MINISTRY OF HEALTH
GENERAL DEPARTMENT OF PREVENTIVE MEDICINE

NATIONAL SURVEY ON THE RISK FACTORS OF NON-COMMUNICABLE DISEASES (STEPS) VIET NAM 2015

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HANOI- 2016

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FORWARD

Noncommunicable diseases (NCDs) are the leading cause of death and morbidity in all of the regions in the world, as well as in all classes of society. The World Health Organization (WHO) estimated in 2012, of the 56 million global deaths, 38 million (68%) was due to NCDs and the number is estimated to increase to 52 million by 2030. In addition, nearly 3/4 of the total NCD mortality and over 80% of premature NCD mortality occur in countries of low and middle income.

Viet Nam is also faced with the high and growing burden of NCD morbidity and mortality. In 2012 it is estimated that 73% of deaths and 66% of the total burden of disease were due to NCDs, mainly cardiovascular diseases, cancers, diabetes and chronic respiratory diseases. The increase in the prevalence of these NCDs are related to the habits and customs of the people and by the high level of increase of the risk factors such as smoking, harmful use of alcohol, unhealthy nutrition, lack of physical activity along with an increase in overweight and obesity, hypertension, hyperglycemia, and dyslipidemia. On 20th of March 2015, the Prime Minister signed Decision No. 376/QD-TTg approving the National Strategy for prevention and control of cancer, cardiovascular disease, diabetes, chronic obstructive pulmonary disease, asthma and other non-communicable diseases, for the period from 2015 to 2025. The strategy is issued as an important direction for activities in the coming period, emphasizes on comprehensive approach, focusing on controlling the risk factors, disease prevention and early detection to effectively manage the NCDs.

In order to provide evidence for the implementation of action plans and evaluate the objectives and targets of the National Strategy for the period 2015-2025, the Ministry of Health organized a national survey on the risk factors of NCDs (STEPS) 2015. This survey was designed with the scientific standards, applying the standardized tools developed by the WHO, with a national representative sample to study status and trends of the common risk factors of NCDs in Viet Nam. The survey data also help monitor and report on the progress of implementation of the Global voluntary targets on NCDs that Viet Nam has adopted and committed to.

We sincerely thank the World Health Organization for providing technical and financial support for the survey. We also thank other agencies, units and individuals within and outside of the health sector who have contributed to the successful implementation of this survey.

Ha Noi, 5th September 2016

Prof. Dr. Nguyen Thanh Long
Vice Minister of Health

ABBREVIATION

NCD	**Non- communicable disease**
BMI	**Body Mass Index**
BP	**Blood Pressure**
STEPS	**STEPwise approach for NCD risk factor surveillance**
WHO	**World Health Organization**
95% CI	**95% Confident interval**

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EXECUTIVE SUMMARY

The National Survey on risk factors of Non-communicable diseases (STEPS) used the standard protocol of the WHO STEPwise approach to NCD risk factor surveillance focused on the adult population age 18-69 and addressed 4 objectives: (i) To evaluate the prevalence of risk behaviors including smoking, alcohol consumption, unhealthy diet and physical inactivity and related parameters; (ii) To measure mean levels of BMI and blood pressure, prevalence of overweight-obesity and hypertension and related parameters; (iii) To measure the mean levels of blood glucose and total cholesterol, prevalence of raised blood glucose and cholesterol and related parameters.

The survey employed a cross-sectional design with national representative sample of population age 18-69 year old residing in Viet Nam (using multistage sampling approach with stratified sample by gender and age). The survey included three stages or STEP: STEP 1 to collect demographic information/behavior risk factors; STEP 2 to collect physical measurement such as heigh/weight/blood pressure; STEP 3 to collect blood sample to test for glucose/cholesterol and collect urine sample. The total subjects aged 18-69 selected and participated in STEPS survey were 3856. Of them, 3758 subjects participated in STEP 1 (response rate: 97.4%) and 3080 subjects participated in both STEP 1, 2 and 3 (79.8%). Data weighting and analysis was conducted using Microsoft Excel, Access and Epi-Info version 3.5.4 and Stata version 10.

Major findings of the survey are as follow:

- Overall, 43.8% study population were current drinkers (consuming alcohol in the past 30 days). The pattern of alcohol consumption by gender showed clear and significant difference between males 77.3% and females 11.0%; The proportion of population engaging in heavy episodic drinking (6 or more drinks on any occasion in the past 30 days) were 44.2% among males and 1.2% among females); Almost half (45%) of current drinkers drove after drinking.
- More than half (57.2%) of the study population did not meet the recommendation on fruit/vegetable consumption by WHO. This proportion was significantly higher in males 63.1% compared to females 51.4%, and higher in rural 60.0% compared to urban area 51.0%.
- The average population salt intake per day among Vietnamese was 9.4 grams, which was almost double the recommendation of WHO.
- Nearly one third (28.1%) of the study population not attaining the WHO recommended level of physical activity (>=150 minutes of moderate intensity physical activity per week or equivalent). The proportion of physically inactive was significantly less males 20.2% compared to females 35.7%. This proportion is less in rural area 23.2% compared to urban area 37.3%. Work related activity contributed the largest part (more than 2/3) of daily physical activity, while recreation and transport related physical activity accounted for a quite small proportion.
- The prevalence of overweight/obesity (BMI>=25) was 15.6%. There was no clear different in the prevalence of overweight/obesity by gender, however, there was significant higher prevalence of overweight/obesity among urban adults (21.3%) compared to the rural counterparts (12.6%).
- The prevalence of hypertension (SBP ≥140 and/or DBP ≥ 90 mmHg or on medication) was 18.9%, and it was significantly higher among males (23.1%) compared to females (14.9%).
- Of the study population, 3.6% had impaired fasting glycaemia and 4.1% had raised blood sugar or were currently on medication for diabetes. There was no clear difference between males and females for impaired and raised blood glucose.
- The prevalence of respondents having blood total cholesterol >=5.0 mmol/L or currently on medication for raised cholesterol was 30.2%. Majority of the study population with 67% of males and 72% of females has low HDL (defined as men with HDL<1.03mmol/l or women with HDL<1.29mmol/L).

- Among those detected with raised blood pressure in this survey, only 43.1% reported being diagnosed by a doctor before, that means 56.9% are undiagnosed, and only 13.6% reported their hypertension currently being managed at a health facility; (ii) Among those detected with raised blood glucose/diabetes in this survey, only one third (31.1%) reported previously diagnosed by a doctor and 28.9% currently being managed at a health facility; that means 68.9% are undiagnosed.
- Only 24.9% of females age 18-69 and 31.5% of females age 30-49 reported being screening for cervical cancer before.

Comparison with STEP 2010 results among age group 25-64:

- The prevalence of alcohol use in the past 30 days have increased significantly from 37% in 2010 to 44.8% in 2015 The significant increase is also shown for both males and females between the two surveys.
- The proportion not consuming 5 servings per day decreased from 81.7% in 2010 to 57.2% in 2015.
- There was significant reduction of physically inactive population from 30.4% to 26.1% among those aged 25-64. A closer look showed that the improvement took placed only among males (dropped from 28.1% to 19.0%) while it stay the same for females at (32.6% for both years).
- The prevalence of overweight/obesity was rising fast from 12.0% in 2010 to 17.5% in 2015. This was more than 45% relative increase.
- The percentage with impaired blood glucose has increased significantly from 1.5% to 3.5%, while the prevalence of raised blood glucose/diabetes has increased from 2.6% to 4.1%.
- Comparison with STEPS 2010 there was a significant and large increase in the prevalence of hypertension from 15.3% in 2010 to 20.3% in 2015 among population aged 25-64.
- The prevalence of respondents having blood total cholesterol >=5.0 mmol/L or currently on medication for raised cholesterol stayed the same compared to 2010.

Overall, STEP survey 2015 showed that among population aged 18-69, the prevalence of all NCD risk factors were high. Apart from the % of not consuming enough vegetable/fruits and % of physically inactive population showed reduction over time, prevalence of other risk factors stayed the same or increase over time. Some risk factors had higher prevalence among male compared to female such as alcohol consumption, not consuming enough vegetable/fruit, and high blood pressure. The % of people with raised blood pressure, or raised blood glucose who were detected and managed by health care facility stayed low; similarly the % of women who has received screening for cervical cancer was also low.

Some recommendations from the survey results as follows:

- Strengthen interventions to control NCD risk factors, with focus on the reduction of: harmful use of alcohol, salt consumption, and overweight/obesity.
- Strengthen NCD services at primary health care level to increase the proportion of early detection and management of hypertension, diabetes; strengthening cervical cancer screening service.
- Establish sustainable national NCD surveillance system to provide reliable, consistent and timely data of magnitude, distribution and the trend of NCD indicators so as to inform policy development and implementation, as well as to ensure Viet Nam will be able to fulfill its international responsibility of reporting on progress of the Global NCD Targets.

I. INTRODUCTION

Non-communicable disease, such as cardiovascular diseases, cancer, diabetes and chronic respiratory disease are the leading causes of death and disability worldwide. Disease rates from these conditions are accelerating globally, advancing across regions and social classes. WHO estimated that in 2012, 38 millions of deaths among the total of 56 million of deaths in the worlds were caused by NCDs (the proportion of deaths caused by NCDs accounted for 68%)[1]. It was anticipated that the mortality due to NCD in developing countries would increase 8 times compared to developed countries in 2030.[2]

Viet Nam has to face with the increasing burden of NCDs. WHO estimated that in 2012, of total 520.000 death cases, there was 379.600 cases due to NCDs accounting for 73% (mostly due to heart diseases, cancer, diabetes and COPD).[3] It was estimated that NCDs were responsible for 66% the total burden of disease measuring by DALY.[4]

In 2013, the World Health Assembly endorsed Global Action Plan for NCD prevention and control to the year 2020 together with a set of 9 Global voluntary targets to be achieved by the year 2025.[5] To help member states monitor trends and assess progress made in the implementation of national strategies and plans on NCDs, a comprehensive global monitoring framework including the set of 25 indicators has been adopted.

In response to the World Health Assembly resolution, Viet Nam has conducted the National NCD risk factor Survey (STEPS) in 2015 applying WHO STEPS approach to NCD risk factor surveillance. STEPS is a standardized method developed by WHO to collect NCD risk factor information which can be used to compared across different countries, regions and time.

The STEPS survey 2015 contributes to implement the WHO global monitoring framework, provide baseline data for the implementation of the National NCD strategy 2015-2025, and to build capacity of the NCD surveillance network nationwide.

This Survey was coordinated by General Department of Preventive Medicine (GDPM) in collaboration with General Statistics Office (GSO), technical universities, and related partners with the financial and technical supports of WHO.

[1] World Health Organization. Global status report on non-communicable diseases 2014

[2] Institute for Health Metrics and Evaluation. The Global Burden of Disease; Generating Evidence, Guiding Policy. Seattle, WA: IHME 2013

[3] World Health Organization. NCD Country Profiles 2014

[4] World Health Organization, Health statistics and information systems. Global Health Estimates for the years 2000-2012.

II. OBJECTIVES OF THE SURVEY

(i) To evaluate the prevalence of risk behaviors including smoking, alcohol consumption, unhealthy diet and physical inactivity and related parameters in adults aged 18 to 69 years.

(ii) To measure mean levels of BMI and blood pressure, prevalence of overweight-obesity and hypertension and related parameters in adults aged 18 to 69 years.

(iii) To measure the mean levels of blood glucose and total cholesterol, prevalence of raised blood glucose and cholesterol and related parameters in adults aged 18 to 69 years.

(iv) To estimate average population salt consumption among adults aged 18 to 69 years.

III. METHODOLOGY

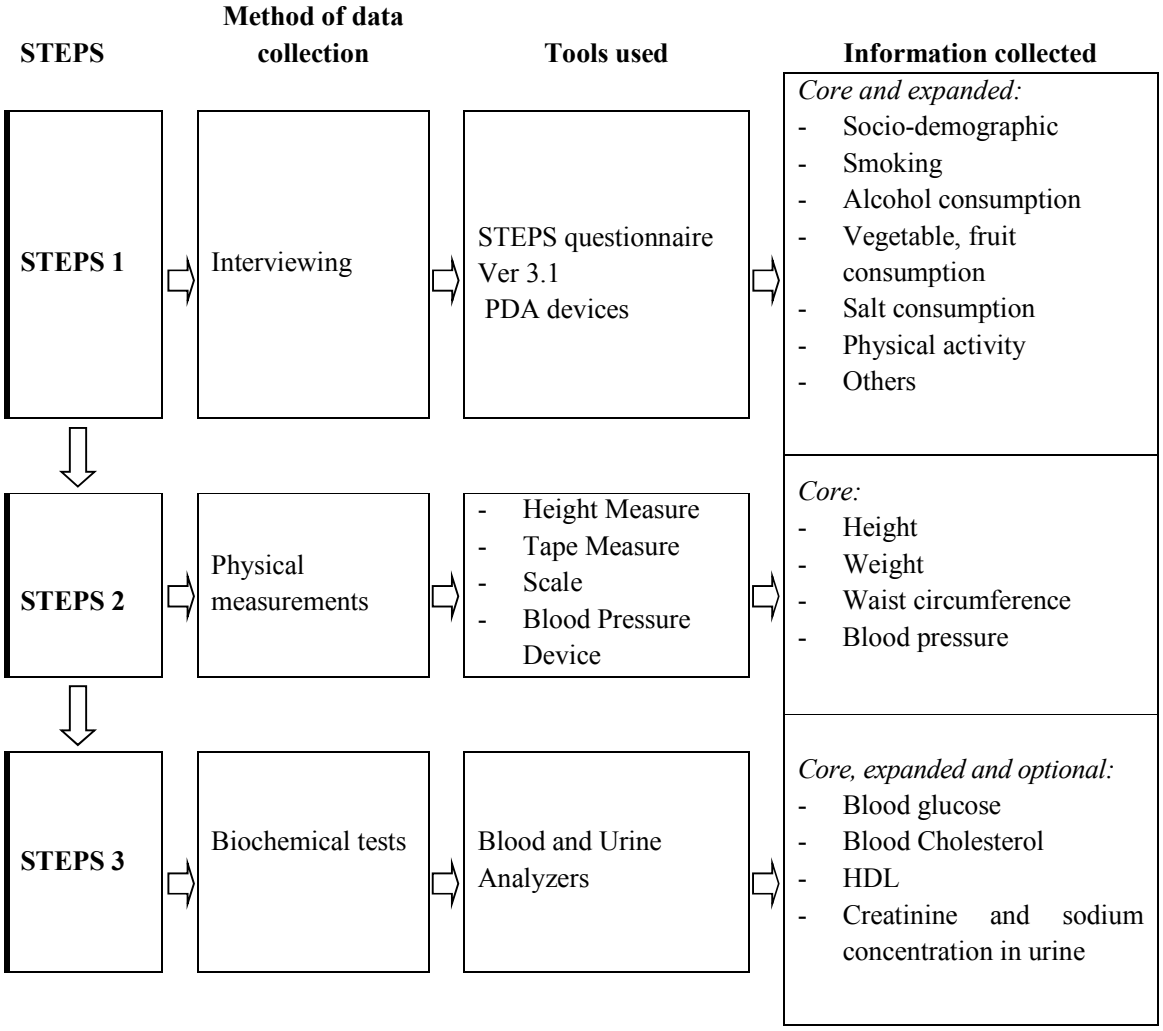
Time and location of the study:

The Survey was conducted across all 63 provinces/cities of Viet Nam; time of data collection was in 2015.

Study design:

This is cross sectional study applying methods and tools of the WHO STEPSwise approach to NCD risk factor surveillance.

Diagram : Description of the STEPSwise method in the study



Sampling:

Study subjects

- People aged 18-69 years old residing in Viet Nam
- Not including: People not permanent residing in Viet Nam, patients currently in health facility and people with impaired mental health.

Sample size calculation

Sample calculation is made using the Sample calculator for STEPS provided by WHO. The samples are stratified by gender and 3 age groups (18-29, 30-49, 50-69). The minimum sample size for each stratum is calculated using bellow formula:

$$n = Z^2 \frac{P(1-P)}{e^2}$$

Z - Level of Confidence Measure:	1.96
e - Margin of Error:	0.05
P- Baseline levels of the key indicators:	0.5

Then we need to add:

Design effect (DE):	1.5
Expected Response Rate (for all three STEPS):	0.8
Number of age/sex groups:	6

Therefore:

$$n = \frac{\left[1.96x1.96\ x\ \frac{0.5(1\quad 0.5)}{0.05x0.05}x\ 1.5\ x\ 6\right]}{0.8}$$

$$n = (384 \times 1.5 \times 6)/0.8 = 4320$$

From the calculation, it was found that about 4320 subjects for overall need to be sampled.

Sampling method

At the same time of STEP survey, MOH also conduct the Global Adult Tobacco Survey (GATS) at the same scale, location, and study subjects (>15 years for GATS and 18-69 for STEPS). The sampling of STEPS was done in as part of the sampling for the (GATS) conducted in combination manner to save time and resources for these two surveys.

Applied the multi-stages complex sampling process, the sampling process done by GSO was as follow:

- Sampling of clusters (EA)

In the first stage of sampling, the primary sampling unit (PSU) was an enumeration area (EA). There are about 170,000 EAs in the whole Viet Nam and the average number of households in each EA is different between urban and rural areas. An average number of households in an urban EA and a rural EA is 133 households and 120 households, respectively.

Sample of EAs were selected from the master sample frame. The master sample frame was a cluster frame made by the GSO based on the frame of Population and Housing Census 2009 and updated with data of 2014. Based on the Population and Housing Census data 2009, GSO prepared a 15% of master sample to serve as a national survey sampling frame. The master sample frame contains 25,500 enumeration areas (EAs) from 706/708 districts of Viet Nam (2 island districts were excluded from the GSO master sample frame). The master sample frame of GSO was divided by two

stratification variables: urbanization (1 = urban; 2 = rural) and district group (1 = district/town/city of province; 2 = plain and coastal district; 3 = mountainous, island district). It means that the master sample frame was divided into 6 sample frames or 6 strata. The probability proportional to size (PPS) sampling method was used to select sample of EAs from 6 strata of master sample frame. The final sample of GATS included 315 EAs in the urban and 342 EAs for the rural. From these 657 EAs, 315 EAs were systematically selected for STEPS.

- Sampling of households

At the second stage of sampling, 10% households in each EA were selected. Thus, 15 households from the selected urban EA and 14 households from the selected rural EA were chosen using simple systematic random sampling. The total households for STEPS 2015 were 4,651 households.

- Sampling of individuals

One eligible person is then randomly selected from each selected household for the STEPS 1 interview. The selection of individual is automatically done by the PDA program after eligible household members are entered into the PDA.

The selection probability of an eligible individual was calculated as a product of selection probability for each stage. The sampling base weight for an eligible individual was the inverse of the selection probability shown above.

Response rate:

From the GATs sample, 4651 cases selected for STEPS (STEPS1) survey. However, the age range for STEPS is only from 18 to 69 different from the age range for GATS (15 and above), so only 3856 were eligible for STEPS1. All of these cases were automatically included in the STEPS survey. During the fieldwork, 98 cases were dropped out for various reasons, leaving only 3758 cases who completed STEPS1 (response rate for STEPS 1: 97.4%). For STEPS 2 and 3, another 678 cases dropped out, leaving only 3080 cases completed questionnaire for these STEPS (79.8%).

Weighting:

Weight is calculated with technical support of WHO experts. Weights were calculated for STEPS 1, STEPS 2 and 3 separately. A base weight was first calculated based on the inverse of the probability of selection, then non-response adjustment was made for non-response at household and individual levels. Next, population adjustment was made using the population of Viet Nam estimated for 2015 by GSO, in the publication entitled “Forecast of Viet Nam population 2009-2049”. The population aged 18-19 was estimated from population aged 15-19 using the proportion of the 18-19 age group in the 15-19 age group taken from the 2009 census data. The population adjustment were made for 12 subgroups obtained from males-females; urban-rural; and three age groups for STEPS 18-29; 30-49 and 50-69.

Methods and tools for data collection

Tools for data collection

- Questionnaire: Using standard questionnaire of WHO (STEPS Instrument CORE_EXP V3.1). The questionnaire was translated in to Vietnamese, adapted to the situation of Viet Nam and pre – tested in the field site before use.
- Showcards:To support interviewers to measure and convert some behavioral indicators into standard units, a set of pictures were developed including: Showcard for vegetable, fruits; Showcard for alcohol.
- Tools for physical measurement

- ✓ Digital automatic blood pressure monitor recommended by WHO (BOSO device)
- ✓ Standard electronic scales recommended by WHO (330 HRS)
- ✓ Standard Stadiometer and Constant Tension Tape Measure for measuring height and waist circumference

- Biochemical measurement devices
  - ✓ Devices for testing blood glucose and cholesterol (Cardio Check)
  - ✓ Urine Analyzer (in laboratory)
- Pretest the tools and pilot the survey: Before applying in the field sites, one demostration survey was conducted at two communes to pretest all tools and practice the data collection activity.

Method for data collection:

STEPS 1: conducted together with GATS by GSO staff at households.

- Interviewing Subjects to obtain data on risk behaviors, socio-economic and demographic status

STEPS 2 and 3: conducted by provincial preventive medicine centers under the supervision from National and Regional Epidemiology/Pasteur Institutes at selected Commune Health Station (CHS).

- Measurements of blood pressure, height, weight and waist circumference to assess overweight-obesity, raised blood pressure and related information.
- Finger blood test was used to measure blood glucose, total cholesterol and HDL
- Spot urine was collected to estimate the 24 hour salt consumption.

Training of data collectors:

Data collectors was GSO staffs, and staffs from the Provincial Preventive Medicine Centres. One week training was provided for the team of data collectors, with technical support from WHO, GSO and GDPM-MOH. The contents including going through all questionnaires, question by question; sample selection procedures in the field; the use of show-card for standard alcohol drink and standard vegetable and fruits serving; and the coordination with the team who will do STEPS2-3.

Data collection at the field sites

Each province had one data collection team including 5 GATS interviewers who were in charge of interviewing at households and 3 local staff who were in charge of conducting STEPS 2 and 3 at the CHS. In each EA, the data collection was carried out in 2 days.

- The first day: Interview at household

5 GATS interviewers visited households in the provided list. A the households interviewer do the following:

- ✓ Follow the instructions to select 01 person in the household.
- ✓ Interview subject using the provided PDA.
- ✓ After completed the GATS questionnaire, ask respondent to answer STEPS questionnaire (STEPS 1).
- ✓ After completion of STEPS 1, give instruction for urine sample collection. The interviewer provided 01 tube and instructed the subject to collect and preserve urine sample in a suitable place and bring urine tube to the CHS in the next morning.
- ✓ Instruct subject for overnight fasting and visiting the CHS in the next morning for physical measurement and blood test.
- ✓ In case the the STEPS 2-3 cannot be done the next day, then the team in charge will inform respondents of a suitable nearest date and then visited the households the day before to pass

on the tube for urine sample collection and provided instruction for the respondents to fast and come to the CHS the day after for STEPS 2-3 data collection.

- ✓ The STEPS1 Coordinator then provided the interviewee list to STEPS 2-3 team coordinator for follow up and for STEPS 2-3 data collection.

- The second day: Physical measurement and blood tests at commune health station

In the morning when STEPS 2-3 data collection took place, village health collaborators went to households to invite subjects to bring urine tube to the CHS and participate in physical measurements and blood tests. The data collection was conducted in the early morning to ensure the fasting of subjects.

At the CHS, there was 3 staff to collect data:

- ✓ 01 technician to perform blood test using handheld devices and collects urine tube to store in the cold vacuum.
- ✓ 01 staff to perform blood pressure measurement following standard procedures.
- ✓ 01 staff to measure height, weight, waist circumference, and make conclusion.

Pretest-of field procedures and using PDA for interviewing

Pretest was conducted with technical support of a team from Hanoi Medical University (HMU). About 120 households from two communes, one in urban and one in rural area, were selected for pretests of both GATS-STEPS1 questionnaire and STEPS2-3 components.

Feedbacks from pretests were then collected and used for finalization of questionnaire, field procedures, show-cards and for finalization of an overall data collection Guideline for STEPS.

Managing and analyzing data

Data Entry

For interviewing data (STEPS 1): the interviewing result was entered directly in the software on the PDA at the field site, and was sent to the management team.

For measurement data of STEPS 2 and 3: after the questionnaires were completed, they were sent to the management team for data entry.

Data was cleaned, double entered and performed by staff who had been trained for data entry.

Analysis of data:

Using software EPI- Infor 3.54 to process and analyze the data. Data analysis and writing report was conducted by a local consultant in consultation with GDPM and WHO.

For simplicity, comparisons between two means or proportion are made using 95% CI.

Definitions used in the survey

1. MET: For physical activity, MET (Metabolic Equivalents Task unit) are used to express the intensity of activities. MET is the ratio of a person's working metabolic rate relative to the resting metabolic rate. One MET is defined as the energy cost of sitting quietly, and is equivalent to a caloric consumption of 1 kcal/kg/hour. Applying MET values to each activity allows us to calculate total physical activity. For the analysis of GPAQ data, existing guidelines have been adopted. It is estimated that, compared to sitting quietly, a person's caloric consumption is four times as high when being moderately active, and eight times as high when being vigorously active. This total activity is expressed as MET-hours, or MET-minutes.

2. A standard drink generally contains 10g of ethanol. This is the equivalent of 285 ml of regular beer (5%), 30 ml of spirits (40%), 120 ml of wine (11%), or 60 ml of aperitif (20%).
3. One serving is equal to 80 grams of fruit or vegetable. For fruits, this refers to one medium-sized piece of fruit (banana, apple, kiwi etc.) or a half cup of cooked or canned fruit or a half cup of juice from a fruit (not artificially flavoured). For vegetables this refers to one cup of raw, leafy green vegetables, (spinach, salad etc.), one half cup of other cooked vegetables (tomatoes, pumpkin, beans etc.), or a half cup of vegetable juice. The consumption of at least 400g of fruit and vegetables per day is recommended.
4. The classification of overweight and obesity was based on body mass index (BMI) cut points recommended by WHO. The categories are as follows:
   - Underweight: $BMI < 18.5\ kg/m^2$
   - Normal weight: $18.5\ kg/m^2 \leq BMI < 25.0\ kg/m^2$
   - Overweight: $25.0\ kg/m^2 \leq BMI < 30.0\ kg/m^2$
   - Obese: $BMI \geq 30\ kg/m^2$
5. Raised blood pressure was defined as: systolic blood pressure ≥140 mmHg and/or diastolic ≥ 90 mmHg or currently on medication for raised blood pressure.
6. Impaired fasting glycaemia is defined as 6.1 mmol/L ≤ plasma venous glucose < 7 mmol/L. Raised blood glucose is defined as: plasma venous glucose >=7 mmol/L. The measurement of finger capillary blood glucose was done using the Cardiocheck devices which had been calibrated to give results that are comparable with the plasma venous glucose levels.
7. Raised total cholesterol: total cholesterol ≥ 5.0 mmol/L
8. Levels of sodium and creatinine in spot urine samples were used in STEPS to estimate population 24 hour salt intake, using the INTERSALT equation

Additional Analysis for Viet Nam

In addition to standard indicators introduced by WHO, we also create some additional indicators for some age groups or using different definitions to provide meaningful comparison with other previous survey in Viet Nam, additional analysis were done for some key indicators related to alcohol use, diet, physical activities, hypertension and raised blood glucose. These additional analysis are presented in a separate section in the results and, notes are clearly placed at respective tables.

- Selected analysis to be done for the age range of 25-64 to compare with STEPS 2010 which was done for this age range.
- Selected analysis were done for the age range of 30-69 and extended definition of hypertension and raised blood glucose was done so as to have a meaningful comparison with national surveys in which calculation of these indicators used those extended definition. Details of definition was provided at respective tables for clarity.

Ethical considerations

- Ethical approval for the study was obtained from the Research Ethics Committee of the Hanoi School of Public Health.
- All participants were provided verbal and/or written informed consent and could refuse or withdraw from study after participation. The information provided by the participants was committed to ensure confidential and used only for purposes of research. Types of testing, testing procedures (if any) are on the list of regulations and in accordance with the technical procedures issued by the Ministry of Health.
- Some measurement results (such as the BP, weight, height, ...) and the blood test results were informed to participants.

IV. RESULTS

Background characteristics

Tables from 1 to 5 present the characteristics of the study sample. Among three age groups, the sample size for age group 18-29 was the smallest (only 691 people), however, the sample size still enough to yield valid estimated prevalence for this group. If stratified this group by gender, the sample size for men was 316 and for women was 375, which can be used to estimate prevalence with absolute precision from 6% to 8%.

Overall, men were more employed as well as higher education level compared to women. The prevalence of unpaid among men was only 13.9% while it was 24.9% among women. The prevalence of no formal school was 2.2% among men and 6.4% among women.

The majority of the sample was Kinh group (83.1%), other common ethnic groups in the sample include Tay (3.3%), Muong (2.3%) and Nung (2.4%).

More information about social-demographic characteristics of the study population can be found in appendix 2.

Table 1. Age group and sex of respondents

Age Group (years)	Men		Women		Both sexes	
	n	%	n	%	n	%
18 – 29	316	45.7	375	54.3	691	100.0
30 - 49	795	43.7	1025	56.3	1820	100.0
50 - 69	565	45.3	682	54.7	1247	100.0
18 - 69	1676	**44.6**	**2082**	**55.4**	3758	100.0

Table 2. Highest level of education of respondents by age and sex

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
Men								
18 – 29	316	0.3	5.7	16.5	23.7	30.7	22.8	0.3
30 - 49	795	2.5	13.8	21.8	26.4	17.1	16.7	1.5
50 - 69	565	2.7	12.2	18.1	33.3	16.6	16.5	0.7
18 - 69	**1676**	**2.1**	**11.8**	**19.5**	**28.2**	**19.**	**17.8**	**1.0**
Women								
18 – 29	375	3.7	6.	12.8	20.5	30.1	25.6	0.8
30 - 49	1025	5.	11.4	27.3	26.3	11.9	16.4	0.9
50 - 69	682	9.1	19.8	21.7	27.0	9.8	12.5	0.1
18 - 69	**2082**	**6.4**	**13.2**	**22.9**	**25.5**	**14.5**	**16.8**	**0.6**
Both sexes								
18 – 29	691	2.2	5.9	14.	22.0	30.4	24.3	0.6

30 - 49	1820	4.3	12.5	24.9	26.4	14.2	16.5	1.2
50 - 69	1247	6.2	16.4	20.0	29.8	12.9	14.3	0.4
18 - 69	**3758**	**4.5**	**12.6**	**21.4**	**26.7**	**16.7**	**17.2**	**0.8**

Table 3. Employment status of respondents by age and sex

Age Group (years)	N	% Government employee	% Non – Government employee	% Self - employed	% Unpaid
Men					
18 – 29	316	9.2	18.7	55.7	16.4
30 - 49	795	12.6	14.1	70.7	2.6
50 - 69	565	8.4	5.5	57.8	28.3
18 - 69	**1676**	**10.5**	**12.1**	**63.5**	**13.9**
Women					
18 – 29	375	7.2	25.9	36.4	30.5
30 - 49	1025	12.5	11.4	63.7	12.4
50 - 69	682	4.6	1.9	52.7	40.8
18 - 69	**2082**	**9.0**	**10.9**	**55.2**	**24.9**
Both sexes					
18 – 29	691	8.1	22.6	45.2	24.1
30 - 49	1820	12.5	12.6	66.7	8.2
50 - 69	1247	6.3	3.6	55.0	35.1
18 - 69	**3758**	**9.7**	**11.4**	**58.9**	**20.0**

Table 4. Unpaid work and unemployed of respondents by age and sex

Age group (years)	n	% Non paid	% Student	% Home - maker	% Retired	Unemployed	
						% Able to work	% Not able to work
Men							
18 – 29	316	16.4	11.7	0.3	0.0	3.8	0.6
30 - 49	795	2.5	0.1	0.5	0.0	1.4	0.5
50 - 69	565	28.7	0.0	1.6	15.8	5.3	6.0
18 - 69	**1676**	**13.2**	**2.3**	**0.0**	**5.3**	**3.2**	**2.4**
Women							
18 – 29	375	30.4	13.1	13.3	0.0	3.5	0.5
30 - 49	1025	12.3	0.1	11.2	0.1	0.6	0.3
50 - 69	682	40.9	0.0	20.2	13.8	2.2	4.7

18 - 69	**2082**	**25.0**	**2.4**	**14.6**	**4.6**	**1.6**	**1.8**
Both sexes							
18 – 29	691	24.0	12.4	7.4	0.0	3.6	0.6
30 - 49	1820	8.0	0.1	6.5	0.1	0.9	0.4
50 - 69	1247	35.4	0.0	11.8	14.7	3.6	5.3
18 - 69	**3758**	**19.9**	**2.3**	**8.4**	**4.9**	**2.3**	**2.0**

Table 5. Ethnicity

Age Group (years)	**Both Sexes**											
	% Kinh	% Tay	% Thai	% Hoa	% Kho me	% Muong	% Nung	% H'm ong	% Dao	% Gia rai	% Other	No in-for mation
18-29	76.1	1.6	3.6	3.8	1.7	1.0	1.3	3.0	3.3	3.3	0.1	0.0
30-49	82.9	0.2	3.4	4.0	1.3	0.7	1.8	2.3	2.1	1.0	0.4	0.1
50-69	87.1	0.5	1.5	1.9	0.5	1.7	1.6	1.5	2.3	1.2	0.2	0.0
18-69	**83.0**	**0.5**	**2.8**	**3.2**	**1.1**	**1.1**	**1.6**	**2.3**	**2.4**	**1.5**	**0.3**	**0.0**

Alcohol Consumption

Participants were asked about their alcohol consumption status. If they had never consumed alcohol, they were defined as lifetime abstainer, participants reporting alcohol consumption in the past 30 days were classified as current drinkers.

Table 6 presents the alcohol consumption status. As shown in this table, 43.8% of participants are current drinkers. The prevalence of lifetime abstainer is 22.5% and the majority of these are women.

Table 6. Alcohol consumption status of all respondents

Age Groups (years)	Alcohol consumption status								
	n	% Current drinker (past 30 days)	95% CI	% Drank in past 12 months, not current	95% CI	% Past 12 months abstainer	95% CI	% Lifetime abstainer	95% CI
Men									
18-29	315	75.3	69.8-80.9	17.9	13.0-22.9	3.3	1.2-5.4	3.5	1.1-5.8
30-49	792	81.8	78.5-85.2	11.4	8.6-14.2	4.0	2.5-5.5	2.7	1.4-4.1
50-69	563	71.2	66.9-75.6	13.4	10.4-16.3	12.6	9.2-16.1	2.8	1.2-4.4
18-69	**1670**	**77.3**	**74.6-80.0**	**14.0**	**11.8-16.2**	**5.7**	**4.4-7.0**	**3.0**	**1.9-4.0**
Women									
18-29	374	10.3	6.9-13.7	35.1	29.7-40.5	18.8	14.3-23.3	35.8	29.7-41.8
30-49	1024	14.5	11.7-17.3	29.6	26.0-33.3	14.3	11.9-16.7	41.6	37.6-45.5
50-69	681	6.3	4.3-8.4	28.1	23.8-32.4	16.5	13.4-19.7	49.0	44.0-54.1
18-69	**2079**	**11.1**	**9.3-12.9**	**31.0**	**28.3-33.7**	**16.3**	**14.3-18.3**	**41.6**	**38.5-44.7**
Both sexes									
18-29	689	43.2	39.0-47.5	26.4	22.9-30.0	11.0	8.4-13.5	19.4	15.8-23.0
30-49	1816	48.2	45.0-51.4	20.5	18.0-23.1	9.1	7.6-10.7	22.1	19.8-24.4
50-69	1244	36.7	33.6-39.8	21.2	18.4-24.0	14.7	12.4-17.0	27.4	24.5-30.2
18-69	**3749**	**43.8**	**41.6-46.1**	**22.6**	**20.8-24.4**	**11.1**	**9.8-12.3**	**22.5**	**20.7-24.3**

Table 7 presents the frequency of alcohol consumption in the past 7 days by current drinkers. Among males current drinkers, 15.2% was daily drinkers during the past 7 days and among females current drinkers, 4.9% was daily drinkers.

Table 7. Frequency of alcohol consumption in the past 7 days by current (past 30 days) drinkers.

Age Groups (years)	Frequency of alcohol consumption in the past 7 days										
	N	% Daily	95% CI	% 5-6 days	95% CI	% 3-4 days	95% CI	% 1-2 days	95% CI	% 0 days	95% CI
Men											
18-29	237	1.9	0.3-3.6	5.6	1.9-9.3	11.4	7.1-15.7	60.7	54.0-67.5	20.4	14.7-26.0
30-49	648	17.1	13.0-21.3	5.2	3.2-7.2	12.3	9.3-15.4	45.7	41.1-50.3	19.7	16.0-23.4
50-69	393	31.5	26.0-37.0	4.9	1.9-7.9	12.4	8.6-16.3	36.4	30.9-41.8	14.8	10.6-19.0
18-69	**1278**	**15.2**	**12.6-17.8**	**5.3**	**3.5-7.0**	**12.1**	**9.9-14.2**	**48.6**	**45.1-52.1**	**18.9**	**16.2-21.6**
Women											
18-29	43	3.6	0.0-10.7	0.0	0.0-0.0	8.1	0.0-17.9	52.3	33.2-71.4	36.0	18.0-53.9
30-49	139	3.7	0.0-7.4	1.7	0.0-4.2	3.9	0.0-8.4	43.4	33.4-53.4	47.3	37.0-57.6
50-69	47	12.7	1.5-24.0	4.4	0.0-9.6	15.8	2.2-29.4	27.4	11.3-43.6	39.6	21.6-57.6
18-69	**229**	**4.9**	**1.5-8.4**	**1.6**	**0.0-3.2**	**6.8**	**2.4-11.3**	**43.8**	**35.5-52.0**	**42.9**	**34.2-51.6**
Both sexes											
18-29	280	2.1	0.4-3.8	5.0	1.6-8.3	11.0	7.0-15.0	59.8	53.5-66.1	22.1	16.8-27.4
30-49	787	15.2	11.6-18.8	4.7	3.0-6.4	11.1	8.5-13.8	45.3	41.2-49.4	23.6	20.1-27.2
50-69	440	29.9	24.7-35.1	4.9	2.1-7.7	12.7	9.0-16.4	35.6	30.4-40.8	16.9	12.7-21.0
18-69	**1507**	**14.0**	**11.7-16.3**	**4.8**	**3.3-6.4**	**11.4**	**9.4-13.4**	**48.0**	**44.8-51.3**	**21.8**	**19.2-24.4**

Table 8 presents the average number of occasions with at least one drink in the past 30 days among current drinkers. For both sexes, the age group 50-69 was the group with highest number of occasions drinking at least 1 standard drink (i.e., on average 14.9 occasions). For males participants, the average number of occasions during the last 30 days was 10.2 times, while for females participants, this figure was 3.4 times.

Table 8. Mean number of occasions with at least one drink in the past 30 days among current (past 30 days) drinkers

Mean number of occasions with at least one drink in the past 30 days among current (past 30 days) drinkers									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	N	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	234	5.6	4.8-6.4	43	3.2	1.2-5.2	277	5.3	4.6-6.1
30-49	643	10.9	9.5-12.2	139	2.9	2.1-3.7	782	9.7	8.6-10.9
50-69	387	15.8	13.8-17.8	47	5.7	2.8-8.5	434	14.9	13.0-16.9
18-69	**1264**	**10.2**	**9.3-11.1**	**229**	**3.4**	**2.5-4.2**	**1493**	**9.4**	**8.6-10.2**

Table 9 presents the average number of standard drinks consumed on a drinking occasions among current drinkers. On average, females current drinkers drank about 2.7 standard drinks per occasion and males drinkers drank about 5.5 standard drinks per occasion. The younger group (age 18-29 years old) had highest number of standard drinks per occasion compared with other age groups.

Table 9. Mean number of standard drinks consumed on a drinking occasion among current (past 30 days) drinkers

Mean number of standard drinks consumed on a drinking occasion among current (past 30 days) drinkers									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	N	Mean	95% CI	N	Mean	95% CI	n	Mean	95% CI
18-29	235	6.2	5.5-6.9	43	4.0	1.9-6.1	278	6.0	5.3-6.6
30-49	645	5.6	5.2-6.0	139	1.9	1.7-2.2	784	5.1	4.7-5.5
50-69	391	4.2	3.7-4.7	47	3.0	1.5-4.6	438	4.1	3.6-4.6
18-69	**1271**	**5.5**	**5.2-5.9**	**229**	**2.7**	**2.0-3.4**	**1500**	**5.2**	**4.8-5.5**

Table 10 shows the percentage for high-end, intermediate and lower-end drinking among all respondents stratified by age group and gender. Among males, the % of high-end drinkers was highest among respondents age 30-49 and among women, this figure was highest among females age 18-29. For both sexes, all age groups, the % of drinking at high-end level was 15% and the % of intermediate drinkers was 11.8%. Drinking alcohol on high-end level is much more common in men than in women.

Table 10. Percentage of all respondents with different drinking levels, on average at a single occasion (past 30 days)

Age Groups (years)	Percentage of **all respondents (past 30 days) with different drinking levels, on average at a single occasion (past 30 days)**								
	N	% high-end (≥60g)	95% CI	% intermediate (40-59.9g)	95% CI	% lower-end (<40g)	95% CI	% not current drinker	95% CI
Men									
18-29	312	30.8	26.8-40.9	22.0	16.8-27.1	19.3	13.7-24.8	24.9	19.3-30.5
30-49	783	31.1	26.7-35.5	21.2	17.9-24.6	29.3	25.5-33.1	18.4	15.0-21.7
50-69	556	15.6	11.7-19.4	16.0	12.4-19.6	39.4	34.1-44.7	29.0	24.6-33.4
18-69	**1651**	**28.4**	**25.0-32.0**	**20.3**	**17.8-22.7**	**28.3**	**25.1-31.4**	**22.9**	**20.2-25.7**
Women									
18-29	372	2.9	1.1-4.7	2.9	1.1-4.7	3.8	1.7-6.0	90.4	87.1-93.7
30-49	1014	1.6	0.8-2.3	5.3	3.5-7.1	6.8	4.8-8.7	86.3	83.6-89.1
50-69	674	1.0	0.2-1.9	1.5	0.4-2.5	3.2	1.8-4.7	94.3	92.3-96.2
18-69	**2060**	**1.8**	**1.2-2.5**	**3.6**	**2.4-4.7**	**4.9**	**3.8-6.0**	**89.6**	**87.9-91.4**
Both sexes									
18-29	684	18.6	14.6-22.6	12.6	9.7-15.4	11.6	8.5-14.8	57.2	53.0-61.5
30-49	1779	16.3	13.9-18.8	13.3	11.2-15.3	18.0	15.7-20.4	52.4	49.1-55.6
50-69	1230	7.8	5.9-9.7	8.2	6.4-10.1	20.1	17.2-23.0	63.8	60.7-66.9
18-69	**3711**	**15.0**	**13.1-16.9**	**11.8**	**10.4-13.3**	**16.5**	**14.7-18.2**	**56.7**	**54.4-58.9**

Table 11 shows the % of respondents who had six or more drinks on any occasion during the last 30 days among all respondents. The percentage of drinking six or more per single occasion was 44.2% among

males respondents and only 1.2% among females respondents. Among all respondents, 22.4% had six or more standard drinks per single occasion.

Table 11. Percentage of respondents having six or more drinks on a single occasion (past 30 days) among among all respondents

Six or more drinks on a single occasion at least once during the past 30 days among all respondents									
Age Groups (years)	Men			Women			Both Sexes		
	N	% ≥ 6 drinks	95% CI	N	% ≥ 6 drinks	95% CI	n	% ≥ 6 drinks	95% CI
18-29	315	47.4	40.6-54.3	374	2.4	0.7-4.1	689	25.2	21.1-29.3
30-49	792	49.7	45.3-54.2	1024	0.7	0.1-1.4	1816	25.3	22.5-28.0
50-69	563	28.5	24.2-32.8	681	0.5	0.0-1.0	1244	13.6	11.4-15.7
18-69	**1670**	**44.2**	**40.8-47.5**	**2079**	**1.2**	**0.6-1.8**	**3749**	**22.4**	**20.4-24.4**

Table 12 present the average times in the past 30 days on which current drinkers consumed six or more drinks during a single occasion. This figure was 5.7 times for both sexes. Due to small number of females in this categories, 95%CI could not be established.

Table 12. Mean number of times in the past 30 days on which current (past 30 days) drinkers consumed six or more drinks during a single occasion

Mean number of times with six or more drinks during a single occasion in the past 30 days among current drinkers									
Age Group (years)	Men			Women			Both Sexes		
	N	Mean number of times	95% CI	N	Mean number of times	95% CI	n	Mean number of times	95% CI
18-29	146	4.4	3.5-5.2	10	4.6	NA	156	4.4	3.5-5.2
30-49	399	6.3	5.4-7.1	9	2.2	NA	408	6.2	5.4-7.1
50-69	161	7.4	5.6-9.3	4	11.5	NA	165	7.5	5.7-9.3
18-69	**706**	**5.8**	**5.2-6.4**	**23**	**4.7**	**NA**	**729**	**5.7**	**5.1-6.3**

Table 13 presents the % of current drinkers who drove their motorized vehicles within 2 hours after drinking. This figure was highest among males aged 18-29 (50.6%). For all age groups of males current drinkers, it is a big concern when almost half of them had been driving their motorized vehicles after drinking during the last 30 days.

Table 13. % of driving after drinking among current drinkers

Age Group (years)	Men			Women			Both Sexes		
	N	% Drove after drinking	95% CI	N	% Drove after drinking	95% CI	N	% Drove after drinking	95% CI
18-29	236	50.6	43.2-58.0	43	23.9	8.7-39.1	279	47.6	40.8-54.5
30-49	646	49.7	45.1-54.2	138	27.5	19.1-36.0	784	46.5	42.3-50.7
50-69	394	39.6	33.8-45.5	47	10.1	1.4-18.8	441	37.2	31.6-42.7
18-69	**1276**	**47.9**	**44.3-51.4**	**228**	**24.0**	**17.3-30.7**	**1504**	**45.0**	**41.7-48.2**

Diet

The fruit and vegetable consumption patterns of the study population were assessed by asking about the frequency and quantity of fruit and vegetables consumed in a typical week. Table 14 presents the average number of days the respondents reported consuming fruit/vegetables. On average, the study population ate fruits 4 days per week and vegetables almost every day (6.5 days per week).

Table 14. Mean number of day's fruit and vegetables consumed

Mean number of days fruit consumed in a typical week									
Age groups (years)	**Men**			**Women**			**Both Sexes**		
	N	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
18-29	313	3.6	3.2-3.9	371	4.7	4.4-4.9	684	4.1	3.9-4.4
30-49	778	3.6	3.4-3.8	1013	4.4	4.2-4.6	1791	4.0	3.8-4.1
50-69	558	3.8	3.5-4.0	672	4.1	3.9-4.4	1230	3.9	3.8-4.1
18-69	**1649**	**3.6**	**3.4-3.8**	**2056**	**4.4**	**4.3-4.6**	**3705**	**4.0**	**3.9-4.2**
Mean number of days vegetables consumed in a typical week									
Age groups (years)	**Men**			**Women**			**Both Sexes**		
	N	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
18-29	315	6.5	6.3-6.6	373	6.5	6.3-6.6	688	6.5	6.3-6.6
30-49	789	6.5	6.4-6.6	1023	6.6	6.5-6.7	1812	6.6	6.5-6.6
50-69	562	6.6	6.5-6.7	682	6.6	6.5-6.7	1244	6.6	6.5-6.7
18-69	**1666**	**6.5**	**6.4-6.6**	**2078**	**6.6**	**6.5-6.7**	**3744**	**6.5**	**6.5-6.6**

Table 15 shows the average serving of fruit and/or vegetable consumed per day among the study population. The consumption of vegetables was similar among men and women (both was at 3.1 serving per day) but the consumption of fruit was higher among women compared to men (i.e., 2.4 serving compared to 1.7 serving per day)

Table 15. Mean number of fruit, vegetable, and combined fruit and vegetable servings on average per day

Mean number of servings of fruit on average per day									
Age Group (years)	Men			Women			Both Sexes		
	N	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
18-29	313	1.7	1.5-2.0	371	2.7	2.4-3.1	684	2.2	2.0-2.5
30-49	772	1.6	1.5-1.8	1009	2.3	2.2-2.5	1781	2.0	1.8-2.1
50-69	556	1.6	1.5-1.8	669	2.1	1.9-2.3	1225	1.9	1.7-2.0
18-69	**1641**	**1.7**	**1.5-1.8**	**2049**	**2.4**	**2.2-2.6**	**3690**	**2.0**	**1.9-2.2**
Mean number of servings of vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	N	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
18-29	315	3.1	2.8-3.4	373	3.1	2.8-3.3	688	3.1	2.9-3.3
30-49	786	3.0	2.8-3.2	1019	3.2	3.0-3.3	1805	3.1	3.0-3.2
50-69	561	3.1	2.9-3.3	680	3.0	2.8-3.2	1241	3.0	2.9-3.2
18-69	**1662**	**3.1**	**2.9-3.2**	**2072**	**3.1**	**3.0-3.2**	**3734**	**3.1**	**3.0-3.2**
Mean number of servings of fruit and/or vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	N	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
18-29	315	4.8	4.4-5.3	374	5.7	5.2-6.3	689	5.3	4.9-5.7
30-49	788	4.6	4.3-4.9	1022	5.5	5.2-5.7	1810	5.0	4.8-5.3
50-69	561	4.7	4.4-5.0	680	5.1	4.7-5.4	1241	4.9	4.7-5.1
18-69	**1664**	**4.7**	**4.5-4.9**	**2076**	**5.5**	**5.2-5.7**	**3740**	**5.1**	**4.9-5.3**

Adequate fruit and vegetable consumption reduces the risk of noncommunicable diseases; however, the study showed that 57.2% of the study population did not meet the recommendation on fruit/vegetable

consumption by WHO (table 16). This figure was 63.1% among males and 51.4% among females respondents.

Table 16. Percentage of those eating less than five servings of fruit and/or vegetables on average per day

Less than five servings of fruit and/or vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	N	% < five servings per day	95% CI	n	% < five servings per day	95% CI	n	% < five servings per day	95% CI
18-29	315	60.9	54.7-67.0	374	47.2	40.8-53.6	689	54.1	49.3-59.0
30-49	788	65.0	60.6-69.4	1022	51.0	46.8-55.1	1810	58.0	54.7-61.3
50-69	561	62.8	58.1-67.6	680	57.5	52.6-62.3	1241	60.0	56.6-63.4
18-69	**1664**	**63.1**	**59.9-66.3**	**2076**	**51.4**	**48.1-54.8**	**3740**	**57.2**	**54.6-59.8**

Table 17 shows the percentage of those eating less than five servings of fruit and/or vegetables on average per day by rural/urban. In general, the % of the study population did not meet the recommendation on fruit/vegetable consumption by WHO was higher among urban population compared to rural population. The differences between rural/urban was more evident among females than males participants.

Table 17. Percentage of those eating less than five servings of fruit and/or vegetables on average per day by rural/urban

Less than five servings of fruit and/or vegetables on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	% < five servings per day	95% CI	n	% < five servings per day	95% CI	*n*	*% < five servings per day*	*95% CI*
Urban	792	61.4	56.6-66.3	1032	42.8	38.2-47.5	1824	51.7	47.9-55.4
Rural	872	64.0	59.9-68.2	1044	56.3	51.8-60.7	1916	60.2	56.7-63.7
Total	**1664**	**63.1**	**59.9-66.3**	**2076**	**51.4**	**48.1-54.8**	**3740**	**57.2**	**54.6-59.8**

The next 2 tables, from table 18 to table 19 presents the knowledge, attitudes and practices of the study population on dietary salt evaluated using structured questionnaires (more information can be found in appendix 4, from table 70 to 73). A very high proportion of the study population reported that they always or often add salt or salty sauce to their food before/while eating (i.e., 70.3% for both sexes, 71.5% among males and 69.1% among women)

Table 18. Percentage of all respondents who always or often add salt or salty sauce to their food before eating or as they are eating.

Add salt always or often before eating or when eating									
Age groups (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	315	68.9	61.5-75.4	374	69.4	63.4-74.8	689	69.1	64.4-73.5
30-49	788	71	66.6-75.0	1022	71	67.3-74.4	1810	71	67.8-74.0
50-69	561	76.2	71.5-80.4	680	65.6	61.1-69.9	1241	70.6	67.2-73.8
18-69	**1664**	**71.5**	**67.9-74.8**	**2076**	**69.1**	**66.0-72.1**	**3740**	**70.3**	**67.6-72.9**

Table 19 presents the proportion of the study population who always often eat processed food high in salt. The age group reported consumed processed foods high in salt most frequently were young age group, age 18-29.

Table 19. Percentage of all respondents who always or often eat processed foods high in salt

Always or often consume processed food high in salt									
Age groups (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	315	13.7	9.3-18.0	374	11.7	8.1-15.4	689	12.7	9.8-15.7
30-49	790	11.1	8.4-13.8	1024	6.7	4.8-8.5	1814	8.9	7.1-10.6
50-69	564	10.5	7.8-13.1	682	6.3	4.2-8.5	1246	8.3	6.5-10.0
18-69	**1669**	**11.8**	**9.7-13.8**	**2080**	**8.2**	**6.6-9.7**	**3749**	**10.0**	**8.6-11.3**

Put less salt when cooking									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	100	34.7	28.2-41.2	373	58.5	52.1-64.9	687	46.5	41.6-51.3
30-49	211	42.0	37.6-46.4	1022	58.2	54.1-62.3	1810	50.1	47.0-53.3
50-69	139	45.4	40.4-50.4	679	64.6	60.1-69.1	1241	55.6	51.9-59.3
18-69	**450**	**40.4**	**37.1-43.6**	**2074**	**59.9**	**56.4-63.4**	**3738**	**50.3**	**47.6-52.9**

The self-reported quantity of salt consumed in relative measures was also evaluated in the table 20 below. Of the study population 69.3% thought that they were using just the right amount of salt. About 14.6% though that they were using too little or far too little.

Table 20. Frequency of self-reported quantity of salt consumed

Self-reported quantity of salt consumed											
	Men										
Age groups (years)	n	% Far too much	95% CI	% Too much	95% CI	% Just the right amount	95% CI	% Too little	95% CI	% Far too little	95% CI
Men											
18-29	315	0.3	0.0-0.9	19.5	14.5-24.5	72.3	66.7-77.9	7.9	4.9-10.9	0.0	0.0-0.0
30-49	790	1.3	0.5-2.2	19.1	15.8-22.5	66.2	62.4-70.0	12.9	10.1-15.7	0.4	0.0-0.8
50-69	564	0.5	0.0-1.3	17.6	14.0-21.2	63.8	58.8-68.8	16.8	13.3-20.4	1.1	0.2-2.1
18-69	**1669**	**0.8**	**0.4-1.3**	**18.9**	**16.5-21.4**	**67.7**	**64.9-70.5**	**12.1**	**10.3-13.9**	**0.4**	**0.2-0.7**
Women											
18-29	373	0.0	0.0-0.0	12.2	8.2-16.3	73.0	68.0-77.9	14.0	9.6-18.4	0.8	0.0-1.8
30-49	1022	0.6	0.1-1.0	12.3	9.7-14.8	72.7	69.4-76.0	14.0	11.5-16.5	0.5	0.1-0.9
50-69	681	0.8	0.0-1.8	11.2	8.5-14.0	65.4	61.2-69.5	22.1	18.7-25.6	0.4	0.0-0.9
18-69	**2076**	**0.5**	**0.1-0.8**	**12.0**	**10.1-13.8**	**70.9**	**68.6-73.3**	**16.1**	**14.1-18.1**	**0.6**	**0.2-0.9**
Both sexes											
18-29	688	0.2	0.0-0.5	15.9	12.8-19.0	72.6	68.9-76.4	10.9	8.2-13.5	0.4	0.0-0.9
30-49	1812	1.0	0.5-1.5	15.7	13.6-17.8	69.4	66.9-72.0	13.5	11.6-15.3	0.4	0.2-0.7
50-69	1245	0.7	0.1-1.3	14.2	12.0-16.5	64.7	61.2-68.2	19.7	16.9-22.4	0.7	0.2-1.3
18-69	**3745**	**0.6**	**0.3-0.9**	**15.4**	**13.8-17.0**	**69.3**	**67.4-71.3**	**14.1**	**12.7-15.5**	**0.5**	**0.3-0.7**

Oil or fat consumption was assessed by asking about the oil or fat most often used for meal preparation in the household (table 21). The results showed that most of study population (80.5%) used vegetable oil for meal preparation.

Table 21. Type of oil or fat most often used for meal preparation in households (presented only for both sexes because results are for the household not individuals).

Type of oil or fat most often used for meal preparation in household										
n (house-holds)	% Veget able oil	95% CI	% Lard or Suet	95% CI	% Butter or Ghee	95% CI	% none in parti-cular	95% CI	% None	95% CI
3738	80.5	77.5-83.4	15.1	12.2-17.9	0.1	0.0-0.3	4.2	3.2-5.2	0.2	0.0-0.3

Physical Activity

For the calculation of the categorical indicator on the recommended amount of physical activity for health, the total time spent in physical activity during a typical week and the intensity of the physical activity are taken into account.

Throughout a week, including activity for work, during transport and leisure time, adults should do at least

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

Table 22 presents the % of the study population not meeting WHO recommendations on physical activity for health. It was found that for both sexes, 28.1% respondents did not meeting the recommendations. This figure was lower among males (20.2%) compared to females (35.7%). The most inactive age group was females age 18-29 (48.9%).

Table 22. Percentage of respondents not meeting WHO recommendations on physical activity for health (respondents doing less than 150 minutes of moderate-intensity physical activity per week, or equivalent).

Not meeting WHO recommendations on physical activity for health									
Age groups (years)	Men			Women			Both Sexes		
	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI
18-29	306	18.2	13.5-22.8	367	48.9	42.5-55.3	673	33.4	29.1-37.7
30-49	767	19.8	16.3-23.2	1009	31.8	28.4-35.2	1776	25.8	23.1-28.5
50-69	548	24.1	20.0-28.1	664	26.0	21.8-30.2	1212	25.1	22.1-28.1
18-69	**1621**	**20.2**	**17.8-22.6**	**2040**	**35.7**	**32.7-38.7**	**3661**	**28.1**	**25.9-30.2**

Table 23 showed the stratified analysis of percentage of respondents not meeting WHO recommendations on physical activity for health (respondents doing less than 150 minutes of moderate-intensity physical activity per week, or equivalent) by rural/urban. For both men and women, this figure was significant higher among urban population compared to rural population.

Table 23. Percentage of respondents not meeting WHO recommendations on physical activity for health (respondents doing less than 150 minutes of moderate-intensity physical activity per week, or equivalent) by rural/urban

Not meeting WHO recommendations on physical activity for health									
Age Group (years)	Men			Women			Both Sexes		
	n	% not meeting recs	95% CI	n	% not meeting recs	95% CI	*n*	*% not meeting recs*	*95% CI*
Urban	772	29.0	24.9-33.0	1014	44.8	40.8-48.9	1786	37.3	34.4-40.3
Rural	849	15.8	13.0-18.7	1026	30.6	26.5-34.7	1875	23.2	20.3-26.1
Total	**1621**	**20.2**	**17.8-22.6**	**2040**	**35.7**	**32.7-38.7**	**3661**	**28.1**	**25.9-30.2**

Table 24 presents the classification of physical activity according to the former recommendations: The former way to classify the physical activity as follow:

- **High:** A person reaching any of the following criteria is classified in this category:

  - Vigorous-intensity activity on at least 3 days achieving a minimum of at least 1,500 MET-minutes/week OR

  - 7 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 3,000 MET-minutes per week.

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

  - 3 or more days of vigorous-intensity activity of at least 20 minutes per day OR

  - 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR

  - 5 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 600 MET-minutes per week.

- **Low:** A person not meeting any of the above mentioned criteria falls in this category.

As shown in table 24, the % of the study population classified as high physical activity was 58.6% among males, 37.9% among females and 48.1% among both sexes. In general, men have higher level of physical activity compared to women

Table 24. Percentage of respondents classified into three categories of total physical activity according to former recommendations

Age Group (years)	Level of total physical activity according to former recommendations						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
Men							
18-29	306	25.3	19.9-30.7	12.2	8.1-16.3	62.5	56.3-68.7
30-49	767	24.9	21.2-28.6	11.9	9.4-14.5	63.2	58.8-67.5
50-69	548	27.2	22.9-31.6	28.5	24.4-32.6	44.2	39.2-49.3
18-69	**1621**	**25.6**	**22.9-28.2**	**15.8**	**13.8-17.8**	**58.6**	**55.5-61.7**
Women							
18-29	367	51.3	44.8-57.7	20.8	15.8-25.8	27.9	21.9-34.0
30-49	1009	34.4	31.0-37.9	21.9	19.1-24.8	43.6	39.8-47.5
50-69	664	29.7	25.2-34.3	29.8	25.1-34.6	40.4	35.3-45.6
18-69	**2040**	**38.6**	**35.5-41.6**	**23.6**	**21.2-26.0**	**37.9**	**34.6-41.2**
Both sexes							
18-29	673	38.2	33.8-42.6	16.5	13.3-19.6	45.4	40.5-50.3
30-49	1776	29.7	26.9-32.5	17.0	15.0-19.0	53.3	50.2-56.5
50-69	1212	28.6	25.3-31.9	29.2	26.0-32.5	42.2	38.5-45.9
18-69	**3661**	**32.2**	**29.9-34.4**	**19.7**	**18.1-21.3**	**48.1**	**45.5-50.7**

Table 25 presents the mean and median minutes of total physical activity on average per day. On average, a Vietnamese person age from 16-69 year old would spend 191.5 minutes on physical activities and about 50% of the population would spend more than 87.9 minutes on physical activities.

Table 25. Mean minutes of total physical activity on average per day

Mean minutes of total physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	306	227.4	197.3-257.4	367	127.0	98.9-155.1	673	177.6	155.4-199.9
30-49	767	241.5	220.6-262.5	1009	188.7	171.4-206.1	1776	215.0	199.8-230.1
50-69	548	171.8	150.9-192.8	664	163.5	140.7-186.2	1212	167.4	151.5-183.3
18-69	**1621**	**221.0**	**205.0-236.9**	**2040**	**162.9**	**147.6-178.2**	**3661**	**191.5**	**178.8-204.2**
Median minutes of total physical activity on average per day									
Age Group (years)	Men			Women			Both Sexes		
	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)	n	Median minutes	Inter-quartile range (P25-P75)
18-29	306	150.0	34.3-381.4	367	21.4	0.0-188.6	673	60.0	01.4-325.7
30-49	767	180.0	30.0-420.0	1009	70.0	12.9-342.9	1776	128.6	17.1-390.0
50-69	548	85.7	21.4-282.9	664	65.7	2.0-290.0	1212	70.0	20.0-282.9
18-69	**1621**	**137.1**	**30.0-385.7**	**2040**	**51.4**	**2.9-295.7**	**3661**	**87.9**	**15.-347.1**

Table 26 presents the analysis of engagement in vigorous physical activity. More than 60% of the study population (66%) reported to have no vigorous physical activity. This proportion was higher among women compared to men (81.2% compared to 50.3%). Among men, the group have highest proportion of no vigorous physical activity was age 50-69 while among women, not much differences across age groups were observed.

Table 26. Percentage of respondents not engaging in vigorous physical activity

No vigorous physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no vigorous activity	95% CI	n	% no vigorous activity	95% CI	n	% no vigorous activity	95% CI
18-29	306	38.8	32.8-44.8	367	83.9	78.9-88.9	673	61.1	56.5-65.8
30-49	767	46.8	42.3-51.3	1009	78.7	75.3-82.1	1776	62.9	59.7-66.1
50-69	548	73.9	69.3-78.4	664	82.2	78.4-86.0	1212	78.3	75.3-81.3
18-69	**1621**	**50.3**	**47.1-53.5**	**2040**	**81.2**	**78.6-83.9**	**3661**	**66.0**	**63.6-68.4**

Table 27 presents the % of study population doing no work, transport or recreational related physical activity. The % of no work related physical activity among women was higher than that among men (56.2% compared to 39.8%). Similarly, the % of no recreation related physical among women also higher than that among men (74.7% compared to 66.2%). However, women seem to perform more transportation related physical activity than men when the % of no transportation related physical activity among women was lower than that among men (50.5 vs. 64.2%).

Table 27. Percentage of respondents classified as doing no work-, transport- or recreational-related physical activity

No work-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at work	95% CI	n	% no activity at work	95% CI	n	% no activity at work	95% CI
18-29	306	40.4	34.5-46.3	367	64.4	58.2-70.7	673	52.3	47.9-56.7
30-49	767	33.9	29.5-38.3	1009	50.0	46.0-54.0	1776	42.0	38.8-45.2
50-69	548	50.5	45.5-55.4	664	56.4	51.4-61.5	1212	53.6	50.2-57.1
18-69	**1621**	**39.8**	**36.7-43.0**	**2040**	**56.2**	**52.7-59.6**	**3661**	**48.1**	**45.6-50.7**

No transport-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no activity for transport	95% CI	n	% no activity for transport	95% CI	n	% no activity for transport	95% CI
18-29	306	63.1	56.3-70.0	367	61.3	54.9-67.6	673	62.2	57.0-67.4
30-49	767	67.5	63.4-71.7	1009	50.2	46.4-54.0	1776	58.8	55.8-61.8
50-69	548	59.5	54.6-64.3	664	37.6	33.1-42.1	1212	47.8	44.4-51.2
18-69	**1621**	**64.2**	**60.8-67.7**	**2040**	**50.5**	**47.2-53.8**	**3661**	**57.3**	**54.6-59.9**
No recreation-related physical activity									
Age Group (years)	Men			Women			Both Sexes		
	n	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI	n	% no activity at recreation	95% CI
18-29	306	61.4	54.9-67.9	367	80.5	76.1-84.9	673	70.9	66.8-74.9
30-49	767	70.6	66.7-74.6	1009	75.3	72.3-78.4	1776	73.0	70.3-75.7
50-69	548	64.8	60.2-69.4	664	66.4	62.0-70.8	1212	65.6	62.3-69.0
18-69	**1621**	**66.2**	**63.1-69.4**	**2040**	**74.7**	**72.3-77.2**	**3661**	**70.6**	**68.5-72.6**

The mean time and median time spent in sedentary among the study population was 242.8 minutes and 180 minutes, respectively.

Table 28. Minutes spent in sedentary activities on a typical day

Age Group (years)	Minutes spent in sedentary activities on average per day				
	n	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25-P75)
Men					
18-29	315	220.8	198.5-243.1	180.0	120.0-270.0
30-49	790	228.3	212.7-244.0	180.0	120.0-300.0
50-69	565	261.2	244.6-277.8	225.0	120.0-315.0
18-69	**1670**	**233.3**	**221.4-245.2**	**180.0**	**12.0-300.0**
Women					
18-29	374	301.5	275.0-328.1	240.0	120.-480.0
30-49	1024	228.0	214.7-241.4	180.0	120.0-300.0
50-69	682	231.7	217.2-246.2	180.0	120.0-300.0
18-69	**2080**	**252.1**	**239.3-264.9**	**185.0**	**120.0-330.0**
Both sexes					
18-29	689	260.7	241.1-280.2	180.0	120.-360.0
30-49	1814	228.2	216.8-239.6	180.0	120.0-300.0
50-69	1247	245.5	232.9-258.1	185.0	120.0-300.0
18-69	**3750**	**242.8**	**232.5-253.1**	**180.0**	**120.0-300.0**

History of Raised Blood Pressure

The situation of blood pressure measurement and diagnosis among the study population was assessed by asking respondents about history of blood pressure and their treatment history. Nearly one third (29.5%) of the study population had never had their blood pressure measured by a doctor or any other health worker (table 29). This proportion was higher among males compared to females respondent (33.8% vs 25.3%). The proportion of respondents diagnosed as high blood pressure within past 12 months was 7.8% and this proportion was very high among older group, aged 50-69 (i.e., 20.3% among both sexes, 21.4% among males and 19.4% among females).

Table 29. Blood pressure measurement and diagnosis among all respondents

Age Group (years)	Blood pressure measurement and diagnosis								
	n	% Never measured	95% CI	% Measured, not diagnosed	95% CI	% Diagnosed, but not within past 12 months	95% CI	% Diagnosed within past 12 months	95% CI
Men									
18-29	315	37.6	30.8-44.4	58.9	52.3-65.4	1.7	0.3-3.1	1.9	0.2-3.6
30-49	790	37.1	33.4-40.8	54.1	50.3-58.0	3.4	2.1-4.8	5.4	3.5-7.3
50-69	564	22.1	18.0-26.2	50.6	45.8-55.5	5.8	3.7-7.9	21.4	17.7-25.2
18-69	**1669**	**33.8**	**30.7-37.0**	**54.9**	**51.8-57.9**	**3.4**	**2.5-4.3**	**7.9**	**6.4-9.3**
Women									
18-29	374	27.4	22.2-32.6	69.3	63.8-74.7	2.2	0.6-3.8	1.1	0.0-2.5
30-49	1024	27.1	23.5-30.6	64.6	60.8-68.4	2.7	1.6-3.9	5.6	3.9-7.2
50-69	682	19.5	15.8-23.3	51.8	47.3-56.3	9.3	6.6-12.0	19.4	16.0-22.7
18-69	**2080**	**25.3**	**22.7-27.8**	**62.8**	**60.1-65.6**	**4.2**	**3.2-5.3**	**7.7**	**6.4-8.9**
Both sexes									

18-29	689	32.6	27.8-37.3	64.0	59.4-68.6	2.0	0.9-3.0	1.5	0.4-2.6
30-49	1814	32.1	29.4-34.7	59.4	56.6-62.1	3.1	2.2-4.0	5.5	4.3-6.7
50-69	1246	20.7	18.1-23.4	51.3	47.9-54.6	7.7	6.0-9.4	20.3	17.7-22.9
18-69	**3749**	**29.5**	**27.4-31.6**	**58.9**	**56.8-61.0**	**3.8**	**3.1-4.5**	**7.8**	**6.8-8.8**

History of Diabetes

Respondents were asked about history of having blood glucose measured and their treatment for raised blood glucose. Nearly two third (66.7%) of the study population had never had their blood glucose measured by a doctor or any other health worker (table 30). This proportion was slightly higher among males compared to females respondent (68.8% vs.64.7%). The proportion of respondents diagnosed with raised blood glucose within past 12 months was 1.3% and this proportion was the highest among older group aged 50-69.

Table 30. Blood sugar measurement and diagnosis among all respondents

Age Group (years)	Blood sugar measurement and diagnosis								
	n	% Never measured	95% CI	% Measured, not diagnosed	95% CI	% Diagnosed, but not within past 12 months	95% CI	% Diagnosed within past 12 months	95% CI
Men									
18-29	315	74.9	69.0-80.9	24.3	18.7-29.9	0.1	0.0-0.3	0.7	0.0-2.0
30-49	790	69.0	65.1-72.8	30.1	26.3-34.0	0.2	0.0-0.5	0.7	0.2-1.2
50-69	564	59.5	55.2-63.9	36.5	32.2-40.7	1.1	0.1-2.0	3.0	1.4-4.5
18-69	**1669**	**68.8**	**65.9-71.7**	**29.6**	**26.8-32.5**	**0.4**	**0.1-0.6**	**1.2**	**0.6-1.8**
Women									
18-29	374	67.9	62.6-73.2	30.9	25.6-36.2	0.8	0.0-1.9	0.4	0.0-1.2
30-49	1024	66.2	62.7-69.7	32.8	29.3-36.3	0.3	0.0-0.6	0.8	0.1-1.4
50-69	682	58.1	53.7-62.6	36.4	32.1-40.8	2.0	0.6-3.5	3.4	2.2-4.7
18-69	**2080**	**64.7**	**62.0-67.4**	**33.1**	**30.5-35.7**	**0.9**	**0.4-1.4**	**1.3**	**0.9-1.8**
Both sexes									

18-29	689	71.5	67.2-75.7	27.6	23.5-31.6	0.4	0.0-1.0	0.5	0.0-1.3
30-49	1814	67.6	64.7-70.4	31.4	28.5-34.4	0.3	0.0-0.5	0.7	0.3-1.1
50-69	1246	58.8	55.4-62.2	36.4	33.2-39.7	1.6	0.7-2.4	3.2	2.3-4.2
18-69	**3749**	**66.7**	**64.6-68.8**	**31.4**	**29.3-33.5**	**0.6**	**0.3-0.9**	**1.3**	**0.9-1.6**

Among those with self-reported diagnosed with raised blood glucose, 67.2% of both sexes (75.3% among males and 61.6% among females) were currently taking medication for high blood glucose prescribed by a doctor or other health workers (table 31). The proportion of taking insulin among those previously diagnosed was 32.3% for both sexes, and this proportion was slightly higher among females compared to males respondents (i.e., 34.2 vs. 29.6%)

Table 31. Diabetes treatment results among those previously diagnosed with raised blood sugar or diabetes

Currently taking drugs (medication) prescribed for diabetes among those previously diagnosed									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
18-29	2	88.9	60.5-100.0	3	33.0	0.0-88.3	5	55.3	7.0-100.0
30-49	11	50.7	20.4-81.0	13	60.8	26.6-95.0	24	56.2	32.9-79.5
50-69	28	82.3	68.1-96.5	43	69.7	51.3-88.0	71	74.6	61.7-87.6
18-69	**41**	**75.3**	**60.8-89.8**	**59**	**61.6**	**44.1-79.2**	**100**	**67.2**	**54.9-79.5**
Currently taking insulin prescribed for diabetes among those previously diagnosed									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% taking insulin	95% CI	n	% taking insulin	95% CI	n	% taking insulin	95% CI
18-29	2	0.0	0.0-0.0	3	33.0	0.0-88.4	5	19.8	0.0-56.4
30-49	11	21.8	0.0-49.0	13	31.4	0.0-66.4	24	27.0	4.1-49.9
50-69	28	41.4	18.1-64.7	41	35.5	19.3-51.8	69	37.9	23.7-52.1
18-69	**41**	**29.6**	**11.3-48.0**	**57**	**34.2**	**18.3-50.1**	**98**	**32.3**	**20.1-44.6**

History of Raised Total Cholesterol

The situation of cholesterol measurement and diagnosis among the study population was assessed by asking respondents about history of raised blood total cholesterol and their treatment. The proportion of the study population never had their total cholesterol measured by a doctor or any other health worker was very high (74.1%) as seen in table 32. During the past 12 months, the % of respondents diagnosed as raised cholesterol was 3.6%, this figure was slightly higher among females compared to males respondents (i.e., 4.1% vs. 3%).

Table 32. Total cholesterol measurement and diagnosis among all respondents.

Age Group (years)	Total cholesterol measurement and diagnosis								
	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
Men									
18-29	314	82.6	77.6-87.5	16.1	11.2-20.9	0.6	0.0-1.4	0.8	0.0-2.1
30-49	790	75.5	71.9-79.0	19.5	16.4-22.7	2.5	1.4-3.6	2.5	1.4-3.6
50-69	564	65.3	61.0-69.6	22.7	18.9-26.4	4.7	2.6-6.7	7.4	5.0-9.7
18-69	**1668**	**75.5**	**72.9-78.1**	**19.1**	**16.7-21.6**	**2.4**	**1.7-3.1**	**3.0**	**2.2-3.8**
Women									
18-29	374	79.3	74.5-84.1	19.6	14.9-24.4	0.6	0.0-1.5	0.5	0.0-1.0
30-49	1024	72.1	68.8-75.4	22.6	19.5-25.7	2.2	1.3-3.2	3.1	2.0-4.2
50-69	681	65.7	61.3-70.2	20.8	17.3-24.3	3.1	1.8-4.5	10.3	7.4-13.3
18-69	**2079**	**72.8**	**70.1-75.4**	**21.2**	**18.9-23.5**	**1.9**	**1.3-2.6**	**4.1**	**3.2-5.0**
Both sexes									

18-29	688	80.9	77.3-84.5	17.8	14.3-21.4	0.6	0.0-1.2	0.6	0.0-1.4
30-49	1814	73.8	71.2-76.4	21.1	18.8-23.4	2.4	1.7-3.1	2.8	2.0-3.5
50-69	1245	65.5	62.2-68.9	21.7	19.0-24.4	3.8	2.6-5.1	8.9	6.9-11.0
18-69	**3747**	**74.1**	**72.1-76.1**	**20.2**	**18.4-22.0**	**2.2**	**1.7-2.6**	**3.6**	**2.9-4.2**

Among those previously diagnosed with raised cholesterol, 22.1% respondents reported that they are currently taking medication prescribed by doctors/health care workers for raised total cholesterol (table 33). This proportion was higher (but non-significant) among females compared to males respondents (i.e., 26.1% compared to 17.5%)

Table 33. Cholesterol treatment results among those previously diagnosed with raised cholesterol

Currently taking oral treatment (medication) prescribed for raised total cholesterol among those previously diagnosed									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
18-29	5	0.0	0.0-0.0	5	0.0	0.0-0.0	10	0.0	0.0-0.0
30-49	44	10.2	0.0-21.4	63	14.2	4.2-24.2	107	12.3	4.8-19.8
50-69	70	26.3	13.8-38.7	100	36.8	25.9-47.7	170	32.2	24.0-40.3
18-69	**119**	**17.5**	**9.6-25.4**	**168**	**26.1**	**18.8-33.4**	**287**	**22.1**	**16.9-27.3**

History of Cardiovascular Diseases

By asking respondents about history of heart attack or chest pain, the situation of cardiovascular diseases among the study population was assessed. The proportion of study population reporting to ever have a heart attack or chest pain from heart disease or a stroke was 7.4% (8.0% among females and 6.7% among males). Among population aged 50-69, 12.6% reported to have this history and this figure was not different between males and females respondents in this age group (table 34)

Table 34. Percentage of respondents who have ever had a heart attack or chest pain from heart disease (angina) or a stroke among all respondents

Having ever had a heart attack or chest pain from heart disease or a stroke									
Age Group (years)	Men			Women			Both Sexes		
	n	% CVD history	95% CI	n	% CVD history	95% CI	n	% CVD history	95% CI
18-29	315	5.1	2.4-7.8	374	5.2	2.4-8.0	689	5.1	3.2-7.0
30-49	789	4.7	3.2-6.2	1023	7.5	5.6-9.4	1812	6.1	4.9-7.4
50-69	564	12.7	9.8-15.6	681	12.5	9.7-15.3	1245	12.6	10.5-14.7
18-69	**1668**	**6.7**	**5.3-8.0**	**2078**	**8.0**	**6.6-9.5**	**3746**	**7.4**	**6.3-8.4**

Among study population, 1.3% of respondents reported that they are currently taking aspirin frequently to prevent/treat heart disease. This figure was highest among age group 50-69 year old (4.1%). The % of taking statins regularly was also 1.3% among all respondents and slightly higher among women compared to men (1.4% vs. 1.1%) (more information can be found in appendix 6)

Receiving health advices

Table 35 presents the information about the proportion of respondents receiving lifestyle advice form a doctor or health workers during the last 3 years. The types of health promotion advices examined in this study included: Quit smoke, reduce salt intake, eat enough vegetable/fruit, reduce fat intake, reduce body weight and increase physical activity. The lifestyle advices the respondents received most frequently was advices to eat at least five servings of fruit and/or vegetables each day and to eat more fruit and/or vegetables each day.

Table 35. Percentage of respondents who received lifestyle advice from a doctor or health worker during the past three years among all respondents

Advised by doctor or health worker to quit using tobacco or don't start									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	315	13.7	9.5-17.9	374	6.5	3.6-9.3	689	10.1	7.5-12.7
30-49	788	23.9	20.7-27.0	1024	6.2	4.4-8.0	1812	15.0	13.1-16.9
50-69	561	29.4	25.2-33.6	680	7.6	5.3-9.9	1241	17.8	15.5-20.0
18-69	**1664**	**21.8**	**19.4-24.1**	**2078**	**6.6**	**5.3-8.0**	**3742**	**14.1**	**12.8-15.4**
Advised by doctor or health worker to reduce salt in the diet									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	315	11.2	7.4-15.0	374	14.0	10.1-18.0	689	12.6	9.7-15.5
30-49	789	17.2	14.3-20.1	1024	24.5	21.4-27.6	1813	20.9	18.6-23.2
50-69	561	29.5	25.0-34.0	681	35.8	31.4-40.2	1242	32.8	29.5-36.2
18-69	**1665**	**18.0**	**15.8-20.1**	**2079**	**24.0**	**21.7-26.4**	**3744**	**21.0**	**19.4-22.7**
Advised by doctor or health worker to eat at least five servings of fruit and/or vegetables each day									

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	82	24.5	19.3-29.7	144	36.7	29.0-44.4	226	30.3	25.3-35.3
30-49	239	30.1	26.5-33.7	395	37.4	33.1-41.7	634	33.6	30.5-36.8
50-69	224	37.9	33.4-42.3	318	45.3	40.4-50.3	542	41.7	38.1-45.4
18-69	**547**	**35.9**	**30.6-41.3**	**859**	**39.8**	**35.2-43.7**	**1402**	**37.9**	**34.5-41.4**

Advised by doctor or health worker to reduce fat in the diet

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	315	12.2	8.1-16.4	374	18.5	14.0-22.9	689	15.3	12.0-18.6
30-49	789	18.8	15.5-22.2	1024	26.8	23.5-30.2	1813	22.8	20.5-25.2
50-69	561	27.8	23.3-32.3	680	39.0	34.7-43.4	1241	33.8	30.4-37.2
18-69	**1665**	**18.7**	**16.3-21.0**	**2078**	**27.3**	**24.7-29.9**	**3743**	**23.0**	**21.2-24.9**

Advised by doctor or health worker to start or do more physical activity

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	315	14.1	9.8-18.4	374	18.0	13.5-22.4	689	16.0	12.8-19.3
30-49	789	21.1	17.7-24.4	1024	24.7	21.6-27.9	1813	22.9	20.4-25.4
50-69	561	27.8	23.7-31.9	680	33.1	29.0-37.3	1241	30.6	27.4-33.9
18-69	**1665**	**20.3**	**18.0-22.6**	**2078**	**24.7**	**22.1-27.3**	**3743**	**22.5**	**20.6-24.4**

Advised by doctor or health worker to maintain a healthy body weight or to lose weight

Age Group (years)	Men			Women			Both Sexes		
	n	% advised	95% CI	n	% advised	95% CI	n	% advised	95% CI
18-29	315	11.3	7.4-15.2	374	16.5	12.0-20.9	689	13.8	10.7-17.0
30-49	789	14.0	11.2-16.8	1024	20.3	17.4-23.2	1813	17.2	15.0-19.3
50-69	560	20.0	16.1-24.0	680	25.4	21.6-29.3	1240	22.9	19.8-26.0
18-69	**1664**	**14.5**	**12.4-16.5**	**2078**	**20.4**	**17.9-22.8**	**3742**	**17.5**	**15.7-19.2**

Cervical Cancer Screening

Table 36 presents the information about history of cervical cancer screening among females respondents. Among all women age 18-69, the % of ever done screening for cervical cancer was 24.9%. Among the target group of cervical cancer screening program (i.e., women age 30-49 years old), the % of respondents ever received screening services for cervical cancer was 31.5%.

Table 36. Percentage of females respondents who have ever had a screening test for cervical cancer among all females respondents

Age Group (years)	Women		
	n	% ever tested	95% CI
18-29	352	16.9	12.4-21.4
30-49	989	31.5	28.0-35.0
50-69	644	23.1	18.8-27.4
18-69	**1985**	**24.9**	**22.5-27.3**

Blood pressure

Table 37 presents the information about the proportion of the study population with raised blood pressure. Different criteria were used for the assessment of blood pressure:

- The prevalence of raised BP, using the criteria of SBP>=140 or DBP>=90mmHg and excluding those on medication was 15% (men 19.4% and women 10.7%). Among age 50-69, this prevalence was 30.7% (35.9% among males and 26.3% among females population)
- The prevalence of raised BP, using the criteria of SBP>=140 or DBP>=90mmHg and including those on medication was 18.9% (men 23.1% and women 14.9%)
- The prevalence of raised BP, using the criteria of SBP>=160 or DBP>=100mmHg and excluding those on medication was 4.7% (men 6.8% and women 2.7%).
- The prevalence of raised BP, using the criteria of SBP>=160 or DBP>=100mmHg and including those on medication was 9.1% (men 11.0% and women 7.2%). Among age 50-69, this prevalence was 23.2% (27.8% among males and 19% among females population).

Table 37. Percentage of respondents with raised blood pressure

SBP ≥140 and/or DBP ≥ 90 mmHg, excluding those on medication for raised blood pressure									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	218	8.0	3.9-12.1	268	1.4	0.0-2.9	486	4.7	2.5-6.9
30-49	597	20.7	16.8-24.7	865	9.5	7.1-11.8	1462	15.1	12.8-17.5
50-69	416	35.9	30.2-41.5	528	26.3	21.5-31.2	944	30.7	27.2-34.2
18-69	**1231**	**19.4**	**16.7-22.1**	**1661**	**10.7**	**9.0-12.4**	**2892**	**15.0**	**13.5-16.5**
SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	220	8.7	4.6-12.9	269	1.9	0.1-3.7	489	5.4	3.1-7.7
30-49	612	22.3	18.4-26.2	888	12.3	9.6-14.9	1500	17.3	14.9-19.7
50-69	487	45.5	39.9-51.0	603	35.4	30.5-40.4	1090	40.2	36.5-43.8
18-69	**1319**	**23.1**	**20.3-25.9**	**1760**	**14.9**	**13.0-16.7**	**3079**	**18.9**	**17.3-20.5**

SBP ≥160 and/or DBP ≥ 100 mmHg, excluding those on medication for raised blood pressure									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	218	0.9	0.0-2.1	268	0.6	0.0-1.6	486	0.7	0.0-1.5
30-49	597	7.5	5.1-10.0	865	1.7	0.7-2.6	1462	4.6	3.3-5.9
50-69	416	15.1	11.0-19.2	528	7.6	5.0-10.2	944	11.0	8.8-13.3
18-69	**1231**	**6.8**	**5.3-8.2**	**1661**	**2.7**	**1.9-3.5**	**2892**	**4.7**	**3.9-5.5**

SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	220	1.7	0.0-3.3	269	1.1	0.0-2.6	489	1.4	0.3-2.5
45-59	612	9.3	6.7-12.0	888	4.7	3.1-6.4	1500	7.0	5.6-8.5
60-69	487	27.8	23.1-32.6	603	19.0	15.4-22.7	1090	23.2	20.1-26.2
18-69	**1319**	**11.0**	**9.2-12.8**	**1760**	**7.2**	**5.9-8.5**	**3079**	**9.1**	**8.0-10.2**

Table 38 presents the percentage of respondents with treated and/or controlled of raised blood pressure among respondents with raised BP or currently on medication for raised BP. Among those detected, 24.9% were on medication while 75.1% were not on medication. Among those on medication (24.9%) 9.7% had their blood pressure controlled (SBP<140 and DBP<90) while the rest (15.2%) did not their BP controlled (SBP ≥140 and/or DBP ≥ 90 mmHg).

Table 38. Percentage of respondents with treated and/or controlled of raised blood pressure among those with raised blood pressure (SBP ≥140 and/or DBP ≥ 90 mmHg) or currently on medication for raised blood pressure

Age Group (years)	Respondents with treated and/or controlled raised blood pressure						
	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/or DBP≥90	95% CI	% Not on medication and SBP≥140 and/or DBP≥90	95% CI
Men							
18-29	18	4.7	0.0-13.9	4.7	0.0-13.9	90.6	77.7-100.0
30-49	123	1.2	0.0-2.7	8.2	3.0-13.4	90.6	85.2-96.0
50-69	224	14.1	9.0-19.3	19.6	13.1-26.1	66.3	59.3-73.2
18-69	**365**	**7.5**	**4.7-10.4**	**12.9**	**8.7-17.2**	**79.5**	**74.5-84.5**
Women							
18-29	6	28.8	0.0-75.6	0.0	0.0-0.0	71.2	24.4-100.0
30-49	96	8.3	1.2-15.4	17.1	8.3-25.9	74.6	64.3-84.9
50-69	206	14.7	9.1-20.3	20.5	14.7-26.3	64.8	57.4-72.2
18-69	**308**	**13.0**	**8.3-17.6**	**18.5**	**13.9-23.0**	**68.6**	**62.5-74.6**
Both sexes							
18-29	24	8.9	0.0-21.1	3.9	0.0-11.4	87.2	73.1-100.0
30-49	219	3.8	0.9-6.7	11.5	6.8-16.2	84.7	79.4-90.0
50-69	430	14.4	10.4-18.3	20.0	15.5-24.6	65.6	60.4-70.8
18-69	**673**	**9.7**	**7.0-12.4**	**15.2**	**11.9-18.4**	**75.1**	**71.0-79.2**

Other information about the average SBP, DBP, heart rate among the study population can be found in Appendix 1 and appendix 7.

Overweight and obesity

Table 39 presents the categorization of the study population into 4 BMI classes: Underweight (BMI<18.5), Normal (BMI 18.5-24.9), Overweight (BMI 25-29.9) and Obese (BMI>=30). About two third of the study sample had BMI in the normal range (72.7%). This proportion was slightly lower in women (71%) than in men (74.4%). About 13.9% of the population was overweight and 1.7% were obese and the proportions were similar among males and females.

Table 39. Percentage of respondents (excluding pregnant women) in each BMI category

Age Group (years)	BMI classifications								
	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% Over weight 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
Men									
18-29	220	16.2	10.7-21.8	72.9	65.9-80.0	9.4	4.7-14.1	1.5	0.0-3.4
30-49	610	5.9	3.9-7.9	76.8	73.3-80.4	15.4	12.4-18.4	1.9	0.6-3.1
50-69	486	11.9	8.5-15.3	72.0	67.2-76.8	14.3	10.7-18.0	1.8	0.6-2.9
18-69	**1316**	**10.7**	**8.4-12.9**	**74.4**	**71.3-77.5**	**13.2**	**10.8-15.5**	**1.7**	**0.8-2.6**
Women									
18-29	251	20.9	15.1-26.7	70.5	63.9-77.1	7.8	4.2-11.3	0.8	0.0-2.0
30-49	868	8.1	6.1-10.2	73.9	70.5-77.3	17.0	14.0-20.0	1.0	0.3-1.8
50-69	602	10.4	7.2-13.5	66.8	62.2-71.4	18.9	14.9-22.9	3.9	2.1-5.8
18-69	**1721**	**12.6**	**10.2-14.9**	**71.0**	**68.2-73.9**	**14.7**	**12.7-16.8**	**1.7**	**1.0-2.4**
Both sexes									
18-29	471	18.4	14.5-22.4	71.8	67.0-76.6	8.6	5.6-11.7	1.1	0.0-2.3
30-49	1478	7.0	5.5-8.5	75.4	72.7-78.0	16.2	14.0-18.4	1.5	0.7-2.2
50-69	1088	11.1	8.7-13.4	69.3	65.8-72.7	16.7	13.9-19.6	2.9	1.8-4.0
18-69	**3037**	**11.6**	**10.0-13.2**	**72.7**	**70.6-74.9**	**13.9**	**12.3-15.6**	**1.7**	**1.1-2.3**

Table 40 presents the information of respondents having BMI>=25 excluding pregnant women. The proportion of the study sample with high BMI (i.e., >=25) was 15.6% and this proportion was slightly higher among females respondents compared to males (16.4% vs. 14.9%).

Table 40. Percentage of respondents (excluding pregnant women) classified as overweight (BMI≥25).

BMI≥25									
Age Group (years)	Men			Women			Both Sexes		
	n	% BMI ≥25	95% CI	n	% BMI ≥25	95% CI	n	% BMI ≥25	95% CI
18-29	220	10.9	5.8-15.9	251	8.6	4.8-12.3	471	9.8	6.5-13.0
30-49	610	17.3	14.0-20.5	868	18.0	14.9-21.1	1478	17.6	15.3-19.9
50-69	486	16.1	12.3-19.9	602	22.8	18.5-27.1	1088	19.7	16.6-22.7
18-69	**1316**	**14.9**	**12.3-17.5**	**1721**	**16.4**	**14.2-18.6**	**3037**	**15.6**	**13.9-17.4**

Table 41 present the % of overweight (BMI>=25) among rural and urban population. This figure was significantly higher among urban population compared to rural population (21.3% vs. 12.6%)

Table 41. Percentage of respondents (excluding pregnant women) classified as overweight (BMI≥25) by rural/urban

BMI≥25									
Age Group (years)	Men			Women			Both Sexes		
	n	% BMI≥25	95% CI	n	% BMI≥25	95% CI	*n*	*% BMI≥25*	*95% CI*
Urban	572	22.1	16.6-27.6	789	20.6	17.2-24.1	1361	21.3	18.0-24.7
Rural	744	11.2	8.6-13.8	932	14.0	11.2-16.9	1676	12.6	10.5-14.6
Total	**1316**	**14.9**	**12.3-17.5**	**1721**	**16.4**	**14.2-18.6**	**3037**	**15.6**	**13.9-17.4**

Other information about weight, height, waist and hip can be found in appendix 8.

Blood glucose

The study reported that mean fasting blood glucose for both sexes was 4.7mmol/l; this figure was same among men and women. Older age groups of both men and women had higher mean fasting glucose than younger age groups (Annex 9).

Table 42 presents the percentage of different blood glucose level categories as well as the percentage of study population currently on medication for raised blood glucose, excluding non-fasting cases. The percentage of impaired fasting glycaemia (plasma venous value:>=6.1mmol/l and <7.0mmol/l) was 3.6% among both sexes (i.e., 3.9% among men and 3.2% among women).

Overall, 4.1% had raised blood sugar (plasma venous value>=7mmol) or were currently on medication for diabetes. This figure was higher among men than women and among older group than younger group. Among group 50-69 year old, this prevalence was 7.7%.

Table 42. Categorization of respondents into blood glucose level categories and percentage of respondents currently on medication for raised blood glucose (non-fasting recipients excluded)

Impaired Fasting Glycaemia*									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	N	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	191	3.0	0.6-5.3	238	2.7	0.6-4.8	429	2.8	1.2-4.4
30-49	559	3.9	2.2-5.5	819	2.3	1.3-3.3	1378	3.1	2.1-4.0
50-69	456	5.2	2.7-7.8	553	5.5	3.3-7.7	1009	5.4	3.7-7.0
18-69	**1206**	**3.9**	**2.7-5.1**	**1610**	**3.2**	**2.3-4.2**	**2816**	**3.6**	**2.8-4.3**
Raised blood glucose or currently on medication for diabetes**									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	N	%	95% CI	n	%	95% CI	*n*	*%*	*95% CI*
18-29	191	2.5	0.0-5.0	238	1.2	0.0-2.7	429	1.8	0.3-3.3
30-49	559	4.2	2.6-5.9	819	3.0	1.7-4.4	1378	3.6	2.5-4.7
50-69	456	7.9	5.0-10.8	553	7.5	5.0-10.1	1009	7.7	5.8-9.7
18-69	**1206**	**4.5**	**3.1-5.9**	**1610**	**3.6**	**2.7-4.6**	**2816**	**4.1**	**3.2-5.0**

The stratified analysis of prevalence of diabetes by rural/urban was presented in table 43. The prevalence of diabetes tended to be higher (but non-significant) among urban population than rural population (5.2% vs. 3.5%) and urban males population was the group with highest prevalence (6.1%).

Table 43. % Raised blood glucose or currently on medication for diabetes by rural/urban

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*
Urban	525	6.1	4.0-8.2	733	4.5	2.7-6.2	1258	5.2	3.8-6.7
Rural	681	3.8	1.9-5.6	877	3.2	2.0-4.3	1558	3.5	2.3-4.6
Total	**1206**	**4.5**	**3.1-5.9**	**1610**	**3.6**	**2.7-4.6**	**2816**	**4.1**	**3.2-5.0**

Management of Hypertension and Diabetes

Table 44 presents the information about the management of diabetes and hypertension in health care system. Among those hypertensive detected in this survey (using WHO definition), 43.1% of cases reported that they were previously diagnosed by doctors and 13.6% reported that they are currently being managed at a health facility for their hypertension.

Among those defined as diabetes in this survey (using WHO definition), 31.1% of cases reported that they were previously diagnosed by doctors and 28.9% reported that they are currently being managed at a health facility for their raised blood glucose.

Table 44. Percentage of detected HTN and DM cases reported diagnosed by a doctor or being managed at a health facility

Indicators	n	**Report diagnosed by a doctor before**		**Report being managed at a health facility**	
		%	95% CI	%	95% CI
Detected raised blood pressure	689	43.1	39.4-46.8	13.6	11.1-16.2
Detected raised blood glucose	135	31.1	23.2-39.0	28.9	21.1-36.6

Of those reported having hypertension managed at a health facility, 20.3% reported being manged at a CHS and 34% at a district health center (Figure 1). The rest were managed in other health facilities.

Of those reported having their diabetes managed at a health facility, only 6.2% reported being managed at a CHS. Most cases were managed at district level (38.5%), provincial level (35.4%) and central hospital (13.8%) (Figure 2).

Figure 1. Health facility currently managing your hypertension

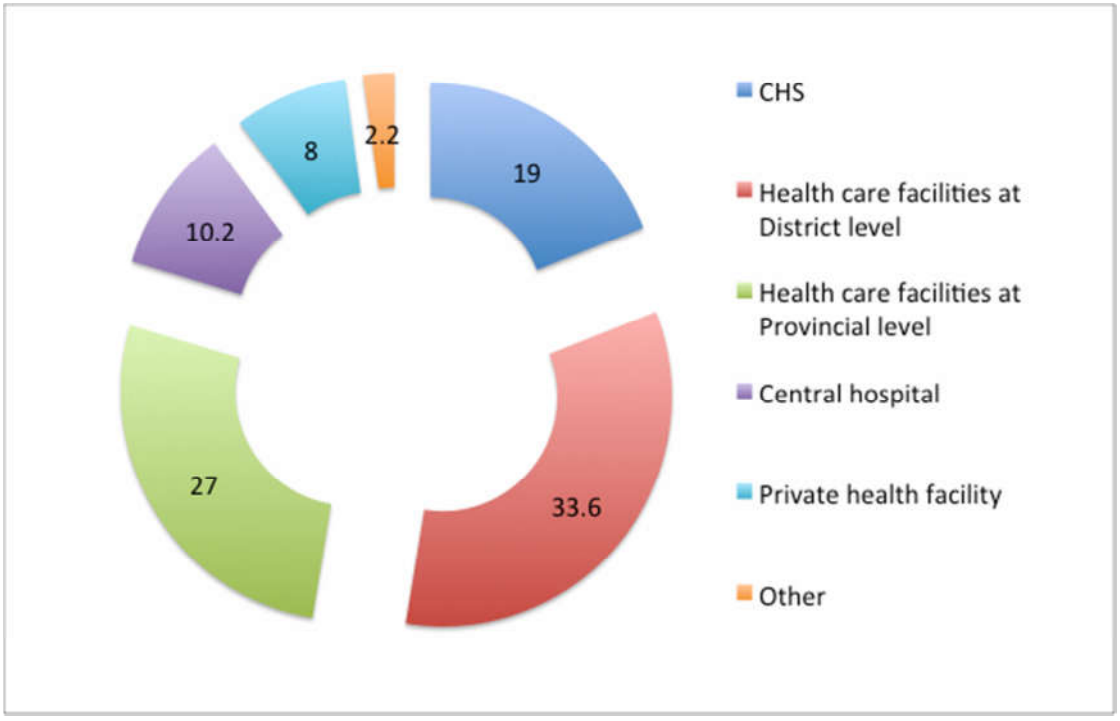
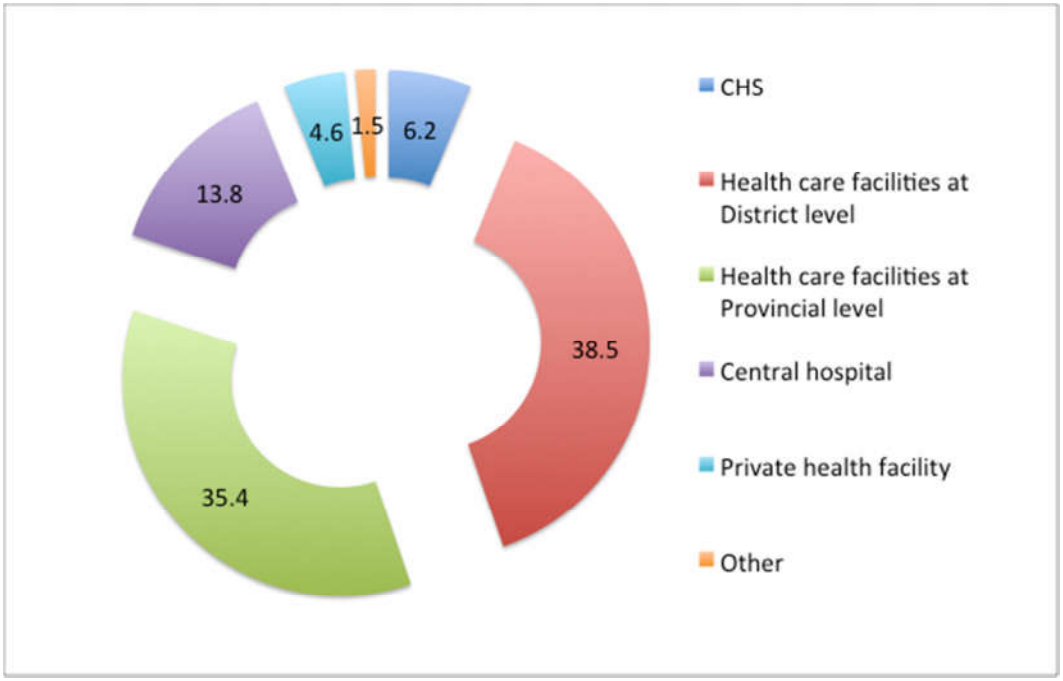


Figure 2. Health facility currently managing your diabetes



Cholesterol/HDL

The mean cholesterol level for both sexes was 4.5 mmol/L and females participants had slightly higher average blood cholesterol compared to males (i.e., 4.7 mmol/L vs. 4.3 mmol/L) (appendix 10)

The prevalence of respondents having blood total cholesterol>=5.0 mmol/L or currently on medication for raised cholesterol was 30.2%. This figure was about 10% points higher among women compared to men (i.e., prevalence 35% among women and 25.2% among men). Noticeable, more than half of women age 50-69 had total blood cholesterol>=5mmol/l or currently on medication for raised cholesterol (table 45).

Table 45. Percentage of respondents with raised total cholesterol and percentage of respondents currently on medication for raised cholesterol

Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	220	13.4	8.6-18.2	269	21.3	14.9-27.7	489	17.3	13.4-21.2
30-49	611	30.8	26.2-35.3	885	31.8	27.7-35.8	1496	31.3	28.1-34.4
50-69	487	31.8	26.6-37.0	602	57.8	52.6-63.0	1089	45.6	41.7-49.5
18-69	**1318**	**25.2**	**22.1-28.3**	**1756**	**35.0**	**31.8-38.2**	**3074**	**30.2**	**27.9-32.5**
Total cholesterol ≥ 6.2 mmol/L or ≥ 240 mg/dl or currently on medication for raised cholesterol									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	220	3.7	0.7-6.7	269	6.4	3.0-9.8	489	5.0	2.8-7.3
30-49	611	8.8	6.3-11.4	885	8.3	6.2-10.5	1496	8.6	6.9-10.3
50-69	487	10.6	7.3-13.8	602	24.0	19.8-28.2	1089	17.7	14.9-20.5
18-69	**1318**	**7.5**	**5.8-9.3**	**1756**	**11.7**	**9.8-13.6**	**3074**	**9.6**	**8.2-11.0**

Table 46 presents the proportion of study population with low HDL (defined as men with HDL<1.03mmol/l or women with HDL<1.29mmol/L). This figure was 67% among males respondents and 72% among females respondents.

Table 46. Percentage of respondents with low HDL

Percentage of respondents with HDL <1.03mmol/L or <40 mg/dl			
Age Group (years)	Men		
	n	%	95% CI
18-29	220	75.1	68.9-81.4
30-49	612	64.9	60.2-69.5
50-69	488	59.4	54.1-64.8
18-69	**1320**	**67.0**	**63.7-70.4**
Percentage of respondents with HDL <1.29mmol/L or <50 mg/dl			
Age Group (years)	Women		
	n	%	95% CI
18-29	269	65.2	57.5-72.9
30-49	888	75.7	72.4-79.1
50-69	603	74.1	69.6-78.7
18-69	**1760**	**72.0**	**68.7-75.2**

Salt intake per day

The WHO recommendation is less than 5 grams of salt or 2 grams of sodium per person per day. Table 47 presents the average salt intake in grams per 24 hours. This figure was 9.4 grams for both sexes, 8.3 grams for women and 10.5 grams for men. By looking at 95% CI of these mean, it can be concluded that most of Vietnamese people consume more salt per day than the recommendation made by WHO. In general, the average salt intake was not significantly different across age groups.

Table 47. The average salts in take in grams per day

Mean salt intake (g/day)									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	187	10.3	10.0-10.7	226	8.2	7.9-8.5	413	9.3	9.0-9.6
30-49	542	10.7	10.4-10.9	788	8.6	8.4-8.7	1330	9.6	9.5-9.8
50-69	436	10.6	10.3-10.8	532	7.9	7.7-8.1	968	9.2	9.0-9.3
18-69	**1165**	**10.5**	**10.4-10.7**	**1546**	**8.3**	**8.2-8.4**	**2711**	**9.4**	**9.3-9.6**

Cardiovascular disease risk and cardiovascular disease risk prediction

Table 48 presents the analysis of study population with a 10 year cardiovascular disease risk>=30% or with existing CVD. This indicator was defined according to age, sex, blood pressure, smoking status (current smokers or those who quit smoking less than 1 year before the assessment), total cholesterol and diabetes (previously diagnosed or a fasting plasma glucose concentration>7mmol/l) OR with existing CVD (history of CVD). The % of participants with a 10 year CVD risk >=30% or with existing CVD accounted for 12.7% of the study population aged 40-69 years old (i.e, 12.9% among males and 12.5% among women).

Table 48. Percentage of respondents aged 40-69 years with a 10-year cardiovascular disease (CVD) risk* ≥30% or with existing CVD

Percentage of respondents with a 10-year CVD risk ≥30% or with existing CVD									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
40-54	429	7.6	5.2-10.0	611	11.3	8.2-14.4	1040	9.5	7.5-11.5
55-69	316	22.1	16.9-27.4	362	14.8	10.9-18.8	678	18.5	15.0-22.0
40-69	**745**	**12.9**	**10.3-15.4**	**973**	**12.5**	**10.0-14.9**	**1718**	**12.7**	**10.9-14.4**

Table 49 presents the proportion of respondents aged 40-69 years with a 10 year CVD risk>=30% or with existing CVD who are currently receiving drug therapy or counseling to prevent heart attacks and strokes. Counseling is defined as receiving advice from a doctor or other health worker to quit using tobacco or not start, reduce salt in diet, eat at least five servings of fruit and/or vegetables per day, reduce fat in diet, start or do more physical activity, maintain a healthy body weight or lose weight. This figure was 28.9% for both sexes, 24.3% for eligible males and 33.4% for eligible females.

Table 49. Percentage of eligible persons (defined as aged 40-69 years with a 10-year cardiovascular disease (CVD) risk* ≥30%, including those with existing CVD) receiving drug therapy and counseling** (including glycemic control) to prevent heart attacks and strokes.

Percentage of eligible persons receiving drug therapy and counseling to prevent heart attacks and strokes									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
40-54	43	11.9	2.4-21.3	68	19.7	9.6-29.9	111	16.7	9.8-23.7
55-69	71	31.9	20.8-43.0	57	53.8	38.8-68.9	128	40.7	31.3-50.0
40-69	**114**	**24.3**	**16.2-32.4**	**125**	**33.4**	**23.7-43.1**	**239**	**28.9**	**22.5-35.4**

Summary of Combined Risk Factors

The analysis of combined risk factors was done by combining information of STEPS 1 and 2 on 5 risk factors:

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

The study population was classified into three group according to the presence of these five risk factors: Group 1: no risk factors, group 2: 1 or 2 risk factors and group 3: 3 to 5 risk factors. The distribution of these groups among study population was presented in table 3.50. The percentage having 3 or more risk factors was 12.7% among both sexes (18.2 among maless and 7.1% among femaless). This prevalence was higher among older age group and among males compared to females (table 50)

Table 50. Percentage of respondents with 0, 1-2, or 3-5 of NCD risk factors

Age Group (years)	Summary of Combined Risk Factors						
	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
Men							
18-44	642	15.9	12.6-19.3	71.7	68.0-75.5	12.3	9.3-15.4
45-69	630	6.9	4.6-9.2	64.1	59.9-68.2	29.0	24.9-33.1
18-69	**1272**	**12.7**	**10.4-15.0**	**69.0**	**66.1-72.0**	**18.2**	**15.6-20.9**
Women							
18-44	900	29.3	24.8-33.9	67.5	62.9-72.0	3.2	1.9-4.5
45-69	785	18.5	15.3-21.7	67.8	64.0-71.6	13.7	10.5-17.0
18-69	**1685**	**25.3**	**22.1-28.6**	**67.6**	**64.3-70.8**	**7.1**	**5.6-8.6**
Both sexes							
18-44	1542	22.5	19.5-25.5	69.6	66.7-72.6	7.8	6.2-9.5
45-69	1415	12.8	10.6-15.0	66.0	63.2-68.8	21.2	18.6-23.9
18-69	**2957**	**19.0**	**16.9-21.1**	**68.3**	**66.1-70.5**	**12.7**	**11.1-14.2**

V. DISCUSSION

NCDs are a global challenge and an immense burden for society and the health system. Similar to many developing countries, Viet Nam is undergoing an epidemiological transition with an increasing burden of NCDs. NCDs account for a growing share of total deaths, rising from 56 percent in 1990 to 72 percent in 2010.[5] More importantly, NCDs create burden by causing huge number of years of life lost to disability (YLD). Out of total burden of disease measured in DALYS in Viet Nam in 2010, 66.3 percent were due to NCDs.[6]

This report presents an updated situational analysis about the commonly known behavioral and metabolic risk factors for NCDs in Viet Nam. When the data available, comparison with results from STEPS 2010[7] will be provided, however, it should be noted that the current STEPS survey are among age 18-69 years old while previous STEPS survey in 2010 was done among age 25-64 years old. For more accurate comparison with STEPS 2010, stratified analysis among age group 25-64 was done for STEPS 2015 data, results are presented in Appendix 1.

The GATS survey result was presented in a separate report, however, some information about tobacco use from GATS report were quoted here to present a comprehensive picture of all NCD risk factors.

Tobacco use

The prevalence of tobacco use was 45.3% among male, 1.1% among female and 22.5% overall for both sexes. This prevalence was among age group 15 year old and over (different from STEPS age group).

Alcohol use

Alcohol use causes for more than 200 diseases and injuries according to ICD10, among that 30 diseases included "alcohol" in their name. Alcohol use is associated with heart disease due to raised blood pressure, causing stroke, cancer, mental health impair, and many other social disorder like violence, injury and reduction of productivity.[8]

The pattern of alcohol consumption by gender showed clear and significant difference between males 77.3% (95%CI:74.6-80.0) and females 11% (95%CI: 9.3-12.9). This is as expected and reflecting the custom in Viet Nam that women do not often drink. In addition, the older age group consumes alcohol significantly more often than the younger ones. The percentage of daily drinkers were 2.1% (95%CI:0.4-3.8); 15.2% (95%CI:11.6-18.8); and 29.9%(95%CI:24.7-35.1) for age groups: 18-29; 30-49; and 50-69 respectively.

Compared to 2010 (appendix 1) the prevalence of alcohol use in the past 30 days have increased significantly from 37% (95%CI: 36.5-37.5) in 2010 to 44.8 (95%CI: 42.4-47.3) in 2015 among those aged 25-64. The significant increase is also shown for both males and females between the two surveys.

Especially, among males 44.2% had consumed alcohol at harmful level, that is at least one occasion consuming 6 or more standard drink during the past 30 days.

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[5] Institute for Health Metrics and Evaluation. The Global Burden of Disease; Generating Evidence, Guiding Policy. Seattle, WA: IHME 2013.

[6]. Nguyen Thi Trang Nhung et al. Estimation of Viet Nam National Burden of Disease 2008. Asia-Pacific Journal of Public Health 26(5) · November 2013

[7] Cục Quản lý khám, chữa bệnh - Bộ Y tế (2012). Nghiên cứu các yếu tố nguy cơ của một số bệnh không lây nhiễm tại Việt Nam. Báo cáo kết quả đề tài khoa học công nghệ. Hà Nội. (Medical Service Administration MOH Viet Nam. STEPS survey 2010 report).

[8] World Health Organization (2014). Global status report on alcohol and health 2014.

One important indicator for Viet Nam is the prevalence of drink drive, since this is one of the important public health issues in the country. The result showed that almost half (45.0%) of current drinkers drove after drinking in the past 30 days. Unfortunately, we do not have respective data from STEPS 2010 for comparison.

Reduce Alcohol use by 10% is one of the nine Global NCD voluntary targets by 2025. The calculation method is more complicated and will be treated in future work but the current trend of alcohol use in the past 30 days showed that Viet Nam will have a big challenge to achieve the global target.

Diet

The WHO recommends a minimum of five servings of fruits and/or vegetables intake per day due to their protective role in preventing cancers and other NCDs. however, this survey showed that more than half (57.2%) of the study population did not meet the recommendation on fruit/vegetable consumption by WHO. This proportion is significantly higher in males 63.1% (95CI: 59.9-66.3) compared to females 51.4% (95%CI: 48.1-54.8).

Compared to 2010 survey, the results showed a large and significant improvement of daily intake of fruit/vegetable. The proportion not consuming 5 servings per day decreased from 81.7% (95%CI: 81.1-82.3) in 2010, to 57.2% (95%CI:54.6-59.8) in 2015 among those aged 25-64. This is almost 30% relative drop compared to the baseline in 2010. The increase in the consumption of vegetable could be attributable to the fact that vegetable is abundant in Viet Nam and at very affordable price. In addition, in recent years, the information on the benefits of eating more vegetables has been broadcasted very regularly on mass media and mostly as earned media. One simple search on google in using the key word "benefit of eating vegetable" in local language showed more than 2.5 million hits. The % of population received advices from health care staffs about consuming enough vegetables/fruit was higher compared to % of receiving other health care information. However, the % of the study population did not meet the recommendation on fruit/vegetable consumption by WHO was still high, accounting for more than 50% of population aged 18-69 years in Viet Nam.

High salt diets are linked to raised blood pressure—a major risk factor for CVDs and a range of other illnesses such as stomach cancer, kidney failure, and stroke. Reducing population salt intake has been identified as an important and cost effective measure for improving population health outcomes throughout the world. The WHO has been urging all countries to reduce average salt intake to the recommended level of <5 g/day for adults.[9]

The average population salt intake per 24 hours among Vietnamese was 9.4 gram/day, which was similar to other countries around the world (i.e., other countries salt intake about 10gr/day)[10] but almost double the recommendation of WHO. It is interesting to note that although most of the study population (81.3%) knew that consuming too much salt could cause a serious health problem and 70% of population stated that they consumed salt just the right amount of salt every day, the result of salt intake showed that most of the population consumed much higher than the recommendation level. It could have happened because people don't know that their current level of consumption is already too high. Unfortunately, data is not available for comparison in earlier surveys.

[9] World Health Organization. WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-20. Available online: http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf?ua=1

[10] Sodium intake for adults and children Guideline WHO 2012. Available online:http://apps.who.int/iris/bitstream/10665/77985/1/9789241504836_eng.pdf?ua=1&ua=1

The Global voluntary targets aim at reducing salt consumption by 30% 2025 (that mean Viet Nam need to reduce to less than 7gram/day by that time). Viet Nam needs to take strong action in order to achieve this goal.

Physical activity:

Not attaining enough physical activity is among the top cause of mortality due to its association with heart diseases, diabetes and some cancers. Physical activity helps reduce overweight/obesity but also provide other great benefits such as prevention of heart diseases, diabetes, cancers and other NCDs.

Overall, nearly one third (28.1%) of the study population not attaining the WHO recommended level of physical activity (>=150 minutes of moderate intensity physical activity per week or equivalent). The proportion physically inactive was significantly less among males 20.2% (95%CI: 17.8-22.6) compared to females 35.7% (95%CI: 32.7-38.7). Deeper analysis showed that, work related activity contributed the largest part (more than 2/3) of daily physical activity (appendix 5), while recreation and transport related physical activity accounted for a quite small proportion.

Compared to STEPS 2010, there was significant improvement in the prevalence of physical inactivity overall from 30.4% (95%CI: 29.8-31.0) reduced to 26.1% (95%CI: 23.9-28.3). A closer looks showed that the improvement took placed only among males (dropped from 28.1% to 19.0%) while it stay the same for females at (32.6% for both years).

The National strategy for NCD prevention/control aimed at reducing the prevalence of physical inactivity by 10% in 2025, same as the target set by the Global Voluntary Targets. Viet Nam has a good chance to achieve this goal if there is more attention from government to promote physical activities in coming years, to create more supportive environment for physical activities and promote more suitable public transportation, especially focus on female population.

In addition for behavioral risk factors for NCDs, this report also provides comprehensive analysis of metabolic risk factors for NCDs including overweight/obesity raised blood pressure, raised cholesterol and blood glucose.

Overweight/Obesity

The prevalence of overweight/obesity was 15.6% (BMI>=25). There was no clear different in the prevalence of overweight/obesity by gender, however, there was significant higher prevalence of overweight/obesity among urban adults 21.3% (95%CI:18.0-24.7) compared to the rural counterparts 12.6% (95%CI:10.5-14.6).

Compared to the results from STEPS 2010, the prevalence of overweight/obesity was rising fast from 12.0% (95%CI: 11.2-12.8) in 2010 to 17.5% (95%CI: 15.5-19.5) in 2015, among population aged 25-64. This is more than 45% relative increase! The current prevalence of Viet Nam is not high compared with global average[11], but it is very likely that the prevalence of overweight will continue to rise fast in coming years.

Both National strategy for NCD prevention/control and Global Voluntary Targets aim at halting the rise of obesity. This will also be a big challenge for Viet Nam in coming years.

Hypertension

The prevalence of hypertension was significantly higher among males 23.1% (95%CI: 20.3-25.9) compared to females 14.9% (95%CI: 13.0-16.7). This is similar to the global picture where overall

[11] Marie Ng, PhD, Tom Fleming, BS, Margaret Robinson, BA et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013.

hypertension is higher among males.[12]

The average SBP was 120.0 mmHg (95%CI; 119-20.8), this indicator was lower than the world average SBP (124.0 mmHg)

Comparison with STEPS 2010 there was a significant and large increase in the prevalence of hypertension. The prevalence among age group 25-64 increased from 15.3% (95%CI:14.9-15.7) to 20.3% (95%CI:18.5-22.1) in 2015.

A new indicator was created for hypertension, that is SBP>=140 and or DBP>=90 no matter subject are currently on medicine or not. The prevalence of hypertension using this definition was 17.1% (95%CI: 15.6-18.7) of total population aged 18-69 years old.

Additional analysis (appendix 1) was also done for age group 30-69 and with extended definitions to attempt comparing with the results of the earlier survey on Hypertension conducted by the National Heart Institute in selected provinces[13]. Unfortunately, there was not enough information on 95% confidence interval and the sampling frame was so much different so that no reliable conclusion could be made on this comparison.

The National program set a target to reduce the % of hypertension among adults to less than 30% in the next ten years. With the raising trend of hypertension (about 1% point/year), it is a huge challenge for Viet Nam to achieve this global target.

Raised Blood Glucose

There is not a clear difference between males and females for raised blood glucose. Compared to STEPS 2010, among the age group 25-64, the percentage with impaired blood glucose has increased significantly from 1.5% (95%CI: 1.4-1.6) to 3.5% (95%CI: 2.7-4.3), while prevalence of raised blood glucose has increased from 2.6% (95%CI: 2.2-3.0) to 4.1% (95%CI: 3.2-5.0).

Additional analysis on prevalence of raised blood glucose was also done for age group 30-69 (appendix 1) and with extended definitions to attempt comparing with the results of the earlier survey on diabetes epidemiology in Viet Nam conducted by the National Endocrinology Hospital in selected provinces[14]. Unfortunately, there was not enough information on 95% confidence interval and the sampling frame was so much different that no reliable conclusion could be made on this comparison.

Global Voluntary Targets aim at halting the rise of diabetes. The National Strategy for NCD control in Viet Nam aimed to control for the prevalence of diabetes to less than 8% among population aged 30-69 years old in year 2025. This will be a big challenge for Viet Nam in coming years to achieve this goal.

Raised blood cholesterol

The prevalence of respondents having blood total cholesterol>=5.0 mmol/L or currently on medication for raised cholesterol was 30.2%. This figure stayed the same compared to the results in 2010.

Majority of the study population has low level of HDL (defined as men with HDL<1.03mmol/l or women with HDL<1.29mmol/L). The figure was 67% among males and 72% among females. There was no data from earlier national surveys for comparison.

Keeping the prevalence of raised blood cholesterol below 35% among adults is the target of the National Strategy. This target is quite achievable for Viet Nam in the coming years.

[12] WHO. A global brief on Hypertension. 2013. At: http://ish-world.com/downloads/pdf/global_brief_hypertension.pdf. Access Aug 2016.

[13] Nguyen Thai Son. hypertension in Viet Nam from community-based studies to a national targeted programme.

[14] National Endocrinology Institute. Report on the survey to map out epidemiology of diabetes in Viet Nam 2012.

NCD early detection and management

For raised blood pressure: it is important to note that, among those detected with raised blood pressure in this survey only 43.1% report being diagnosed by a doctor before and only 13.6% reported their hypertension is currently managed at a health facility.

Raised blood glucose: among detected cases with raised blood glucose in this survey, only one-third (31.1%) reported previously diagnosed by a doctor and 28.9% reported currently being managed at a health facility for their raised blood glucose.

The National Strategy aimed to detect 50% of cases with raised blood glucose/raised blood pressure, and manage 50% of detected cases in health care facilities. In order to achieve these target, Viet Nam need to strengthen the diagnostic/treatment services at primary health care levels.

One important baseline indicator of the Global Voluntary Target is the "Percentage of eligible persons (defined as aged 40-69 years with a 10-year cardiovascular disease (CVD) risk ≥30%, including those with existing CVD) receiving drug therapy and counseling (including glycemic control) to prevent heart attacks and strokes". Global voluntary targets aim that by 2025 countries will be able to provide drug therapy and counselling for 50% of people in need. With the current level of service coverage of only 28.9% (table 3.49) for this high risk group, Viet Nam still has a big challenge to achieve this indicator.

Cervical cancer screening: Only one fourth (24.9%) of women age 18-69, and one third (31.5%) of women aged 30-49 had ever received screening for cervical cancer.

Limitation of Viet Nam STEPS survey and lesion learn for future surveys.

The STEPS survey 2015 in Viet Nam has implemented standardized questionnaire and methodology developed by WHO. Best efforts have been mobilized to ensure quality of the survey. However we have notice a few limitation as following:

- The National survey with sample spreading across 63 provinces pose a big challenge in term of arranging logistics. In addition, each province need one local team who know their province to collect STEPS 2-3 data, so there are too many teams involved in data collection from all provinces. Therefore, the variations caused by the differences of data collection team and equipment cannot be avoided.
- It is noted that there was differences in dropout across age groups and between rural/urban. For instance the dropout was higher among younger groups because they tend to work far from home. Therefore, in the future survey, the sample size for the younger group should be increased to compensate for larger dropout of the sample in this group.

VI. CONCLUSIONS

STEPS survey 2015 provides a comprehensive profile of national estimates of NCD behavioral and metabolic risk factors in Viet Nam. The main findings, are as follows:

- High percentage were current drinkers: 77.3% among males, 11% among females and 43.8% overall, and there was a fast increasing trend; Nearly half (45%) of current drinkers drove after drinking in the past 30 days.
- More than half (57.2%) of population still not consuming enough of 5 serving per day, however, this figure improved significantly compared to 2010. The percentage not consuming enough vegetable was higher among males (63.1%) compared to females (51.4%) and higher in rural area (60.0%) compared to urban one (51.0%).
- Salt consumption is at a high level, 9.4 grams per person/day, which is two times the amount recommended by WHO.
- About one third (28.1%) were with insufficient physical activities and this percentage is lower among males (20.2%) compared to females (35.7%) and lower in rural area (23.2%. The proportion has reduced compared to 2010, but only among males.
- Prevalence of overweight/obesity is 15.6%, but there is a fast increasing trend, especially at urban area.
- Almost one in 5 persons (18.9%) were hypertensive. The rate is higher among males (23.1%) compared to females (14.9%) and there is a fast increase trend in recent years. Average systolic BP is 120 mmHg.
- The rate of impaired fasting glucose was 3.6% and raised blood glucose was 4.1% and there was a fast increasing trend.
- Prevalence of high blood cholesterol (>=5mmol/L) remained high (30.2%), no change from 2010. Majority (67% of males and 72% of females) have low level of HDL.
- High percentage of people with common NCDs (56.9% of people with hypertension and 68.9% people with diabetes) were undiagnosed. Low percentage of people with common NCDs (Only 13.6% of people with hypertension and 28.9% of people diabetes) were having their NCDs managed at a health facility.
- Less than one-third (28.9%) of people in need have received drug therapy and counselling to prevent heart attack and stroke.
- Only one-fourth (24.9%) of women age 18-69, and one third (31.5%) of those age 30-49 had ever done screening for cervical cancer.

VII. RECOMMENDATIONS

1. Strengthen interventions to control NCD risk factors, with focus on those risk factors that are at worsening trend or at worrying level, especially to:

    - Strengthen policy and legislation measures to prevent harmful use of alcohol and drink driving. Implement effective measures recommended by WHO including: controlling alcohol advertisement; limit time/place for selling alcohol; pricing and tax policy for alcohol and controlling drink-drive.
    - Develop policy and programmes to reduce salt consumption such as IEC campaigns, regulations about displaying specific amount of salt on food labels or using warning label about harmful health effect of salt on food items.
    - Develop policy and programmes to slow down or to halt the rise in overweight/obesity and integrate these into the National Nutrition Strategy.

2. Strengthen NCD early detection and management of NCD at primary care level. This is to ensure that people at early stage of raised blood pressure, raised blood glucose can be detected and provided with proper management to avoid serious complications, and to reduce hospital overload at central level. Strengthen Cervical cancer screening.

3. Establish sustainable national NCD surveillance system:

    - To have a plan to conduct regular STEPS survey to monitor NCD risk factors.
    - To use other tools and survey methods to collect information not available from STEPs such as mortality due to NCDs, cancer, COPDs, response of health care system, and surveillance of NCD risk factors among adolescents.
    - Use data from STEPs 2015 to develop, adjust and evaluate the implementation of the National Action Plans to implement National NCD Strategy 2015-2025 which was approved by the Prime Minister.

VIII. APPENDIX

Appendix 1: Additional indicators for comparison with other previous surveys in Viet Nam

Table 3.51 present some selected indicators from STEPS 2015 analyzed only among population aged 25-64 years old in order to make comparison with STEPS 2010 with the same age range.

Table 51. Comparison of STEPS 2015 and 2010 (age group 25-64)

Indicators	STESP 2015 % (95%CI)			STEPS 2010 % (95%CI)		
	Overall	**Males**	**Females**	**Overall**	**Males**	**Females**
STEPS 1 Alcohol consumption						
Percentage who currently drink (drank alcohol in the past 30 days)	44.8 42.4-47.3	80.3 77.7-82.9	11.2 9.2-13.2	37,0 (36.5-37.5)	69,6 (68.6-70.6)	5,6 (5,2-6.0)
STEPS 1 Diet						
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	57.2 54.6-59.8	63.2 59.8-66.7	51.5 48.1-54.9	81,7 (81.1-82.3)	81,6 (78.8-82.4)	81,7 (80.9-82.5)
STEPS 1 Physical Activity						
Percentage with insufficient physical activity (defined as < 150 minutes of moderate-intensity activity per week, or equivalent)	26.1 23.9-28.3	19.0 16.5-21.6	32.6 29.7-35.6	30,4 (29.8-31.0)	28,1 (27.2-29.0)	32,6 (31.8-33.4)
STEPS 2 Physical Measurements						
Percentage who are overweight (BMI ≥ 25 kg/m^2)	17.5 15.5-19.5	16.9 14.0-19.7	18.1 15.7-20.6	12,0 (11.2-12.8)	12,5 (11.2-13.8)	11,4 (10.4-12.4)

Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	20.3 18.5-22.1	24.7 21.6-27.8	16.1 14.0-18.2	15,3 (14.9-15.7)	19,3 (18.6-20.0)	11,5 (11.0-12.0)
STEPS 3 Biochemical Measurement						
Percentage with impaired fasting glycaemia as defined below (plasma venous value ≥6.1 mmol/L (110 mg/dl) and <7.0 mmol/L (126 mg/dl)	3.5 2.7-4.3	3.9 2.6-5.2	3.1 2.1- 4.2	1,5 (1.4-1.6)	1,9 (1.7-2.1)	1,2 (1.1-1.3)
Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose (plasma venous value ≥ 7.0 mmol/L (126 mg/dl)	4.1 3.2-5.0	4.6 3.0-6.1	3.6 2.6-4.7	3,1 (2.9-3.3)	3,2 (2.8-3.6)	3,1 (2.8-3.4)
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	32.4 29.8-35.0	27.9 24.4-31.4	36.7 33.4-40.0	30,1 (29.5-30.7)	27,8 (26.8-28.8)	32,3 (31.5-33.1)

This appendix also presents the results for some special indicators (i.e., not following STEPS definition) for the purpose of comparison with previous surveys done in Viet Nam to examine the trend overtime of diabetes and hypertension.

Table 52. Comparison of Prevalence of hypertension using extended definition* between STEPS 2015 and National HTN 2008

Indicators	STESP 2015 % (95%CI) (age group 30-69)			National HTN survey 2008 % (age group 25 and above)		
	Overall	**Males**	**Females**	**Overall**	**Males**	**Females**
Prevalence of hypertension	**30.6** (28.4-32.8)	**35.1** (31.7-38.4)	**26.3** (23.7-28.9)	25.1	28.3	23.1

* Definition of hypertension: Hypertension was defined as an average systolic blood pressure ≥ 140 mmHg, and/or average diastolic blood pressure ≥ 90 mmHg, and/or self- reported previous diagnosis of hypertension by a health professional, and/or self-reported current treatment for hypertension with antihypertensive medications in the previous 2 weeks.

This indicator was created because a previous survey conducted by the National Heart Institute in Viet Nam for hypertension in 2008 used this definition. The previous survey was done among adult population aged 25 years and older, randomly selected in eight provinces in different regions of Viet Nam (sample size 31,720 adults). Results from the previous survey in 2008 showed that: The overall prevalence of hypertension in Vietnamese adults was 25.1%, slightly higher in men than in women (28.3% vs. 23.1%).

Table 53. Comparison of *Percentage with raised fasting blood glucose* among age group 30-69* years between STEPS 2015 and National DM surveys

Indicators	STEPS 2015 % (95%CI)	National DM surveys 2012 %
% with raised fasting blood glucose as defined below (blood glucose >=7mmol/l) or currently on medication for raised blood glucose	5.8 (4.8-6.9)	5.4

*Data was analyzed only among age group 30-69 years in order to make comparison with a previous study done by the National Hospital of Endocrinology of Viet Nam

This previous study was done in 2012. In term of sample method: this study used PPS sampling method to randomly select subject age 30-69 years from 6 ecological regions of Viet Nam. The sample for each ecological region was 1800 subjects; the total sample was 10.800 subjects. Results of study in 2012 showed that *percentage with raised fasting blood glucose as defined below or currently on medication (during the past 2 weeks) for raised blood glucose was 5.4% among people aged 30-69 years old.*

Appendix 2: Demographic information

Table 54. Marital status of respondents by age

Age Group (years)	n	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
18 – 29	690	47.7	50.1	0.1	1.6	0.4	0.0
30 - 49	1819	4.0	89.2	0.7	3.5	2.5	0.2
50 - 69	1238	3.4	78.4	0.9	2.7	14.3	0.2
18 - 69	**3747**	**11.8**	**78.4**	**0.7**	**2.9**	**6.0**	**0.2**

Appendix 3: Alcohol consumption

Table 55. Percentage of former drinkers (those who did not drink during the past 12 months) who stopped drinking due to health reasons

Stopping drinking due to health reasons									
	Men			Women			Both Sexes		
Age Group (years)	n	% stopping due to health reasons	95% CI	n	% stopping due to health reasons	95% CI	n	% stopping due to health reasons	95% CI
18-29	11	50.1	16.5-83.6	71	25.2	12.5-38.0	82	29.0	17.0-41.0
30-49	31	50.3	29.9-70.8	157	27.1	18.7-35.4	188	32.1	23.6-40.7
50-69	65	67.3	54.8-79.9	116	34.7	24.0-45.5	181	47.8	39.2-56.5
18-69	**107**	**58.8**	**46.8-70.8**	**344**	**28.4**	**21.5-35.3**	**451**	**36.1**	**30.2-42.1**

Table 56. Largest number of drinks consumed during a single occasion in the past 30 days among current (past 30 days) drinkers.

Mean maximum number of standard drinks consumed on one occasion in the past 30 days									
Age Groups (years)	Men			Women			Both Sexes		
	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI
18-29	232	8.7	7.8-9.7	41	4.0	2.3-5.6	273	8.2	7.3-9.1
30-49	639	8.6	7.9-9.2	139	2.4	2.0-2.7	778	7.7	7.1-8.3
50-69	391	6.0	5.4-6.6	46	2.9	1.1-4.7	437	5.8	5.2-6.4
18-69	**1262**	**8.1**	**7.6-8.6**	**226**	**2.9**	**2.3-3.5**	**1488**	**7.5**	**7.0-7.9**

Table 57. Mean number of standard drinks consumed on average per day in the past 7 days among current (past 30 days) drinkers

Mean number of standard drinks consumed on average per day in the past 7 days among current drinkers									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number	95% CI	n	Mean number	95% CI	n	Mean number	95% CI
18-29	237	1.5	1.2-1.8	43	1.1	0.0-2.2	280	1.4	1.1-1.7
30-49	648	2.0	1.8-2.3	139	0.3	0.2-0.4	787	1.8	1.6-2.0
50-69	393	2.3	2.0-2.6	47	0.9	0.0-1.7	440	2.2	1.9-2.5
18-69	**1278**	**1.9**	**1.7-2.1**	**229**	**0.6**	**0.3-1.0**	**1507**	**1.8**	**1.6-1.9**

Table 58. Frequency of not being able to stop drinking once started during the past 12 months among past 12 month drinkers

Frequency of not being able to stop drinking once started during the past 12 months among past 12 month drinkers							
Age Group (years)	n	% monthly or more frequently	95% CI	% less than monthly	95% CI	% never	95% CI
Men							
18-29	288	1.9	0.0-4.1	2.9	0.7-5.1	95.2	92.2-98.1
30-49	725	2.4	1.2-3.6	5.9	3.7-8.0	91.7	89.3-94.1
50-69	464	1.0	0.1-1.8	5.3	2.8-7.7	93.7	91.2-96.3
18-69	**1477**	**2.0**	**1.0-2.9**	**4.7**	**3.5-6.0**	**93.3**	**91.7-95.0**
Women							
18-29	95	1.6	0.0-4.8	2.8	0.0-6.7	95.6	90.7-100.0
30-49	250	0.0	0.0-0.0	1.2	0.0-3.1	98.8	96.9-100.0
50-69	99	1.6	0.0-4.8	0.4	0.0-1.2	98.0	94.7-100.0
18-69	**444**	**0.9**	**0.0-2.1**	**1.7**	**0.0-3.4**	**97.5**	**95.3-99.6**
Both sexes							
18-29	383	1.9	0.1-3.7	2.9	1.0-4.8	95.2	92.6-97.9
30-49	975	1.9	1.0-2.9	4.9	3.2-6.6	93.2	91.3-95.1
50-69	563	1.1	0.2-2.0	4.5	2.4-6.6	94.4	92.1-96.6
18-69	**1921**	**1.7**	**1.0-2.5**	**4.1**	**3.1-5.2**	**94.1**	**92.7-95.6**

Table 59. Frequency of needing a first drink in the morning to get going after a heavy drinking session during the past 12 months among past 12 month drinkers

Age groups (years)	Frequency of needing a first drink in the morning to get going during the past 12 months among past 12 month drinkers						
	n	% Monthly or more frequently	95% CI	% Less than monthly	95% CI	% Never	95% CI
Men							
18-29	288	0.5	0.0-1.4	2.0	0.0-4.1	97.5	95.3-99.7
30-49	725	0.7	0.0-1.4	2.4	1.1-3.8	96.9	95.4-98.4
50-69	463	1.2	0.2-2.2	3.0	1.3-4.8	95.7	93.7-97.7
18-69	1476	0.7	0.2-1.2	2.4	1.4-3.4	96.8	95.6-98.1
Women							
18-29	95	0.0	0.0-0.0	0.0	0.0-0.0	100.0	100.0-100.0
30-49	250	0.0	0.0-0.0	0.3	0.0-0.9	99.7	99.1-100.0
50-69	99	0.0	0.0-0.0	1.6	0.0-4.8	98.4	95.2-100.0
18-69	444	0.0	0.0-0.0	0.4	0.0-1.0	99.6	99.0-100.0
Both sexes							
18-29	383	0.4	0.0-1.1	1.6	0.0-3.2	98.0	96.3-99.8
30-49	975	0.5	0.0-1.1	2.0	0.9-3.1	97.5	96.2-98.7
50-69	562	1.0	0.2-1.9	2.8	1.2-4.4	96.1	94.4-97.9
18-69	1920	0.6	0.2-1.0	2.0	1.2-2.8	97.4	96.4-98.4

Table 60. Frequency of failing to do what was normally expected from you because of drinking during the past 12 months among past 12 month drinkers

Age Group (years)	Frequency of failing to do what was normally expected from you during the past 12 months among past 12 month drinkers						
	n	% monthly or more frequently	95% CI	% less than monthly	95% CI	% never	95% CI
Men							
18-29	288	4.2	1.5-6.8	15.4	10.7-20.2	80.4	75.3-85.5
30-49	725	3.2	1.9-4.5	17.0	13.5-20.6	79.7	76.0-83.5
50-69	464	2.6	0.8-4.4	10.1	7.1-13.1	87.3	83.9-90.7
18-69	**1477**	**3.4**	**2.3-4.5**	**15.0**	**12.7-17.4**	**81.6**	**79.0-84.1**
Women							
18-29	95	0.0	0.0-0.0	4.4	0.0-9.1	95.6	90.9-100.0
30-49	250	1.2	0.0-3.4	2.8	0.0-5.6	96.1	92.5-99.6
50-69	99	0.0	0.0-0.0	1.7	0.0-4.1	98.3	95.9-100.0
18-69	**444**	**0.6**	**0.0-1.6**	**3.2**	**0.9-5.5**	**96.2**	**93.8-98.7**
Both sexes							
18-29	383	3.3	1.2-5.4	13.1	9.1-17.0	83.7	79.4-87.9
30-49	975	2.8	1.7-3.9	14.1	11.2-17.0	83.1	80.0-86.2
50-69	563	2.2	0.6-3.7	8.8	6.3-11.4	89.0	86.2-91.8
18-69	**1921**	**2.8**	**1.9-3.8**	**12.7**	**10.8-14.6**	**84.5**	**82.3-86.6**

Table 61. Frequency of having had problems with family or partner due to someone else's drinking in the past 12 months among all respondents.

Age Group (years)	Frequency of family/partner problems due to someone else's drinking during the past 12 months among all respondents						
	Men						
	n	% monthly or more frequently	95% CI	% less than monthly	95% CI	% never	95% CI
18-29	314	1.0	0.0-2.4	7.4	3.7-11.1	91.6	87.6-95.6
30-49	790	0.8	0.1-1.5	9.3	6.8-11.8	89.9	87.3-92.5
50-69	564	1.1	0.0-2.2	4.5	2.7-6.3	94.4	92.1-96.7
18-69	1668	0.9	0.3-1.5	7.6	5.8-9.4	91.5	89.5-93.5
	Women						
18-29	373	1.1	0.0-2.2	12.0	7.9-16.1	86.9	82.7-91.1
30-49	1023	1.0	0.4-1.6	9.4	7.1-11.8	89.5	87.1-92.0
50-69	681	1.6	0.4-2.9	7.1	4.7-9.6	91.2	88.6-93.9
18-69	2077	1.2	0.6-1.8	9.7	7.9-11.5	89.1	87.2-91.0
	Both sexes						
18-29	687	1.0	0.1-1.9	9.7	6.8-12.6	89.3	86.2-92.3
30-49	1813	0.9	0.4-1.4	9.4	7.5-11.3	89.7	87.8-91.7
50-69	1245	1.4	0.5-2.2	5.9	4.3-7.5	92.7	90.9-94.5
18-69	3745	1.1	0.6-1.5	8.6	7.2-10.1	90.3	88.7-91.9

Table 62. The percentage of population engaging in heavy episodic drinking by rural/urban

Six or more drinks on a single occasion at least once during the past 30 days among total population									
Age Group (years)	Men			Women			Both Sexes		
	n	% ≥ 6 drinks	95% CI	n	% ≥ 6 drinks	95% CI	n	% ≥ 6 drinks	95% CI
Urban	796	39.7	35.3-44.1	1034	2.0	0.7-3.2	1830	20.0	17.5-22.5
Rural	874	46.4	41.9-51.0	1045	0.8	0.1-1.4	1919	23.8	21.0-26.5
Total	**1670**	**44.2**	**40.8-47.5**	**2079**	**1.2**	**0.6-1.8**	**3749**	**22.4**	**20.4-24.4**

Table 63. Mean number of engaging in heavy episodic drinking by rural/urban

Mean number of times with six or more drinks during a single occasion in the past 30 days among current drinkers									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of times	95% CI	n	Mean number of times	95% CI	n	Mean number of times	95% CI
Urban	308	5.7	4.7-6.7	15	4.9	-	323	5.7	4.7-6.6
Rural	398	5.8	5.0-6.5	8	4.5	-	406	5.8	5.0-6.5
Total	**706**	**5.8**	**5.2-6.4**	**23**	**4.7**	**-**	**729**	**5.7**	**5.1-6.3**

Table 64. Alcohol consumption status by rural/urban

Alcohol consumption status									
Age Group (years)	Men								
	n	% Current drinker (past 30 days)	95% CI	% Drank in past 12 months, not current	95% CI	% Past 12 months abstainer	95% CI	% Lifetime abstainer	95% CI
Urban	796	75.8	71.8-79.8	15.2	12.0-18.5	5.1	3.4-6.8	3.9	1.8-5.9
Rural	874	78.0	74.5-81.5	13.4	10.5-16.3	6.0	4.3-7.7	2.5	1.4-3.7
Total	**1670**	**77.3**	**74.6-80.0**	**14.0**	**11.8-16.2**	**5.7**	**4.4-7.0**	**3.0**	**1.9-4.0**
	Women								
Urban	1034	15.4	12.5-18.3	32.9	29.2-36.6	16.3	13.5-19.2	35.4	31.3-39.4
Rural	1045	8.7	6.5-10.9	29.9	26.2-33.5	16.3	13.6-19.0	45.1	40.9-49.4
Total	**2079**	**11.1**	**9.3-12.9**	**31.0**	**28.3-33.7**	**16.3**	**14.3-18.3**	**41.6**	**38.5-44.7**
	Both sexes								
Urban	1830	44.2	41.0-47.4	24.5	21.9-27.1	11.0	9.2-12.7	20.3	17.8-22.9
Rural	1919	43.6	40.6-46.6	21.6	19.2-23.9	11.1	9.5-12.7	23.7	21.3-26.1
Total	**3749**	**43.8**	**41.6-46.1**	**22.6**	**20.8-24.4**	**11.1**	**9.8-12.3**	**22.5**	**20.7-24.3**

Appendix 4: Diet

Table 65. Frequency of fruit and/or vegetable consumption

Age Group (years)	Number of servings of fruit and/or vegetables on average per day								
	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
Men									
18-29	315	2.8	0.8-4.8	22.0	17.0-27.0	36.1	30.5-41.7	39.1	33.0-45.3
30-49	788	3.6	1.8-5.4	25.6	21.7-29.5	35.8	31.5-40.1	35.0	30.6-39.4
50-69	561	2.3	0.9-3.8	24.5	20.3-28.7	36.0	31.3-40.8	37.2	32.4-41.9
18-69	**1664**	**3.0**	**1.8-4.2**	**24.2**	**21.4-26.9**	**35.9**	**32.9-39.0**	**36.9**	**33.7-40.1**
Women									
18-29	374	2.4	0.5-4.3	20.4	15.8-25.0	24.4	19.5-29.3	52.8	46.4-59.2
30-49	1022	1.6	0.7-2.5	18.2	14.9-21.5	31.2	27.6-34.8	49.0	44.9-53.2
50-69	680	2.2	0.9-3.5	24.1	20.0-28.1	31.2	26.9-35.5	42.5	37.7-47.4
18-69	**2076**	**2.0**	**1.2-2.8**	**20.4**	**17.8-23.0**	**29.1**	**26.5-31.6**	**48.6**	**45.2-51.9**
Both sexes									
18-29	689	2.6	1.1-4.0	21.2	17.8-24.7	30.3	26.4-34.2	45.9	41.0-50.7
30-49	1810	2.6	1.4-3.7	21.9	19.2-24.6	33.5	30.5-36.5	42.0	38.7-45.3
50-69	1241	2.2	1.3-3.2	24.3	21.4-27.1	33.5	30.2-36.7	40.0	36.6-43.4
18-69	**3740**	**2.5**	**1.7-3.3**	**22.2**	**20.1-24.3**	**32.5**	**30.4-34.5**	**42.8**	**40.2-45.4**

Table 66. Average number of servings of fruit/vegetables per day by rural/urban

Number of servings of fruit and/or vegetables on average per day									
Age Group (years)	Men								
	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
Urban	792	3.0	1.2-4.7	24.7	21.3-28.1	33.7	29.4-38.1	38.6	33.8-43.4
Rural	872	3.1	1.5-4.6	23.9	20.1-27.6	37.1	33.1-41.1	36.0	31.8-40.1
Total	**1664**	**3.0**	**1.8-4.2**	**24.2**	**21.4-26.9**	**35.9**	**32.9-39.0**	**36.9**	**33.7-40.1**
					Women				
Urban	1032	1.1	0.5-1.7	15.1	12.0-18.2	26.7	23.1-30.3	57.2	52.5-61.8
Rural	1044	2.5	1.2-3.8	23.3	19.7-27.0	30.4	26.9-33.9	43.7	39.3-48.2
Total	**2076**	**2.0**	**1.2-2.8**	**20.4**	**17.8-23.0**	**29.1**	**26.5-31.6**	**48.6**	**45.2-51.9**
					Both sexes				
Urban	1824	2.0	1.1-2.8	19.7	17.2-22.2	30.0	27.0-33.0	48.3	44.6-52.1
Rural	1916	2.8	1.7-3.9	23.6	20.7-26.5	33.8	31.0-36.5	39.8	36.3-43.3
Total	**3740**	**2.5**	**1.7-3.3**	**22.2**	**20.1-24.3**	**32.5**	**30.4-34.5**	**42.8**	**40.2-45.4**

Table 67. Percentage of all respondents who always or often add salt to their food when cooking or preparing foods at home

Add salt always or often when cooking or preparing food at home									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	315	81.8	76.3-86.2	374	91.3	87.2-94.2	689	86.5	82.9-89.4
30-49	788	87.9	85.0-90.2	1022	93.2	91.1-94.9	1810	90.5	88.7-92.1
50-69	561	88.2	84.7-91.0	680	92.4	89.7-94.4	1241	90.4	88.3-92.2
18-69	**1664**	**85.9**	**83.5-88.0**	**2076**	**92.4**	**90.7-93.8**	**3740**	**89.2**	**87.6-90.6**

Table 68. Percentage of all respondents who think they consume far too much or too much salt

Think they consume far too much or too much salt									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	315	19.8	14.8-24.8	373	12.2	8.2-16.3	688	16.1	12.9-19.2
30-49	790	20.5	17.0-24.0	1022	12.8	10.3-15.4	1812	16.7	14.5-18.8
50-69	564	18.2	14.5-21.8	681	12.1	9.1-15.1	1245	14.9	12.6-17.3
18-69	**1669**	**19.7**	**17.3-22.2**	**2076**	**12.4**	**10.6-14.3**	**3745**	**16.1**	**14.5-17.6**

Table 69. Percentage of respondents who think consuming too much salt could cause a serious health problem

Think consuming too much salt could cause serious health problem									
Age groups (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	315	74.4	68.8-80.1	374	85.2	79.9-90.6	689	79.8	75.6-84.0
30-49	790	78.6	75.2-82.0	1024	86.0	83.4-88.6	1814	82.3	80.0-84.6
50-69	564	77.1	72.8-81.4	682	85.2	81.9-88.6	1246	81.4	78.6-84.2
18-69	**1669**	**76.9**	**74.1-79.7**	**2080**	**85.6**	**83.2-87.9**	**3749**	**81.3**	**79.2-83.3**

Table 70. Frequency of self-reported quantity of salt consumed

Self-reported quantity of salt consumed											
Age groups (years)	Men										
	n	% Far too much	95% CI	% Too much	95% CI	% Just the right amount	95% CI	% Too little	95% CI	% Far too little	95% CI
Men											
18-29	315	0.3	0.0-0.9	19.5	14.5-24.5	72.3	66.7-77.9	7.9	4.9-10.9	0.0	0.0-0.0
30-49	790	1.3	0.5-2.2	19.1	15.8-22.5	66.2	62.4-70.0	12.9	10.1-15.7	0.4	0.0-0.8
50-69	564	0.5	0.0-1.3	17.6	14.0-21.2	63.8	58.8-68.8	16.8	13.3-20.4	1.1	0.2-2.1
18-69	**1669**	**0.8**	**0.4-1.3**	**18.9**	**16.5-21.4**	**67.7**	**64.9-70.5**	**12.1**	**10.3-13.9**	**0.4**	**0.2-0.7**
Women											
18-29	373	0.0	0.0-0.0	12.2	8.2-16.3	73.0	68.0-77.9	14.0	9.6-18.4	0.8	0.0-1.8
30-49	1022	0.6	0.1-1.0	12.3	9.7-14.8	72.7	69.4-76.0	14.0	11.5-16.5	0.5	0.1-0.9
50-69	681	0.8	0.0-1.8	11.2	8.5-14.0	65.4	61.2-69.5	22.1	18.7-25.6	0.4	0.0-0.9
18-69	**2076**	**0.5**	**0.1-0.8**	**12.0**	**10.1-13.8**	**70.9**	**68.6-73.3**	**16.1**	**14.1-18.1**	**0.6**	**0.2-0.9**
Both sexes											
18-29	688	0.2	0.0-0.5	15.9	12.8-19.0	72.6	68.9-76.4	10.9	8.2-13.5	0.4	0.0-0.9
30-49	1812	1.0	0.5-1.5	15.7	13.6-17.8	69.4	66.9-72.0	13.5	11.6-15.3	0.4	0.2-0.7
50-69	1245	0.7	0.1-1.3	14.2	12.0-16.5	64.7	61.2-68.2	19.7	16.9-22.4	0.7	0.2-1.3
18-69	**3745**	**0.6**	**0.3-0.9**	**15.4**	**13.8-17.0**	**69.3**	**67.4-71.3**	**14.1**	**12.7-15.5**	**0.5**	**0.3-0.7**

Table 71. Mean number of meals per week eaten outside a home.

Mean number of meals eaten outside a home									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	313	3.4	2.9-3.8	368	2.7	2.3-3.2	681	3.1	2.7-3.4
30-49	778	3.1	2.8-3.4	1015	1.9	1.7-2.1	1793	2.5	2.3-2.7
50-69	557	1.6	1.3-1.8	678	1.2	0.9-1.4	1235	1.4	1.2-1.5
18-69	**1648**	**2.8**	**2.6-3.1**	**2061**	**2.0**	**1.8-2.2**	**3709**	**2.4**	**2.2-2.6**

Table 72. Percentage of respondents who take specific action on a regular basis to control salt intake.

Limit consumption of processed foods									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	314	53.2	46.3-60.1	373	63.5	57.0-69.9	687	58.3	53.0-63.5
30-49	787	58.9	54.5-63.2	1021	68.0	64.0-71.9	1808	63.4	60.2-66.7
50-69	562	61.9	56.9-66.9	678	68.1	63.6-72.6	1240	65.2	61.4-69.0
18-69	**1663**	**57.7**	**54.3-61.1**	**2072**	**66.6**	**63.2-70.0**	**3735**	**62.2**	**59.3-65.0**

Restricted adding salt at the table									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	315	48.0	41.5-54.6	373	56.1	49.7-62.4	688	52.0	47.2-56.8
30-49	788	51.7	47.4-56.0	1022	57.5	53.6-61.4	1810	54.6	51.6-57.6
50-69	562	56.5	51.3-61.6	679	65.1	60.4-69.8	1241	61.0	57.3-64.8
18-69	**1665**	**51.6**	**48.2-54.9**	**2074**	**59.0**	**55.6-62.3**	**3739**	**55.3**	**52.7-57.9**

Restricted eating of salty foods as stew, fry									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	313	41.0	34.1-47.9	373	48.8	42.3-55.2	686	44.9	39.6-50.1
30-49	788	46.7	42.3-51.1	1023	51.0	46.9-55.1	1811	48.8	45.7-52.0
50-69	560	51.6	46.6-56.7	679	56.0	50.9-61.1	1239	54.0	49.9-58.0
18-69	**1661**	**45.9**	**42.2-49.7**	**2075**	**51.6**	**48.0-55.1**	**3736**	**48.8**	**45.7-51.8**

Appendix 5: Physical activities

Table 73. Mean minutes spent in work-, transport- and recreation-related physical activity on average per day

Mean minutes of work-related physical activity on average per day									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	306	187.4	158.6-216.3	367	98.0	73.6-122.4	673	143.1	123.2-163.0
30-49	767	204.7	184.7-224.6	1009	150.4	134.0-166.9	1776	177.4	163.2-191.6
50-69	548	135.4	114.7-156.1	664	114.2	94.0-134.4	1212	124.1	109.3-138.8
18-69	**1621**	**183.2**	**167.9-198.4**	**2040**	**124.8**	**111.1-138.4**	**3661**	**153.5**	**141.9-165.1**
Mean minutes of transport-related physical activity on average per day									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	306	23.6	15.9-31.2	367	22.5	15.8-29.2	673	23.0	17.6-28.5
30-49	767	24.4	18.4-30.4	1009	29.6	25.3-33.9	1776	27.0	23.2-30.9
50-69	548	21.5	17.2-25.8	664	34.8	29.4-40.1	1212	28.6	25.2-32.0
18-69	**1621**	**23.5**	**19.5-27.5**	**2040**	**28.7**	**25.2-32.1**	**3661**	**26.1**	**23.2-29.0**

Mean minutes of recreation-related physical activity on average per day									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
18-29	306	16.4	12.5-20.2	367	6.5	4.5-8.6	673	11.5	9.3-13.7
30-49	767	12.5	10.3-14.6	1009	8.7	6.5-10.9	1776	10.6	9.0-12.2
50-69	548	15.0	12.3-17.7	664	14.5	11.2-17.8	1212	14.7	12.4-17.0
18-69	**1621**	**14.3**	**12.6-16.1**	**2040**	**9.5**	**8.1-10.9**	**3661**	**11.9**	**10.7-13.0**

Appendix 6: History of selected NCDs

Raised blood pressure

Table 74. Percentage of respondents who have sought advice or received treatment from a traditional healer for raised blood pressure among those previously diagnosed with raised blood pressure

Seen a traditional healer among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI
18-29	15	0.0	0.0-0.0	13	0.0	0.0-0.0	28	0.0	0.0-0.0
30-49	72	9.4	2.2-16.6	82	7.1	0.6-13.6	154	8.3	3.5-13.0
50-69	161	10.3	4.1-16.5	197	8.2	3.9-12.4	358	9.1	5.6-12.6
18-69	**248**	**8.9**	**4.8-13.0**	**292**	**7.1**	**3.3-10.9**	**540**	**8.0**	**5.3-10.7**
Currently taking herbal or traditional remedy for raised blood pressure among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI
18-29	15	0.0	0.0-0.0	13	0.0	0.0-0.0	28	0.0	0.0-0.0
30-49	72	4.5	0.5-8.6	82	4.1	0.0-8.4	154	4.3	1.4-7.3
50-69	161	7.9	2.7-13.2	197	7.1	3.0-11.3	358	7.5	4.3-10.7
18-69	**248**	**5.9**	**2.9-8.9**	**292**	**5.6**	**2.8-8.4**	**540**	**5.8**	**3.7-7.8**

Diabetes

Table 75. Percentage of respondents who are have sought advice or treatment from a traditional healer for diabetes among those previously diagnosed

Seen a traditional healer for diabetes among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI
18-29	2	0.0	0.0-0.0	3	0.0	0.0-0.0	5	0.0	0.0-0.0
30-49	11	9.9	0.0-29.1	13	4.2	0.0-12.8	24	6.8	0.0-16.7
50-69	28	16.1	0.0-37.0	43	3.0	0.0-7.1	71	8.1	0.0-16.9
18-69	**41**	**11.9**	**0.0-26.2**	**59**	**2.7**	**0.0-5.9**	**100**	**6.5**	**0.6-12.4**
Currently taking herbal or traditional treatment for diabetes among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI
18-29	2	88.9	60.5-100.0	3	0.0	0.0-0.0	5	35.5	0.0-87.3
30-49	11	9.2	0.0-27.2	13	2.8	0.0-8.6	24	5.7	0.0-14.5
50-69	28	22.4	0.0-45.3	43	13.8	1.0-26.6	71	17.2	5.5-28.8
18-69	**41**	**29.8**	**5.1-54.5**	**59**	**9.1**	**0.8-17.5**	**100**	**17.6**	**5.4-29.7**

CVD

Table 76. Percentage of respondents who are currently taking aspirin or statins regularly to prevent or treat heart disease

Currently taking aspirin regularly to prevent or treat heart disease									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking aspirin	95% CI	n	% taking aspirin	95% CI	n	% taking aspirin	95% CI
18-29	315	0.0	0.0-0.0	374	0.3	0.0-1.0	689	0.2	0.0-0.5
30-49	789	0.2	0.0-0.5	1023	1.2	0.5-1.9	1812	0.7	0.3-1.1
50-69	563	3.1	1.7-4.5	682	5.0	3.1-6.9	1245	4.1	2.9-5.4
18-69	**1667**	**0.8**	**0.5-1.2**	**2079**	**1.9**	**1.2-2.5**	**3746**	**1.3**	**1.0-1.7**

Currently taking statins regularly to prevent or treat heart disease									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking statins	95% CI	n	% taking statins	95% CI	n	% taking statins	95% CI
18-29	314	0.7	0.0-2.0	374	0.0	0.0-0.0	688	0.3	0.0-1.0
30-49	790	0.6	0.0-1.1	1024	0.9	0.3-1.5	1814	0.7	0.4-1.1
50-69	564	2.8	1.3-4.3	680	4.1	2.5-5.7	1244	3.5	2.4-4.5
18-69	**1668**	**1.1**	**0.5-1.7**	**2078**	**1.4**	**0.9-1.9**	**3746**	**1.3**	**0.9-1.7**

Raised cholesterol

Table 77. Percentage of respondents who are have sought advice or treatment from a traditional healer for raised cholesterol among those previously diagnosed

Seen a traditional healer for raised cholesterol among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% seen trad. healer	95% CI	n	% seen trad. healer	95% CI	n	%seen trad. healer	95% CI
18-29	5	0.0	0.0-0.0	5	0.0	0.0-0.0	10	0.0	0.0-0.0
30-49	44	9.8	0.0-20.7	63	9.0	0.0-18.9	107	9.4	2.3-16.6
50-69	70	1.9	0.0-5.7	100	8.2	1.1-15.2	170	5.4	1.2-9.6
18-69	**119**	**5.0**	**0.1-9.9**	**168**	**8.0**	**2.4-13.6**	**287**	**6.6**	**3.0-10.3**
Currently taking herbal or traditional treatment for raised cholesterol among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI	n	% taking trad. meds	95% CI
18-29	5	0.0	0.0-0.0	5	0.0	0.0-0.0	10	0.0	0.0-0.0
30-49	44	6.9	0.0-16.0	63	4.9	0.0-11.0	107	5.9	0.6-11.1
50-69	70	0.2	0.0-0.5	100	7.0	0.6-13.5	170	4.0	0.2-7.8
18-69	**119**	**2.9**	**0.0-6.7**	**168**	**5.8**	**1.6-10.1**	**287**	**4.5**	**1.6-7.3**

Appendix 7: Heart rate and blood pressure

Table 78. Mean blood pressure among all respondents, including those currently on medication for raised blood pressure

Mean systolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	220	118.0	116.0-120.0	269	106.1	104.6-107.6	489	112.1	110.7-113.6
30-49	612	124.2	122.5-125.9	888	114.6	113.2-116.0	1500	119.4	118.2-120.6
50-69	487	134.3	131.7-137.0	603	128.8	126.7-130.8	1090	131.4	129.7-133.1
18-69	**1319**	**124.4**	**123.1-125.7**	**1760**	**115.5**	**114.4-116.6**	**3079**	**119.9**	**119.0-120.8**
Mean diastolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	220	74.5	72.9-76.0	269	69.3	68.0-70.6	489	71.9	70.8-73.1
30-49	612	80.4	79.2-81.5	888	75.2	74.3-76.1	1500	77.8	77.0-78.6
50-69	487	84.6	83.3-86.0	603	81.2	80.1-82.4	1090	82.8	81.9-83.7
18-69	**1319**	**79.4**	**78.5-80.3**	**1760**	**74.8**	**74.1-75.6**	**3079**	**77.1**	**76.5-77.7**

Table 79. Mean heart rate (beats per minute)

Mean heart rate (beats per minute)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	220	72.2	70.5-73.9	269	79.1	77.8-80.3	489	75.6	74.4-76.7
30-49	612	72.5	71.5-73.5	888	76.5	75.6-77.4	1500	74.5	73.8-75.2
50-69	487	74.9	73.6-76.1	602	76.1	75.0-77.1	1089	75.5	74.6-76.3
18-69	**1319**	**72.9**	**72.1-73.7**	**1759**	**77.2**	**76.5-77.9**	**3078**	**75.1**	**74.5-75.6**

Table 80. Mean blood pressure among all respondents, including those currently on medication for raised blood pressure by rural/urban

Mean systolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	*n*	*Mean*	*95% CI*
Urban	573	123.9	121.9-126.0	806	113.3	111.9-114.6	1379	118.4	117.1-119.6
Rural	746	124.7	123.1-126.4	954	116.7	115.1-118.4	1700	120.8	119.5-122.0
Total	**1319**	**124.4**	**123.1-125.7**	**1760**	**115.5**	**114.4-116.6**	**3079**	**119.9**	**119.0-120.8**
Mean diastolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	N	Mean	95% CI	n	Mean	95% CI	*n*	*Mean*	*95% CI*
Urban	573	79.4	78.0-80.8	806	73.8	72.8-74.7	1379	76.4	75.6-77.3
Rural	746	79.4	78.3-80.5	954	75.5	74.4-76.5	1700	77.5	76.6-78.3
Total	**1319**	**79.4**	**78.5-80.3**	**1760**	**74.8**	**74.1-75.6**	**3079**	**77.1**	**76.5-77.7**

Table 81. Percentage of respondents with raised blood pressure by rural/urban

SBP ≥140 and/or DBP ≥ 90 mmHg, excluding those on medication for raised blood pressure									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	*n*	*%*	*95% CI*
Urban	523	19.1	14.8-23.4	751	8.8	6.8-10.9	1274	13.7	11.6-15.9
Rural	708	19.6	16.1-23.0	910	11.8	9.4-14.1	1618	15.7	13.7-17.7
Total	**1231**	**19.4**	**16.7-22.1**	**1661**	**10.7**	**9.0-12.4**	**2892**	**15.0**	**13.5-16.5**
SBP ≥140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	*n*	*%*	*95% CI*
Urban	573	23.6	19.1-28.1	806	13.7	11.2-16.2	1379	18.4	16.1-20.7
Rural	746	22.8	19.3-26.4	954	15.5	12.9-18.1	1700	19.2	17.0-21.3
Total	**1319**	**23.1**	**20.3-25.9**	**1760**	**14.9**	**13.0-16.7**	**3079**	**18.9**	**17.3-20.5**
SBP ≥160 and/or DBP ≥ 100 mmHg, excluding those on medication for raised blood pressure									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	*n*	*%*	*95% CI*
Urban	523	7.2	4.8-9.7	751	2.8	1.4-4.3	1274	4.9	3.6-6.3
Rural	708	6.5	4.7-8.3	910	2.6	1.6-3.6	1618	4.6	3.6-5.6
Total	**1231**	**6.8**	**5.3-8.2**	**1661**	**2.7**	**1.9-3.5**	**2892**	**4.7**	**3.9-5.5**

SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	%	95% CI	n	%	95% CI	*n*	*%*	*95% CI*
Urban	573	12.4	9.4-15.3	806	8.1	6.0-10.1	1379	10.1	8.3-11.9
Rural	746	10.3	8.1-12.6	954	6.7	5.1-8.4	1700	8.5	7.2-9.9
Total	**1319**	**11.0**	**9.2-12.8**	**1760**	**7.2**	**5.9-8.5**	**3079**	**9.1**	**8.0-10.2**

Table 82. Percentage of respondents with treated and/or controlled of raised blood pressure among those with raised blood pressure (SBP ≥140 and/or DBP ≥ 90 mmHg) or currently on medication for raised blood pressure by rural/urban

Respondents with treated and/or controlled raised blood pressure							
	Men						
Age Group (years)	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/or DBP≥90	95% CI	% Not on medication and SBP≥140 and/or DBP≥90	95% CI
Urban	169	9.9	5.5-14.3	14.2	8.0-20.4	76.0	68.1-83.9
Rural	196	6.3	2.6-10.0	12.3	6.7-17.9	81.4	75.1-87.8
Total	**365**	**7.5**	**4.7-10.4**	**12.9**	**8.7-17.2**	**79.5**	**74.5-84.5**
	Women						
Age Group (years)	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/or DBP≥90	95% CI	% Not on medication and SBP≥140 and/or DBP≥90	95% CI
Urban	142	19.0	10.3-27.7	20.2	13.5-27.0	60.8	51.8-69.8
Rural	166	9.9	4.6-15.3	17.6	11.7-23.5	72.5	64.6-80.4
Total	**308**	**13.0**	**8.3-17.6**	**18.5**	**13.9-23.0**	**68.6**	**62.5-74.6**
	Both Sexes						
Age Group (years)	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/or DBP≥90	95% CI	% Not on medication and SBP≥140 and/or DBP≥90	95% CI
Urban	311	13.5	8.9-18.0	16.6	11.8-21.3	70.0	63.7-76.3
Rural	362	7.8	4.4-11.2	14.4	10.1-18.8	77.8	72.4-83.2
Total	**673**	**9.7**	**7.0-12.4**	**15.2**	**11.9-18.4**	**75.1**	**71.0-79.2**

Appendix 8: Height, weight and BMI

Table 83. Mean height, weight, and body mass index among all respondents (excluding pregnant women).

Mean height (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	220	163.7	162.8-164.6	252	154.2	153.3-155.1
30-49	610	162.0	161.4-162.6	868	152.5	152.0-153.0
50-69	486	161.4	160.8-162.1	602	150.9	150.3-151.4
18-69	**1316**	**162.4**	**162.0-162.9**	**1722**	**152.6**	**152.2-153.0**

Mean weight (kg)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	220	57.2	55.8-58.6	252	49.1	48.0-50.3
30-49	610	58.8	58.0-59.6	868	52.1	51.4-52.9
50-69	486	58.2	57.2-59.1	602	51.8	50.9-52.7
18-69	**1316**	**58.1**	**57.4-58.8**	**1722**	**51.2**	**50.6-51.7**

Mean BMI (kg/m^2)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	220	21.3	20.9-21.8	251	20.7	20.3-21.2	471	21.1	20.7-21.4
30-49	610	22.4	22.1-22.7	868	22.4	22.1-22.7	1478	22.4	22.2-22.6
50-69	486	22.3	22.0-22.6	602	22.7	22.4-23.1	1088	22.5	22.3-22.8
18-69	**1316**	**22.0**	**21.8-22.3**	**1721**	**22.0**	**21.8-22.2**	**3037**	**22.0**	**21.8-22.2**

Table 84. Mean waist circumference among all respondents (excluding pregnant women).

Waist circumference (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	219	74.5	73.0-76.0	252	71.4	70.1-72.8
30-49	611	78.8	78.0-79.6	866	76.1	75.3-76.8
50-69	485	80.6	79.6-81.6	602	79.2	78.2-80.2
18-69	**1315**	**77.8**	**77.0-78.6**	**1720**	**75.5**	**74.8-76.2**

Table 85. Mean hip circumference among all respondents (excluding pregnant women).

Hip circumference (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	219	89.5	88.3-90.7	252	88.5	87.5-89.5
30-49	611	91.3	90.8-91.9	866	90.7	90.1-91.2
50-69	485	91.2	90.5-91.9	602	90.7	90.0-91.5
18-69	**1315**	**90.7**	**90.1-91.2**	**1720**	**90.0**	**89.5-90.5**

Table 86. Mean waist-to-hip ratio among all respondents (excluding pregnant women).

Mean waist / hip ratio						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
18-29	219	0.8	0.8-0.8	252	0.8	0.8-0.8
30-49	611	0.9	0.9-0.9	866	0.8	0.8-0.8
50-69	485	0.9	0.9-0.9	602	0.9	0.9-0.9
18-69	**1315**	**0.9**	**0.9-0.9**	**1720**	**0.8**	**0.8-0.8**

Table 87. Average height by rural/urban

Mean height (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
Urban	572	163.0	162.3-163.8	789	153.1	152.6-153.7
Rural	744	162.1	161.6-162.7	933	152.3	151.7-152.8
Total	**1316**	**162.4**	**162.0-162.9**	**1722**	**152.6**	**152.2-153.0**

Table 88. Average weight by rural/urban

Mean weight (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
Urban	572	60.4	59.2-61.6	789	52.7	51.8-53.6
Rural	744	57.0	56.2-57.8	933	50.3	49.5-51.0
Total	**1316**	**58.1**	**57.4-58.8**	**1722**	**51.2**	**50.6-51.7**

Table 89. Average waist circumference (cm) by rural/urban

Waist circumference (cm)						
Age Group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
Urban	570	80.4	79.2-81.6	788	76.8	75.9-77.7
Rural	745	76.5	75.5-77.4	932	74.7	73.8-75.7
Total	**1315**	**77.8**	**77.0-78.6**	**1720**	**75.5**	**74.8-76.2**

Table 90. Average BMI by rural/urban

Mean BMI (kg/m^2)									
Age Group (years)	**Men**			**Women**			**Both Sexes**		
	n	Mean	95% CI	n	Mean	95% CI	*n*	*Mean*	*95% CI*
Urban	572	22.7	22.3-23.2	789	22.4	22.1-22.8	1361	22.6	22.3-22.9
Rural	744	21.7	21.4-21.9	932	21.7	21.4-22.0	1676	21.7	21.5-21.9
Total	**1316**	**22.0**	**21.8-22.3**	**1721**	**22.0**	**21.8-22.2**	**3037**	**22.0**	**21.8-22.2**

Table 91. Percentage of respondents (excluding pregnant women) in each BMI category by rural/urban

BMI classifications									
	Men								
Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% BMI 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
Urban	572	9.3	6.1-12.5	68.6	62.7-74.5	20.1	14.9-25.3	2.0	0.7-3.3
Rural	744	11.4	8.4-14.4	77.4	73.9-80.9	9.6	7.4-11.9	1.6	0.4-2.7
Total	**1316**	**10.7**	**8.4-12.9**	**74.4**	**71.3-77.5**	**13.2**	**10.8-15.5**	**1.7**	**0.8-2.6**
	Women								
Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% BMI 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
Urban	789	9.6	6.6-12.7	69.7	65.5-74.0	18.2	14.9-21.4	2.5	1.1-3.8
Rural	932	14.2	11.0-17.4	71.8	68.0-75.6	12.7	10.1-15.3	1.3	0.6-2.0
Total	**1721**	**12.6**	**10.2-14.9**	**71.0**	**68.2-73.9**	**14.7**	**12.7-16.8**	**1.7**	**1.0-2.4**
	Both Sexes								
Age Group (years)	n	% Under-weight <18.5	95% CI	% Normal weight 18.5-24.9	95% CI	% BMI 25.0-29.9	95% CI	% Obese ≥30.0	95% CI
Urban	1361	9.5	7.1-11.8	69.2	65.5-72.9	19.1	16.0-22.3	2.2	1.1-3.3
Rural	1676	12.8	10.6-14.9	74.7	72.1-77.2	11.1	9.3-13.0	1.4	0.8-2.1
Total	**3037**	**11.6**	**10.0-13.2**	**72.7**	**70.6-74.9**	**13.9**	**12.3-15.6**	**1.7**	**1.1-2.3**

Appendix 9: Blood glucose

Table 92. Mean fasting blood glucose results including those currently on medication for diabetes (non-fasting recipients excluded).

Mean fasting blood glucose (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	190	4.5	4.3-4.6	238	4.3	4.2-4.4	428	4.4	4.3-4.5
30-49	558	4.8	4.7-4.9	819	4.7	4.6-4.8	1377	4.7	4.6-4.8
50-69	456	5.0	4.8-5.2	552	5.2	5.0-5.4	1008	5.1	5.0-5.2
18-69	**1204**	**4.7**	**4.6-4.8**	**1609**	**4.7**	**4.6-4.8**	**2813**	**4.7**	**4.6-4.8**
Mean fasting blood glucose (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	190	80.6	77.8-83.4	238	77.6	75.6-79.6	428	79.1	77.3-80.9
30-49	558	86.4	84.0-88.9	819	84.3	82.1-86.5	1377	85.4	83.6-87.1
50-69	456	90.1	87.2-93.0	552	93.8	90.7-96.8	1008	92.0	89.8-94.2
18-69	**1204**	**85.4**	**83.7-87.2**	**1609**	**84.7**	**83.1-86.2**	**2813**	**85.0**	**83.7-86.4**

Table 93. Average fasting blood glucose by rural/urban

Mean fasting blood glucose (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	*n*	*Mean*	*95% CI*
Urban	524	4.9	4.7-5.0	732	4.7	4.6-4.8	1256	4.8	4.7-4.9
Rural	680	4.7	4.6-4.8	877	4.7	4.6-4.8	1557	4.7	4.6-4.8
Total	**1204**	**4.7**	**4.6-4.8**	**1609**	**4.7**	**4.6-4.8**	**2813**	**4.7**	**4.6-4.8**

Mean fasting blood glucose (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	*n*	*Mean*	*95% CI*
Urban	524	87.3	84.7-90.0	732	84.5	82.2-86.7	1256	85.8	83.9-87.7
Rural	680	84.5	82.2-86.8	877	84.8	82.8-86.8	1557	84.6	82.9-86.4
Total	**1204**	**85.4**	**83.7-87.2**	**1609**	**84.7**	**83.1-86.2**	**2813**	**85.0**	**83.7-86.4**

Appendix 10: Blood cholesterol

Table 94. Mean total cholesterol among all respondents including those currently on medication for raised cholesterol

Mean total cholesterol (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	220	3.9	3.7-4.1	269	4.3	4.1-4.4	489	4.1	3.9-4.2
30-49	611	4.5	4.4-4.6	885	4.6	4.5-4.7	1496	4.5	4.5-4.6
50-69	487	4.6	4.4-4.7	602	5.3	5.2-5.4	1089	4.9	4.8-5.1
18-69	**1318**	**4.3**	**4.2-4.4**	**1756**	**4.7**	**4.6-4.7**	**3074**	**4.5**	**4.4-4.6**

Mean total cholesterol (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	220	150.1	143.5-156.8	269	164.9	158.2-171.6	489	157.4	152.7-162.1
30-49	611	174.3	169.5-179.2	885	176.6	172.5-180.8	1496	175.5	172.1-178.8
50-69	487	176.0	171.1-180.9	602	204.7	199.3-210.2	1089	191.3	187.2-195.4
18-69	**1318**	**166.7**	**163.0-170.4**	**1756**	**180.0**	**176.4-183.6**	**3074**	**173.4**	**170.6-176.3**

Table 95. Percentage of respondents with raised total cholesterol

Total cholesterol ≥ 5.0 mmol/L or ≥ 190 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
18-29	220	13.4	8.6-18.2	269	21.3	14.9-27.7	489	17.3	13.4-21.2
30-49	611	30.5	25.9-35.0	885	31.4	27.3-35.4	1496	30.9	27.7-34.1
50-69	487	29.5	24.4-34.5	602	55.6	50.5-60.7	1089	43.4	39.5-47.2
18-69	**1318**	**24.6**	**21.5-27.7**	**1756**	**34.3**	**31.1-37.5**	**3074**	**29.5**	**27.2-31.8**

Table 96. Mean HDL among all respondents and percentage of respondents with low HDL

Mean HDL (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	220	0.9	0.8-0.9	269	1.2	1.1-1.2	489	1.0	1.0-1.1
30-49	612	1.0	0.9-1.0	888	1.1	1.1-1.1	1500	1.0	1.0-1.1
50-69	488	1.0	1.0-1.0	603	1.1	1.0-1.1	1091	1.0	1.0-1.1
18-69	**1320**	**0.9**	**0.9-1.0**	**1760**	**1.1**	**1.1-1.1**	**3080**	**1.0**	**1.0-1.1**

Mean HDL (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18-29	220	34.2	32.5-35.9	269	44.9	42.4-47.5	489	39.5	37.8-41.2
30-49	612	37.3	35.8-38.9	888	42.1	40.9-43.2	1500	39.7	38.7-40.7
50-69	488	38.8	37.2-40.4	603	41.6	40.0-43.3	1091	40.3	39.1-41.6
18-69	**1320**	**36.6**	**35.6-37.7**	**1760**	**42.9**	**41.7-44.0**	**3080**	**39.8**	**38.9-40.7**

IX. REFERENCES

1. World Health Organization (2014). Global status report on noncommunicable diseases.
2. Institute for Health Metrics and Evaluation (2013). The Global Burden of Disease: Generating Evidence, Guiding Policy. Seattle, WA: IHME.
3. World Health Organization (2014). Noncommunicable Diseases (NCD) Country Profiles.
4. World Health Organization (2014). Health statistics and information systems. Global Health Estimates for the years 2000–2012.
5. Institute for Health Metrics and Evaluation (2013). Global Burden of Disease Study 2010 (GBD 2010) Results by Cause 1990-2010 - Viet Nam Country Level. Seattle, United States: IHME.
6. Nguyen Thi Trang Nhung et al (2013). Estimation of Viet Nam National Burden of Disease 2008. Asia-Pacific Journal of Public Health 26(5).
7. Cục Quản lý khám, chữa bệnh - Bộ Y tế (2012). Nghiên cứu các yếu tố nguy cơ của một số bệnh không lây nhiễm tại Việt Nam. Báo cáo kết quả đề tài khoa học công nghệ. Hà Nội. (Medical Service Administration-MOH Viet Nam. STEPS 201 report).
8. World Health Organization (2014). Global status report on alcohol and health 2014.
9. World Health Organization (2013). Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020.
10. World Health Organization (2012). Guideline. Sodium intake for adults and children.
11. Marie Ng, PhD, Tom Fleming, BS, Margaret Robinson, BA et al (2013). Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013.
12. World Health Organization (2013). A global brief on Hypertension.
13. Pham Thai Son (2012). Hypertension in Viet Nam from community-based studies to a national targeted programme. Doctoral thesis. Umeå: Umeå University.
14. Bệnh viện Nội tiết Trung ương (2013). Điều tra lập bản đồ dịch tễ học bệnh đái tháo đường toàn quốc năm 2012. (National Endocrinology Institute. Report on the survey to map out epidemiology of diabetes in Viet Nam 2012).

STEPS QUESTIONNAIRE

STEP 1 questions

General Information	response	Code
Interviewer ID	⌊_⌋⌊_⌋⌊_⌋⌊_⌋	I3
Date of completion of the instrument	⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ day m y	I4
Consent has been read and obtained	YES/CC 1 NO/KHONG 2	I5
Interview Language *[Insert Language]*	Viet 1 other 2 (……..)	I6
Time of interview (24 hour clock)	⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ Hrs Mins	I7
In total, how many years have you spent at school and in full-time study (excluding pre-school)?	N0 of years ⌊_⌋⌊_⌋	C4

Alcohol Consumption

You have just answered some questions on tobacco use and policies. The next questions ask about the consumption of alcohol.

Question	Response	Code
Have you ever consumed any alcohol such as beer, wine, or spirits? [USE SHOWCARD OR SHOW EXAMPLES]	YES 1 NO 2 If No, go to A16	A1
Have you consumed any alcohol within the past 12 months?	YES 1 If Yes, go to A4 NO 2	A2
Have you stopped drinking due to health reasons, such as a negative impact on your health or on the advice of your doctor or other health worker?	YES 1 If Yes, go to A16 NO 2 If No, go to A16	A3
During the past 12 months, how frequently have you had at least one standard alcoholic drink? [READ RESPONSES, USE SHOWCARD:]	Daily 1 5-6 days per week 2 3-4 days per week 3 1-2 days per week 4 1-3 days per month 5 Less than once a 6 Less than 1 standard 7	A4

Have you consumed any alcohol within the past 30 days? Yes No	YES 1 NO 2 go to A13	A5
During the past 30 days, on how many occasions did you have at least one standard alcoholic drink? [USE SHOWCARD]	Number Don't know 777 └─┴─┴─┘ If "0", go to A13	A6
During the past 30 days, when you drank alcohol, how many standard drinks on average did you have during one drinking occasion? [USE SHOWCARD]	Number Don't know 77 └─┴─┘	A7
During the past 30 days, what was the largest number of standard drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number Don't Know 77 └─┴─┘	A8
During the past 30 days, how many times did you have six or more standard drinks in a single drinking occasion?	Number of times Don't Know 77 └─┴─┘	A9
During the past 30 days, did you drive motorized vehicles within 2 hours after drinking?	YES 1 NO 2 Go to A10a	XA9A
During the past 30 days, did you drive motorized vehicles within 2 hours after drinking more than 2 standard drinks?	YES 1 No 2	XA9B
During each of the past 7 days, how many standard drinks did you have each day? [USE SHOWCARD] [IF DON'T KNOW, ENTER 77 IF REFUSED, ENTER 99]	Monday └─┴─┘	A10a
	Tuesday └─┴─┘	A10b
	Wednesday └─┴─┘	A10c
	Thursday └─┴─┘	A10d
	Friday └─┴─┘	A10e

	Saturday ⌊_⌋⌊_⌋	A10f
	Sunday ⌊_⌋⌊_⌋	A10g
During each of the past 7 days, how many standard drinks did you have each day? [USE SHOWCARD] [IF DON'T KNOW, ENTER 77 IF REFUSED, ENTER 99]	Monday ⌊_⌋⌊_⌋	A10a
	Tuesday ⌊_⌋⌊_⌋	A10b
	Wednesday ⌊_⌋⌊_⌋	A10c
	Thursday ⌊_⌋⌊_⌋	A10d
	Friday ⌊_⌋⌊_⌋	A10e
	Saturday ⌊_⌋⌊_⌋	A10f
	Sunday ⌊_⌋⌊_⌋	A10g

Alcohol Consumption, continued

I have just asked you about your consumption of alcohol during the past 7 days. Now I would like to ask you about the consumption of each kind of alcohol including beer, home brewed spirits, factory produced spirits,

Question	**Response**	**Code**
In total **how many standard drinks** of home brewed spirits (rice spirit, casava spirit, herbal medicine alcohol) did you consume **during the past 7 days**? [USE SHOWCARD]	Number of Standard Drinks ⌊_⌋⌊_⌋ Don't Know 77	A12a
In total **how many standard drinks** of beer did you consume **during the past 7 days**? [USE SHOWCARD]	Number of Standard Drinks ⌊_⌋⌊_⌋ Don't Know 77	XA12b

In total how many standard drinks of factory produced spirits (vodka, whisky) did you consume **during the past 7 days**? [USE SHOWCARD]	Number of Standard Drinks ⌊_⌋⌊_⌋ Don't Know 77	XA12c
In total how many standard drinks of factory produced wine (including Champaign and fruit wine) did you consume **during the past 7 days**? [USE SHOWCARD]	Number of Standard Drinks ⌊_⌋⌊_⌋ Don't Know 77	XA12d
During the **past 12 months,** how often have you found that you were not able to stop drinking once you had started?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A13
During the past 12 months, how often have you failed to do what was normally expected from you because of drinking?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A14
During the past 12 months, how often have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A15
During the past 12 months, have you had family problems or problems with your partner due to someone else's drinking?	Yes, more than monthly 1 Yes, monthly 2 Yes, several times but less than monthly 3 Yes, once or twice 4 No 5	A16
		Diet
The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you		

answer these questions please think of a typical week in the last year.

Question	Response	Code
In a typical week, on how many days do you eat fruit?	Number of days └┴┘ If Zero Don't Know 77 days, go to D3	D1
How many servings of fruit do you eat on one of those days? [USE SHOWCARD TO EXPLAIN ABOUT THE SIZE OF SERVINGS OF DIFFERENT	Number of servings Don't Know 77 └┴┘	D2
In a typical week, on how many days do you eat vegetables? [USE SHOWCARD]	Number of days └┴┘ If Zero Don't Know 77 days, go to D5	D3
How many servings of vegetables do you eat on one of those days? [USE SHOWCARD TO EXPLAIN ABOUT THE SIZE OF SERVINGS OF DIFFERENT VEGETABLES]	Number of servings Don't know 77 └┴┘	D4
		Dietary salt
With the next questions, we would like to learn more about salt in your diet. Dietary salt includes ordinary table salt, unrefined salt such as sea salt, iodized salt, salty stock cubes and powders, and salty sauces such as soya sauce or fish sauce (see show card). The following questions are on adding salt to the food right before you eat it, on how food is prepared in your home, on eating processed foods that are high in salt such as instant noodles, and questions on controlling your salt intake. Please answer the questions even if you consider yourself to eat a diet low in salt.		
How often do you add salt or a salty sauce such as soya sauce to your food right before you eat it or as you are eating it? [READ RESPONSES, USE SHOWCARD:]	Always (every meal) 1 Often (most meals) 2 Sometimes 3 Rarely 4 Never 5 Don't know 7	D5
How often is salt, salty seasoning or a salty sauce added in cooking or preparing foods in your household? [READ RESPONSES, USE SHOWCARD:]	Always (every meal) 1 Often (most meals) 2 Sometimes 3 Rarely 4 Never 5 Don't know 7	D6
How often do you eat processed food high in salt? By processed food high in salt, I mean foods that have been altered from their natural state, such as salted vegetables, salted eggplants, instant noodles, packaged salty snacks, canned salty food including pickles and preserves, salty	Always (every meal) 1 Often (most meals) 2 Sometimes 3 Rarely 4 Never 5 Don't know 7	D7
How much salt or salty sauce do you think you consume?	Far too much 1 Too much 2 Just the right amount 3 Too little 4	D8

	Far too little 5 Don't know 7	
		Diet, continued
Question	Response	Code
Do you think that too much salt or salty sauce in your diet could cause a health problem?	Yes 1 No 2 Go to D11a Don't know 7	D10
Do you think that too much salt or salty sauce in your diet can cause the following diseases?		
Hypertension	YES 1 NO 2 DON'T KNOW 7	XD10a
Strokes	YES 1 NO 2 DON'T KNOW 7	XD10b
Heart attack	YES 1 NO 2 DON'T KNOW 7	XD10c
Stomach cancer	YES 1 NO 2 DON'T KNOW 7	XD10d
Do you do any of the following on a regular basis to control your salt intake?		
Limit consumption of processed foods	YES 1 NO 2	D11a
Put less salt when cooking	YES 1 NO 2 I USUALLY DON'T COOK 3	XD11e1
Restrict adding salt on the table (dipping food to salt and/or adding salt to food)	YES 1 NO 2	XD11e2
Restrict eating of salty foods as stew, fry	YES 1 NO 2	XD11e3
The next questions ask about the oil or fat that is most often used for meal preparation in your household, and about meals that you eat outside a home.		
What type of oil or fat is most often used for meal preparation in your household? [USE SHOWCARD] [SELECT ONLY ONE]	Vegetable oil 1 Lard or suet 2 Butter or ghee 3 Margarine 4 None in particular 5 None 6 Don't know 77	D12

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 ⌊_⌋⌊_⌋ Don't know 77	D13

Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.

Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

Question	Response	Code
	Work	
Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like carrying or lifting heavy loads, digging or construction work for at least 10 minutes continuously?	YES 1 NO 2 If No, go to P 4	P1
In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days ⌊_⌋	P2
How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	P3 (a-b)
Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking or carrying light loads for at least 10 minutes continuously?	YES 1 NO 2 If No, go to P 7	P4
In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ⌊_⌋	P5
How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	P6 (a-b)
	Travel to and from places	

The next questions exclude the physical activities at work that you have already mentioned.

Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship.

Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	YES 1 NO 2 If No, go to P 10	P7
In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days ⌊__⌋	P8
How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P9 (a-b)
		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).		
Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like running or football for at least 10 minutes continuously?	YES 1 NO 2 If No, go to P 13	P10
In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?	Number of days ⌊__⌋	P11
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P12 (a-b)
Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, cycling, swimming, volley ball for at least 10 minutes continuously?	YES 1 NO 2 If No, go to P16	P13
In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?	Number of days ⌊__⌋	P14
How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P15 (a-b)
		Sedentary behaviour
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting during meals, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping. [USE SHOWCARD]		

How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P16 (a-b)
	History of Raised Blood Pressure	
Question	Response	Code
Have you ever had your blood pressure measured by a doctor or other health worker?	YES 1 NO 2 If No, go to H6	H1
Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?	YES 1 NO 2 If No, go to H6	H2a
Have you been told about your high blood pressure in the past 12 months?	YES 1 NO 2	H2b
In the past two weeks, have you taken any drugs (medication) for raised blood pressure prescribed by a doctor or other health worker?	YES 1 NO 2	H3
Have you ever seen a traditional healer for raised blood pressure or hypertension?	YES 1 NO 2	H4
Are you currently taking any herbal or traditional remedy for your raised blood pressure?	YES 1 NO 2	H5
	History of Diabetes	
Have you ever had your blood sugar measured by a doctor or other health worker?	YES 1 NO 2 If No, go to XH11a	H6
Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?	YES 1 NO 2 If No, go to XH11a	H7a
Have you been told about your raised blood sugar or diabetes in the past 12 months?	YES 1 NO 2	H7b
In the past two weeks, have you taken any drugs (medication) for diabetes prescribed by a doctor or other health worker?	YES 1 NO 2	H8
Are you currently taking insulin for diabetes prescribed by a doctor or other health worker?	YES 1 NO 2	H9
Have you ever seen a traditional healer for diabetes or raised blood sugar?	YES 1 NO 2	H10
Are you currently taking any herbal or traditional remedy for your diabetes?	YES 1 NO 2	H11

Have you ever been told by a doctor or other health worker that you have COPD or asthma?	YES 1 NO 2	XH11a

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

Lifestyle Advice		
During the past three years, has a doctor or other health worker advised you to do any of the following?		
Quit using tobacco or don't start	YES 1 NO/DON'T 2	H20a
Reduce salt in your diet	YES 1 NO/DON'T REMEMBER 2	H20b
Eat more fruit and/or vegetables each day	YES 1 NO/DON'T REMEMBER 2	XH20g
Eat at least five servings of fruit and/or vegetables each day	YES 1 NO/DON'T REMEMBER 2	H20c
Reduce fat in your diet	YES 1 NO/DON'T REMEMBER 2	H20d

Start or do more physical activity	YES 1 NO/DON'T REMEMBER 2	H20e
Maintain a healthy body weight or lose weight	YES 1 NO/DON'T REMEMBER 2	H20f

NCD treatment and Management		
If H2a=1 (Yes) or H7a=1 (Yes) or XH11a=1 (Yes), then go to XQL1. Else skip to CX0SEX		
Do you currently have any type of these NCDs: hypertension, diabetes, COPD and asthma that is\are being managed at health facilities? (Management means your medical record is kept at the health facility and you go there periodically to check the condition of your NCD and get a	YES 1 NO 2 -> skip to CX0sex Don't' know 7 -> skip to CX0sex	XQL1
Do you currently have hypertension being managed at a health facility?	YES 1 NO 2 go to *XQL2b*	XQL2a
What health facility is currently managing your hypertension?	COMMUNE HEALTH STATION 1 2 DISTRICT HEALTH FACILITIES 3 4 PROVINCIAL HEALTH FACILITIES 5 6	XQL2a1
	Others (Specify) ……	XQL2a other
Do you currently have diabetes being managed at a health facility?	Yes 1 NO 2 *Go to XQL2c*	XQL2b
What health facility is currently managing your Diabetes?	COMMUNE HEALTH STATION 1 2 DISTRICT HEALTH FACILITIES 3 4	XQL2b1
	Others (Specify) …….	XQL2b other

Do you currently have COPD or asthma being managed at a health facility?	YES 1 NO 2 *go to cx0*	XQL2c
What health facility is currently managing your COPD or Asthma?	COMMUNE 1 HEALTH STATION 2 DISTRICT HEALTH FACILITIES 3 4	XQL2c1
	Others (Specify) ……	XQL2c other

(for women only): Cervical Cancer Screening		
[RECORD GENDER FROM OBSERVATION. ASK IF NECESSARY.]	MALE 1 – Skip to LAST FEMALE 2	CX0SEX
The next question asks about cervical cancer prevention. Screening tests for cervical cancer prevention can be done in different ways, including Visual Inspection with Acetic Acid/vinegar (VIA), VILI, pap smear and Human Papillomavirus (HPV) test. VIA is an inspection of the surface of the uterine cervix after acetic acid (or vinegar) or iodine has been applied to it. For both pap smear and HPV test, a doctor or nurse uses a swab to wipe from inside your vagina, take a sample and send it to a laboratory. It is even possible that you were given the swab yourself and asked to swab the inside of your vagina. The laboratory checks for abnormal cell changes if a pap smear is done, and for the HP virus if an HPV test is done.		
Question	Response	Code
Have you ever had a screening test for cervical cancer, using any of the methods described above?	YES 1 NO 2 DON'T KNOW 7	CX1
Those are all of the questions I have. Thank you very much for participating in this important survey.		LAST for STEPS1

STEP 2-3 Questions

General Information for matching with STEP1	response	Code
Interviewer ID	⌊_⌋⌊_⌋⌊_⌋⌊_⌋	I3
Date of completion of the instrument	⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ day m y	I4
Consent has been read and obtained	YES/CC 1 NO/KHONG 2	I5
Interview Language *[Insert Language]*	Viet 1 other 2 (……..)	I6
Time of interview (24 hour clock)	⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ Hrs Mins	I7
Urine collection		
Had you been fasting prior to the urine collection?	YES/CO 1 NO/KHONG 2	B10
Time of day urine sample taken (24 hour clock)	Giờ : Phút ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ Giờ phút	B13
Blood testing		
During the past 12 hours have you had anything to eat or drink, other than water?	YES/CO 1 NO/KHONG 2	B1
Time of the latest meal you had eaten (24 hour clock)?	Hrs : Mins ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hour minute	XB1
Technician ID	⌊_⌋⌊_⌋⌊_⌋⌊_⌋	B2
Device ID	⌊_⌋⌊_⌋	B3
Time of day blood specimen taken (24 hour clock)	Hrs : Min ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	B4
Total cholesterol *[MMOL/L]*	mmol/l ⌊_⌋⌊_⌋ . ⌊_⌋⌊_⌋	B8
During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?	YES/CO 1 NO/KHONG 2	B9
HDL Cholesterol (MMOL/L)	mmol/l ⌊_⌋ . ⌊_⌋⌊_⌋	B16

Fasting blood glucose *[MMOL/L]*	mmol/l ⌊_⌋⌊_⌋ . ⌊_⌋⌊_⌋	B5
Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose?	YES/CO 1 NO/KHONG 2	B6
Blood pressure and Heart rate	**Response**	**Code**
Technician ID	⌊_⌋⌊_⌋⌊_⌋⌊_⌋	M1
Device ID	⌊_⌋⌊_⌋	M2
Reading 1	Systolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M4a
	Diastolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M4b
	Beats per minute ⌊_⌋⌊_⌋⌊_⌋	M16a
Reading 2	Systolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M5a
	Diastolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M5b
	Beats per minute ⌊_⌋⌊_⌋⌊_⌋	M16b
Reading 3	Systolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M6a
	Diastolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M6b
	Beats per minute ⌊_⌋⌊_⌋⌊_⌋	M16c
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/CO 1 NO/KHONG 2	M7
Height and Weight		
For women: Are you pregnant?	YES/CO 1 NO/KHONG 2	M8
Technician ID	⌊_⌋⌊_⌋⌊_⌋⌊_⌋	M9
Device ID	⌊_⌋⌊_⌋ Height weight ⌊_⌋⌊_⌋	M10a M10b
Height	cm ⌊_⌋⌊_⌋⌊_⌋ . ⌊_⌋	M11
Weight *If too large for scale 666.6*	kg ⌊_⌋⌊_⌋⌊_⌋ . ⌊_⌋	M12
BMI	kg/(m)^2 ⌊_⌋⌊_⌋ . ⌊_⌋	XM12

Waist/Hip		
Device ID for waist/hip	⌊__⌋⌊__⌋⌊__⌋	M13
Waist circumference	cm ⌊__⌋⌊__⌋ ⌊__⌋	M14
Hip circumference	cm ⌊__⌋⌊__⌋ . ⌊__⌋	M15