |
| 25-34 | 775 | 33.1 | 4.3 | 0.0,51.4 | 1027 | 11.7 | 0.0 | 0.0,7.1 | 1802 | 21.6 | 0.0 | 0.0,25.7 |
| 35-44 | 713 | 17.6 | 0.0 | 0.0,5.7 | 902 | 9.9 | 0.0 | 0.0,0.0 | 1615 | 13.8 | 0.0 | 0.0,0.0 |
| 45-54 | 613 | 24.4 | 0.0 | 0.0,20.0 | 591 | 13.4 | 0.0 | 0.0,2.9 | 1204 | 18.7 | 0.0 | 0.0,12.9 |
| 55-64 | 447 | 14.5 | 0.0 | 0.0,0.0 | 412 | 7.1 | 0.0 | 0.0,0.0 | 859 | 11.4 | 0.0 | 0.0,0.0 |
| **25-64** | **2548** | **24.9** | **0.0** | **0.0,25.7** | **2932** | **11.2** | **0.0** | **0.0,0.0** | **5480** | **17.9** | **0.0** | **0.0,12.9** |

*Total physical activity include work over 10 minutes at stretch moderate or vigorous that make people feel palpitations

And breathlessness (for detail see appendix D: glossary of terms) done at work, during travel or at leisure

**IQR - Inter Quartile Range

**Table 19: Prevalence of work, transport and leisure related physical activity**

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | N | % | 95% CI | N | % | 95% CI | N | % | 95% CI |
| *Work-related physical activity* | | | | | | | | | |
| 25-34 | 775 | 7.8 | 5.3-10.4 | 1027 | 5.4 | 2.8-8.1 | 1802 | 6.5 | 4.4-8.7 |
| 35-44 | 713 | 5.0 | 2.3-7.7 | 902 | 6.0 | 2.2-9.9 | 1615 | 5.5 | 2.9-8.0 |
| 45-54 | 613 | 8.7 | 5.2-12.2 | 591 | 5.6 | 3.0-8.2 | 1204 | 7.1 | 4.7-9.5 |
| 55-64 | 447 | 17.4 | 8.8-26.1 | 412 | 14.3 | 7.1-21.6 | 859 | 16.1 | 10.4-21.8 |
| **25-64** | **2548** | **8.3** | **6.4-10.1** | **2932** | **6.4** | **4.1-8.7** | **5480** | **7.3** | **5.6-9.0** |
| *Transport-related physical activity* | | | | | | | | | |
| 25-34 | 775 | 9.8 | 5.9-13.7 | 1027 | 12.0 | 8.7-15.3 | 1802 | 11.0 | 7.7-14.3 |
| 35-44 | 713 | 9.8 | 5.5-14.0 | 902 | 12.2 | 9.2-15.3 | 1615 | 11.0 | 8.0-14.0 |
| 45-54 | 613 | 5.2 | 2.8-7.6 | 591 | 10.6 | 6.2-15.1 | 1204 | 8.0 | 5.4-10.7 |
| 55-64 | 447 | 15.1 | 6.7-23.5 | 412 | 17.8 | 12.9-22.7 | 859 | 16.2 | 11.0-21.5 |
| **25-64** | **2548** | **9.7** | **6.2-13.2** | **2932** | **12.3** | **10.0-14.5** | **5480** | **11.0** | **8.4-13.6** |
| *Recreation-related physical activity* | | | | | | | | | |
| 25-34 | 775 | 49.2 | 43.3-55.2 | 1027 | 72.2 | 68.5-75.8 | 1802 | 61.6 | 57.4-65.8 |
| 35-44 | 713 | 72.8 | 62.1-83.6 | 902 | 78.1 | 73.7-82.5 | 1615 | 75.4 | 70.9-79.9 |
| 45-54 | 613 | 66.8 | 60.7-72.8 | 591 | 74.5 | 68.0-81.0 | 1204 | 70.8 | 65.6-76.0 |
| 55-64 | 447 | 79.8 | 72.2-87.3 | 412 | 87.7 | 83.9-91.5 | 859 | 83.1 | 78.5-87.7 |
| **25-64** | **2548** | **62.7** | **56.6-68.9** | **2932** | **75.4** | **72.9-78.0** | **5480** | **69.2** | **66.3-72.1** |

**Table 20:** Proportion of work, transport and leisure activity contributing to total activity

| Age Group (years) | N | Activity from work | | Activity for transport | | Activity during leisure time | |
|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | |
| 25-34 | 756 | 66.8 | 63.8-69.7 | 22.8 | 20.6-24.9 | 10.5 | 8.8-12.1 |
| 35-44 | 696 | 74.4 | 69.0-79.9 | 20.6 | 17.0-24.3 | 4.9 | 2.8-7.0 |
| 45-54 | 600 | 66.4 | 63.4-69.5 | 26.9 | 24.1-29.8 | 6.6 | 4.8-8.5 |
| 55-64 | 429 | 67.1 | 62.5-71.7 | 28.0 | 23.4-32.7 | 4.9 | 2.9-6.9 |
| **25-64** | **2481** | **69.0** | **66.7-71.4** | **23.4** | **21.9-24.9** | **7.5** | **6.2-8.9** |
| **Women** | | | | | | | |
| 25-34 | 1009 | 75.3 | 72.6-78.0 | 20.2 | 17.9-22.6 | 4.5 | 3.4-5.6 |
| 35-44 | 887 | 76.3 | 73.1-79.4 | 19.7 | 16.7-22.6 | 4.1 | 2.9-5.2 |
| 45-54 | 573 | 75.2 | 71.5-78.8 | 19.3 | 17.0-21.6 | 5.5 | 3.0-8.0 |
| 55-64 | 394 | 71.9 | 64.8-79.1 | 25.3 | 18.4-32.1 | 2.8 | 1.7-3.9 |
| **25-64** | **2863** | **75.3** | **73.5-77.1** | **20.3** | **18.6-22.1** | **4.4** | **3.7-5.2** |
| **Both Sexes** | | | | | | | |
| 25-34 | 1765 | 71.4 | 69.1-73.7 | 21.4 | 19.7-23.1 | 7.2 | 6.1-8.4 |
| 35-44 | 1583 | 75.3 | 71.7-79.0 | 20.2 | 17.2-23.1 | 4.5 | 3.5-5.5 |
| 45-54 | 1173 | 71.0 | 68.4-73.5 | 23.0 | 20.8-25.1 | 6.1 | 4.5-7.6 |
| 55-64 | 823 | 69.2 | 64.5-73.9 | 26.8 | 22.7-31.0 | 4.0 | 2.7-5.2 |
| **25-64** | **5344** | **72.2** | **70.4-74.0** | **21.8** | **20.5-23.2** | **5.9** | **5.2-6.7** |

**Table 21:** Prevalence of non-engagement into vigorous physical activity irrespective of duration

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | N | % | 95% CI | N | % | 95% CI | N | % | 95% CI |
| 25-34 | 775 | 19.8 | 14.8-24.9 | 1027 | 43 | 35.6-50.4 | 1802 | 32.3 | 27.5-37.1 |
| 35-44 | 713 | 18.1 | 10.6-25.6 | 902 | 40.7 | 34.4-47.1 | 1615 | 29.1 | 24.2-34.0 |
| 45-54 | 613 | 26.9 | 20.3-33.6 | 591 | 31.8 | 23.2-40.4 | 1204 | 29.4 | 25.8-33.1 |
| 55-64 | 447 | 41.7 | 24.4-59.1 | 412 | 55 | 47.9-62.1 | 859 | 47.3 | 37.3-57.2 |
| **25-64** | **2548** | **23.1** | **20.1-26.0** | **2932** | **41.4** | **36.8-46.0** | **5480** | **32.4** | **29.1-35.7** |

**Table 22:** **Time (in minutes) spent in sedentary activity on an average day**

| Age Group(years) | N | Mean minutes | 95% CI | Median minutes | Inter- quartile range (P25-P75) |
|---|---|---|---|---|---|
| **Men** | | | | | |
| 25-34 | 792 | 130.9 | 120.3-141.6 | 120 | 60-180 |
| 35-44 | 726 | 137.5 | 128.6-146.5 | 120 | 60-180 |
| 45-54 | 627 | 147.1 | 132.0-162.3 | 120 | 60-200 |
| 55-64 | 456 | 146.4 | 120.4-172.4 | 120 | 60-180 |
| **25-64** | **2601** | **137.4** | **132.2-142.7** | **120** | **60-180** |
| **Women** | | | | | |
| 25-34 | 1069 | 123.4 | 113.1-133.6 | 120 | 60-180 |
| 35-44 | 921 | 121.9 | 111.7-132.1 | 120 | 60-180 |
| 45-54 | 610 | 126.5 | 108.2-144.9 | 120 | 60-180 |
| 55-64 | 425 | 164.3 | 146.8-181.7 | 120 | 90-240 |
| **25-64** | **3025** | **126.9** | **116.4-137.3** | **120** | **60-180** |
| **Both sexes** | | | | | |
| 25-34 | 1861 | 126.8 | 117.4-136.2 | 120 | 60-180 |
| 35-44 | 1647 | 129.8 | 124.5-135.0 | 120 | 60-180 |
| 45-54 | 1237 | 136.4 | 126.9-145.9 | 120 | 60-180 |
| 55-64 | 881 | 153.9 | 135.6-172.3 | 120 | 60-210 |
| **25-64** | **5626** | **132** | **125.2-138.7** | **120** | **60-180** |

**Table 23: Distribution of Level of total physical activity**

| Age Group (years) | N | Low | | Moderate | | High | |
|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | |
| 25-34 | 775 | 6.7 | 4.3-9.1 | 6.5 | 3.7-9.4 | 86.7 | 82.5-90.9 |
| 35-44 | 713 | 5.0 | 2.3-7.6 | 5.9 | 2.8-9.1 | 89.1 | 83.8-94.4 |
| 45-54 | 613 | 5.6 | 2.6-8.6 | 8.1 | 5.0-11.2 | 86.3 | 81.6-91.0 |
| 55-64 | 447 | 16.7 | 8.0-25.3 | 5.9 | 2.8-9.0 | 77.4 | 69.5-85.4 |
| **25-64** | **2548** | **7.2** | **5.6-8.7** | **6.5** | **4.4-8.6** | **86.3** | **83.2-89.3** |
| **Women** | | | | | | | |
| 25-34 | 1027 | 7.9 | 4.5-11.3 | 9.7 | 6.3-13.1 | 82.4 | 76.7-88.2 |
| 35-44 | 902 | 7.2 | 4.2-10.1 | 12.5 | 9.4-15.6 | 80.3 | 75.6-85.1 |
| 45-54 | 591 | 6.9 | 3.9-9.9 | 14.4 | 6.4-22.3 | 78.8 | 70.8-86.7 |
| 55-64 | 412 | 11.6 | 7.6-15.6 | 15.3 | 10.9-19.6 | 73.1 | 67.1-79.1 |
| **25-64** | **2932** | **7.8** | **5.5-10.1** | **11.7** | **9.8-13.6** | **80.5** | **77.2-83.7** |
| **Both Sexes** | | | | | | | |
| 25-34 | 1802 | 7.4 | 5.1-9.7 | 8.2 | 5.8-10.6 | 84.4 | 80.4-88.4 |
| 35-44 | 1615 | 6.0 | 3.8-8.3 | 9.1 | 7.0-11.3 | 84.8 | 80.9-88.8 |
| 45-54 | 1204 | 6.3 | 4.0-8.5 | 11.4 | 7.9-14.8 | 82.4 | 79.0-85.8 |
| 55-64 | 859 | 14.6 | 9.0-20.1 | 9.8 | 6.9-12.8 | 75.6 | 70.2-81.1 |
| **25-64** | **5480** | **7.5** | **6.0-9.0** | **9.2** | **7.6-10.7** | **83.3** | **80.6-86.0** |

**Table 24:** **Distribution of the respondents by alcohol consumption status**

| Age Group (years) | N | Current drinker (past 30 days) | | Drank in past 12 months, not current | | Past 12 months abstainer | | Lifetime abstainer | |
|---|---|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | | | |
| 25-34 | 792 | 34.8 | 28.4-41.3 | 8.4 | 5.2-11.5 | 9.9 | 7.1-12.7 | 46.9 | 41.0-52.8 |
| 35-44 | 727 | 39.9 | 31.6-48.2 | 5.8 | 2.9-8.7 | 9.4 | 5.1-13.7 | 44.9 | 31.5-58.2 |
| 45-54 | 627 | 48.1 | 37.4-58.7 | 7.5 | 4.2-10.8 | 14.4 | 10.2-18.6 | 30.0 | 22.1-37.8 |
| 55-64 | 456 | 32.7 | 21.4-44.0 | 6.8 | 3.1-10.4 | 16.6 | 10.5-22.7 | 44.0 | 27.6-60.3 |
| **25-64** | **2602** | **38.3** | **35.1-41.6** | **7.3** | **5.2-9.4** | **11.3** | **8.4-14.2** | **43.1** | **37.9-48.3** |
| **Women** | | | | | | | | | |
| 25-34 | 1069 | 15.6 | 10.8-20.5 | 9.4 | 7.1-11.8 | 11.0 | 7.8-14.1 | 64.0 | 59.7-68.2 |
| 35-44 | 923 | 23.5 | 18.7-28.2 | 8.9 | 6.2-11.5 | 11.0 | 7.9-14.0 | 56.7 | 50.9-62.5 |
| 45-54 | 610 | 29.3 | 21.9-36.7 | 9.7 | 3.2-16.2 | 12.8 | 8.2-17.3 | 48.2 | 40.7-55.7 |
| 55-64 | 425 | 25.0 | 16.8-33.3 | 6.0 | 3.0-8.9 | 14.6 | 9.5-19.8 | 54.4 | 45.3-63.4 |
| **25-64** | **3027** | **20.9** | **18.2-23.6** | **9.1** | **7.2-10.9** | **11.6** | **9.8-13.3** | **58.5** | **55.0-62.0** |
| **Both sexes** | | | | | | | | | |
| 25-34 | 1861 | 24.4 | 20.9-27.8 | 9.0 | 7.0-10.9 | 10.5 | 8.6-12.3 | 56.2 | 52.5-59.9 |
| 35-44 | 1650 | 31.9 | 28.4-35.3 | 7.3 | 5.7-8.9 | 10.2 | 6.9-13.5 | 50.7 | 44.9-56.4 |
| 45-54 | 1237 | 38.3 | 30.2-46.4 | 8.6 | 4.8-12.5 | 13.6 | 10.0-17.2 | 39.5 | 33.9-45.1 |
| 55-64 | 881 | 29.5 | 21.7-37.2 | 6.4 | 4.1-8.8 | 15.8 | 11.6-19.9 | 48.3 | 38.1-58.6 |
| **25-64** | **5629** | **29.4** | **26.8-31.9** | **8.2** | **6.7-9.7** | **11.4** | **9.8-13.1** | **51.0** | **47.6-54.4** |

**Table 25:     Frequency of drinking among those who drank alcohol in the past 12 months**

| Age Group (years) | N | Daily | | 5-6 Days/week | | 1-4 Days/ week | | 1-3 Days/month | | < Once a month | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | | | | | |
| 25-34 | 314 | 7.3 | 3.0-11.5 | 5.1 | 1.4-8.8 | 33.1 | 25.3-40.9 | 24.8 | 17.8-31.8 | 29.7 | 20.4-39.0 |
| 35-44 | 370 | 14.6 | 9.6-19.5 | 6.8 | 3.6-10.1 | 43.8 | 33.0-54.5 | 19.9 | 12.1-27.7 | 14.9 | 10.1-19.8 |
| 45-54 | 319 | 18.7 | 10.9-26.5 | 15.9 | 4.3-27.5 | 31.3 | 23.8-38.9 | 20.7 | 11.9-29.6 | 13.3 | 7.2-19.4 |
| 55-64 | 214 | 25.1 | 17.0-33.2 | 8.1 | 3.3-13.0 | 31.5 | 24.2-38.8 | 11.1 | 6.8-15.4 | 24.2 | 15.2-33.1 |
| **25-64** | **1217** | **13.6** | **9.8-17.4** | **8.1** | **5.3-10.9** | **35.7** | **29.3-42.1** | **21.1** | **17.4-24.8** | **21.4** | **16.1-26.7** |
| **Women** | | | | | | | | | | | |
| 25-34 | 297 | 5.3 | 2.5-8.1 | 4.4 | 1.5-7.3 | 22.8 | 16.3-29.2 | 27.9 | 21.1-34.7 | 39.6 | 30.6-48.7 |
| 35-44 | 277 | 9.7 | 5.0-14.4 | 6.9 | 2.8-11.1 | 35.4 | 25.1-45.7 | 20.6 | 12.5-28.8 | 27.4 | 21.3-33.4 |
| 45-54 | 222 | 8.0 | 3.3-12.6 | 8.5 | 2.6-14.4 | 35.4 | 16.8-53.9 | 25.9 | 14.9-36.9 | 22.3 | 11.4-33.3 |
| 55-64 | 142 | 17.4 | 9.8-25.1 | 5.2 | 1.4-9.1 | 37.8 | 26.8-48.7 | 16.6 | 9.8-23.5 | 22.9 | 13.8-32.1 |
| **25-64** | **938** | **8.2** | **5.5-10.9** | **6.1** | **3.4-8.8** | **30.5** | **24.0-37.0** | **24.4** | **18.5-30.3** | **30.8** | **26.3-35.3** |
| **Both sexes** | | | | | | | | | | | |
| 25-34 | 611 | 6.5 | 3.7-9.2 | 4.8 | 2.2-7.4 | 28.9 | 23.8-33.9 | 26.1 | 21.5-30.6 | 33.8 | 28.3-39.3 |
| 35-44 | 647 | 12.6 | 8.4-16.9 | 6.9 | 4.0-9.8 | 40.4 | 30.8-49.9 | 20.2 | 13.8-26.5 | 19.9 | 16.1-23.8 |
| 45-54 | 541 | 14.0 | 8.9-19.2 | 12.7 | 6.0-19.3 | 33.1 | 21.8-44.3 | 23.0 | 15.0-31.0 | 17.2 | 10.3-24.2 |
| 55-64 | 356 | 22.3 | 16.0-28.6 | 7.1 | 3.1-11.1 | 33.8 | 28.3-39.3 | 13.1 | 9.4-16.8 | 23.7 | 17.5-29.9 |
| **25-64** | **2155** | **11.4** | **8.5-14.3** | **7.3** | **5.3-9.4** | **33.6** | **27.7-39.5** | **22.5** | **19.1-25.8** | **25.2** | **21.7-28.8** |

**Table 26:** Number of occasions with at least one drink consumed on a drinking occasion and mean number of standard drinks per drinking in the past 30 days by current drinkers

| Age Group(years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | Mean | 95% CI | n | Mean | 95% CI | n | Mean | 95% CI |
| **Number of occasion** | | | | | | | | | |
| 25-34 | 238 | 7.5 | 6.1-8.8 | 191 | 6.7 | 5.4-8.1 | 429 | 7.2 | 6.2-8.2 |
| 35-44 | 313 | 10.6 | 9.2-12.0 | 202 | 9.2 | 7.2-11.3 | 515 | 10.1 | 8.8-11.4 |
| 45-54 | 262 | 13.7 | 11.1-16.2 | 170 | 9.0 | 6.6-11.5 | 432 | 11.8 | 10.5-13.0 |
| 55-64 | 177 | 14.2 | 11.8-16.5 | 104 | 10.9 | 8.5-13.3 | 281 | 13.0 | 11.2-14.8 |
| **25-64** | **990** | **10.4** | **9.2-11.6** | **667** | **8.5** | **7.3-9.6** | **1657** | **9.7** | **8.9-10.5** |
| **Standard drinks** | | | | | | | | | |
| 25-34 | 249 | 7.5 | 6.0-8.9 | 204 | 6.4 | 5.0-7.9 | 453 | 7.1 | 6.0-8.2 |
| 35-44 | 316 | 7.8 | 6.7-9.0 | 209 | 5.3 | 4.5-6.1 | 525 | 6.9 | 6.0-7.8 |
| 45-54 | 271 | 10.9 | 8.2-13.5 | 175 | 5.6 | 4.2-7.0 | 446 | 8.7 | 7.2-10.2 |
| 55-64 | 179 | 9.8 | 8.0-11.5 | 113 | 5.7 | 4.6-6.9 | 292 | 8.3 | 7.0-9.7 |
| **25-64** | **1015** | **8.5** | **7.5-9.6** | **701** | **5.8** | **5.0-6.6** | **1716** | **7.5** | **6.8-8.2** |

**Table 27:** Mean maximum number of drinks consumed on one occasion in the past 30 days

| Age Group (years) | Men | | | Women | | | Both sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | N | Mean max number | 95% CI | N | Mean max number | 95% CI | N | Mean max number | 95% CI |
| 25-34 | 243 | 10.9 | 8.8-12.9 | 203 | 7.3 | 6.0-8.7 | 446 | 9.6 | 8.1-11.1 |
| 35-44 | 308 | 10.2 | 8.5-11.9 | 203 | 6.8 | 5.7-7.9 | 511 | 9.0 | 7.6-10.3 |
| 45-54 | 268 | 12.7 | 10.1-15.4 | 172 | 8.9 | 5.2-12.5 | 440 | 11.2 | 8.1-14.2 |
| 55-64 | 175 | 12.2 | 10.1-14.2 | 114 | 7.2 | 5.8-8.6 | 289 | 10.4 | 8.8-11.9 |
| **25-64** | **994** | **11.2** | **10.1-12.3** | **692** | **7.5** | **6.5-8.6** | **1686** | **9.8** | **8.8-10.9** |

**Table 28:** **Prevalence of heavy episodic (binge) drinking in the past 30 days among current drinkers**

| Age Group(years) | Men | | | Women | | |
|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI |
| **Prevalence of having ≥ 5 drinks in men and ≥4 drinks in women** | | | | | | |
| 25-34 | 792 | 26.0 | 19.1-32.8 | 1069 | 9.7 | 6.3-13.1 |
| 35-44 | 727 | 27.4 | 22.8-32.0 | 923 | 15.3 | 10.5-20.0 |
| 45-54 | 627 | 33.8 | 21.2-46.5 | 610 | 20.4 | 12.5-28.3 |
| 55-64 | 456 | 23.0 | 14.3-31.6 | 425 | 14.5 | 7.7-21.2 |
| **25-64** | **2602** | **27.4** | **23.7-31.1** | **3027** | **13.4** | **11.4-15.4** |
| **Mean number of times drank ≥ 5 drinks in men and ≥4 drinks in women** | | | | | | |
| 25-34 | 244 | 3.7 | 2.1-5.2 | 189 | 2.6 | 1.7-3.5 |
| 35-44 | 319 | 3.5 | 2.7-4.2 | 201 | 3.3 | 2.3-4.3 |
| 45-54 | 258 | 5.5 | 3.7-7.2 | 166 | 3.2 | 2.0-4.5 |
| 55-64 | 180 | 5.8 | 3.8-7.8 | 103 | 4.1 | 2.5-5.7 |
| **25-64** | **1001** | **4.2** | **3.3-5.1** | **659** | **3.1** | **2.4-3.8** |

**Table 29:** Drinking with meals among current drinker

| Age Group (years) | N | Usually with meals | | Sometimes with meals | | Rarely with meals | | Never with meals | |
|---|---|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | | | |
| 25-34 | 251 | 46.3 | 39.1-53.5 | 19.5 | 12.0-27.0 | 13.4 | 8.1-18.8 | 20.8 | 12.3-29.3 |
| 35-44 | 327 | 46.2 | 34.5-57.9 | 20.6 | 14.4-26.8 | 9.2 | 5.1-13.2 | 24.0 | 16.1-31.9 |
| 45-54 | 281 | 40.4 | 33.1-47.8 | 19.8 | 10.9-28.8 | 9.5 | 4.7-14.4 | 30.2 | 20.7-39.8 |
| 55-64 | 185 | 36.6 | 27.5-45.6 | 23.3 | 17.8-28.8 | 14.2 | 8.2-20.2 | 25.9 | 17.7-34.1 |
| **25-64** | **1044** | **44.0** | **38.1-50.0** | **20.3** | **15.1-25.5** | **11.4** | **8.0-14.8** | **24.3** | **19.6-29.0** |
| **Women** | | | | | | | | | |
| 25-34 | 207 | 41.1 | 30.8-51.4 | 13.7 | 8.4-18.9 | 9.0 | 4.2-13.9 | 36.2 | 27.8-44.6 |
| 35-44 | 212 | 43.4 | 36.5-50.3 | 13.4 | 7.1-19.7 | 17.8 | 6.8-28.9 | 25.3 | 16.1-34.5 |
| 45-54 | 178 | 53.6 | 37.2-70.0 | 13.0 | 6.3-19.7 | 10.2 | 4.1-16.3 | 23.2 | 12.9-33.6 |
| 55-64 | 117 | 45.2 | 33.5-56.9 | 8.2 | 2.7-13.8 | 8.2 | 1.9-14.5 | 38.4 | 27.8-48.9 |
| **25-64** | **714** | **45.3** | **38.9-51.6** | **12.9** | **9.3-16.4** | **11.9** | **8.4-15.3** | **30.0** | **24.0-36.0** |
| **Both sexes** | | | | | | | | | |
| 25-34 | 458 | 44.5 | 37.7-51.2 | 17.5 | 12.3-22.7 | 11.9 | 8.2-15.6 | 26.2 | 19.7-32.7 |
| 35-44 | 539 | 45.2 | 36.8-53.7 | 18.0 | 12.7-23.3 | 12.2 | 8.0-16.5 | 24.5 | 17.5-31.4 |
| 45-54 | 459 | 45.7 | 36.7-54.7 | 17.1 | 10.0-24.2 | 9.8 | 5.3-14.2 | 27.4 | 22.2-32.6 |
| 55-64 | 302 | 39.6 | 31.5-47.8 | 17.9 | 13.3-22.6 | 12.0 | 7.5-16.6 | 30.4 | 24.0-36.8 |
| **25-64** | **1758** | **44.5** | **39.0-49.9** | **17.6** | **13.6-21.6** | **11.5** | **9.6-13.5** | **26.4** | **23.2-29.6** |

**Table 30:** Frequency and quantity of drinks consumed in the past 7 days

| Age Group(years) | N | Drank on 4+ days | | 5+ drinks on any day | | 20+ drinks in 7 days | |
|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | |
| 25-34 | 245 | 20.3 | 11.4-29.3 | 42.9 | 27.7-58.1 | 21.9 | 13.9-29.9 |
| 35-44 | 307 | 36.2 | 22.2-50.2 | 43.3 | 33.1-53.5 | 23.5 | 16.1-30.8 |
| 45-54 | 270 | 44.0 | 37.5-50.6 | 60.5 | 43.9-77.1 | 38.6 | 31.4-45.9 |
| 55-64 | 176 | 43.8 | 32.2-55.3 | 53.1 | 44.0-62.2 | 38.6 | 29.5-47.6 |
| **25-64** | **998** | **32.5** | **26.7-38.3** | **47.7** | **40.3-55.2** | **27.6** | **23.2-32.0** |

| Women | N | Drank on 4+ days | | 4+ drinks on any day | | 15+ drinks in 7 days | |
|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI |
| 25-34 | 197 | 17.1 | 10.9-23.2 | 46.9 | 37.1-56.8 | 19.7 | 13.5-25.9 |
| 35-44 | 203 | 24.0 | 14.9-33.2 | 52.5 | 36.1-68.9 | 18.9 | 11.0-26.9 |
| 45-54 | 173 | 27.8 | 16.6-39.0 | 36.3 | 21.5-51.1 | 14.3 | 7.1-21.4 |
| 55-64 | 116 | 42.0 | 30.8-53.2 | 57.1 | 42.6-71.5 | 36.9 | 24.8-48.9 |
| **25-64** | **689** | **24.3** | **18.7-29.9** | **47.0** | **40.7-53.3** | **19.9** | **14.7-25.1** |

**Table 31:**     **Distribution of level of Body Mass Index of the respondents**

| Age Group(years) | | Under-weight(<18.5) | | Normal weight(18.5-24.9) | | Overweight (25.0-29.9) | | Obese(≥30) | |
|---|---|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | | | |
| 25-34 | 784 | 12.5 | 7.9-17.0 | 76.2 | 70.8-81.6 | 9.1 | 5.8-12.5 | 2.2 | 1.1-3.3 |
| 35-44 | 721 | 18.4 | 11.9-24.8 | 64.9 | 52.2-77.5 | 14.1 | 6.6-21.5 | 2.7 | 0.9-4.5 |
| 45-54 | 625 | 22.4 | 8.1-36.7 | 56.7 | 45.7-67.6 | 17.8 | 12.6-23.0 | 3.1 | 1.4-4.9 |
| 55-64 | 450 | 16.4 | 9.9-22.9 | 67.5 | 56.8-78.1 | 13.8 | 7.8-19.9 | 2.3 | 0.5-4.1 |
| **25-64** | **2580** | **16.3** | **12.4-20.2** | **68.6** | **64.4-72.7** | **12.6** | **10.4-14.8** | **2.5** | **1.5-3.5** |
| **Women** | | | | | | | | | |
| 25-34 | 933 | 8.7 | 5.3-12.1 | 58.3 | 54.3-62.3 | 19.7 | 16.7-22.8 | 13.3 | 9.3-17.3 |
| 35-44 | 862 | 8.6 | 5.8-11.4 | 49.2 | 40.2-58.2 | 24.7 | 18.4-31.0 | 17.4 | 12.9-22.0 |
| 45-54 | 599 | 9.2 | 5.5-12.9 | 47.5 | 42.7-52.3 | 26.7 | 20.1-33.3 | 16.6 | 11.5-21.6 |
| 55-64 | 417 | 12.9 | 8.8-17.0 | 57.7 | 50.1-65.4 | 16.1 | 12.2-20.0 | 13.3 | 8.3-18.3 |
| **25-64** | **2811** | **9.1** | **6.7-11.5** | **53.8** | **49.9-57.6** | **22.1** | **18.6-25.6** | **15.0** | **12.4-17.7** |
| **Both sexes** | | | | | | | | | |
| 25-34 | 1717 | 10.6 | 7.1-14.0 | 67.1 | 64.0-70.2 | 14.5 | 12.4-16.7 | 7.8 | 5.5-10.1 |
| 35-44 | 1583 | 13.6 | 10.4-16.9 | 57.3 | 47.3-67.3 | 19.2 | 12.9-25.6 | 9.9 | 7.9-11.9 |
| 45-54 | 1224 | 15.6 | 9.0-22.2 | 52.0 | 46.2-57.8 | 22.4 | 18.6-26.1 | 10.0 | 7.0-13.0 |
| 55-64 | 867 | 14.9 | 10.8-19.0 | 63.4 | 55.7-71.1 | 14.8 | 10.8-18.7 | 6.9 | 4.0-9.9 |
| **25-64** | **5391** | **12.8** | **10.9-14.6** | **61.2** | **57.6-64.9** | **17.3** | **14.8-19.7** | **8.7** | **7.3-10.1** |

**Table 32:** **Prevalence of high blood pressure among respondents at measurement during survey**

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | N | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| **SBP ≥140 and/or DBP ≥ 90 mmHg, excluding those on medication for raised blood pressure** | | | | | | | | | |
| 25-34 | 782 | 17.0 | 12.5-21.6 | 1051 | 13.3 | 10.9-15.7 | 1833 | 15.0 | 12.4-17.6 |
| 35-44 | 718 | 19.5 | 12.6-26.3 | 895 | 25.5 | 21.6-29.4 | 1613 | 22.4 | 17.3-27.5 |
| 45-54 | 617 | 38.1 | 32.3-43.9 | 588 | 39.1 | 34.1-44.1 | 1205 | 38.6 | 34.5-42.8 |
| 55-64 | 442 | 46.9 | 40.4-53.3 | 394 | 55.2 | 46.5-64.0 | 836 | 50.3 | 45.5-55.2 |
| **25-64** | **2559** | **24.8** | **21.6-28.0** | **2928** | **24.2** | **21.7-26.8** | **5487** | **24.5** | **22.1-26.9** |
| **SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure** | | | | | | | | | |
| 25-34 | 786 | 17.2 | 12.6-21.8 | 1065 | 14.2 | 11.7-16.7 | 1851 | 15.6 | 12.9-18.2 |
| 35-44 | 725 | 20.2 | 13.1-27.2 | 914 | 29.1 | 25.6-32.5 | 1639 | 24.6 | 21.1-28.0 |
| 45-54 | 624 | 39.0 | 33.2-44.8 | 607 | 41.7 | 37.3-46.0 | 1231 | 40.4 | 36.4-44.4 |
| 55-64 | 450 | 48.0 | 41.6-54.4 | 424 | 57.7 | 49.2-66.2 | 874 | 52.1 | 47.3-57.0 |
| **25-64** | **2585** | **25.4** | **22.1-28.7** | **3010** | **26.4** | **24.3-28.6** | **5595** | **25.9** | **23.8-28.1** |
| **SBP ≥160 and/or DBP ≥ 100 mmHg, excluding those on medication for raised blood pressure** | | | | | | | | | |
| 25-34 | 782 | 3.0 | 1.0-4.9 | 1051 | 2.9 | 1.5-4.2 | 1833 | 2.9 | 1.7-4.1 |
| 35-44 | 718 | 4.4 | 2.2-6.6 | 895 | 7.9 | 5.7-10.1 | 1613 | 6.1 | 4.2-8.0 |
| 45-54 | 617 | 18.2 | 11.5-24.9 | 588 | 21.8 | 14.3-29.2 | 1205 | 20.0 | 13.6-26.5 |
| 55-64 | 442 | 25.4 | 18.8-32.0 | 394 | 29.0 | 22.4-35.7 | 836 | 26.9 | 22.5-31.3 |
| **25-64** | **2559** | **8.6** | **6.8-10.3** | **2928** | **9.5** | **8.0-11.0** | **5487** | **9.0** | **7.9-10.2** |
| **SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure** | | | | | | | | | |
| 25-34 | 786 | 3.2 | 1.2-5.1 | 1065 | 3.8 | 2.2-5.4 | 1851 | 3.5 | 2.2-4.8 |
| 35-44 | 725 | 5.2 | 2.7-7.8 | 914 | 12.3 | 7.5-17.1 | 1639 | 8.7 | 6.8-10.6 |
| 45-54 | 624 | 19.3 | 12.8-25.9 | 607 | 25.1 | 18.8-31.4 | 1231 | 22.3 | 16.6-28.1 |
| 55-64 | 450 | 27.0 | 20.7-33.3 | 424 | 33.0 | 26.4-39.5 | 874 | 29.5 | 25.4-33.6 |
| **25-64** | **2585** | **9.3** | **7.6-11.0** | **3010** | **12.1** | **10.4-13.8** | **5595** | **10.8** | **9.4-12.2** |

**Table 33:** Percentage of respondents who received lifestyle advice from a doctor or health worker to treat raised blood pressure among those previously diagnosed with raised blood pressure

| Age Group(years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| **Advised by doctor or health worker to reduce salt intake among those previously diagnosed** | | | | | | | | | |
| 25-34 | 14 | 30.3 | 0.0-65.0 | 81 | 33.1 | 15.0-51.2 | 95 | 32.7 | 16.1-49.2 |
| 35-44 | 27 | 44.0 | 19.8-68.3 | 107 | 50.5 | 34.0-67.0 | 134 | 48.9 | 34.9-62.8 |
| 45-54 | 28 | 57.7 | 29.3-86.1 | 99 | 28.4 | 17.5-39.2 | 127 | 34.4 | 23.3-45.6 |
| 55-64 | 52 | 68.9 | 52.4-85.5 | 84 | 54.1 | 39.3-68.8 | 136 | 60.9 | 48.9-72.8 |
| **25-64** | **121** | **52.8** | **38.6-67.0** | **371** | **39.8** | **30.8-48.8** | **492** | **43.1** | **35.0-51.2** |
| **Advised by doctor or health worker to lose weight among those previously diagnosed** | | | | | | | | | |
| 25-34 | 14 | 30.3 | 0.0-65.0 | 81 | 10.2 | 1.9-18.5 | 95 | 13.4 | 3.8-23.0 |
| 35-44 | 27 | 39.7 | 9.1-70.3 | 107 | 28.9 | 8.8-48.9 | 134 | 31.6 | 15.5-47.7 |
| 45-54 | 28 | 21.8 | 0.0-44.9 | 99 | 16.0 | 6.3-25.7 | 127 | 17.2 | 7.3-27.0 |
| 55-64 | 52 | 33.4 | 18.3-48.6 | 84 | 24.9 | 12.5-37.3 | 136 | 28.8 | 18.4-39.2 |
| **25-64** | **121** | **32.3** | **18.5-46.2** | **371** | **19.4** | **11.3-27.5** | **492** | **22.7** | **15.3-30.1** |
| **Advised by doctor or health worker to stop smoking among those previously diagnosed** | | | | | | | | | |
| 25-34 | 14 | 34.2 | 0.0-69.5 | 81 | 6.7 | 0.8-12.6 | 95 | 11.1 | 2.8-19.4 |
| 35-44 | 27 | 31.4 | 1.9-60.9 | 107 | 22.4 | 1.4-43.4 | 134 | 24.7 | 8.0-41.4 |
| 45-54 | 28 | 12.5 | 0.0-26.2 | 99 | 5.2 | 1.2-9.2 | 127 | 6.7 | 2.1-11.4 |
| 55-64 | 52 | 41.9 | 26.3-57.5 | 84 | 16.7 | 7.5-25.9 | 136 | 28.3 | 18.4-38.1 |
| **25-64** | **121** | **31.2** | **19.3-43.1** | **371** | **12.4** | **4.7-20.0** | **492** | **17.2** | **10.7-23.6** |
| **Advised by doctor or health worker to start or do more exercise among those previously diagnosed** | | | | | | | | | |
| 25-34 | 14 | 32.7 | 0.0-67.5 | 81 | 25.2 | 13.7-36.7 | 95 | 26.4 | 15.1-37.8 |
| 35-44 | 27 | 23.5 | 3.8-43.2 | 107 | 32.1 | 12.6-51.6 | 134 | 30.0 | 14.6-45.4 |
| 45-54 | 28 | 34.2 | 18.5-49.9 | 99 | 22.4 | 13.1-31.7 | 127 | 24.9 | 16.4-33.3 |
| 55-64 | 52 | 50.4 | 28.9-71.9 | 84 | 24.1 | 13.0-35.3 | 136 | 36.2 | 23.2-49.1 |
| **25-64** | **121** | **36.0** | **23.3-48.6** | **371** | **26.4** | **18.7-34.1** | **492** | **28.8** | **21.9-35.8** |

**Table 34:** **Hypertensive who have seen traditional healers for advice/treatment for raised Blood Pressure**

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| **Seen a traditional healer among those previously diagnosed** | | | | | | | | | |
| 25-34 | 14 | 4.7 | 0.0-14.2 | 81 | 5 | 0.2-9.7 | 95 | 4.9 | 0.7-9.1 |
| 35-44 | 27 | 19.7 | 0.0-41.1 | 107 | 17 | 7.0-27.1 | 134 | 17.7 | 8.7-26.7 |
| 45-54 | 28 | 6.0 | 0.0-16.2 | 99 | 22.7 | 5.0-40.3 | 127 | 19.2 | 6.4-32.1 |
| 55-64 | 52 | 26.7 | 12.8-40.6 | 84 | 12.2 | 3.7-20.7 | 136 | 18.9 | 10.6-27.2 |
| **25-64** | **121** | **16.7** | **7.3-26.0** | **371** | **14.5** | **7.8-21.2** | **492** | **15.1** | **10.1-20.0** |
| **Currently taking herbal or traditional remedy for high BP among those previously diagnosed** | | | | | | | | | |
| 25-34 | 14 | 0.0 | 0.0-0.0 | 81 | 1.3 | 0.0-3.1 | 95 | 1.1 | 0.0-2.6 |
| 35-44 | 27 | 4.7 | 0.0-10.9 | 107 | 8.6 | 1.4-15.8 | 134 | 7.6 | 2.0-13.2 |
| 45-54 | 28 | 11.3 | 0.0-31.6 | 99 | 17.6 | 0.0-35.7 | 127 | 16.3 | 2.8-29.8 |
| 55-64 | 52 | 31.9 | 15.1-48.8 | 84 | 5.8 | 1.1-10.5 | 136 | 17.8 | 8.0-27.5 |
| **25-64** | **121** | **14.2** | **6.1-22.2** | **371** | **8.6** | **2.4-14.9** | **492** | **10** | **4.5-15.6** |

**Table 35:** **Status of treatment and blood pressure control among previously diagnosed hypertensive respondents**

| Age Group (years) | N | On medication and SBP<140 and DBP<90 | | On medication and SBP≥140 and/orDBP≥90 | | Not on medication and SBP≥140 and/orDBP≥90 | |
|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI |
| Men Respondents with treated and/or controlled raised blood pressure | | | | | | | |
| 25-34 | 144 | 0.9 | 0.0-2.0 | 0.3 | 0.0-0.8 | 98.8 | 97.4-100.0 |
| 35-44 | 173 | 1.9 | 0.0-3.8 | 2.5 | 0.0-5.6 | 95.6 | 92.0-99.2 |
| 45-54 | 224 | 3.1 | 0.0-7.2 | 0.5 | 0.0-1.2 | 96.4 | 92.2-100.0 |
| 55-64 | 235 | 0.5 | 0.0-1.4 | 4.0 | 0.0-8.8 | 95.5 | 90.5-100.0 |
| **25-64** | **776** | **1.6** | **0.4-2.8** | **1.7** | **0.3-3.1** | **96.7** | **94.6-98.8** |
| Women Respondents with treated and/or controlled raised blood pressure | | | | | | | |
| 25-34 | 178 | 6.3 | 1.3-11.4 | 0.5 | 0.0-1.3 | 93.1 | 88.0-98.3 |
| 35-44 | 264 | 7.3 | 0.0-16.6 | 9.1 | 0.1-18.1 | 83.6 | 65.6-100.0 |
| 45-54 | 243 | 1.2 | 0.0-2.5 | 9 | 1.0-17.0 | 89.8 | 81.9-97.7 |
| 55-64 | 251 | 2.3 | 0.4-4.2 | 7.3 | 3.7-11.0 | 90.4 | 86.2-94.5 |
| **25-64** | **936** | **4.5** | **1.7-7.3** | **6.6** | **3.5-9.6** | **88.9** | **83.9-94.0** |
| Both sexes Respondents with treated and/or controlled raised blood pressure | | | | | | | |
| 25-34 | 322 | 3.6 | 1.0-6.3 | 0.4 | 0.0-0.9 | 95.9 | 93.2-98.7 |
| 35-44 | 437 | 5.1 | 0.0-10.8 | 6.4 | 0.6-12.1 | 88.6 | 77.3-99.8 |
| 45-54 | 467 | 2.1 | 0.0-4.4 | 5.1 | 0.5-9.6 | 92.9 | 88.0-97.8 |
| 55-64 | 486 | 1.4 | 0.3-2.4 | 5.6 | 2.4-8.7 | 93.1 | 89.7-96.4 |
| **25-64** | **1712** | **3.1** | **1.6-4.7** | **4.2** | **2.5-6.0** | **92.6** | **89.8-95.4** |

**Table 36:**     **Distribution of the respondents by measurement of blood glucose and diagnosis of diabetes**

| Age Group (years) | N | Never measured | | Measured, not diagnosed | | Diagnosed, but not within past 12 months | | Diagnosed within past 12 months | |
|---|---|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | | | |
| 25-34 | 792 | 96.5 | 94.8-98.2 | 3.4 | 1.7-5.0 | 0.1 | 0.0-0.4 | 0.0 | 0.0-0.0 |
| 35-44 | 726 | 94.2 | 91.4-97.1 | 4.6 | 2.2-7.0 | 0.4 | 0.0-0.8 | 0.8 | 0.0-1.8 |
| 45-54 | 627 | 88.5 | 84.3-92.8 | 9.1 | 5.2-13.1 | 1.4 | 0.3-2.6 | 0.9 | 0.2-1.6 |
| 55-64 | 456 | 87.0 | 81.1-93.0 | 7.9 | 4.2-11.6 | 2.2 | 0.0-4.7 | 2.9 | 0.3-5.5 |
| **25-64** | **2601** | **93.4** | **91.3-95.4** | **5.2** | **3.5-6.9** | **0.7** | **0.3-1.1** | **0.7** | **0.3-1.2** |
| **Women** | | | | | | | | | |
| 25-34 | 1069 | 93.9 | 91.4-96.4 | 5.5 | 3.1-7.8 | 0.5 | 0.0-1.0 | 0.2 | 0.0-0.4 |
| 35-44 | 921 | 85.5 | 78.2-92.9 | 10.7 | 5.7-15.8 | 0.7 | 0.1-1.3 | 3.0 | 0.2-5.8 |
| 45-54 | 610 | 82.0 | 74.3-89.7 | 15.5 | 7.8-23.2 | 1.0 | 0.1-1.8 | 1.6 | 0.4-2.7 |
| 55-64 | 425 | 87.4 | 83.1-91.7 | 9.6 | 5.7-13.5 | 1.7 | 0.1-3.4 | 1.2 | 0.3-2.2 |
| **25-64** | **3025** | **89.1** | **86.6-91.5** | **9.0** | **6.9-11.1** | **0.7** | **0.4-1.1** | **1.3** | **0.6-1.9** |
| **Both sexes** | | | | | | | | | |
| 25-34 | 1861 | 95.1 | 93.4-96.7 | 4.5 | 2.9-6.1 | 0.3 | 0.0-0.6 | 0.1 | 0.0-0.2 |
| 35-44 | 1647 | 89.9 | 87.0-92.8 | 7.7 | 5.5-9.8 | 0.5 | 0.1-1.0 | 1.9 | 0.6-3.2 |
| 45-54 | 1237 | 85.1 | 81.8-88.4 | 12.5 | 9.1-15.9 | 1.2 | 0.4-1.9 | 1.3 | 0.6-2.0 |
| 55-64 | 881 | 87.2 | 82.9-91.5 | 8.6 | 5.8-11.4 | 2.0 | 0.4-3.6 | 2.2 | 0.6-3.7 |
| **25-64** | **5626** | **91.1** | **89.8-92.5** | **7.2** | **6.0-8.3** | **0.7** | **0.4-1.0** | **1.0** | **0.6-1.4** |

**Table 37: Diabetic respondents who are currently taking insulin or oral ant-diabetic drugs**

| Age Group(years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| Currently taking insulin prescribed for diabetes among those previously diagnosed | | | | | | | | | |
| 25-34 | 2 | 0.0 | 0.0-0.0 | 10 | 0.0 | 0.0-0.0 | 12 | 0.0 | 0.0-0.0 |
| 35-44 | 9 | 13.1 | 0.0-39.4 | 19 | 47.2 | 0.3-94.0 | 28 | 38.9 | 0.0-79.4 |
| 45-54 | 18 | 26.0 | 1.5-50.6 | 18 | 41.9 | 13.6-70.2 | 36 | 34.6 | 15.0-54.2 |
| 55-64 | 22 | 21.5 | 0.0-59.2 | 17 | 14.6 | 0.0-36.9 | 39 | 19.4 | 0.0-46.0 |
| **25-64** | **51** | **19.8** | **1.2-38.4** | **64** | **34.5** | **5.1-64.0** | **115** | **28.7** | **8.5-48.8** |
| Currently taking oral drugs prescribed for diabetes among those previously diagnosed | | | | | | | | | |
| 25-34 | 2 | 0.0 | 0.0-0.0 | 10 | 18.3 | 0.0-42.1 | 12 | 15.4 | 0.0-35.6 |
| 35-44 | 9 | 82.1 | 54.9-100 | 19 | 68.3 | 36.3-100.0 | 28 | 71.7 | 47.9-95.5 |
| 45-54 | 18 | 42.6 | 13.2-71.9 | 18 | 41.5 | 13.2-69.8 | 36 | 42.0 | 21.9-62.1 |
| 55-64 | 22 | 48.8 | 10.7-87.0 | 17 | 46.1 | 16.5-75.8 | 39 | 48.0 | 21.1-74.9 |
| **25-64** | **51** | **52.9** | **30.4-75.4** | **64** | **51.8** | **27.6-76.0** | **115** | **52.2** | **35.7-68.7** |

**Table 38:** Previously diagnosed diabetic respondents who received advice for lifestyle modification from a doctor or health worker

| Age Group (years) | Men | | | Women | | | Both sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| **Having special prescribed diet** | | | | | | | | | |
| 25-34 | 2 | 40.1 | 0.0-100.0 | 10 | 23.5 | 0.0-51.6 | 12 | 26.2 | 0.0-53.9 |
| 35-44 | 9 | 75.7 | 42.2-100.0 | 19 | 87.2 | 70.9-100.0 | 28 | 84.4 | 69.8-99.0 |
| 45-54 | 18 | 44.3 | 14.9-73.7 | 18 | 72.2 | 46.9-97.5 | 36 | 59.4 | 39.6-79.2 |
| 55-64 | 22 | 93.3 | 84.0-100.0 | 17 | 63.0 | 41.3-84.6 | 39 | 84.2 | 72.1-96.4 |
| **25-64** | **51** | **72.8** | **55.9-89.7** | **64** | **70.8** | **52.9-88.8** | **115** | **71.6** | **59.0-84.3** |
| **Lose weight** | | | | | | | | | |
| 25-34 | 2 | 100.0 | 100.0-100.0 | 10 | 18.3 | 0.0-42.1 | 12 | 31.2 | 7.9-54.6 |
| 35-44 | 9 | 22.4 | 0.0-53.4 | 19 | 76.8 | 52.3-100.0 | 28 | 63.6 | 34.9-92.3 |
| 45-54 | 18 | 45.8 | 15.2-76.3 | 18 | 46.4 | 19.0-73.8 | 36 | 46.1 | 26.3-66.0 |
| 55-64 | 22 | 81.1 | 63.5-98.6 | 17 | 47.4 | 19.8-75.1 | 39 | 71.0 | 52.2-89.8 |
| **25-64** | **51** | **57.7** | **37.9-77.6** | **64** | **57.3** | **34.6-80.0** | **115** | **57.5** | **42.5-72.4** |
| **Stop smoking** | | | | | | | | | |
| 25-34 | 2 | 40.1 | 0.0-100.0 | 10 | 9.9 | 0.0-29.7 | 12 | 14.7 | 0.0-35.8 |
| 35-44 | 9 | 32.8 | 0.0-72.0 | 19 | 74.5 | 48.6-100.0 | 28 | 64.4 | 36.2-92.6 |
| 45-54 | 18 | 22.9 | 0.0-47.0 | 18 | 23.7 | 1.4-46.1 | 36 | 23.4 | 7.4-39.3 |
| 55-64 | 22 | 56.4 | 19.1-93.6 | 17 | 30.2 | 6.5-53.8 | 39 | 48.5 | 22.4-74.6 |
| **25-64** | **51** | **40.5** | **18.9-62.0** | **64** | **47.7** | **22.2-73.2** | **115** | **44.8** | **27.4-62.3** |
| **Start or doing more exercise** | | | | | | | | | |
| 25-34 | 2 | 100.0 | 100.0-100.0 | 10 | 13.7 | 0.0-35.2 | 12 | 27.4 | 5.2-49.6 |
| 35-44 | 9 | 89.1 | 72.7-100.0 | 19 | 77.5 | 52.4-100.0 | 28 | 80.3 | 62.0-98.6 |
| 45-54 | 18 | 58.0 | 29.3-86.8 | 18 | 46.4 | 19.0-73.8 | 36 | 51.8 | 31.5-72.0 |
| 55-64 | 22 | 82.6 | 64.5-100.0 | 17 | 59.6 | 38.9-80.4 | 39 | 75.7 | 60.4-91.0 |
| **25-64** | **51** | **78.0** | **66.1-90.0** | **64** | **58.4** | **36.2-80.5** | **115** | **66.2** | **52.7-79.7** |

**Table 39:** **Distribution of previously diagnosed diabetic respondents who sought advice or treatment from traditional healers for diabetes**

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | 95% CI | n | % | 95% CI | n | % | 95% CI |
| **Seen a traditional healer for diabetes** | | | | | | | | | |
| 25-34 | 2 | 0.0 | 0.0-0.0 | 10 | 21.2 | 0.0-47.0 | 12 | 17.9 | 0.0-40.1 |
| 35-44 | 9 | 30.1 | 0.0-67.2 | 19 | 28.9 | 0.0-60.7 | 28 | 29.2 | 4.5-53.9 |
| 45-54 | 18 | 49.2 | 21.1-77.2 | 18 | 23.2 | 3.3-43.1 | 36 | 35.1 | 18.0-52.2 |
| 55-64 | 22 | 57.6 | 27.7-87.4 | 17 | 19.4 | 0.0-43.6 | 39 | 46.1 | 19.7-72.5 |
| **25-64** | **51** | **45.9** | **23.8-68.1** | **64** | **25.3** | **9.2-41.3** | **115** | **33.5** | **19.1-47.8** |
| **Currently taking herbal or traditional treatment for diabetes** | | | | | | | | | |
| 25-34 | 2 | 0 | 0.0-0.0 | 10 | 5.3 | 0.0-16.2 | 12 | 4.5 | 0.0-13.6 |
| 35-44 | 9 | 19.2 | 0.0-46.8 | 19 | 12.5 | 0.0-30.5 | 28 | 14.1 | 0.0-29.5 |
| 45-54 | 18 | 27.2 | 0.9-53.4 | 18 | 4.4 | 0.0-11.2 | 36 | 14.9 | 1.9-27.8 |
| 55-64 | 22 | 39.5 | 2.4-76.5 | 17 | 14.2 | 0.0-32.8 | 39 | 31.9 | 5.4-58.4 |
| **25-64** | **51** | **29.3** | **9.2-49.4** | **64** | **9.8** | **0.6-19.0** | **115** | **17.6** | **7.0-28.1** |

**Table 40:** **Distribution of respondents' mean fasting glucose, total cholesterol and triglycerides**

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | Mean | 95% CI | n | Mean | 95% CI | n | Mean | 95% CI |
| **Fasting blood glucose (mmol/L)** | | | | | | | | | |
| 25-34 | 669 | 4.8 | 4.7-4.9 | 884 | 4.7 | 4.6-4.9 | 1553 | 4.8 | 4.7-4.8 |
| 35-44 | 638 | 4.6 | 4.2-5.0 | 789 | 5.0 | 4.8-5.1 | 1427 | 4.8 | 4.5-5.0 |
| 45-54 | 543 | 5.0 | 4.8-5.2 | 539 | 5.1 | 4.6-5.7 | 1082 | 5.1 | 4.7-5.4 |
| 55-64 | 405 | 4.8 | 4.4-5.1 | 399 | 5.1 | 4.8-5.3 | 804 | 4.9 | 4.7-5.1 |
| **25-64** | **2255** | **4.8** | **4.6-4.9** | **2611** | **4.9** | **4.8-5.0** | **4866** | **4.8** | **4.7-4.9** |
| **Total cholesterol (mmol/L)** | | | | | | | | | |
| 25-34 | 201 | 4.3 | 4.2-4.4 | 340 | 4.5 | 4.4-4.6 | 541 | 4.4 | 4.3-4.5 |
| 35-44 | 219 | 4.3 | 4.2-4.4 | 315 | 4.7 | 4.5-4.9 | 534 | 4.5 | 4.4-4.7 |
| 45-54 | 207 | 4.6 | 4.5-4.8 | 216 | 5.0 | 4.8-5.2 | 423 | 4.9 | 4.7-5.0 |
| 55-64 | 175 | 4.7 | 4.6-4.8 | 173 | 4.8 | 4.7-5.0 | 348 | 4.8 | 4.7-4.9 |
| **25-64** | **802** | **4.4** | **4.4-4.5** | **1044** | **4.7** | **4.6-4.8** | **1846** | **4.6** | **4.5-4.6** |
| **Fasting triglycerides (mmol/L)** | | | | | | | | | |
| 25-34 | 197 | 1.6 | 1.4-1.8 | 339 | 1.8 | 1.5-2.0 | 536 | 1.7 | 1.5-1.9 |
| 35-44 | 218 | 1.7 | 1.4-1.9 | 302 | 1.7 | 1.5-2.0 | 520 | 1.7 | 1.6-1.9 |
| 45-54 | 201 | 1.8 | 1.4-2.2 | 210 | 2.0 | 1.6-2.4 | 411 | 1.9 | 1.5-2.3 |
| 55-64 | 156 | 1.7 | 1.4-2.1 | 160 | 1.6 | 1.4-1.9 | 316 | 1.7 | 1.5-1.9 |
| **25-64** | **772** | **1.7** | **1.5-1.8** | **1011** | **1.8** | **1.6-2.0** | **1783** | **1.7** | **1.6-1.9** |

**Table 41:** **Distribution of respondents with Impaired Fasting Glycaemia and 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 |
| **Impaired Fasting Glycaemia*** | | | | | | | | | |
| 25-34 | 669 | 13.8 | 9.5-18.2 | 885 | 9.4 | 5.5-13.4 | 1554 | 11.4 | 9.1-13.7 |
| 35-44 | 638 | 8.9 | 4.6-13.2 | 789 | 12.1 | 5.1-19.2 | 1427 | 10.5 | 5.8-15.3 |
| 45-54 | 543 | 9.3 | 5.7-12.9 | 539 | 8.7 | 5.7-11.6 | 1082 | 9.0 | 6.3-11.6 |
| 55-64 | 405 | 10.7 | 5.9-15.5 | 399 | 9.6 | 5.7-13.6 | 804 | 10.3 | 7.1-13.5 |
| **25-64** | **2255** | **11.3** | **9.4-13.1** | **2612** | **10.0** | **6.5-13.5** | **4867** | **10.6** | **8.3-12.9** |
| **Raised blood glucose or currently on medication for diabetes ** ** | | | | | | | | | |
| 25-34 | 669 | 6.8 | 4.2-9.4 | 885 | 8.9 | 4.8-13.0 | 1554 | 8.0 | 5.8-10.2 |
| 35-44 | 638 | 7.7 | 3.8-11.7 | 789 | 11.0 | 7.5-14.5 | 1427 | 9.4 | 7.0-11.7 |
| 45-54 | 543 | 10.2 | 5.0-15.4 | 539 | 10.9 | 6.6-15.2 | 1082 | 10.6 | 6.3-14.8 |
| 55-64 | 405 | 9.7 | 5.0-14.4 | 399 | 11.9 | 7.9-16.0 | 804 | 10.6 | 7.4-13.9 |
| **25-64** | **2255** | **8.0** | **5.6-10.5** | **2612** | **10.0** | **7.8-12.2** | **4867** | **9.1** | **7.8-10.3** |
| **Currently on medication for diabetes** | | | | | | | | | |
| 25-34 | 794 | 0.1 | 0.0-0.2 | 1073 | 0.2 | 0.0-0.3 | 1867 | 0.1 | 0.0-0.2 |
| 35-44 | 730 | 0.9 | 0.0-2.0 | 928 | 2.8 | 0.0-5.6 | 1658 | 1.9 | 0.6-3.1 |
| 45-54 | 633 | 1.1 | 0.3-2.0 | 619 | 1.3 | 0.2-2.3 | 1252 | 1.2 | 0.5-1.9 |
| 55-64 | 466 | 3.5 | 0.3-6.7 | 437 | 1.4 | 0.2-2.5 | 903 | 2.6 | 0.7-4.5 |
| **25-64** | **2623** | **0.9** | **0.4-1.4** | **3057** | **1.1** | **0.5-1.8** | **5680** | **1.0** | **0.7-1.4** |

*Impaired fasting glycaemia was defined as: Capillary whole blood value: ≥5.6mmol/L (100mg/dl) and
<6.1mmol/L (110mg/dl)

**Table 42:**  **Distribution of respondents' Fasting Total cholesterol and triglycerides by age and sexes**

| Age Group (years) | Men | | | Women | | | Both Sexes | | |
|---|---|---|---|---|---|---|---|---|---|
| | N | % | 95% CI | N | % | 95% CI | N | % | 95% CI |
| **Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol** | | | | | | | | | |
| 25-34 | 201 | 13.0 | 5.8-20.1 | 340 | 24.8 | 16.9-32.8 | 541 | 19.8 | 14.0-25.6 |
| 35-44 | 219 | 9.0 | 2.6-15.3 | 315 | 35.9 | 24.6-47.3 | 534 | 22.7 | 18.2-27.2 |
| 45-54 | 207 | 22.3 | 12.2-32.3 | 216 | 49.7 | 37.7-61.6 | 423 | 38.0 | 28.6-47.4 |
| 55-64 | 175 | 39.9 | 32.0-47.8 | 173 | 39.1 | 27.5-50.8 | 348 | 39.6 | 31.8-47.5 |
| **25-64** | **802** | **17.0** | **12.0-22.0** | **1044** | **33.9** | **27.2-40.6** | **1846** | **26.0** | **21.4-30.7** |
| **Total cholesterol ≥ 6.2 mmol/L or ≥ 240 mg/dl or currently on medication for raised cholesterol** | | | | | | | | | |
| 25-34 | 201 | 2.5 | 0.0-5.1 | 340 | 2.5 | 0.3-4.7 | 541 | 2.5 | 0.9-4.1 |
| 35-44 | 219 | 1.6 | 0.0-3.6 | 315 | 4.9 | 0.0-11.0 | 534 | 3.3 | 0.6-5.9 |
| 45-54 | 207 | 4.2 | 1.2-7.2 | 216 | 14.3 | 0.0-30.2 | 423 | 10.0 | 1.1-18.8 |
| 55-64 | 175 | 3.6 | 0.2-7.0 | 173 | 8.0 | 2.6-13.4 | 348 | 5.2 | 1.6-8.8 |
| **25-64** | **802** | **2.6** | **1.0-4.3** | **1044** | **5.9** | **1.8-10.0** | **1846** | **4.4** | **2.5-6.3** |
| **Percentage of respondents with fasting triglycerides ≥ 1.7 mmol/L or ≥ 150 mg/dl** | | | | | | | | | |
| 25-34 | 197 | 26.6 | 18.1-35.0 | 339 | 31.0 | 23.6-38.3 | 536 | 28.8 | 22.5-35.2 |
| 35-44 | 218 | 29.7 | 21.9-37.6 | 302 | 37.7 | 22.4-52.9 | 520 | 34.2 | 24.2-44.1 |
| 45-54 | 201 | 36.6 | 16.9-56.3 | 210 | 46.0 | 35.4-56.5 | 411 | 41.8 | 29.6-54.0 |
| 55-64 | 156 | 45.7 | 17.3-74.1 | 160 | 33.4 | 18.0-48.7 | 316 | 40.5 | 20.9-60.2 |
| **25-64** | **772** | **31.3** | **22.1-40.5** | **1011** | **36.0** | **27.9-44.1** | **1783** | **33.8** | **25.7-41.9** |
| **Percentage of respondents with fasting triglycerides ≥ 2.0 mmol/L or ≥ 180 mg/dl** | | | | | | | | | |
| 25-34 | 197 | 23.1 | 14.3-31.9 | 339 | 22.2 | 14.6-29.8 | 536 | 22.6 | 15.7-29.6 |
| 35-44 | 218 | 24.7 | 16.6-32.9 | 302 | 26.4 | 16.1-36.7 | 520 | 25.7 | 18.8-32.5 |
| 45-54 | 201 | 26.6 | 4.4-48.8 | 210 | 34.9 | 25.6-44.2 | 411 | 31.2 | 16.6-45.8 |
| 55-64 | 156 | 36.0 | 2.9-69.2 | 160 | 24.0 | 11.8-36.2 | 316 | 31.0 | 9.6-52.4 |
| **25-64** | **772** | **25.6** | **14.5-36.7** | **1011** | **26.0** | **18.5-33.6** | **1783** | **25.8** | **17.0-34.7** |

**Table 43:** **Summary of combined NCD risk factors from the surveyed population**

| Age Group (years) | N | With 0 risk factors | | With 1-2 risk factors | | With 3-5 risk factors | |
|---|---|---|---|---|---|---|---|
| | | % | 95% CI | % | 95% CI | % | 95% CI |
| **Men** | | | | | | | |
| 25-44 | 1451 | 0.5 | 0.1-0.9 | 89.5 | 87.0-92.1 | 9.9 | 7.4-12.4 |
| 45-64 | 1023 | 0.8 | 0.3-1.4 | 71.8 | 65.2-78.3 | 27.4 | 20.8-34.1 |
| **25-64** | **2474** | **0.6** | **0.3-1.0** | **84.5** | **82.5-86.4** | **14.9** | **12.9-16.9** |
| **Women** | | | | | | | |
| 25-44 | 1716 | 1.1 | 0.5-1.8 | 84.5 | 82.1-86.8 | 14.4 | 11.9-16.8 |
| 45-64 | 952 | 0.6 | 0.2-1.1 | 70.8 | 66.3-75.3 | 28.6 | 24.1-33.1 |
| **25-64** | **2668** | **1** | **0.5-1.5** | **80.8** | **78.4-83.1** | **18.2** | **15.8-20.7** |
| **Both Sexes** | | | | | | | |
| 25-44 | 3167 | 0.8 | 0.5-1.2 | 87 | 85.5-88.4 | 12.2 | 10.7-13.6 |
| 45-64 | 1975 | 0.7 | 0.3-1.1 | 71.3 | 66.3-76.3 | 28 | 22.9-33.0 |
| **25-64** | **5142** | **0.8** | **0.5-1.1** | **82.6** | **80.9-84.4** | **16.6** | **14.7-18.4** |

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