WHO STEPS Surveillance Manual

The Pan American Version of the WHO STEPwise approach to chronic disease risk factor surveillance

World Health Organization

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Part 1: Introduction and Roles

Overview

In this part

This Part covers the following topics

Section 1: Introduction

Overview

Introduction

This section is an introduction to the WHO STEPS Surveillance Manual.

Purpose

The purpose of the manual is to provide guidelines and supporting material for sites embarking on STEPS chronic disease risk factor surveillance, so they are able to:

- plan and prepare the survey scope, sample and environment
- train staff
- conduct the survey
- capture and analyse the data collected
- report and disseminate the results.

Intended audience

The manual is intended for all parties responsible for implementing STEPS chronic disease risk factor surveillance in their site. The various parties include a wide range of people from public health officials in the Ministry of Health and/or any health institutions, to field staff as well as laboratory technicians, nurses and statisticians. Interested parties will read the part and sections relevant to their role in STEPS.

Guide to using the manual

The manual has been written in seven modular parts and is structured to follow the sequence of events required to implement a STEPS survey. Each part of the manual is further divided into sections. Each part and section is introduced with a table of contents to help readers find specific topics. The manual includes guidelines and instructional material that can be extracted and used for:

- training
- data collection
- data entry
- data analysis
- reporting.

Page numbers have three components. The first number refers to the part, the second to the section and the third to the page number in that section. For example: 3-6-5 indicates Part 3, Section 6, Page 5.

Continued on next page

Overview, Continued

In this section This section contains the following topics:

Rationale for Surveillance of Chronic Disease Risk Factors

Introduction

Chronic, noncommunicable diseases are responsible for 60% of all deaths globally *(1)*.

Especially in developing countries, the burden of chronic diseases is increasing rapidly and will have significant social, economic, and health consequences.

Main chronic diseases

The main chronic diseases attributable to the most common risk factors are:

- heart disease
- stroke
- cancer
- chronic respiratory diseases
- diabetes (*1*).

Terminology

The term 'noncommunicable diseases' is used to make the distinction between these conditions and infectious or 'communicable diseases'.

For STEPS surveillance, the term 'chronic diseases' is used because it emphasizes the following important shared features:

- the epidemics take decades to become fully established - they have their origin at young ages;
- they require a long term systematic approach to treatment;
- given their long duration, there are multiple opportunities for prevention;
- health services must integrate the response to these diseases with the response to infectious diseases.

The evidence

Evidence of the increasing burden of chronic disease in low and middle income countries is now very clear.

- In 2005, the major chronic, noncommunicable diseases accounted for 60% of all deaths and 47% of the global burden of disease.
- By 2020, these figures are expected to rise to 73% and 60%, respectively.
- 80% of chronic disease deaths are already occurring in low and middle income countries (*2,3*).

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Rationale for Surveillance of Chronic Disease Risk Factors,
Continued

Prevention

The key to controlling the global epidemics of chronic diseases is primary prevention based on comprehensive population-wide programmes.

The aim is to avert these epidemics wherever possible and to control them as quickly as possible where they are already present.

Basis of prevention

The basis of chronic disease prevention is the identification of the major common risk factors and their prevention and control. The risk factors of today are the diseases of tomorrow.

Objectives of surveillance

The objectives of surveillance of chronic disease risk factors and selected chronic diseases are therefore to:

- collect consistent data across and within countries;
- develop standardized tools to enable comparisons over time and across countries/sites;
- prevent chronic disease epidemics before they occur;
- help health services plan and determine public health priorities;
- predict future caseloads of chronic diseases;
- monitor and evaluate population-wide interventions.

Selected Risk Factors

Introduction

Common, preventable risk factors underlie most chronic diseases. These chronic disease risk factors are a leading cause of the death and disability burden in all countries, regardless of their economic development status (*4*). The leading risk factor globally is raised blood pressure, followed by tobacco use, raised total cholesterol, and low fruit and vegetable consumption. The major risk factors together account for approximately 80% of deaths from heart disease and stroke.

Risk factor definition

A 'risk factor' refers to any:

- attribute
- characteristic
- exposure of an individual

which increases the likelihood of developing a chronic noncommunicable disease.

Major behavioural risk factors

The major (modifiable) behavioural risk factors identified in the World Health Report 2002 are:

- tobacco use
- harmful alcohol consumption
- unhealthy diet (low fruit and vegetable consumption)
- physical inactivity (*5*).

Major biological risk factors

The major biological risk factors identified in the World Health Report 2002 are:

- overweight and obesity
- raised blood pressure
- raised blood glucose
- abnormal blood lipids and its subset raised total cholesterol.

These eight major behavioural and biological risk factors are therefore included in STEPS chronic disease risk factor surveillance (*5*).

Continued on next page

Selected Risk Factors, Continued

Rationale for inclusion of core risk factors

The rationale for including these eight core risk factors in STEPS surveillance activities is that:

- they have the greatest impact on chronic disease mortality and morbidity
- modification is possible through effective prevention
- measurement of risk factors has been proven to be valid
- measurements can be obtained using appropriate ethical standards (*6*).

Item Rationales for Risk Factors

Introduction

The following paragraphs provide specific information and research findings for each of the eight major behavioural and biological risk factors that are included in STEPS chronic disease risk factor surveillance.

Tobacco use

- About 1.3 billion people worldwide smoke and the number of smokers continues to rise. Among these, about 84% live in developing and transitional economy countries (*7*).
- Tobacco is the fourth most common risk factor for disease and the second major cause of death worldwide. It is currently responsible for the death of one in ten adults worldwide (about 4.9 million deaths each year) (*5*).
- If the current smoking pattern continues, it is estimated that deaths from tobacco consumption will be about 10 million people per year by 2020 (*5*).
- Smokers have markedly increased risk of multiple cancers, particularly lung cancer, and are at far greater risk of heart disease, stroke, Chronic Obstructive Pulmonary Disease (COPD), diabetes, and other fatal and non-fatal diseases. People who chew tobacco risk cancer of the lip, tongue and mouth (*8*).
- Intra Uterine Growth Retardation, spontaneous miscarriages and low birth weight babies are known outcomes of smoking during pregnancy (*8*).
- A 2000 report estimated that productive assets equal to 1% or more of global GDP are lost each year due to smoking (*9*). Applying this result to global GDP for 2005 suggests that over US$ 600 thousand million in productive assets may be lost annually (*10*).
- Many studies have shown that in the poorest households in some low-income countries as much as 10% of total household expenditure is on tobacco. In addition to its direct health effects, tobacco leads to malnutrition, increased health care costs and premature death (*11-13*).
- It has also been shown that non-smokers exposed to second hand smoke have a 25 to 35% increased risk of suffering acute coronary diseases, and increased frequency of chronic respiratory conditions (*14*). Small children whose parents smoke at home have an increased risk of suffering lower tract respiratory infections, middle ear infection and Sudden Infant Death Syndrome (SIDS) (*15*).
- The World Bank estimates that in high-income countries, smoking-related healthcare accounts for between 6 and 15 percent of all annual health-care costs (*16*).

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Item Rationales for Risk Factors, Continued

Harmful alcohol consumption

- In 2000, alcohol use caused 3.2% of deaths (1.8 million) worldwide, and 4% of the global disease burden (*5*).
- Alcohol consumption is the leading risk factor for disease burden in low mortality developing countries and the third largest risk factor in developed countries (*17*).
- The proportion of disease burden attributable to alcohol use in the developing world is between 2.6% to 9.8% of the total burden for males and 0.5% to 2.0% of the total burden for females (*18*).
- Besides the direct toxic effects of intoxication and addiction, alcohol use causes about 20% to 30% of each of esophageal cancer, liver disease, homicide, epileptic seizures, and motor vehicle accidents worldwide (*17*).
- Heavy alcohol use increases the risk of cardiovascular disease (*19-24*) and stroke (*25-29*).
- Alcohol consumption during pregnancy is related to various risks to the fetus, which include Fetal Alcohol Spectrum Disorders. Alcohol consumption during pregnancy can also lead to spontaneous abortion, low birth weight and prematurity, and intra-uterine growth retardation (*30-45*).
- Higher volume of alcohol consumption is also associated with depression (*17*).
- Excessive alcohol consumption can severely impair an individual's functioning in social roles such as parent, spouse or partner (*17*).

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Item Rationales for Risk Factors, Continued

Unhealthy diet

- Overall, 2.7 million lives could potentially be saved each year worldwide if fruit and vegetable consumption were increased (*3*).
- 26.7 million (1.8%) DALYs worldwide are attributable to low fruit and vegetable intake (*5*).
- Of the burden attributable to low fruit and vegetable intake, about 85% was from cardiovascular diseases and 15% from cancers (*5*).
- Low intake of fruits and vegetables is estimated to cause about 19% of gastrointestinal cancer, 31% of ischemic heart disease and 11% of stroke worldwide (*5*).
- The consumption of at least 400g of fruit and vegetables per day is recommended as a population intake goal, to prevent diet-related chronic diseases (*46*).
- Adequate consumption of fruit and vegetables reduces the risk for cardio vascular diseases (*46*), stomach cancer (*47*) and colorectal cancer (*46*).
- There is convincing evidence that high intake of high-energy foods such as processed foods high in fats and sugars promote obesity compared to low-energy foods such as fruits and vegetables (*46*).
- Higher unsaturated fatty acids from vegetable sources and polyunsaturated fatty acids have been associated with a reduced risk of type 2 diabetes (*48,49*). Replacement of saturated and trans fatty acids by polyunsaturated vegetable oils lower coronary heart disease risk (*50*).
- Partial hydrogenation to increase the shelf life of poly unsaturated fatty acids creates trans fatty acids (*46*). Trans fatty acids increase the risk of coronary heart disease and render the plasma lipid profile even more atherogenic than saturated fatty acids by elevating LDL cholesterol and decreasing HDL cholesterol (*51*).

Physical inactivity

- Physical inactivity causes about 1.9 million avoidable deaths per year worldwide (*5*).
- Physically inactive persons have a 20% to 30% increased risk of all-cause mortality as compared to those who adhere to 30 minutes of moderate intensity physical activity on most days of the week (*52*).
- Globally, physical inactivity accounts for 21.5% of ischemic heart disease, 11% of ischemic stroke, 14% of diabetes, 16% of colon cancer and 10% of breast cancer (*53*).
- Physical inactivity is a major risk factor in promoting obesity, which itself is a risk factor for other chronic diseases (*52*).
- Physical activity may have a protective effect against development of cognitive impairment and dementia, and reduces severity of symptoms among the depressed (*54-56*).
- Physical activity is associated with the prevention of osteoporosis and related fractures (*52*).

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Overweight and obesity

Some research findings related to overweight and obesity are as follows:

- At least 2.6 million people die each year as a result of being overweight or obese (*3*).
- Overweight and obesity lead to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance. Risks of coronary heart disease, ischemic stroke and type 2 diabetes mellitus increase steadily with increasing BMI (*5*).
- Raised BMI also increases the risks of cancer of the breast, colon, prostate, endometrium, kidney and gall bladder (*5*).
- Mortality rates increase with increasing degrees of overweight, as measured by BMI (*46*).
- To achieve optimum health, the median BMI for an adult population should be in the range of 21 to 23 kg/m^2, while the goal for individuals should be to maintain BMI in the range 18.5 to 24.9 kg/m^2. There is slightly increased risk of co morbidities for BMI 25.0 to 29.9, and moderate to severe risk of co morbidities for BMI greater than 30 (*57*).
- Waist circumference is an approximate index of intra-abdominal fat mass and total body fat. Changes in waist circumference reflect changes in risk factors for cardiovascular disease and other forms of chronic diseases (*46*).
- Waist circumference or waist-to-hip ratio are more powerful determinants of subsequent risk of type 2 diabetes than BMI (*58-62*).

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Item Rationales for Risk Factors, Continued

Raised blood pressure

- Worldwide, raised blood pressure is estimated to cause 7.1 million deaths, about 13% of the total. This accounts for 64.3 million DALYs or 4.4% of the total (*5*).
- Raised blood pressure is a major risk factor for coronary heart disease and ischemic as well as hemorrhagic stroke (*46*).
- Blood pressure levels have been shown to be positively and continuously related to the risk of stroke and coronary heart disease (*63*). The risk of cardiovascular disease doubles for each increment of 20/10 mmHg of blood pressure, starting as low as 115/75 mmHg (*64*).
- Complications of raised blood pressure include heart failure, peripheral vascular disease, renal impairment, fundal hemorrhages, and papillodema (*65*).
- Treating systolic blood pressure and diastolic blood pressure to targets that are less than 140/90 mmHg is associated with a decrease in cardiovascular complications (*63*).
- Stage 1/Grade 1 hypertension, is defined in a clinical setting when the mean blood pressure is equal to or above 140/90 mmHg and less than 160/100 mmHg on two or more measurements on each of two or more visits on separate days (*63-65*).
- Stage 2/Grade 2 hypertension is defined in a clinical setting when the mean blood pressure is equal to or more than 160/100 mmHg and less than 180/110 mmHg on two or more measurements on each of two or more visits on separate days (*63-65*).
- Stage 3/Grade 3 hypertension is defined in a clinical setting when the mean blood pressure is equal to or more than 180/110 mmHg during two or more measurements on each of two or more visits on separate days (*63-65*).

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Item Rationales for Risk Factors, Continued

Raised blood glucose

- It is predicted that there will be at least 366 million people in the world with diabetes by the year 2030 (*66*).
- The excess mortality attributable to diabetes in the year 2000 was estimated to be 2.9 million deaths, equivalent to 5.2% of all deaths. In people 35-64 years old, 6-27% of deaths were attributable to diabetes (*67*).
- Impaired glucose tolerance and impaired fasting glycaemia are risk categories for future development of diabetes and cardiovascular disease (*68*).
- The age-adjusted mortality, mostly due to coronary heart disease in many populations, is 2-4 times higher than in the non-diabetic population (*69*). People with diabetes have a twofold increase risk of stroke (*70*).
- Diabetes is the leading cause of renal failure in many populations in both developed and developing countries (*71*).
- Lower extremity amputations are at least 10 times more common in people with diabetes than in non-diabetic individuals in developed countries, and more than half of all non-traumatic lower limb amputations are due to diabetes (*72*).
- Diabetes is one of the leading causes of visual impairment and blindness in developed countries (*73,74*).
- People with diabetes require at least 2-3 times the health care resources than people who do not have diabetes, and diabetes care accounts for up to 15% of national healthcare budgets (*75,76*).
- There is a long asymptomatic period during which diabetes can be detected (*77,78*).
- Clinical trials have shown that almost two-thirds of type 2 diabetes can be prevented or postponed (*79-81*).

Abnormal blood lipids

- Raised cholesterol is estimated to cause 18% of the global cerebrovascular disease and 56% of global ischemic heart disease. Overall this amounts to about 4.4 million deaths (7.9% of total) and 40.4 million DALYs (2.8% of total) (*5*).
- Raised total cholesterol is a major cause of disease burden in both the developed and developing world as a risk factor for Ischemic heart disease and Stroke (*2*).
- A 10% reduction in serum cholesterol in men aged 40 can result in a 50% reduction in heart disease within 5 years, while an average of 20% reduction in heart disease occurs within 5 years in men aged 70 years (*82*).
- A 4.6% reduction of population mean of total cholesterol had the greatest impact of all risk factors in decreasing CHD mortality in Ireland; a full 30 % reduction in mortality was attributable to this reduction alone (*83*).
- Levels of plasma HDL cholesterol are inversely related to coronary artery disease incidence, and the relationship is independent of total cholesterol, LDL and triglyceride levels (*84*).
- Increased triglycerides is an independent risk factor for coronary heart disease after controlling for LDL and HDL cholesterol (*85*).

WHO STEPS Overview

Introduction

The WHO STEPwise approach to surveillance (STEPS) is the WHO's recommended tool for surveillance of chronic diseases and their risk factors.

It provides an entry point for low and middle income countries to get started on chronic disease surveillance activities. It is also designed to help countries build and strengthen their capacity to conduct surveillance (*6*).

Basis of STEPS

STEPS is a sequential process. It starts with gathering key information on risk factors with a questionnaire, then moves to simple physical measurements and then to more complex collection of blood samples for biochemical analysis.

STEPS emphasizes that small amounts of good quality data are more valuable than large amounts of poor data. It is based on the following two key premises:

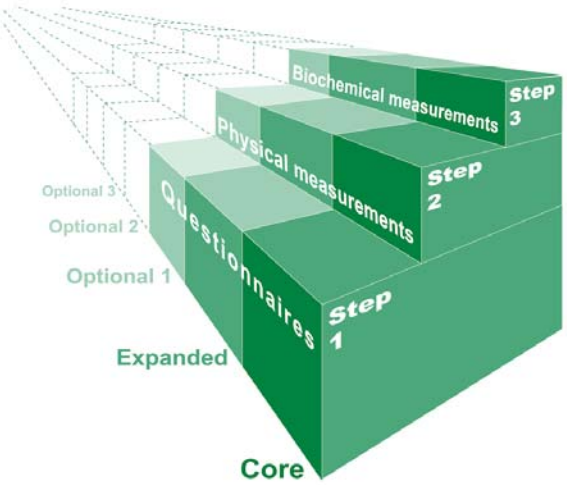
- collection of standardized data
- flexibility for use in a variety of country situations and settings.

Population focus

STEPS uses a representative sample of the study population. This allows for results to be generalized to the population.

STEPS diagram

The following diagram illustrates the general concept of the STEPwise approach:



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WHO STEPS Overview, Continued

STEPS Instrument

The STEPS tool used to collect data and measure chronic disease risk factors is called the **STEPS Instrument**.

The STEPS Instrument covers three different levels, or 'Steps', of risk factor assessment: Step 1, Step 2 and Step 3, as follows:

Step	Description	Purpose	Recommendation
1	Gathering demographic and behavioural information by questionnaire in a household setting.	To obtain core data on: • socio-demographic information • tobacco and alcohol use • nutritional status • physical activity.	All countries/sites should undertake the core items of Step 1.
2	Physical measurements in a household setting.	To build on the core data in Step 1 and determine the proportion of adults that: • are overweight and obese • have raised blood pressure.	Most countries/sites should undertake Step 2.
3	Taking blood samples in a clinic.	To measure prevalence of diabetes or raised blood glucose and abnormal blood lipids.	Only recommended for well- resourced settings.

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Core, expanded and optional items

Within each Step, there are three levels of data collection. These depend on what can realistically be accomplished (financially, logistically and in terms of human and clinical resources) in each country setting.

The core, expanded and optional levels of detail gathered for each Step are briefly described below:

STEPS Core, Expanded, and Optional Items

	Core Items	Expanded Items	Optional Items
Step 1 Behavioural	Basic demographic information, including age, sex, literacy, and highest level of education	Expanded demographic information including years at school, ethnicity, marital status, employment status, household income	Mental health, intentional and unintentional injury and violence, oral health and sexual behaviours
	Tobacco use	Smokeless tobacco use	
	Alcohol consumption	Past 7 days drinking	
	Fruit and vegetable consumption	Oil and fat consumption	
	Physical activity		Objective measure of physical activity behaviour
		History of blood pressure, treatment for raised blood pressure	
		History of diabetes, treatment for diabetes	
Step 2 Physical measurements	Weight and height, waist circumference, blood pressure	Hip circumference	Skin fold thickness, assessment of physical fitness
Step 3 Biochemical measurements	Fasting blood sugar, total cholesterol	HDL-cholesterol and fasting triglycerides	Oral glucose tolerance test, urine examination, salivary cotinine

WHO Recommendations

For countries that are just getting started with chronic disease surveillance, the core and expanded questions and measurements for Steps 1 and 2 are recommended.

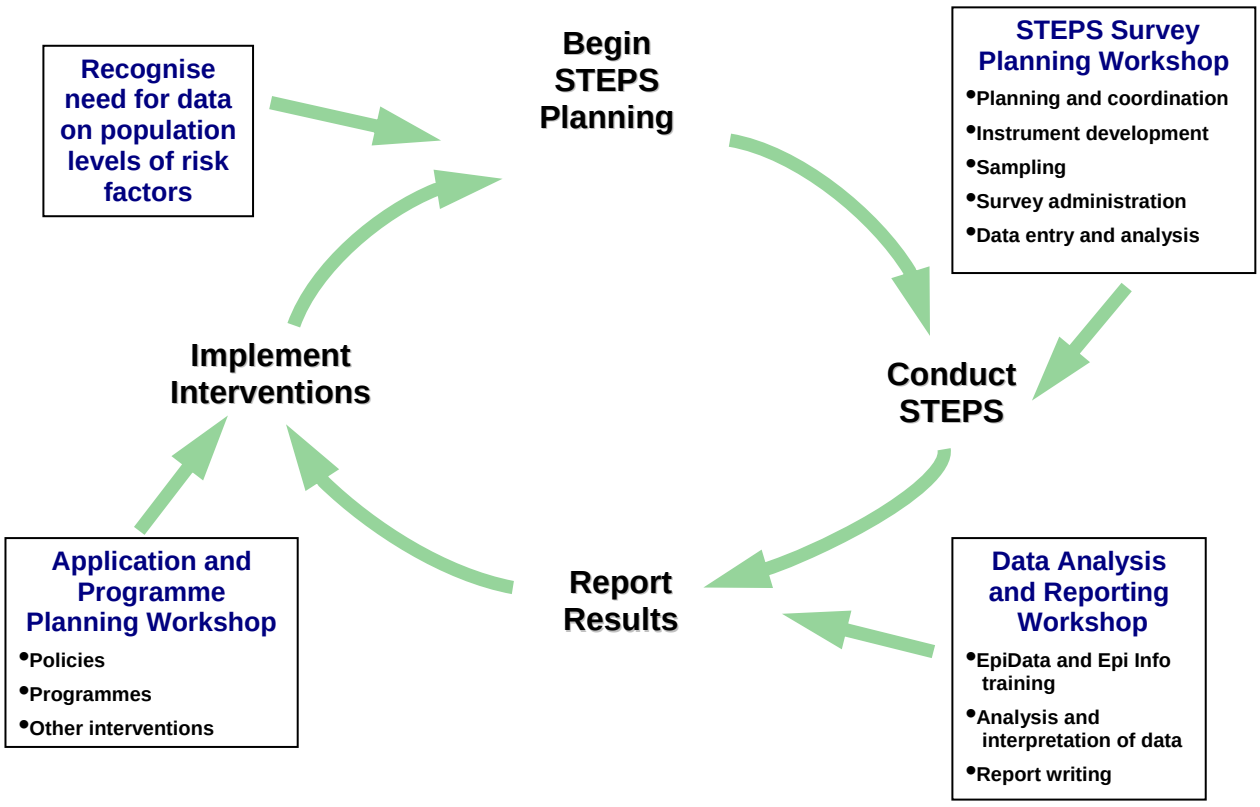
Continued on next page

WHO STEPS Overview, Continued

From surveys to surveillance

While surveys can be a one off exercise, surveillance involves commitment to data collection on an ongoing, repeated basis. Repeat surveys are essential to identify trends in the prevalence of risk factors.

The following diagram illustrates the surveillance process.



Planning and Implementation Overview

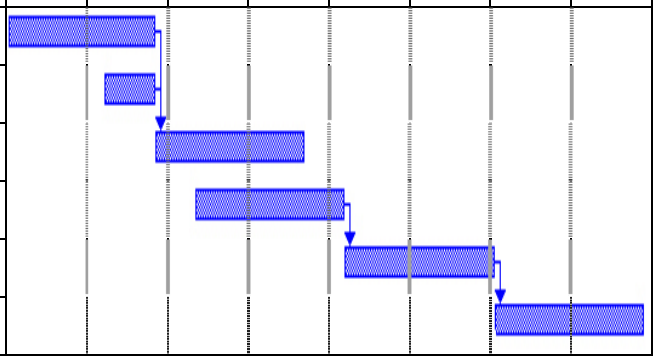
Introduction

For STEPS Surveillance to be effective, the whole process needs to be properly planned and organized before being implemented. Guidelines are provided below to help you plan your STEPS survey.

Key stages, tasks and timeframes

The optimal, recommended total timeframe to conduct a STEPS survey of chronic disease risk factors is approximately six to eight months. This timeframe is based on seasonal considerations and a country's ability to 'second' staff to the STEPS project for longer periods. It is by no means a hard and fast rule, but an indicative guideline.

Task Name	Duration	M1	M2	M3	M4	M5	M6	M7	M8
Planning and Preparations	8 weeks								
Recruitment and Training	2 weeks								
Data Collection	8 weeks								
Data Entry	8 weeks								
Data Analysis	8 weeks								
Reporting and Disseminating Results	8 weeks								



eSTEPS

WHO STEPS now has software and supporting materials to implement STEPS using a Personal Digital Assistant (PDA). This electronic version of STEPS is called eSTEPS. As a PDA-based data collection tool, eSTEPS provides the following benefits:

- immediate error-checking during data collection (e.g. inadvertently skipped questions or out-of-range responses);
- marked reduction of materials to be carried by data collectors (one PDA vs. hundreds of paper instruments);
- no data entry needed
    - no cost for data entry;
    - fewer errors arising from data entry;
    - final dataset can be created quickly following completion of data collection.

While the STEPS Manual has been written with paper-based data collection in mind, much of it still applies for those sites wishing to implement eSTEPS. For these sites, there are two additional documents which will be of particular use as they prepare for data collection and data analysis. These are:

- The eSTEPS Installation Guide
- The eSTEPS User Manual.

Both of these documents are available on the STEPS CD and STEPS website.

Section 2: Roles and Responsibilities

Overview

Introduction

There are a number of entities involved in STEPS surveillance at different levels including:

- country (national or subnational)
- regional
- global.

They all have key roles, which are described below.

Purpose

The purpose of this section is to:

- provide an overview of the relationships between all those involved in a STEPS surveillance study;
- provide a description of each of the core roles involved.

In this section

This section contains information outlining the responsibilities for the following:

Relationships Between Survey Team and WHO

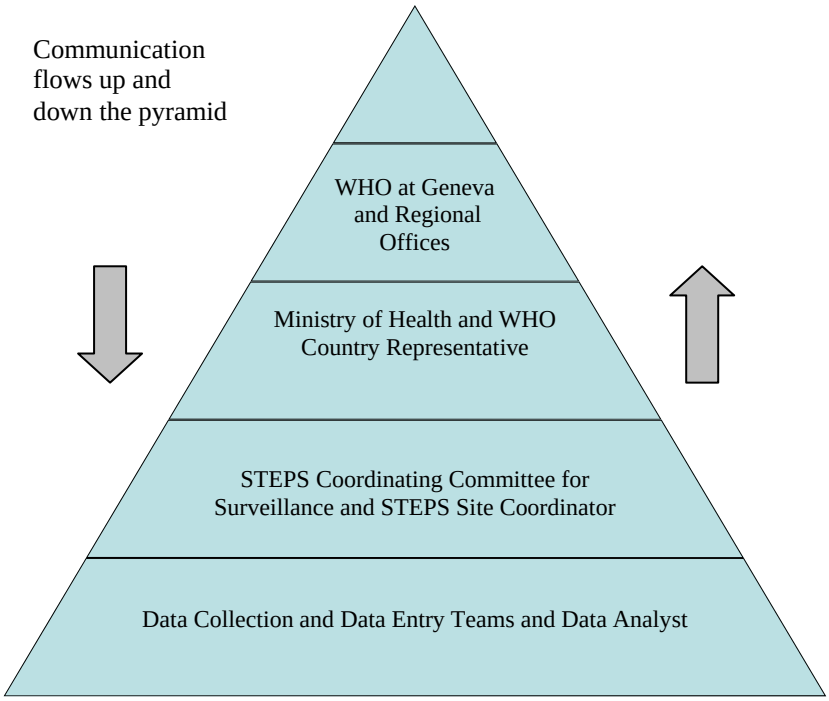
Introduction

The survey team is all those involved in the data collection, entry and analysis processes.

The WHO Geneva STEPS team and the WHO Regional Office provide guidance and support for STEPS Surveillance.

Roles and Relationships

The diagram below shows the lines of communication between all the players in a WHO STEPS Surveillance.



STEPS Site Coordinator

Introduction

The STEPS Site Coordinator is the key person responsible for planning and implementing STEPS.

The STEPS Site Coordinator should be familiar with the entire manual to understand the whole STEPS process.

Skills and attributes

The STEPS Site Coordinator will need to have the following general skills and attributes:

- good written and oral communication skills;
- ability to recruit efficient and motivated staff;
- current knowledge of the Ministry of Health, public health institutions and the personnel involved in STEPS;
- well-organized and efficient planner;
- ability to mobilize multiple teams over a short period to complete data collection;
- ability to chair meetings of the STEPS Coordinating Committee;
- good understanding of the philosophy and objectives of the STEPS risk factor surveillance process.

Level of authority

The STEPS Site Coordinator should have sufficient authority to:

- lead the whole process of STEPS implementation;
- negotiate and obtain resources for survey implementation;
- oversee progress of the national/subnational STEPS implementation plan
- develop partnerships;
- contribute to the disease prevention and health promotion activities that will arise from the data gathered by STEPS.

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STEPS Site Coordinator, Continued

Core roles

The core roles of the STEPS Site Coordinator may include all or some of the following:

Role	Description
1	Liaising with local authorities, the STEPS Coordinating Committee, WHO country representatives and other stakeholders
2	Developing a STEPS implementation plan
3	Planning a STEPS survey
4	Coordinating the set up of a STEPS surveillance site
5	Recruiting and training field staff
6	Supervising the data collection and data entry processes
7	Reporting back results and ensure results are appropriately used
8	Overseeing archiving of files at completion of the project
9	Planning and preparing for future surveys

Note: Information on archiving is available in Part 4, Section 5.

STEPS Coordinating Committee

Introduction

The STEPS Coordinating Committee will most likely be organized within the Ministry or Department of Health (MOH).

In countries where STEPS is nationally representative, a national committee will be established. In others, where STEPS is subnationally representative, a subnational committee will be set up.

Objectives

The main objective of the STEPS Coordinating Committee is to oversee the practical and logistic issues relating to the overall implementation of the STEPwise approach to chronic disease risk factor surveillance (STEPS).

Core roles of the committee

The core roles of the STEPS Coordinating Committee are to:

- support the STEPS Site Coordinator;
- act as an advocacy body for chronic disease surveillance within the country;
- develop national level partnerships with MOH and other stakeholders to enhance the capacity for ongoing chronic disease risk factor surveillance;
- identify and secure local funding and / or "in kind" support;
- oversee the overall implementation of the STEPwise approach to chronic disease risk factor surveillance (STEPS);
- assist in translating the data into policy and programmes;
- ensure the long term sustainability of STEPS surveillance.

Core roles of the chairperson

The STEPS Coordinating Committee chairperson is responsible for chairing meetings of the STEPS Coordinating Committee and for overseeing the practical and logistic issues relating to the overall implementation of the STEPwise approach to chronic disease risk factor surveillance.

This role is usually filled by the STEPS Site Coordinator.

Expertise of members

Members of the STEPS Coordinating Committee should be selected for their expertise in the following areas:

- public health
- epidemiology
- survey statistics
- clinical expertise in chronic diseases
- experience as an advocate for preventing chronic diseases.

Data Collection Team

Introduction

The data collection team undertakes a core function in STEPS Surveillance and includes all those who have been recruited to collect the survey data.

Hiring good interviewers and other field personnel is crucial to successful data collection. The quality of data collection and the survey results depend on the consistency and quality of these workers. Training the staff is therefore a major undertaking.

Data collection supervisor roles

The data collection supervisor may be the same person as the STEPS Site Coordinator.

The core roles of a data collection supervisor are listed in the table below. Specific tasks are identified in Part 2, Section 3; Part 3, Section 1; and Part 4, Section 1.

Role	Description
1	Training field staff
2	Obtaining and managing household lists and maps for each area, or other lists to be used as the sampling frame
3	Informing local authorities about the survey
4	Obtaining necessary venues, supplies and equipment
5	Supervising the interview process and recording daily activities
6	Ensuring data quality
7	Managing human resource performance and issues
8	Sending progress reports to STEPS Site Coordinator or regional focal point
9	Providing completed instruments to data entry supervisor at the end of each day

Skills and attributes

The data collection supervisor should have the following skills and attributes:

- ability to work with teams and motivate people;
- well-organized and efficient in planning STEPS activities;
- ability to mobilize multiple teams over a short period to complete data collection;
- experienced in health population-based surveys;
- good understanding of the philosophy and objectives of the global STEPS risk factor surveillance process.

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Data Collection Team, Continued

Interviewer roles

The interviewers are all those who have been trained to conduct the survey in the household setting using Step 1, and take physical measurements for Step 2 of the STEPS Instrument.

The core roles of an interviewer include:

Role	Description
1	Door knock selected households
2	Brief household members on purpose of the survey
3	Record all eligible participants on the Kish Household Coversheet and select one using the Kish method
4	Record information on the Interview Tracking Form
5	Inform the selected participant using the Participant Information Form and obtain written consent
6	Conduct the interview and record results for Step 1
7	Double check completed Step 1 questions
8	Take measurements and record results for Step 2 (if applicable)
9	Double check completed Step 2 information
10	Fill in Participant Feedback Form on results of Step 2 measurements for the participant
11	Make appointment for Step 3 (if applicable) and inform participant on fasting
12	Check all completed forms and hand to supervisor
13	Report any difficulties to supervisor

Skills and attributes

Interviewers should have the following general skills and attributes:

- good oral and written communication skills
- friendly manner and patience
- good attention to detail.

Clinic health professional's roles

Clinic health professionals are those people recruited to take biochemical measurements in a clinic setting for Step 3 of the STEPS Instrument.

This role does not need health professionals with full medical training. These professionals could be nurse practitioners or medical assistants.

The core roles of a survey clinic health professional include:

Role	Description
1	Checking for appropriate participant consent
2	Taking blood samples from participants and recording results for Step 3
3	Labeling samples and recording Participant Identification Numbers (PIDs)

Continued on next page

Data Collection Team, Continued

Laboratory technicians

Laboratory technicians are the people responsible for analysing the tests taken in the clinic setting for Step 3.

The core roles of a laboratory technician include:

Role	Description
1	Testing samples for glucose and lipids
2	Recording results and passing records on for data entry
3	Identifying out-of-range results for clinical attention
4	Ordering supplies

Note: In rare cases, Step 3 is done within the participants' households. In these cases, the interviewers should be trained to conduct Step 3.

Administrative staff

Administrative staff are required to:

- organize supplies and venues
- print and distribute materials
- organize any publicity for the survey
- send out letters of invitation
- file survey materials in the STEPS coordination office.

Data Entry Team

Introduction

The data entry team includes all those who have been recruited to enter, check, and validate the data gathered by the data collection team.

Supervisor

The data entry supervisor is responsible for planning and organizing staff and workloads to ensure work proceeds smoothly.

The data entry supervisor role may sometimes be filled by the STEPS Site Coordinator or the STEPS data analyst.

The core roles of a data entry supervisor are listed in the table below. Specific tasks are identified in Part 2, Section 4; Part 3, Section 5; and Part 4, Section 2.

Role	Description
1	Training data entry staff
2	Obtaining necessary hardware and software
3	Planning, preparing and setting up the computing environment
4	Supervising the data entry and validation processes
5	Managing human resource performance and data entry team issues
6	Seeking and providing advice on software support
7	Creating master data set
8	Reporting problems or interview errors to the data collection team supervisor

Skills and attributes

Supervisors should have the following skills and attributes:

- ability to lead a team
- systematic work practices
- computer skills and operational experience.

Continued on next page

Data Entry Team, Continued

Data entry staff

The data entry staff are all those who have been recruited to enter, check and validate the data gathered by the survey team.

The core roles of data entry staff are listed in the table below. Specific tasks are identified in Part 4, Section 2.

Role	Description
1	Logging receipt of completed instruments
2	Filing and organising paper copies of instruments
3	Entering survey data
4	Tracking instruments during data entry
5	Identifying errors and resolving problems with supervisor

Skills and attributes

Data entry staff should have the following skills and attributes:

- accurate keyboard (typing) skills;
- computing experience or willingness to learn;
- methodological and tidy work habits;
- clear handwriting;
- ability to follow instructions consistently and to raise concerns when appropriate;
- interact efficiently with others to achieve accurate results.

Statistical Adviser

Introduction

The statistical adviser plays a key role in the sampling and data analysis process. The statistical adviser may be part of the STEPS Coordinating Committee and/or may serve as the data analyst. If a statistical adviser within a site cannot be identified, then the WHO Geneva STEPS team or the WHO Regional Office focal point will be able to advise and assist with this role.

Objectives

The statistical adviser provides an integral role in the sampling and weighting of the survey data. The objective of the adviser is to ensure that a proper sample is selected and that the sample can be weighted to make the results nationally representative.

Expertise of statistical adviser

The statistical adviser should have:

- an advanced degree in statistics
- a special interest in survey statistics
- experience with sampling and weighting data
- an interest in population health statistics
- an ability to discuss concerns and convey advice clearly to the data analyst.

Core roles of statistical adviser

The statistical adviser, under the guidance of the STEPS Coordinating Committee, will be responsible for:

- collecting the sample frame;
- drawing the survey sample;
- reviewing available tracking material and adapting it to the site-specific sample;
- applying weights to survey data;
- providing statistical advice during the analysis and reporting process.

Note: The tracking material is the Interview Tracking Form, available in Part 6, Section 2. The statistical adviser or the supervisor should advise the data collection team on the importance of properly tracking the sample and the impact it has on making the data representative of the target population.

Data Analyst

Introduction

The data analyst should work closely with the STEPS Site Coordinator, the data entry team and the statistical adviser to produce results for inclusion in various STEPS site reports.

Data analyst

A data analyst is someone who has been assigned to undertake the descriptive and statistical analysis of data gathered using the STEPS Instrument.

Core roles

The core roles of the data analyst are listed in the table below. Specific tasks are identified in Part 2, Section 5; Part 3, Section 5 and Part 4, Section 3.

Role	Description
1	Importing dataset, creating database, and data guardianship*
2	Performing any needed cleaning of the dataset
3	Generating derived variables
4	Undertaking exploratory data analysis
5	Undertaking descriptive analyses (e.g. means and proportions)
6	Undertaking additional analyses if needed, under the guidance of the statistical adviser
7	Calculating weights for estimation, under the guidance of the statistical adviser
8	Producing tables and graphs for reports
9	Assisting in report preparation

* It is common that the data analyst becomes the de-facto guardian of the survey data and files.

Attributes and qualifications

It is desirable that the data analyst has some qualifications and experience in data analysis and statistics.

People asked to perform this role should:

- have at least a science or computing background;
- be competent working on a computer;
- be able to understand outputs of means, proportions and confidence intervals.

WHO Offices

Introduction

There are various roles and responsibilities assigned to the WHO offices in Geneva as well as to the WHO offices in the regions and countries. Each entity has a core function, which is described below.

WHO Geneva STEPS team

The WHO Geneva STEPS team works closely with the WHO Regional Offices and provides global coordination for STEPS implementation across the regions.

The WHO Geneva STEPS team is also responsible for supporting training and providing technical support to the STEPS Surveillance sites.

The core roles of the WHO Geneva STEPS team include:

Role	Description
1	Providing training, tools, blood pressure monitoring devices, software, guidance and advice for all aspects of STEPS planning, implementation, analysis and dissemination of data
2	Communicating with the STEPS Regional focal point and with the STEPS Site Coordinator
3	Developing a global strategy in chronic disease risk factor surveillance

WHO Regional Office

WHO Regional Offices are responsible for coordinating the implementation of STEPS in their respective region. The Regional Offices provide ongoing technical support to STEPS sites.

The core roles of the WHO Regional Office include:

Role	Description
1	Selecting a STEPS regional focal point
2	Identifying countries that are ready to implement STEPS
3	Providing overall guidance on planning and coordination of STEPS in their region
4	Funding and delivering STEPS training workshops to those sites
5	Coordinating technical support to sites
6	Coordinating government and agency activities at the regional and international levels
7	Developing a regional strategy in chronic disease prevention and control activities by promoting use of STEPS data

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WHO Offices, Continued

STEPS regional focal point

The STEPS regional focal point is responsible for:

- developing a strategic plan of action that addresses the immediate needs for chronic disease risk factor surveillance;
- liaising between the WHO Geneva STEPS team and STEPS sites;
- suggesting improvements or developments to STEPS materials;
- providing technical support to sites.

WHO country representative

The WHO country representative is the local facilitator, and is responsible for:

- facilitating resource mobilization for chronic disease surveillance;
- serving on the STEPS coordination committee;
- facilitating communications between the STEPS site and the WHO Regional Office.

Note: The WHO country representative does not usually have a technical role.

Additional regional support

This consists of providing additional technical and statistical support to build capacity at the regional and country level. The primary link is through the WHO Geneva STEPS team or Regional Office focal point.

Part 2: Planning and Set Up

Overview

In this Part This Part covers the following topics

Section 1: Planning and Preparing a STEPS Survey

Overview

Introduction

This section covers the tasks that need to be conducted to plan for your STEPS chronic disease risk factor survey.

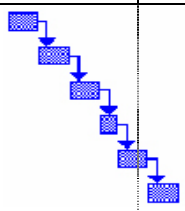
Intended audience

This section is primarily designed to be used by those fulfilling the following roles:

- STEPS Site Coordinator
- STEPS Coordinating Committee.

Tasks and timeframes

The chart below shows the main tasks and indicative timelines covered in this section.

Task Name	Duration	Month 1	Month 2
Develop implementation plan	1 week		
Identify scope of STEPS survey	1 week		
Gain ethical approval	1 week		
Schedule data collection	2 days		
Adapting and translating the STEPS Instrument	1 week		
Pilot test	1 week		

In this section

This section covers the following topics:

The STEPS Implementation Plan

Introduction

You will need to create a detailed STEPS implementation plan for all stakeholders involved in the surveillance process.

Purpose

The purpose of the implementation plan is to:

- outline the scope of the surveillance and desired goals
- identify required resources
- create an action plan
- develop a communication strategy
- provide a well-planned budget as a basis for funding.

Requirement

The content of the implementation plan should be developed using the guidelines in the sections below. Once complete, it should be agreed upon by the Coordinating Committee after wide consultation and discussion, and sent to the WHO Geneva STEPS team for review.

Core topics

The topics that should be covered in the implementation plan and references to appropriate sections in the manual where guidelines can be found are listed in the table below:

Topics	Detail	Reference
Executive Summary	Provide high level summary of main points including: • current situation • goals • scope • resources • budget.	
Current Situation	Specify: • if a risk factor survey has already been conducted in this setting; • the availability of risk factor data in this setting; • if there is an infrastructure (human capacity, equipment, etc.) on which STEPS could be built; • the rationale for conducting chronic disease risk factor surveillance.	Part 1, Section 1

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The STEPS Implementation Plan, Continued

Core topics (cont.)

Topics	Detail	Reference
Goals and Objectives	• Identify planned goals and the use of collected information to: – describe the current levels of chronic disease risk factors in this population; – track the direction and magnitude of risk factor trends; – plan or evaluate a health promotion or preventive campaign; – collect data from which to predict likely future demands for health services. • Specify objectives that support gathering 'essential' information only. • Describe broad timeframes.	Part 2, Section 1
Scope	• Specify the scope of surveillance to be conducted (Step 1, Step 2 and Step 3, plus coverage of core, expanded and optional items). • Specify if future STEPS surveillance can be assured.	Part 2, Section 1
Sampling methods	• Identify the sample size and sample frame that will be used.* • Identify geographical coverage. • Describe sampling design.	Part 2, Section 2
Resources	• Specify required resources in terms of all personnel and equipment required for STEPS surveillance. • Describe resources that have already been committed or which are expected, including support from WHO. • Specify resources expected from other organizations involved.	
Action Plan	Provide a chart of the main tasks, with estimated start dates and timeframes for completion of each phase.	
Communication strategy and publicity	Specify methods for informing and involving community leaders, members of the public, and the media in the STEPS surveillance project to gain commitment and support.	
Reporting and Disseminating Results	Describe to whom and how the results will be reported and disseminated.	Part 4, Section 4

Continued on next page

The STEPS Implementation Plan, Continued

Core topics (cont.)

Topics	Detail	Reference
Budget	Provide a detailed budget that includes: • total funds required for each year planned to implement all STEPS activities as identified in the Scope (including future surveys); • source of funds; • funding gap.	

***** During the planning phase of the survey, it is fundamental to determine the size of the sample as this will impact operational considerations, such as the number of interviewers required. There will have to be a compromise in which the precision requirements of the estimates are weighted against various constraints such as available budget, resources and time.

Implementation plan template

A STEPS Implementation Plan Template can be found in Part 6, Section 1.

Identifying the Scope of the STEPS Survey

Introduction

To develop a STEPS implementation plan, the scope of the STEPS Instrument being covered must be clearly defined.

The WHO STEPwise Instrument

The focus of the WHO STEPwise approach to surveillance of chronic disease risk factors is reflected in the core modules of the STEPS Instrument.

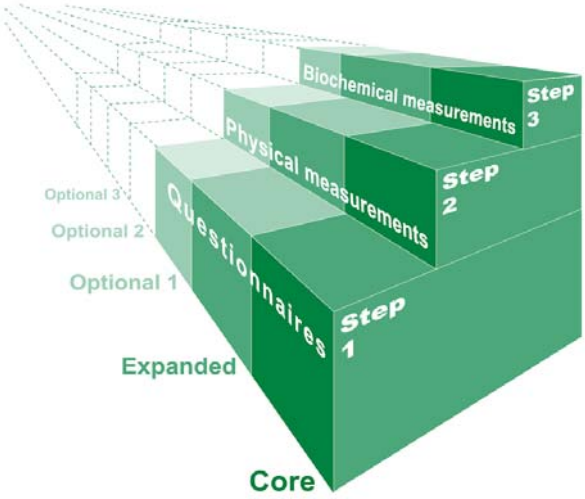
Step 1 core and expanded information will provide basic data on behavioural risk factors. Including Step 2 core and expanded physical measurements will provide useful additional data on excess body fat, raised blood pressure and heart rate.

Including Step 3 biochemical measurements is recommended only in countries that are well resourced, and will provide data on raised blood glucose and cholesterol levels.

Note: The STEPS Instrument can be found in Part 5, Section 1.

STEPS diagram

The diagram below shows each of the Steps.



Note: For guidance on implementing each of the Steps, please refer to the pages that follow. To fully understand each item covered in the STEPS Instrument, please see the Question-by-Question Guide in Part 5, Section 2.

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Identifying the Scope of the STEPS Survey, Continued

Step 1 core questions

All countries should undertake the Step 1 core items. This is an affordable option that will provide basic demographic information and measures of:

- tobacco smoking
- alcohol consumption
- fruit and vegetable consumption
- physical activity.

Step 1 expanded questions

Countries should undertake Step 1 expanded to:

- describe demographic breakdowns (e.g., ethnicity and employment status);
- collect information on ex-smokers and smokeless tobacco (if it is used in your country);
- capture information on drinking with meals and drinking in the past 7 days;
- collect information about oil and fat consumption and meals outside a home;
- capture sedentary behavior;
- describe blood pressure history;
- describe diabetes history.

This level of detail is recommended for most countries/sites.

Step 2 core

Most countries/sites should undertake the Step 2 core items. These are affordable and can be done at the same time as Step 1, using the same data collection staff. Step 2 core will provide measures of:

- height and weight
- waist circumference
- blood pressure.

Step 2 expanded

Countries should undertake Step 2 expanded only if they need to know more about obesity and physical fitness. Step 2 expanded will provide measures of:

- hip circumference
- heart rate.

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Step 3 core

Sites should undertake Step 3 core items only if they are well resourced and have a need to detect the prevalence of diabetes and raised cholesterol. Step 3 core will provide measures of:

- blood glucose
- total cholesterol.

Note: For most countries, the cost of this option makes it not viable to survey all participants. One useful alternative is to conduct Step 3 tests on a sub-sample of the participants.

Step 3 expanded

Sites should undertake Step 3 expanded only if they need to know about abnormal lipid profiles as a risk factor for cardiovascular diseases. Step 3 expanded will provide measures of:

- triglycerides
- HDL cholesterol.

Optional questions

Some sites may wish to go beyond Step 1 and Step 2 core and expanded to describe the prevalence of other specific health problems.

This may be achieved by asking the additional 'optional' questions in Step 1, and taking additional 'optional' measurements in Step 2.

Step 1 and 2 optional

If you want to capture the prevalence of a particular health problem, you can add optional items to Step 1 and Step 2. For example:

If you need to	Then add
Assess a particular health problem, such as prevalence of: • injuries and violence • mental health issues • oral health issues.	Optional questions to Step 1.
Conduct physical measurements of a particular health problem, such as oral health.	Optional measurements to Step 2.
Link the STEPS survey to other population surveys.	Appropriate optional questions.

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Considerations

When countries add additional questions to Step 1 and Step 2 to tailor the Instrument to a local context, the cost of collection, analysis and presentation of the information escalates.

Adding more questions and local information also adds to the burden on participants in the surveys, and thus threatens the level of participation in future surveys in the same population.

Step 3 core generally doubles the cost of the survey.

Note: Data checking and cleaning have been estimated to account for about 20% of the total cost of population surveys.

Choosing a Chemistry Screening Method for Step 3

Introduction

Blood chemistry screening methods are widely used in community-based screening programs and public health surveillance for measurements of:

- glucose
- cholesterol
- triglycerides
- high density lipoproteins (HDL).

Note: This section applies only to those countries undertaking Step 3.

Dry or wet chemistry?

Decide whether dry (blood collection from the fingertip) or wet ('gold standard', laboratory-based drawing of blood samples) chemistry will be used.

Staff, training and clinic equipment will be dependent on the choice.

The table below lists the advantages and disadvantages of both dry and wet chemistry.

Type	Advantages	Disadvantages
Dry	• rapid results available on-site • small sample volumes • no sample transport required • no pre-analytical variables • convenient to participants • viable option for less-resourced and unstable settings.	• operators need good training and supervision • less accurate results as compared to wet methods
Wet	• accurate results • centralized laboratory with trained staff and good internal and external quality control • preferred method for well-resourced settings	• more costly than dry methods

Devices for dry chemistry

The table below lists a selection of dry chemistry devices, along with information on which of the Step 3 measurements they perform. Please note that this selection is just a list of examples. For more information on these and other devices, please contact the WHO Geneva STEPS team.

Device	Measurement
Reflotron Plus	Blood glucose, total cholesterol, triglycerides and HDL cholesterol (*86*)
Accutrend Plus	Blood glucose, total cholesterol, triglycerides and HDL cholesterol (*87*)
HemoCue 201 DM	Blood glucose (*88*)
Accu-Check	Blood glucose (*89*)
Cholestech LDX	Total cholesterol, triglycerides and HDL cholesterol (*90*)

Applying for Ethical Approval

Introduction

Every STEPS survey proposal should undergo technical and ethical review and approval. This is to ensure that the STEPS survey:

- is conducted in a technically and ethically sound manner
- recognizes and protects the rights of participants
- obtains access to information used in the sampling frame.

Process

Ideally, ethical approval should be sought by submission of a proposal and application to a national ethics review committee or other relevant body.

Where no such established process exists, it is recommended that an application for ethical review be prepared and submitted through an ad hoc local mechanism within the Ministry of Health.

Informed consent

Informed consent needs to be obtained from every survey participant before conducting the interviews. See Part 4, Section 1 for more details on gaining informed consent.

Making a submission

Follow the steps below to make a submission.

Step	Action
1	Determine if the ethics committee has a template for proposals which they require researchers to use.
2	Draft a formal submission (See Part 6, Section 1 for guidance on what to include in an ethical clearance submission).
3	Identify and contact the relevant committees, seeking guidance on rules, submission processes and procedures, and committee sitting times.
4	Adapt submission as necessary and submit to the appropriate committee, requesting guidance on expected timeframe for approval.
5	Follow up with the committee to gain clearance.

Note: The STEPS regional focal points and the WHO Geneva STEPS team can provide further advice on making a submission.

Expected timeframes

Preparing and obtaining approval for submissions to ethics committees can take weeks and even months depending on their rules of operation in the site and how often the committees sit.

Timeframes and Data Collection Considerations

Introduction

Data collection should be carefully planned to take place over a defined period of time and within appropriate seasons.

General timeframes

The table below provides a guide to estimated timeframes for each phase in a STEPS survey.

Phase	Suggested timeframes
Planning and scoping	1-2 weeks
Recruitment and training	3-4 weeks
Data collection	8-10 weeks
Data entry	4-6 weeks
Data analysis and reporting	2-4 weeks

Data collection

If possible, you should aim to complete data collection within a period of eight to twelve weeks.

Some key factors to consider when identifying an appropriate time to conduct the survey include:

Factors to consider	Guidelines
Seasons	• Confine the survey period to one season to avoid dietary changes. • Avoid festive seasons (Ramadan, Christmas, and other national holidays). • Avoid rainy seasons where it may be physically difficult to get to individual households. • Avoid seasons when food is in unusually short supply.
Calendar year	Confine the survey period to one calendar year.
Major events	Avoid data collection during periods prior to local, regional or national elections to avoid confusion with political campaigners.
Civil unrest, turmoil, famine, etc.	It is not appropriate to conduct STEPS during times when more pressing matters occupy the minds and lives of the population. Sometimes it may be necessary to defer or cease a STEPS survey because of an intervening event.
Collection timeframe	Keep timeframe as close as possible (within reason) to the recommended timeframe.

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Timeframes and Data Collection Considerations, Continued

Data collection locations

It is recommended that both Step 1 and Step 2 are conducted in household settings.

Step 3 should be conducted in a clinic setting. This is recommended for:

- hygiene standards when taking blood samples
- quality control
- more accurate results.

Number of Staff Required

Data collection staff

Use the following table as a guide to help determine the number of data collection staff required to interview. A final sample size of 4,500 participants was used to determine the numbers in the table below. The numbers may need to be adjusted depending on the final sample size of your survey.

Option	If you conduct	Average number of interviews	Number of interviewers	Number of supervisors
1	• Step 1 core and expanded	6-7	16-20	2-4
2	• Step 1 core and expanded • Step 2 core	4-6	20-24	4-6
3	• Step 1 core and expanded • Step 2 core and expanded	4-6	24-32	6-8
4	• Step 1 core and expanded • Step 2 core and expanded • Step 3 core (and expanded)	4-6	24-32	6-8

Note:

- The average number of interviews represents the number of interviews conducted or measurements taken by one interviewer during an eight hour working day.
- If you increase the size of the survey beyond 4,500, or extend this timeframe for data collection, these indicative numbers would change accordingly.

Data collection teams

Consider the following factors when putting together interview teams:

- Consider allocating between two and four interviewers per team, each assigned to different areas.
- In some sites, you may wish to pair male and female interviewers.
- One supervisor should be responsible for between two and five teams.

Data entry staff

Use the following table to help determine the number of data entry staff required to enter the completed instruments, twice, within an optimal four week period.

Total instruments received per day	Average instruments entered per staff per day	Number of data entry staff	Number of Supervisors
80-100	15-30 (depends on length of site-specific instrument)	8-12	1

Scheduling Data Collection

Introduction	To ensure data collection is completed within the planned 8 to 12 week timeframe, you will need to carefully schedule interviews.
When to schedule data collection	Ideally, as soon as your implementation plan and funding have been approved, the STEPS materials have been translated, and the sample has been drawn, participant lists should be collated and data collection scheduled. Considering the size of this task, however, in practical terms it is recommended that data collection is conducted after the recruitment and training of data collection staff. This way trained interviewers can be used to compile the lists and establish contact with individual households.
Step 1 and Step 2 household settings	In some settings, evenings and weekends are generally preferred for interviewing, especially in urban areas. This needs to be adapted on an individual country basis, as weekends in some countries are not the same days as in others.
Step 3 clinic setting	Schedule participants for blood collection into early morning slots at the clinic. This is because of the fasting requirement.

Adapting the STEPS Instrument

Introduction

Use of a standardized STEPS Instrument enables comparisons both within the country over time and also between countries. However, the degree to which the Instrument can be standardized across cultures or settings can be limited.

When to adapt the Instrument

Adaptations may need to be made to the STEPS Instrument to provide valid data for the surveillance site or to address the needs for information on other risk factors.

The following table provides guidance on when the Instrument can be adapted to local requirements.

Item	If…	Then…	Notes
Terminology	The terms used in some core questions do not fit the cultural setting (e.g. occupations).	Alter the term for local relevance, but ensure the original meaning is retained.	Changing the wording can easily alter the meaning of a question. Seek advice before changing questions.
Additional information	You require additional data on risk (e.g. exposure to indoor smoke) and you have available resources.	Add selective, but limited questions as expanded or optional items.	Inserting them in the middle of the core/expanded sections may alter the meaning of the questions. Insert them where they best fit so that they work with the flow of the other questions.
Link to previous data	You require specific data to link to previous surveys.	Add selective, but limited questions as expanded or optional items.	Insert the questions where they best fit so that they work with the flow of the other questions.
Questions not applicable	Questions asking about a particular health behaviour which are not applicable in your setting, (e.g. alcohol, or smokeless tobacco).	Drop these questions.	Look first at the fact sheet analysis guide and data book to see the impact on removing questions on the analysis.
Presentation	You want the skip instructions to correspond to the question numbers.	Change the skip instructions from the code identifier to the question number.	Only change the skip patterns from the codes to the question number once the questionnaire is finalized.

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Adapting the STEPS Instrument, Continued

Rules

The list below provides some fundamental rules that must be observed when tailoring the STEPS Instrument to create your site-specific instrument.

- Never delete a question or measure from the core sections (unless question is not applicable in your setting).
- Never change the standard coding numbers.
- Place additional questions or measures where they best fit within relevant section as an expanded or optional item.
- Do not place additional questions or measures in between core questions or measures.
- Code all added questions or measures with the letter 'X' plus a number (e.g. X1, X2…).
- Remove from the Instrument the expanded sections and Steps (i.e. 2 and/or 3) that are not being covered by your site.
- Amend the skip instructions if expanded or optional items are added to the any section.
- Review all skip instructions.
- Send a draft of your tailored STEPS Instrument to the WHO Geneva STEPS team for review before finalizing.

Process

The process of adapting the STEPS Instrument involves the following key stages:

Stage	Description
1	Identifying questions that require local adaptation.
2	Adapting wording or adding questions and adjusting skip instructions.
3	Adapting other forms as appropriate.
4	Seeking feedback and advice.
5	Translating and back translating the site-specific instrument.
6	Pilot testing the site-specific instrument.
7	Adapting the data entry templates, data analysis code and reporting templates as appropriate.

Note: Further details on each of these stages are provided in the following pages.

Available support

The WHO Geneva STEPS team is available at all stages of this process for consultation and technical advice. To enable the WHO Geneva STEPS team, to assist with data entry, analyses, and weighting of the data, please ensure that they receive a copy of the Instrument prior to finalization.

Continued on next page

Common questions for adaptation

The table below provides some examples of questions in the STEPS Instrument that most commonly require local adaptation:

Question Code	Standard wording	Guidance for adaptation
C5	What is the highest level of education you have completed?	• The education categories (taken from the World Health Survey) are designed to translate national education programmes into an internationally comparable set of categories. • If you use other categories you should document the definitions and how they relate to those in the Instrument.
C6	What is your [*insert relevant ethnic group/racial group/cultural subgroup/others*] background?	• Insert a list of terms that best define differences in health and health related outcomes in your country, e.g. race, religious, ethnicity, etc. • Base ethnic groups on the census definition.
C8	Which of the following best describes your main work status over the past 12 months?	• Insert categories appropriate to your setting. • Document the list of the new categories and how they relate to the Instrument.
C11	If you don't know the amount, can you give an estimate of the annual household income if I read some options to you? Is it less than… [Insert Quintile Values]?	Insert 20, 40, 60, 80% of average national income distribution obtained from an authentic source (e.g. National Income and Expenditure surveys, etc).
T1	Do you currently smoke any tobacco products, such as cigarettes, cigars or pipes?	Develop a show card that covers all tobacco products used in your country (see example in Part 5, Section 3).

Note: For further guidance and details about each item in the STEPS Instrument, please see the Question-by-Question Guide in Part 5, Section 2.

Skip patterns and question numbers

If the content of the Instrument has been adapted, you will need to review and update all the skip instructions and question numbers to ensure they are accurate.

Note: Currently the skip instructions reflect the codes, but it may be easier for the interviewers to change these to the finalized question numbers.

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Adapting forms, procedures and show cards

Some forms, procedures and show cards may also require tailoring to ensure local relevance.

The table below shows some common adaptations that may be required.

Item	What to adapt (or create)
Show Cards	Adapt (or create) examples used for: • list of work status; • list of tobacco products; • standard drink sizes for alcohol consumption; • local fruit and vegetables with standardized servings; • physical activities. See Part 5, Section 3 for examples.
Interview Tracking Form	May require adjustment according to variations in sampling design.

Note: The Interview Tracking Form needs to be used during the interview process. This form is needed to weight the data during data analysis.

Translating STEPS Documents

Introduction

Many sites will require that the WHO STEPS manual and associated documents are available in more than one language. These materials are to be translated into the language(s) used in the sites by a translator and then back-translated into the original language by a different translator to ensure accurate reproduction of meanings.

Documents to translate

The table below lists some of the documents that may need translating and includes the reference to their location in the manual.

Documents	Manual reference
STEPS Instrument	Part 5, Section 1
Question-by-Question Guide	Part 5, Section 2
Show Cards	Part 5, Section 3
Training and Practical Guides	Part 3
Interview Tracking Form, Clinic Registration Form	Part 6, Section 2
Participant Information Form	Part 6, Section 2
Consent forms	Part 6, Section 2

Purpose

The purpose of translation and back-translation is primarily to produce a locally-understandable site-specific instrument and all supporting documents and that the original intent of the questions is maintained.

This will ensure that all interviewers ask the questions in a standardised way and all STEPS documents are clear and understandable to participants.

Language selection

There may be several recognised languages within a country. In this situation:

- interviewing materials may need to be translated into each of these
- trained translators and interviewers will have to be available.

Notes:

- Check if another country/site has already translated the STEPS Instrument into your local language and is willing to share it.
- Your census office or another government department may help with determining other languages you need to use.

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Translating STEPS Documents, Continued

Translation process

Follow the guidelines below to select appropriate translators and ensure accurate and appropriate translation of the site-specific instrument and all other interviewing materials.

- Initial translation of material should be conducted by at least one translator, ideally a linguistic expert who can explain the terms used and suggest alternatives and has experience in health surveys.
- The instrument must then be back-translated into the original language by another translator to ensure accurate reproduction of meanings.
- Do not use 'interpreters of convenience', such as members of the participant's family or household, the village headman or any other convenient person present, as it may lead to incorrect data being recorded.

Quality standards for translation

Recommended guidelines for translation are listed below.

- Translate the original intent of the questions with the most appropriate equivalent term in the local language.
- Develop an inventory of local expressions used as well as comparisons of expressions in other languages.
- Where there are many dialects and/or languages that are not available in written format, carefully plan specific translation protocols.

Pilot Testing

Introduction

A pilot test of the entire data collection process must be conducted among a limited number of people with a broad range of backgrounds prior to implementing the actual survey. It involves all aspects of the survey including:

- approaching potential participants
- seeking and obtaining informed consent
- making arrangements/appointments for data collection
- site preparation and set-up
- collecting all needed data
- identifying participants who may need follow-up.

Additionally, a pilot test of the entire data entry process must be conducted prior to the actual start of data entry. More information about the data entry pilot test is available in Part 3, Section 5.

When to conduct pilot test

Ideally, the pilot test should be conducted as soon as the translated versions of the site-specific instrument and other interview materials are ready.

In practical terms, however, it is recommended that it be conducted after the recruitment and training of data collection staff so trained interviewers can be used during the pilot. This will ensure interviewer consistency and test interviewer skill prior to the main survey.

Test group

Identify and approach willing participants to be part of the pilot test. The test group should include the following:

- 10 - 20 people
- both men and women
- cover age range used in STEPS
- more than one ethnic group (if appropriate)
- people with differing levels of education
- people from a range of socio-economic groups.

Test environment

Where possible conduct the pilot test under realistic field conditions.

Timeframe

When planning the pilot test, allow sufficient time for adjustments to be made prior to starting data collection.

Continued on next page

Pilot Testing, Continued

Conducting the pilot test

Follow the steps below to conduct the pilot test with each participant.

Step	Action
1	Briefly explain the purpose and aim of STEPS chronic disease risk factor surveillance.
2	Briefly explain the purpose of the pilot test.
3	Get each participant to read and sign the necessary consent forms.
4	Using the site-specific instrument, conduct the interviews and record results.

Feedback

At the end of each interview, ask the participant the following questions and record their feedback:

- Did any of the questions make you feel uncomfortable?
- Did you understand all the words?
- How clear was the intent of the questions?
- Did you know what was being asked?
- How could we make it clearer?
- How else could we improve this survey?

Evaluation and refining the Instrument

On completion of the pilot test:

- compile all participants' comments into a single report;
- where necessary, adapt and refine the instrument - taking care not to change intended meanings;
- send the instrument to WHO Geneva STEPS Team for comments and quality assurance.

Section 2: Preparing the Sample

Overview

Introduction

This section covers the principles, methods, and tasks needed to prepare, design, and select the sample for your STEPS survey.

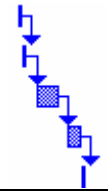
Intended audience

This section is primarily designed to be used by those fulfilling the following roles:

- statistical adviser
- STEPS Site Coordinator
- STEPS Coordinating Committee.

Tasks and timeframes

The sample is prepared as part of the process of planning and preparing the survey. This process should take between two days to one week, depending on the methods chosen and availability of information needed to draw the sample.
The chart below lists the main tasks and timeframes covered in this section.

Task Name	Duration	Month 1
Define target population	1 day	
Determine sample size	1 day	
Identify sample frame and design	1 week	
Select sample participants	3 days	
Document sample selection	1 day	

In this section

This section covers the following topics:

Sampling Guidelines

Introduction

High quality survey techniques can provide a good picture of risk factors for chronic diseases in a population by using a sample of that population. This is achieved by scientifically selecting the sample from the population. The sample will represent the entire target population if the sample is drawn correctly (*91*). High standards of sample design and selection are essential to achieve valuable and useful results from STEPS.

Reflecting the scope of your survey in your sample

To achieve a sample that reflects the scope of the survey you need to:

- define a target population;
- scientifically select a sample of the population that is representative of the target population;
- plan ahead for reporting of survey results by sex and desired age groups.

Define the target population

Each site needs to define the target population for their STEPS Survey. To define your population you need to take into account the purpose and use of the survey data. For example, do you need the survey to be representative of the entire population or a specific region?

It is recommended that the target population for STEPS chronic disease risk factor surveillance be at minimum all adults aged 25 to 64 residing in the survey area. The age range may be expanded to include additional age groups, but it is not recommended to have a smaller age range.

Sample population

The sample population is a scientifically selected subset of the target population. Once you have defined the target population you select your sample of participants within the target population.

Estimates for age-sex groups

The prevalence of most chronic disease risk factors tends to increase with age and vary by sex. Therefore it is recommended that survey results include estimates for specific age groups for each sex, in addition to the total survey population estimates, in order to provide a more nuanced picture of the prevalence of chronic disease risk factors in your target population.

To ensure that precise estimates for each age-sex group can be calculated from the survey data, the total number of age-sex groups must be taken into consideration when calculating the sample size. Reporting estimates for a greater number of age groups will require a larger sample size. While the recommended size of the age groups is 10 years (i.e. 25-34, 35-44, etc.), 20 year age groups may be used if resources are limited. If resources are extremely limited, estimates may be obtained only for the entire age span of the survey (e.g. 25-64). The next topic includes instructions for how to incorporate the total number of desired estimates into the calculation for sample size.

Determining the Sample Size

Introduction

In order to ensure a sufficient level of precision of the survey results, an adequate sample must be drawn from the target population. To calculate the sample size needed, the following factors must be taken into consideration:

- desired level of confidence of the survey results
- acceptable margin of error of the survey results
- design effect of the sampling methodology
- estimated baseline levels of the behaviours or indicators we want to measure.

Additionally, the sample size must be adjusted for:

- number of age-sex estimates
- anticipated non-response.

Helpful Terminology

The following table provides a brief description of several key statistical terms. It is important to develop a good understanding of this terminology before proceeding to calculate the sample size.

Term	Description
Sample Mean / Prevalence	The estimated mean or prevalence of a given population parameter (e.g. mean number of days fruit was consumed in a given week) that is calculated from the survey data.
Population Mean / Prevalence	The true mean or prevalence of a given parameter for the entire target population. The sample mean is an estimate of the population mean.
Confidence Intervals	A range of values around the sample mean or prevalence in which the population mean or prevalence is likely to fall. For example, a 95% confidence interval indicates that for 95 out of 100 surveys, the population mean would fall into this range of values around the sample mean.

Continued on next page

Determining the Sample Size, Continued

Variables used for calculating sample size

The table below provides a description of the variables used in calculating the sample size as well as the recommended values for each variable.

Variable	Description	Recommended Value
Level of Confidence	• Probability value that is associated with a given confidence interval. • Describes the level of uncertainty in the sample mean or prevalence as an estimate of the population mean or prevalence. • The higher the level of confidence, the larger the sample size needed.	• **1.96** • **Note:** 1.96 is the probability value associated with a 95% confidence interval.
Margin of Error	• The expected half-width of the confidence interval. • The smaller the margin of error, the larger the sample size needed.	• **0.05** • **Note:** If the estimated baseline levels of the behaviours or indicators you wish to measure is very low (e.g. <0.10), then the Margin of Error should be decreased to 0.02 or smaller.
Design Effect (Deff)	• Describes the loss of sampling efficiency due to using a complex sample design. • The design effect for a simple random sample is 1.00. Sample designs more complex than a simple random sample require a larger sample to achieve the same level of precision in survey results as a simple random sample. Thus the design effect increases as the sample design becomes more complex.	• **1.50** • **Note:** The value 1.50 is recommended for **most** STEPS surveys with complex sample designs. If design effect information is available from previous national surveys of a similar design to the proposed STEPS survey, it is recommended to use the previous estimates for design effect.
Estimated baseline levels of the behaviours or indicators we want to measure	• The estimated prevalence of the risk factors within the target population. • Values closest to 50% are the **most** conservative, requiring the largest sample size.	• **0.50**, if no previous data are available on the target population. • **The value closest to 0.50**, if previous data is available on the target population.

Equation for calculating sample size

The equation for calculating sample size is as follows:

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

where:

- Z = level of confidence
- P = baseline level of the indicators
- e = margin of error

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Determining the Sample Size, Continued

Example calculation

Using the above recommendations for each variable, the **initial** calculation for sample size would be:

$$n = 1.96^2 \frac{0.5\ (1\text{-}0.5)}{0.05^2} = \mathbf{384}$$

However, this number **must** be adjusted to account for the design effect of the sample design, the number of age-sex estimates to be reported, and the anticipated non-response.

Adjusting for design effect

To adjust for the design effect of the sample design simply **multiply** the sample size by the design effect. For more information on choosing the sample design for your survey, see page 2-2-12.

Adjusting for number of age-sex estimates

As discussed previously, it is recommended that survey results be reported separately for specific age groups for each sex. In order to have an adequate level of precision for each age-sex estimate, the sample size must be **multiplied** by the number of age-sex groups for which estimates will be reported.

The number of age-sex estimates will vary according to the target age range of the survey and the resources available for the survey. For surveys covering the age range of 25-64, the recommended number of age-sex estimates is **8**, or 4 10-year age groups per sex. However, if resources are limited the number of age-sex estimates can be reduced to 4 (e.g. 20-year age groups for each sex) or 2 (e.g. 40-year age groups for each sex).

If the age range of your survey extends beyond the recommended 25-64, the total number of age-sex estimates may need to be adjusted accordingly. For example, if the age range of 15-24 were also to be included in the survey and 10-year age-sex estimates are desired, the total number of age-sex estimates would be 10.

Adjusting for anticipated non-response

To adjust for anticipated non-response **divide** by the anticipated **response rate.**

A non-response rate of 20% is the recommended rate to anticipate. This is a conservative estimate based on response rates of previous STEPS surveys. If response rates have been consistently higher at your site for similar household surveys, a less conservative (i.e. smaller) non-response rate may be used, such as 10%.

Example: For an anticipated non-response rate of 20%, divide the sample size by 0.80.

Continued on next page

Determining the Sample Size, Continued

Summary of sample size calculation

The table below provides a summary of the above steps to calculate sample size.

Step	Description
1	Determine the value of all variables needed to calculate sample size.
2	Use the level of confidence, margin of error, and baseline level of the indicators in the above equation to get an initial estimate for *n* (sample size).
3	Multiply *n* by the design effect and by the number of age-sex estimates.
4	Divide the result from step 3 by the anticipated response rate to attain the final sample size.

Sample Size Calculation Example 1

In this example, the recommended values for all parameters of the sample size equation will be used. Thus, the initial calculation proceeds as follows:

$$n = 1.96^2 * \frac{0.5\ (1\text{-}0.5)}{0.05^2} = 384$$

This initial *n* is then multiplied by the design effect of 1.5 and the 8 age-sex estimates desired for the survey results:
$n = 384 * 1.5 * 8 = 4{,}608$

Finally, *n* is divided by 0.80 to adjust for the anticipated 20% non-response rate:
$n = 4{,}608 \div 0.80 = 5{,}760$

5,760 is the final sample size.

Sample Size Calculation Example 2

In this example, the recommended values for all parameters of the sample size equation will be used and the initial calculation proceeds just as in the previous example:

$$n = 1.96^2 * \frac{0.5\ (1\text{-}0.5)}{0.05^2} = 384$$

However, in this example the estimates will only be reported for 20-year age groups for each sex as the sample size required for 10-year age groups is too large for the resources available. Thus, the initial *n* is then multiplied by the design effect of 1.5 and 4 age-sex estimates desired for the survey results:
$n = 384 * 1.5 * 4 = 2{,}304$

Finally, *n* is divided by 0.80 to adjust for the anticipated 20% non-response rate:
$n = 2{,}304 \div 0.80 = 2{,}880$

2,880 is the final sample size.

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Determining the Sample Size, Continued

Sampling very small populations

When the target population is very small (appx. <50,000 people) the sample size can be reduced using a Finite Population Correction (FPC). The steps below describe how to check if the FPC is appropriate for your site and how to apply it to reduce your sample size.

<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>1</td><td>Complete only steps 1 and 2 in the preceding table to obtain the n for each estimate.</td></tr>
<tr><td>2</td><td>Calculate the target population size for each estimate using available census data or a similar reliable data source.

Example: If 8 10-year age-sex groups will be the estimates, the number of individuals in each age-sex group (e.g. number of males aged 25-34) must be calculated.</td></tr>
<tr><td>3</td><td>The FPC should only be applied when the sample to be drawn represents more than 10% of the target population. Thus for each estimate the n calculated in Step 1 must be divided by the target population size for that estimate to check to see if the FPC can be applied.

Example: n has been calculated as 384. Eight 10-year age-sex estimates are desired. The table below shows the data collected for the first four estimates.
<table>
<tr><th>Desired Estimates</th><th>Target Population Size</th></tr>
<tr><td>Males, 25-34</td><td>2548</td></tr>
<tr><td>Females, 25-34</td><td>2641</td></tr>
<tr><td>Males, 35-44</td><td>3465</td></tr>
<tr><td>Females, 35-44</td><td>3356</td></tr>
</table>
Divide n by the target population for each estimate:
384/2548 = 0.15
384/2641 = 0.15
384/3465 = 0.11
384/3356 = 0.11</td></tr>
<tr><td>4</td><td>If most or all of the quotients from step 3 are 0.10 or higher, then the FPC can be applied (continue to next step). Otherwise, return to step 3 in the preceding table and continue to calculate the total sample size using the n already calculated.</td></tr>
<tr><td>5</td><td>Apply the FPC to the n for each estimate using the following equation:

$\text{new } n = \frac{n}{1 + \frac{n}{population}}$

where "population" refers to the target population for a given estimate, not the entire target population.</td></tr>
</table>

Continued on next page

Determining the Sample Size, Continued

Sampling very small populations (cont.)

Step	Description
6	Sum all the "new *n*'s" together and multiply the sum by the design effect.
7	Divide the result from step 6 by the anticipated response rate to attain the final sample size.

Further modifications to sample size

There are a variety of situations which may require an adjustment to the sample size resulting from the calculations above. The table below describes some of these situations with directions on how to adjust the sample size. If you do not see your situation listed here or if any other additional assistance is required, please contact the STEPS team.

<table>
<tr><th>If …</th><th>Then …</th></tr>
<tr><td>Data for specific subgroups are required (e.g. ethnic groups, urban vs. rural dwellers).</td><td>There are two ways to proceed depending on the information desired:
<table>
<tr><th>If …</th><th>Then …</th></tr>
<tr><td>Data will only be reported for all individuals in each subgroup.</td><td>Set the number of estimates to the larger of:
• the number of age-sex estimates desired
• the number of new subgroups.</td></tr>
<tr><td>Data will be reported for each age-sex group within each subgroup.</td><td>Multiply the number of age-sex groups by the total number of new subgroups (e.g. total number of ethnic groups) to determine the total number of estimates.</td></tr>
</table>
Note: It is important to take these subgroups into mind when allocating the sample to ensure a sufficient number of participants can be drawn from each subgroup (see next topic).</td></tr>
<tr><td>Oversampling is desired for very small sub-populations.</td><td>Increase the overall n by increasing the n for the specific estimate(s) by 10%.</td></tr>
<tr><td>Oversampling is desired for specific sub-populations with higher than average non-response.</td><td>Increase the overall n by increasing the n for the specific estimate(s) by 10 to 20%.</td></tr>
</table>

Continued on next page

Further modifications to sample size (cont.)

If …	Then …
Oversampling of the 55-64 age group is desired because obtaining sufficient numbers of respondents from this age group is expected to be difficult due to high non-response and/or small size of this sub-population.	**Increase** the overall *n* by increasing the specific estimates for males and females in this age group by 10 to 20%. See the discussion of the Kish Method, beginning on p. 2-2-24, for specific instructions for oversampling 55-64 year olds within households.

Note: If oversampling is desired, adjustments usually must also be made when allocating the sample (see next topic). Often in addition to increasing the sample size, the sample allocation must take into consideration the location of hard-to-reach groups and allocate a greater proportion of the sample to these areas.

Sample Size Calculator

There is an Excel workbook, sample_size_calculator.xls, that can assist you in the calculations needed to determine the sample size for your survey. It is available on the STEPS CD and STEPS website. The calculator allows you to adjust all variables discussed here and also provides assistance in determining whether the Finite Population Correction (FPC) is applicable to your survey and, if so, how to correctly apply the FPC.

Smaller sample sizes

If the sample size calculations result in a sample size too large for the resources available, consider reducing the number of age-sex estimates desired for your results. Reducing the age-sex estimates from 10-year age groups to 20-year age groups can significantly reduce the sample size required for your survey.

An additional means to save costs is to only conduct Step 3 on a subsample of the participants for Steps 1 and 2. However, this will reduce the precision of the population estimates and smaller age ranges should be used in reporting Step 3 results. If subsampling for Step 3 is done, a minimum of 20% of the total sample size should be targeted for Step 3.

Identifying the Sampling Frame

Introduction

A sampling frame is a list of units or elements that defines the target population. It is from this list that the sample is drawn. A sampling frame is essential for any survey.

Finding available sampling frames

To identify available sampling frames and determine which is best for your site, search for updated lists, databases, registers or other sources that give good coverage of the population you wish to survey. For example, look for population registers or census lists.

Various government departments and national bodies should be consulted to establish what frames exist in your country and, if suitable, whether they may be accessed for STEPS.

Enumeration areas (EAs)

Most often the sampling frame will use enumeration areas (EAs) which are small- to medium-sized geographic areas that have been defined in a previous census. Most countries have this information and it is usually preferable to incorporate this into the sampling frame.

Factors to consider

A sampling frame, or a collection of them, should cover all of the population in the surveyed site. Good coverage means that every eligible person in the population has a chance of being included in the survey sample.

Representativeness for all sub-populations should be considered when deciding which frame(s) to use. You need to watch out for the possibility that particular age, gender or ethnic groups or geographical areas are more or less likely to be included in the sampling frame. Bias will occur if there is poorer coverage for some groups.

Multiple Sampling Frames

Due to logistical and financial limitations, most national surveys employ multi-stage sampling, which is discussed in detail in the following topic. A multi-stage sample design will require a sampling frame for each stage of sampling.

Continued on next page

Identifying the Sampling Frame, Continued

Features of a good sampling frame

Some features of a good sampling frame are:

- it does not contain duplicates, or if present they can easily be identified and removed;
- it does not contain blanks, such as empty houses or a deceased individual;
- it contains information enabling all units to be distinguished from all others and to be easily located (e.g. a complete street address);
- at minimum, it contains information about the number of households or total number of individuals;
- it could be made accessible to the STEPS team within a reasonable timeframe and at no large expense.

Note: Sampling frames must be assessed for all the above features, but particularly for **completeness** and **potential bias**.

Choosing the Sample Design

Introduction

The selection of the sample design is highly dependent on a variety of factors, most importantly the size of the population, the geography of the area to be covered, and the resources available for the survey. All factors must be kept in mind in selecting the sample design for the survey.

Stratification

Stratification is the process of dividing the sampling frame into mutually exclusive subgroups or strata. The sample is then drawn either proportionately or disproportionately from **all** strata. How the target population is stratified depends on the information that is available for the sampling frame and the information that is desired from the survey results.

Strata are often based on the physical location of the sampling units. Some examples of these types of strata are:

- enumeration areas (EAs) or other well-defined geographic regions
- urban vs. rural areas.

Less often, strata are based on the characteristics of the individuals in the sampling frame. This is less common in large national surveys due to a lack of precise data on all individuals in the target population and the difficulties of developing sampling frames for each strata. Some examples of these types of strata are:

- ethnicity
- socioeconomic status
- gender.

Stratification is not required but is recommended for the following reasons:

- increased precision of survey estimates
- guaranteed coverage of all strata
- administrative convenience.

Stratification can be applied in conjunction with other sampling strategies. This section discusses simple random sampling and multi-stage cluster sampling, both of which can be used along with stratification, as described later in this topic.

Stratification and sample allocation

If the decision has been made to stratify the population, it must then be decided whether to sample proportionately from all strata or to sample a larger proportion of individuals from some strata and a smaller proportion of individuals from other strata (disproportional allocation).

Continued on next page

Stratification and sample allocation (cont.)

Proportional allocation means sampling the same proportion of individuals from each strata so that the resulting sample is distributed across the strata similarly to the underlying target population. This type of sample allocation is the appropriate method for surveys which will only be reporting data for all strata combined.

Disproportional allocation means sampling some strata at a higher rate than other strata. Often this is implemented by drawing an equal sized sample from each strata. This type of sample allocation is appropriate when survey results are desired for each individual strata. In this situation, a larger sample size is usually required to ensure adequate precision in the strata-specific estimates. The primary drawback to this method is a loss of sampling efficiency for the estimates for all strata combined.

Note: In some cases where very small strata exist, proportional allocation may be done but oversampling may be required for the very small strata.

Proportional Allocation Example

Because proportional allocation is more likely to be used for a STEPS survey, an example is provided here.

In this example, the sample size has been calculated to be 3,000. The target population has been divided into the 4 government districts of the country. These districts will serve as strata. The target population within each strata has been listed in the table below along with the proportion each comprises of the total target population.

Strata	Target Pop.	Proportion of Pop.
District 1	25,955	0.24
District 2	30,568	0.28
District 3	32,578	0.30
District 4	19,054	0.18
Total	108,155	1.00

= 25,955 ÷108,155

To compute the number of individuals from the total sample to be drawn from each strata, multiply the total sample size by the proportion for each strata.

Strata	Target Pop.	Proportion of Pop.	Sample
District 1	25,955	0.24	720
District 2	30,568	0.28	840
District 3	32,578	0.30	900
District 4	19,054	0.18	540
Total	108,155	1.00	3,000

= 0.24 x 3,000

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Simple random sampling

In a small number of settings simple random sampling may be feasible. For household surveys, the following characteristics generally should be met:

- small target population;
- small survey area, the entirety of which can be covered by the resources available;
- detailed sampling frame is available, listing, at minimum, all households in the survey area, or, at best, all eligible individuals in the survey area.

Simple random sampling can be combined with stratification. In stratified random sampling, the population is first stratified and then a random sample is drawn from each strata.

Note: If simple or stratified random sampling is deemed to be feasible at your site, a smaller sample size can be used. In the calculation for sample size a design effect of 1 should be used.

Multi-stage cluster sampling

Multi-stage cluster sampling is one of the most common sample designs for national surveys and it is the recommended method for most STEPS surveys.

"Multi-stage" indicates that sampling is done in several steps. First larger sampling units are selected then smaller sampling units are selected within the selected larger units. "Cluster" refers to the fact that the sampling units are subdivided into mutually-exclusive clusters and, unlike stratification, only a **sample** of these clusters is selected for the survey.

Why use multi-stage cluster sampling?

The table below highlights two primary reasons for using multi-stage cluster sampling. These are very common problems in national surveys that can be overcome with the use of multi-stage cluster sampling.

Problem	Solution
Detailed information does not exist for all households or individuals in the sample population and it is not feasible to create a detailed sampling frame for the entire survey area.	Multi-stage cluster sampling allows for the selection of larger sampling units (e.g. villages) that require less detailed information about the target population. It is only at the final stage of sampling (most often the selection of households) that detailed information needs to be available. However, because only a selection of clusters will be chosen at each stage of sampling, the detailed sampling frames are only needed for a subset of the entire target population.

Continued on next page

Why use multi-stage cluster sampling? (cont.)

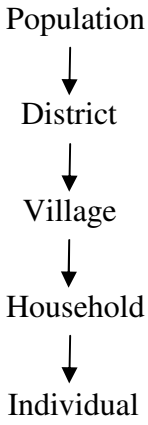
Problem	Solution
The survey area is too large and/or travel costs are too high to draw a sample from the entire country or all regions of interest.	Because the sample is only drawn from selected clusters, multi-stage cluster sampling allows for a reduced area to be surveyed while maintaining a sample that is nationally (or subnationally) representative. **Note:** Using multi-stage cluster sampling does not *guarantee* a representative sample. If done incorrectly, it will not result in a representative sample. The design of the clusters and the selection of clusters at every stage must be done carefully and consistently and must be documented in detail.

Preparing a Multi-stage Cluster Sample

In order to implement multi-stage cluster sampling, the population must be divided into clusters, each of which contain either a number of smaller clusters or, at the final stage, households or individuals.

The flowchart to the right is one example of the multiple sampling stages that could be defined for a site.

Most often the first stage uses enumeration areas (EAs) from census information. The intermediary stages, if any, may be comprised of existing geopolitical units (e.g. villages) or artificially-created units (e.g. a specified collection of city blocks).



Important: The number of sampling units at the initial stage must be fairly numerous (i.e. >100) so at least 50-100 of them can be selected. Selecting a smaller number of sampling units at the initial stage of sampling results in more clustered data and a loss of precision in survey estimates.

A sampling frame will need to be constructed for all clusters in the first stage of sampling. At minimum these sampling frames must contain the total number of households or total number of target individuals in the cluster.

Sampling frames will only be needed for **selected** clusters at all subsequent stages of sampling, with detailed information (i.e. lists of households or eligible individuals) only needed for the sampling frames for the last stage of sampling.

Continued on next page

Multi-stage Cluster Sampling Terminology

The table below describes some key terminology for multi-stage cluster sampling.

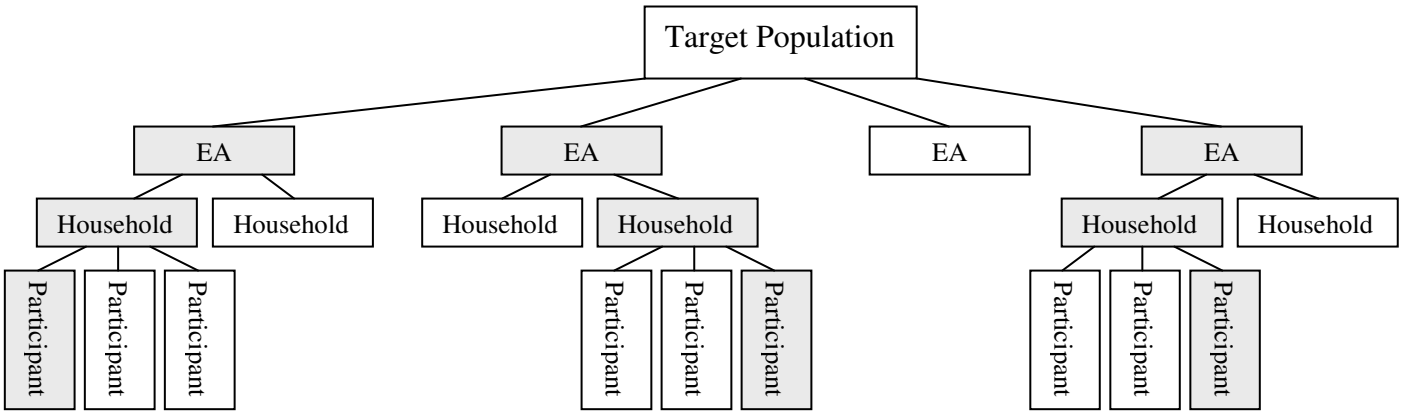
Term	Definition
Primary Sampling Unit (PSU)	These are the clusters that are selected first. Most often the PSUs are enumeration areas (EAs) from a recent census.
Secondary Sampling Unit (SSU)	The clusters that are selected second, separately within each selected PSU.
Tertiary Sampling Unit (TSU)	The clusters that are selected third, separately within each selected SSU.

The list of terms could be extended to describe more levels of sampling as needed.

Example 1

In the following example, there are three stages of sampling. EAs are serving as the PSUs. For each selected PSU, a sampling frame was created comprised of a list of households in the EA. Households were then selected within each PSU and then one participant was selected within each household.

Shaded boxes indicate that the cluster or participant was selected.



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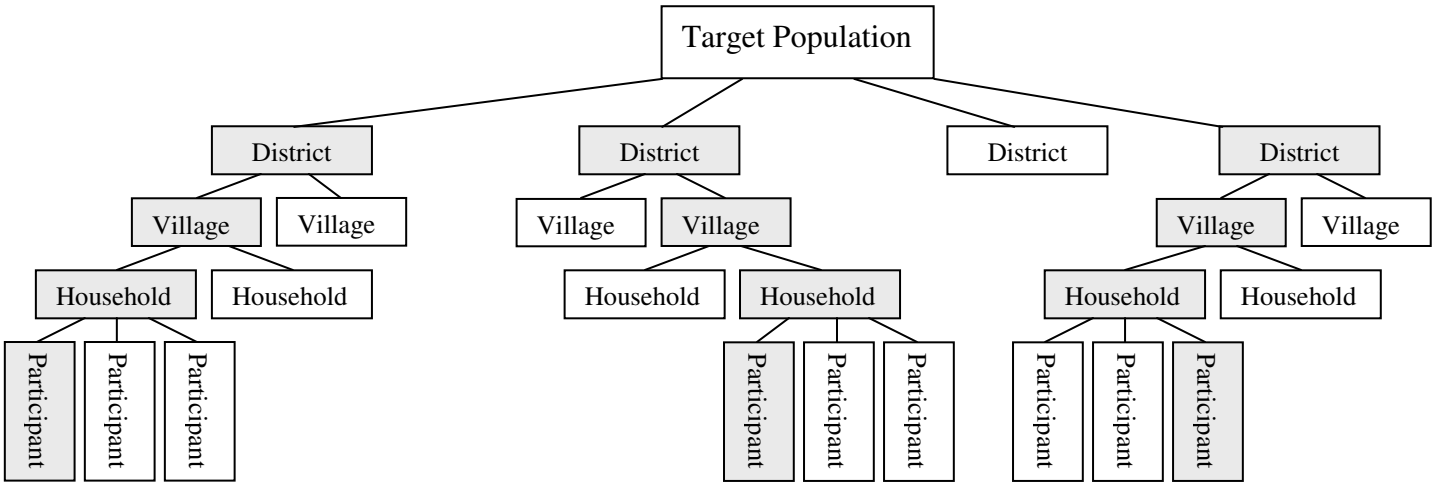
Example 2

In this example, there are four stages of sampling. Districts are serving as the PSUs. For each selected PSU, a sampling frame was created comprised of a list of all villages (the SSUs) with the target population of each village. For each selected village, a sampling frame was also created, comprised of a list of all households in the village. If a detailed list of all eligible individuals were available for any selected village, this list could be used in place of the household list and selection could proceed directly from the village level to the participant level.

Shaded boxes indicate that the cluster or participant was selected.



Qualities of a Good Multi-stage Cluster Design

One very important check to perform on the multi-stage cluster design is that every individual in the target population is included in only one sampling unit per stage. This means that the clusters at each level of sampling must cover the entire target population and be mutually exclusive (non-overlapping).

Additionally, it is important to check the characteristics of the PSUs. The first two items in the table below can be used to check the SSUs, TSUs, etc. as well, but given the nature of multi-stage cluster designs, these checks are most critical for the PSUs.

If …	Then …
PSUs exist that are very small.	Combine these PSUs with a neighboring PSU before selecting the sample.
PSUs exist that are very large.	Split these PSUs into two or more smaller PSUs that are more similar in size to other PSUs.
Total number of PSUs is small (i.e. <100).	Begin sampling at the SSU level (the SSUs would then become PSUs) or subdivide the existing PSUs to ensure that at least 50-100 PSUs can be selected.

Continued on next page

Sample Allocation and Multi-stage Cluster Design

Once the sampling units to be used for PSUs, SSUs, etc. have been determined, the allocation of the sample must be decided. That is, the total number of PSUs to be selected, the total number of SSUs to be selected per PSU, etc. must be determined.

The table below describes the steps to take to determine how to allocate the sample.

Step	Description
1	Calculate the total sample size.
2	Assess the resources available and determine the total number of PSUs to be sampled, keeping in mind that at least 50 to 100 PSUs should be selected.
3	Divide the total sample size by the number of PSUs to be sampled to determine the number of individuals to be sampled per PSU.
4	Continue subdividing the sample size at each stage of sampling according to the number of sampling units to be selected at each stage.

Note: As stated previously, stratification can be combined with a multi-stage cluster design. The total number of PSUs would be allocated proportionately or disproportionately (depending on the requirements of the survey results) across all strata and sample allocation would continue within each strata following the steps above.

Example

For this example, assume that the total sample size has been calculated to be 3,200 individuals. It has also been decided that regions will serve as PSUs, villages will serve as SSUs, and then households will be selected in each village. Resources will allow for 80 PSUs to be selected, meaning that 40 (= 3200/80) individuals will be selected per PSU.

There is some flexibility in how the 40 individuals per PSU are allocated. At this point it would be worthwhile to consider a few scenarios and select the one that is feasible yet provides a good distribution of individuals across the PSU (i.e. not too many or two few of the 40 individuals drawn from a given village). Two scenarios are presented below:

Continued on next page

Example (cont.)

Scenario	Description
1	10 individuals will be selected per village, meaning that 4 villages (= 40/10) must be selected per PSU. Sample allocation: 80 regions x 4 villages/region x 10 individuals/village = 3200
2	5 individuals will be selected per village, meaning that 8 villages (= 40/5) must be selected per PSU. Sample allocation: 80 regions x 8 villages/region x 5 individuals/village = 3200

In terms of resources, the key difference between the above scenarios is the number of villages that would need to be visited within each PSU. This number will likely be a deciding factor in the allocation of the sample, keeping in mind that having a high number of individuals selected from only a few villages would result in greater clustering of survey data and a potential loss of precision in survey estimates.

Example with stratification

For this example, assume again that the total sample size has been calculated to be 3,200 individuals and that regions will serve as PSUs, villages will serve as SSUs, and then households will be selected in each village. Just as in the previous example, resources will allow for 80 PSUs to be selected. However, in this example, the survey designers wish to ensure that the sample is drawn proportionately across the 4 islands that comprise the country.

The table below shows the proportion of the total underlying population that each island represents. The right-most column shows how the number of PSUs would be proportionately allocated across these 4 islands or strata.

Island	Proportion of Total Pop.	PSUs
A	0.50	40
B	0.175	14
C	0.125	10
D	0.20	16
Total	1.00	80

Thus, 40 regions (PSUs) will be picked out of all regions on island A, 14 regions will be picked out of all regions on island B, and so on. Once the PSUs are selected per island, sample allocation continues just as in the preceding example, with the same number of villages being selected in each PSU, regardless of the island on which the PSU is located.

Selecting the Sample

Introduction

Once the sample design is selected and the sampling frame has been prepared, you are ready to proceed with sample selection. This section provides instructions for the various stages of sampling.

Available tools

There is an Excel workbook entitled **STEPSsampling.xls** that includes spreadsheets for every stage of the sample selection. STEPSsampling.xls will:

- provide probability proportional to size (PPS) sampling (see description below) for primary and secondary sampling units as needed;
- randomly select households or individuals;
- provide information for weighting the data.

The spreadsheet is available on the STEPS website (www.who.int/chp/steps) and on the CD-Rom.

Probability proportional to size (PPS) sampling

Probability proportional to size (PPS) sampling is a method for selecting a sampling unit in which the probability of selection for a given sampling unit is proportional to its size (most often the number of individuals or households within the sampling unit).

PPS sampling is appropriate for use when sampling units are of markedly different size. In these situations, were random sampling to be used to select sampling units, those individuals in the larger sampling units would have a much smaller chance of selection than those individuals in the smaller sampling units. PPS sampling corrects this problem, therefore reducing bias in survey estimates.

Instructions for PPS sampling

The table below outlines the steps required to perform PPS sampling on a list of sampling units. Before beginning, a list of sampling units and their corresponding sizes (in number of households or in population) must be compiled. It is recommended that this list be organized geographically, meaning that sampling units located near each other are also near each other on the list. Additionally, the number of sampling units (clusters) to be selected must be decided.

The **STEPSsampling.xls** tool will automatically perform Steps 3 through 8 in the table below. The instructions worksheet inside the file explains how to perform PPS sampling using either the PSU or SSU worksheet in the file.

Continued on next page

Instructions for PPS sampling (cont.)

Step	Action
1	Create a list of all sampling units with their size (either number of households or population). If possible, order this list geographically, placing sampling units that are physically adjacent near each other on the list.
2	Determine the number of sampling units to be selected from the list.
3	Create a new column containing the cumulative size of the sampling units. The final total should match the total population across all sampling units.
4	Divide the total cumulative population size (N) by the number of sampling units to be selected (n) to obtain the sampling interval (k). $k = N/n$
5	Choose a random number (r) that is between 1 and the sampling interval (k). $1 < r < k$
6	Start at the top of the list and select the first sampling unit whose cumulative population size includes the random number (r).
7	To select the second cluster, first add the sampling interval to the random number (r). Then begin counting from the previous cluster selected until the cumulative population size includes this sum (r+k).
8	Select the remaining clusters by adding the sampling interval, multiplied by 2, then 3 and so on, to the random number. Always start counting from the previous cluster selected not the start of the list. r+(k x2) r+(k x3) etc
9	Continue until the end of the list is reached. Do not stop as soon as n units have been selected. To avoid bias, all units selected must be used in the survey even if the number is slightly greater than n.

Using PPS sampling with a multi-stage cluster design

PPS sampling can be applied at all stages of a multi-stage cluster design except for the final stage in which households or individuals are selected.

The **STEPSsampling.xls** tool provides worksheets for selecting your PSUs and SSUs using PPS sampling. The worksheet entitled PSU allows for the selection of up to 100 PSUs from an entered list of all PSUs. The worksheet entitled SSU allows for the selection of the SSUs within each selected PSU. Therefore, the SSU worksheet must be duplicated, one for each PSU that was selected, so that an independent selection of SSUs can be performed for each PSU.

Continued on next page

Selection of households and/or individuals

The final stage of sampling, the selection of households and/or individuals, will depend on the type of information available. The table below describes the possible scenarios for the final stage of sampling and the sample selection process for each.

If …	Then …
A list of eligible individuals is available for the selected sampling unit (e.g. village).	First check that the list of eligible individuals meets the following requirements: • the list is up to date, for example, people who have moved away or who have died are not included in the list; • the list contains specific information allowing for each selected individual to be located by the interviewers. If both conditions are met, the selection of individuals can be done randomly from the list.
No or limited information is available about the individuals in the selected sampling unit but a list of households exists for the sampling unit.	First check that the list of households meets the following requirements: • the list is up to date and each household listed represents a single dwelling; • the list contains specific information allowing for each selected household to be located by the interviewers. If both conditions are met, the selection of households can be done randomly from the list. The Kish Method, covered in the next topic, can then be used to randomly select participants from selected households. If there is a concern that the list may be out of date, it is recommended that the survey team first perform a quick survey of the sampling unit to update the list, noting abandoned/destroyed dwellings, new dwellings, or expanded dwellings (single family into multi-family).

Continued on next page

Selection of households and/or individuals (cont.)

If …	Then …
The number of households is known for the sampling unit but there is no information about their location.	In this situation the sampling unit should be mapped to determine the location of the households. Please contact the STEPS team for more guidance on this method or other alternatives.

In the **STEPSsampling.xls** tool, the "RandHhold" worksheet can be used to randomly select the desired number of participants from a list of eligible individuals or the desired number of households from a list of households.

It is possible that some sampling units have more detailed information available than others. In this case, the above scenarios can be used on a case-by-case basis, meaning in some sampling units with more detailed information individuals may be selected directly while in other sampling units with less detailed information households may need to be selected first.

Note: In all STEPS survey designs, sampling is non-replacement, meaning that once a unit or person is selected they are not replaced with another person/unit. If you replace non-respondents or persons who are not at home for the interview you will be performing a convenience sample and your results will only represent the people sampled and not your target population.

The Kish Method

Introduction

The Kish Method is a technique that allows for the random selection of one individual from a household.

The Kish Method can be used for selection within households regardless of the sampling method used to select the households (*92*).

Materials

To use the Kish Method you will need the **Kish Household Coversheet,** which is in Part 6, Section 2 of this manual.

Process

The table below provides detailed directions on how to implement the Kish Method in each household. An abbreviated version of these directions is also located at the top of the Kish Household Coversheet.

<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>1</td><td>Ask for the age and sex of all adults aged 25-64 residing in the household. List these in the empty table on the Coversheet.</td></tr>
<tr><td>2</td><td>Assign a rank to each adult in the table. The ranks should be consecutive and begin with 1. Assign the ranks according to the following rules:

• first assign ranks to males in order of decreasing age (oldest to youngest);
• next assign ranks to females in order of decreasing age.

An example is provided here:

<table>
<tr><th>Sex</th><th>Age</th><th></th><th>Rank</th></tr>
<tr><td>F</td><td>45</td><td></td><td>2</td></tr>
<tr><td>M</td><td>45</td><td></td><td>1</td></tr>
<tr><td>F</td><td>29</td><td></td><td>4</td></tr>
<tr><td>F</td><td>32</td><td></td><td>3</td></tr>
</table>
</td></tr>
<tr><td>3</td><td>In the Kish Selection Table (at the bottom of the Coversheet), find the column whose heading matches the last digit of the Household ID. In this column find the row whose header matches the total number of eligible adults in the household. The number in the box where this row and column intersect gives the rank of the adult to be interviewed.</td></tr>
</table>

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Preparing materials

The Kish Household Coversheets must be prepared prior to beginning data collection. Directions on completing the Coversheets, including how to assign Household ID numbers, can be found in the last topic of this Section, "Preparing Data Collection Forms", on page 2-2-27.

Oversampling for 55-64 year olds

Depending on your site's population structure it may be difficult to obtain enough respondents from the 55-64 year old age group to get precise estimates for this age group. One possible solution to this problem is to oversample this age group at the household level.

At each household with adults aged 55-64, two adults will be selected and two Kish Household Coversheets will be needed. One Coversheet will be used to select one adult from the non-oversampled group and the other will be used to select one adult from the oversampled group. Thus on one Coversheet all adults aged 25-44 will be listed and on the other all adults 55-64 will be listed.

Note: When oversampling be sure to adjust the household size to reflect this. If there are five people in a household and one is 55-64, then the household size for sampling from the 25-44 group is only four, while the individual in the 55-64 age group would have a household size of only one.

Documenting the Sample Design

Introduction

Once the sample design and methodology have been chosen, all aspects of the sample need to be clearly documented.

Purpose

The purpose of documenting the sample design is primarily for the data analyst to understand how the sample was drawn in order to appropriately adjust the results to the target population. Additionally, an abbreviated version of the documentation should always accompany any presentation of the survey data to explain how the data were collected.

Recordkeeping during data collection

Sufficient records must be kept **during data collection** to ensure that the data analyst can do all possible adjustments to make the results representative of the target population. Most importantly, the data analyst must know:

- the probability of selection of each sampling unit at every stage of sampling (i.e. probability of selection for each PSU, SSU, household, individual);
- the age and sex of any non-responders.

Thus, it is critical to keep a record of the following:

- all sampling frames used at each stage of sampling
- sample selection method used at each stage of sampling
- stratification design, if stratification is used
- for each respondent, the PSU, SSU, etc. from which he/she was selected.

Future surveys

Documenting the sample design and methodology is also important for future surveys when changes in risk factors over time are being examined, since methods chosen in future surveys may differ from this one and thus affect comparability.

Archiving documents

It is important that all relevant sampling materials be archived. This includes the forms discussed in the next topic of this Section, "Preparing Data Collection Forms", as well as all information used to design and draw the sample.

If the sample is drawn by another government entity (e.g. the Statistics Bureau), be sure to obtain from them all materials and information that were used to draw the sample.

Preparing Data Collection Forms

Introduction

Once the sample has been drawn the Interview Tracking Forms and the Kish Household Coversheets as well as the STEPS Instruments and, if applicable, the Clinic Appointment Cards should be prepared for the data collection team. It is recommended that the data collection supervisor and the statistical adviser collaborate on this task to ensure the forms are correctly filled out and properly organized for data collection.

Assigning Unique Identifiers

Before preparing the data collection forms, ID Numbers must be assigned to all interviewers and to all selected clusters from which households and/or individuals will be selected. Additionally, all households to be selected and all participants to be selected should each be assigned a unique ID. The table below provides further instruction for assigning these ID Numbers:

Variable	Description	Value Range
Interviewer ID	Every interviewer should be assigned a unique ID number.	1-999
Cluster ID	A unique number should be assigned to all selected sampling units from which households and/or individuals will be selected. Often these sampling units are villages, but could instead be city blocks, city districts, etc. depending on the sample design. **Note:** If household or individual selection is the first or only stage of sampling, it is not necessary to use Cluster IDs.	1-999
Household ID	All households to be visited should be assigned a unique ID. These numbers should be consecutive from 1 through the total number of households to be visited. This number can be assigned even before data collection begins because the total number of households to be visited should be known from the sample design. If no interview is conducted at a selected household, the Household ID assigned to it is simply not used.	1-99999
Participant ID	All participants should be assigned a unique ID. These need not be consecutive and a grouping by Cluster ID, where a sequence of participant IDs is associated with each Cluster ID, is strongly recommended (e.g. Participant IDs 101-120 are assigned to Cluster ID 1, Participant IDs 201-220 are assigned to Cluster ID 2, etc.).	1-999999999

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Assigning Unique Identifiers (cont.)

The following three identifiers will also need to be assigned and made available to the data collection team as needed:

Variable	Description	Value Range
Data Collection Team ID	Each team of data collectors should be assigned a unique identifier and a record should be kept of which Interviewer IDs are associated with which data collection team.	A-Z
Technician ID	If Step 2 and/or Step 3 will be implemented by someone other than the interviewer (e.g. clinic staff), these individuals should be assigned a Technician ID.	1-999
Device ID	If Step 2 and/or Step 3 will be implemented, any equipment used for these Steps should be assigned a unique Device ID.	1-99

Note: The recommended value ranges indicate what is expected by the standard STEPS data entry templates. These templates will **not** allow for any mixing of alpha and numeric values (e.g. A21) in a single identifier.

Interview Tracking Form

All sites should use the Interview Tracking Form (see template in Part 6, Section 2) regardless of their sample design. This information is used for calculating the weights and response proportions for Step 1, Step 2, and Step 3 (if applicable).

Before data collection begins, Interview Tracking Forms should be completed for each Cluster and each interviewer who will conduct interviews in that Cluster.

Before data collection begins, the following should be completed on each Interview Tracking Form:

- Cluster ID
- Interviewer ID
- Household IDs
- Participant IDs.

Note: If household or individual selection is the first stage of sampling (i.e. Cluster IDs are not used), then prepare the Interview Tracking Forms for each interviewer without assigning Cluster IDs.

Continued on next page

Preparing Data Collection Forms, Continued

Kish Household Coversheet

The Kish Household Coversheet (see a template in Part 6, Section 2) should be used when the data collection team needs to select participants randomly from each household. A Kish Household Coversheet must be prepared for every household to be visited.

Before data collection begins, the following should be completed on each Coversheet:

- Complete physical household address
- Household ID
- Participant ID.

Additionally, the column to be used in the Kish Selection Table can be circled as an added measure to help insure that the Kish Method is implemented correctly.

STEPS Instrument

The following parts on the STEPS Instrument should be filled in prior to data collection:

- Cluster ID
- Cluster name
- Interviewer ID
- Participant ID (on each page, first page twice).

Clinic Appointment Card

The Clinic Appointment Card (see template in Part 6, Section 2) that serves for arranging appointments at the clinic for those selected for Step 3 should be partly filled in before the interviewers start data collection:

- Participant ID
- Centre name

should be filled in for those participants selected for Step 3.

Section 3: Preparing a STEPS Site

Overview

Introduction

This section covers all the tasks that are needed to set up and prepare the STEPS site.

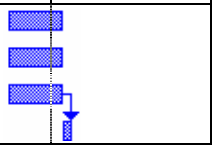
Intended audience

This section is designed for use by those fulfilling the following roles:

- STEPS Site Coordinator
- data collection team supervisors
- data entry team supervisor.

Tasks and timeframes

The chart below shows the main tasks and approximate timelines for setting up and preparing a STEPS site.

Task Name	Duration	Month 1	Month 2
Recruit staff	2 weeks		
Acquire equipment and supplies for data collection	2 weeks		
Acquire equipment for STEPS office	2 weeks		
Set up STEPS office	2 days		

In this section

This section covers the following topics:

Recruiting Staff

Introduction

The number and qualifications of staff will depend on the scope of the STEPS survey and the size of the sample as well as the type(s) of data to be collected, e.g. whether the site is implementing Step 1, 2 and 3, and if optional modules are added. See Part 1, Section 2 for further details on the roles and responsibilities described below.

Data collection team

The core roles within the data collection team include some or all of the following:

- team supervisors
- interviewers
- survey clinic health professionals
- laboratory technicians
- administrative staff.

Data entry team

The core roles within the data entry team include:

- team supervisors
- data entry staff.

Data analyst

The core tasks of the data analyst include:

- clean and prepare data for analysis
- assist in creation of the Fact Sheet, Data Book, and STEPS Site Report.

Gender considerations

For the data collection team, a mixture of staff of both sexes may be required for situations and communities where:

- there are strict rules about contact with members of the opposite sex
- there is individual preference.

Language, ethnic and religious considerations

For the data collection team, a mixture of staff who are fluent in several languages and represent varied cultural, ethnic and religious groups may be valuable.

Continued on next page

Recruiting Staff, Continued

Estimating numbers

The number and mix of staff requires careful calculation. For data collection, multiple teams should be recruited and trained to enable completion of interviews within the planned timeframe. All teams should have back-up staff available to cover for illness and other absences among members of the team.

See Part 2, Section 1 topic "Identifying Scope of STEPS Survey" for further details on estimating numbers of staff required.

Where to recruit people from

In many countries, recruitment is likely to be an informal process where data collection and data entry staff are 'seconded' from other duties within the Ministry of Health or other health authority responsible for undertaking the STEPS survey. In this situation, arrangements for their release and scheduled participation may need to be negotiated and explicitly agreed upon.

Where there is not sufficient available staff or specific skills are required (e.g. for data entry and data analysis) formal recruitment may be necessary.

Required timeframes

It is recommended that staff recruitment takes place over a period of 2-3 weeks if possible, so all may participate in initial training and build a good team structure quickly.

Household Survey (Step 1 and 2)

Introduction

Most sites will conduct Step 1 and 2 within households, although in rare cases, sites may choose to invite participants to attend a central location or a clinic.

General supplies for the household interviews

For the interviews you will need to prepare the following general supplies that the interviewer will have to take with him/her when collecting the data:

Materials	Quantity	Location of template
• district and area maps • household lists • name tags for interviewers • pens, pencils • clipboards	1 of each	
• Interview Tracking Forms	2-3 per interviewer, depending on the number of interviews	Part 6, Section 2
• Notification Cards of WHO STEPS surveillance visit	1 per participant	Part 6, Section 2
• Kish Household Coversheets	1 per participant	Part 6, Section 2
• Participant Information Forms	1 per participant	Part 6, Section 2
• Consent Forms Step 2 and Step 3, if applicable	2 per participant, one stays with the participant	Part 6, Section 2
• STEPS Instruments	1 per participant	Part 5, Section 1
• Question-by-Question Guides	1 per interviewer	Part 5, Section 2
• show cards	1 per interviewer	Part 5, Section 3
• Participant Feedback Forms Step 2	1 per participant	Part 6, Section 2
• Body Mass Index Classification Charts	1 per interviewer	Part 6, Section 2
• if applicable: Clinic Appointment Cards	1 per participant	Part 6, Section 2
• if applicable: Fasting Instructions	1 per participant	Part 6, Section 2

Continued on next page

General supplies for the household interviews (cont.)

The following documents should be prepared and partly filled in prior to the field work:

- Notification Cards of WHO STEPS surveillance visit (it is helpful for the interviewer if the contact details on the Notification Cards are already filled in prior to data collection);
- Kish Household Coversheets;
- Interview Tracking Forms;
- STEPS Instruments;
- if applicable: Clinic Appointment Cards.

Note: See Part 2, Section 2 for instructions on how to prepare the Kish Household Coversheets, Interview Tracking Forms, Clinic Appointment Cards and STEPS Instruments.

Equipment and supplies for Step 2 measurements

For Step 2, you will need the following specific equipment:

- adult, portable height-length measuring devices;
- weighing scales;
- stiff boards in case floor is uneven;
- constant tension tape measures (for example, Figure Finder);
- digital, automatic blood pressure monitors (OMRON device is recommended), complete with small, medium, large and extra large cuffs;
- spare batteries.

Note: Use of mercury sphygmomanometers is **not recommended** for general use but may be made available for use if the digital blood pressure monitor:

– is not functioning properly;
– needs calibration;
– if the largest cuff available on the digital device is too small for the participant.

Location for Step 2 measurements

Where STEPS is conducted entirely in a household setting, equipment and all supplies must be carried and set up as best as possible in each household. Each data collection team will carry the sets of equipment which are required.

If it is not possible to conduct the survey in each household, you may be able to identify a central location and schedule participants to visit at specified times.

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Room setup for Step 2 measurements

Where a central location or public hall for taking Step 2 measurements is available, set up tables, chairs and equipment to optimize the flow of participants through the following steps:

Step	Action
1	Registration
2	Blood pressure measurement (and heart rate, if applicable)
3	Height measurement
4	Weight measurement
5	Waist circumference measurement
6	Hip circumference measurement, if applicable
7	Check out (to ensure all measures are complete and that participants are properly thanked for their participation before departure)

Note: Provide seating near where blood pressure will be measured to allow 15 minutes of relaxation before blood pressure measurement.

Other factors to consider

Some other factors to consider include:

Topic	Factors to consider
Equipment availability	Equipment necessary for collecting physical measurements should be readily available and in good condition to ensure results are as accurate as possible.
Lighting	Lighting needs to be adequate to read tape-measures, scales and blood pressure meters.
Weighing scales	Weighing scales need to be set up on a flat, hard surface. Some households may have uneven floors in which case an alternative location may need to be found or a rigid board should be placed under the scales.
Privacy	Areas used for taking measurements should be screened off or separated in some way to provide some privacy for participants.

Pre-survey site visits

It is advised that all proposed clusters/data collection sites are visited prior to conducting the survey.

This will allow a thorough understanding of operational issues that may impact the survey, and initiate the communication strategy with the communities and other local stakeholders.

Clinic Survey (Step 3 only)

Introduction

A clinic setting is necessary to take blood tests for biochemical measurements required in Step 3 of the STEPS survey.

Room and clinic location requirements

The following table lists the general requirements and set up considerations for the room and location chosen for taking biochemical measurements.

Item	Description
1	The room needs to be of adequate size to accommodate staff and the flow of the expected number of participants (and accompanying people).
2	Separate areas (if possible) for: • registration • waiting • blood tests • checkout
3	Consider privacy requirements for taking blood tests
4	Provide hand washing and toilet facilities for participants and clinic staff
5	Clearly signpost the clinic
6	Ensure easy and adequate parking or transport provision for participants (if necessary)
7	Set up the room according to the sequence of tests

General equipment

General equipment required in the clinic is listed in the following table:

Material	Item
Stationery	• pens • pencils • paper
Paperwork	• Clinic Registration Form (partly filled in, see Part 2, Section 2) for each participant • STEPS Instrument (partly filled in, see Part 2, Section 2) for each participant • Participant Feedback Form Step 3 for each participant
Office equipment	• filing systems • clipboard
Furniture	• tables • chairs

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Equipment and supplies

Different equipment is required depending on which type of chemistry has been selected for biochemical measurements. For further information about types of chemistry see Part 2, Section 1.

The table below provides a list of supplies required for the dry and wet chemistry methods.

Type	Supplies
Dry	• batch of sufficient reagent test strips • lancet • lancet device cotton balls • alcohol swabs • gloves • disposable container
Wet	• source of electric power • ice chests (and ice) for temporary storage • tourniquets • needles • syringes • primary and secondary specimen tubes • pipettes • gloves and possibly protective eyewear • centrifuge • facilities for safe disposal of used equipment particularly sharp needles and bloodied swabs etc. • transport of specimens

Data Entry Office (Step 1, 2 and 3)

Introduction

The data entry office will need to accommodate the data entry team.

Room requirements

The following table lists the general requirements and set up considerations for the space chosen for data entry work.

Item	Description
1	The room or rooms need to be of adequate size to accommodate all data entry staff and computers.
2	Set up tables to optimise physical work flows.
3	Create a pleasant environment for the team who will often sit for long periods.
4	Provide boxes or folders for instruments awaiting data entry.
5	Provide work-space for stacking papers at different stages of processing.
6	Provide temporary storage for individual instruments requiring problem resolution.
7	Set up a filing system for instruments once data entry and checking are completed.
8	Set up computers with good ergonomic positioning, to minimise reflections on screen, and to avoid build up of heat generated by machines.
9	Provide locked storage where instruments can be securely stored overnight and during weekends and holidays.

General equipment and supplies

General office equipment and supplies required for the STEPS coordination and data entry office include:

- bench and table space
- photocopier
- shelving
- filing cabinets or boxes
- telephone
- at least one computer with internet connection
- office stationery supplies (paper, pens, envelopes, staplers etc).

Continued on next page

Data Entry Office (Step 1, 2 and 3), Continued

Computers

Where there is a choice of computer selection, refer to the list below for some general recommendations.

- Choose industry-standard computers and operating systems, i.e. IBM-compatible PCs running Microsoft Windows '98 or later.
- Machines must have capability to transfer information (i.e. CD-writer, floppy disk, networked, or USB (flash disk) drive).
- Purchase from reputable dealers.
- If buying new, seek the highest specification machine(s) you can afford.
- Speed of processing, memory capacity and hard disk space are important for data analysis but machine(s) with less memory may be adequate for data entry.
- Desktop machines are usually cheaper and more easily maintained than portable machines.
- Have at least two machines available to ensure backup in case of failure.

Printers

The quality of printer required is determined by the amount and type of printing the survey materials and data entry team needs. Use the following table to help determine what type of printer to use:

If the printer is used for…	Then choose a…
Producing lists, error checking and reporting progress.	Simple black-ink printer.
High-quality letters.	Highly specified machine, possibly with colour capability.
Producing the main results, reports, tables and graphs.	

Note: If purchasing a new printer, use reputable dealers and buy well-known, industry-standard machines and accessories.

Other equipment

Other equipment that may be needed depending on the location and facilities available include:

Purpose	Equipment options
Data backup	• tape drivers, backup tapes • blank CDs • USB flash-stick • fireproof safe
Power supply	Uninterruptible power supply (UPS) machines

Continued on next page

Data Entry Office (Step 1, 2 and 3), Continued

Software

The following is a list of software that you will need to have setup on your office computers:

- Microsoft Office '98 or higher recommended for reports, correspondence and general word processing;
- virus scanning software (if connected to the internet and/or exchanging files outside the office);
- EpiData 3.1 (or later version, if available) for data entry.

For further information on data entry software, see Part 2, Section 4.

Section 4: Preparing the Data Entry Environment

Overview

Introduction

This section covers all the tasks that need to be conducted to setup, prepare and test the data files for the STEPS survey data entry.

Intended audience

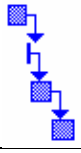
This section is designed for use by people who have been assigned the following roles:

- data entry supervisor
- data entry team
- STEPS Site Coordinator.

Note: These tasks may be commenced but not completed until the data entry team has been recruited.

Tasks and timeframes

The chart below shows the main tasks and timelines covered in this section.

Task Name	Duration	Month 2
Map site-specific instrument	3 days	
Set up computer environment	1 day	
Modify data entry templates	3 day	
Test templates	4 days	

In this section

This section covers the following topics:

Introduction

Overview of process

The table below lists each stage in the process of preparing the data entry environment.

Stage	Description
1	Mapping the site-specific instrument
2	Creating a Master computer
3	Accessing and installing EpiData
4	Installing and modifying the data entry templates
5	Creating STEPS survey data file folders
6	Installing the modified data entry templates on all other computers
7	Testing

Mapping the Site-Specific Instrument

Introduction

The generic tools available for data entry and analysis require that the site-specific instrument be mapped to the generic instrument. In mapping the site instrument, one ensures that the code labeling each question in the site-specific instrument matches the code used for labeling that question in the generic instrument (e.g. C1, C2, T1, T2).

Purpose

Mapping the site-specific instrument to the generic instrument will enable you to use:

- the data entry templates
- the data analysis programs
- the Fact Sheet Analysis Guide
- the Data Book.

Note: Once the site-specific instrument has been mapped, the data entry templates may need adjusting for site-specific response options and questions. Instructions for making these adjustments are covered later in this Section.

Available Materials

There are two documents available for aiding you in mapping your site-specific instrument:

- Mapping and Transforming your Materials
- Mapped Instrument.

The first document, Mapping and Transforming your Materials, provides step-by-step instructions on how to map your site-specific instrument by using the second document, which provides a template with which to create your site-specific mapped instrument.

Both of these documents can be found on the STEPS website here: http://www.who.int/chp/steps/resources/mapped/en/index.html

Site-specific Mapped Instrument

Once the mapping is finished, you will have a complete site-specific mapped instrument that lists all questions in your site-specific instrument. For each question, the site-specific mapped instrument will indicate:

- the generic STEPS code that corresponds to the question (e.g. T1);
- the site-specific code used to label the question on the site-specific instrument;
- the possible response options for the question.

The site-specific mapped instrument will then serve as a useful aid in modifying the data entry templates. As it will also be helpful during data analysis, it should be made available to the data analyst.

Setting up the Computer Environment

Introduction

It is important to properly set up your computer environment prior to working with any data files.

Create Master computer and label others

Designate and label one of the computers in the STEPS Office as the Master computer. This computer will be used to install, modify and test the data entry templates prior to installing them on the other computers.

Label all the other computers (e.g. A, B, C, D, etc.).

Setting up the data entry computers

Follow the steps below to create appropriate folders on the data entry computers for all EpiData surveillance files:

Step	Action	Recommended Folder Name
1	Create a primary folder (directory) for all your STEPS files, including: • data • code • documents • other files.	C:\STEPS
2	Record the address of the folder so it can be entered during the set-up process when prompted.	
3	Create a backup folder in a **different** location than the primary folder.	• D:\STEPS (or similar, if you have multiple drives or your disk is partitioned) • C:\BackupSTEPS (if you only have access to one drive)
4	Create a sub-folder under the STEPS primary folder to contain your data files.	C:\STEPS\data
5	Create a sub-folder under STEPS\data to contain data entry reports.	C:\STEPS\data\reports
6	Create a sub-folder under STEPS\data to contain office tracking information.	C:\STEPS\data\office

EpiData

Introduction

To enter the STEPS survey data, the STEPS team recommends and supports using EpiData 3.1. EpiData 3.1 is a purpose-built, free, public-domain software package that allows users to:

- capture the survey data
- verify data entry accuracy (*93*).

Rationale

The decision for choosing EpiData was made in light of its advantages, some of which are listed below.

- Windows-based and compatible with other software;
- widely used;
- makes compact and easily modifiable data files;
- checks for valid ranges during data entry, but permits values beyond ordinary ranges;
- allows double data entry and data correction;
- files exportable to 6 different file types.

Accessing EpiData

The current release of EpiData is available on the STEPS CD as well as on the STEPS website here: http://www.who.int/chp/steps/resources/EpiData/en/index.html .

Additionally, EpiData can be downloaded and installed directly from the EpiData website: www.epidata.dk .

The table below provides instructions on how to get the EpiData installation file onto your computer.

Source	Instructions
STEPS website	**Step** / **Action** 1 — Connect to the internet and go to: http://www.who.int/chp/steps/resources/EpiData . 2 — Click on the link labeled "Download EpiData Software". 3 — Save the installation file, "setup_epidata.exe", to your desktop.

Continued on next page

Accessing EpiData (cont.)

Source	Instructions
STEPS CD	

Step	Action
1	Insert the CD into the CD-ROM drive and wait for the CD to launch in your internet browser. If the CD does not launch automatically, go to the list of all files on the CD and open the file "start.html".
2	Click on the link labeled "Data Entry Tools and Software" in the left-hand column of the screen.
3	Click on the link labeled "EpiData Software".
4	Click on the link labeled "Download EpiData Software".
5	Save the installation file, "setup_epidata.exe", to your desktop.

Installation

Once the EpiData installation file has been downloaded to your computer, follow the steps below to install EpiData:

Step	Action
1	Go to your desktop and click on the file "setup_epidata.exe".
2	Click "Yes" on the dialog box that says you will install the program. Click "Next" on the welcome screen to continue installation.
3	Read the licensing screen and click "I accept the agreement" and click "Next".
4	An installation program will start, when prompted to select a destination directory make sure the location is "C:\Program Files\EpiData". Click "Next".
5	Click "Don't create a start menu folder". Click "Next".
6	Select "Create a Desktop icon" and "Automatic field naming" from the Select Additional Tasks page. Click "Next".
7	Review the information on the Ready to install screen. If the information is correct click "Install" if it is incorrect use the "Back" button to correct the information.
8	Once you have confirmed that EpiData is properly working on your machine, you can delete the file "setup_epidata.exe" from your desktop.

Note: EpiData will need to be installed on all computers that will be used for data entry.

Continued on next page

EpiData, Continued

Training	EpiData training materials are available in Part 3, Section 5 of this manual. Additionally, further reading about data entry in EpiData may be found at the EpiData website: www.epidata.dk . Of particular interest is the EpiData extended help file, which is available on the EpiData website here: http://www.epidata.dk/documentation.php .
Software support	WHO provides some support for EpiData and can assist in the modification of the data entry templates. If you use software other than EpiData, you are responsible for creating your own data entry files and obtaining suitable support.

Data Entry Templates

Introduction

Standard STEPS templates have been developed to enter survey data from completed instruments. These must be reviewed and updated as needed to make sure they match your site-specific instrument.

Installing EpiData templates from the web

Follow the steps below to install the EpiData templates from the STEPS website.

Step	Action
1	Connect to the internet and go to: http://www.who.int/chp/steps/resources/EpiData .
2	Under the section header "Data Entry Templates", select and download the template zip file that matches your instrument.
3	Save the file in C:\STEPS\data.
4	Open the C:\STEPS\data folder and double click the zip file you have downloaded.
5	The zip file will open up and display several folders. Highlight these folders and copy them. Close the zip folder and paste the folders directly into C:\STEPS\data.

Note: It is recommended that you only install the templates to the Master computer initially and then copy them from the Master computer to the other computers only once any needed modifications have been done.

Templates

There are 3 generic templates that have been developed for EpiData. Each is located in a separate folder of the same name. The table below lists and describes the purpose of each of these templates.

Template	To contain
Consent	Personal information from the instrument (if to be saved electronically).
Survey	Location and date of interview and main instrument data.
Biochemical	Step 3 results, if these are recorded on a form separate from the instrument.

File types

For each template, there are several EpiData files that combine together to make a functioning data entry template. The table below describes the 3 key files for each template:

Extension	Purpose
.rec	Used to enter data. Entered records are saved in this file.
.qes	Used to create the data entry interface. The .rec file is generated from this file.
.chk	Contains tests for out of range values and instructions for skipping questions that are not applicable.

Continued on next page

Data Entry Templates, Continued

Consent template (optional)

The optional consent template collects the confidential data from the lower half of the Survey Information page of the instrument. These data should not be stored with the information entered in any other template and should not be used during data analysis. It may be useful to store this information electronically if:

- participants need to be contacted after the interview;
- quality control procedures require follow-up contacts;
- participants are advised to visit their clinic or physician where biochemical results indicate medical attention (if appropriate).

Survey template

This template is for recording all information pertaining to the location and date of the interview as well as the main STEPS core, expanded and optional data. Each record in this database is uniquely identified by the Participant ID. The final structure of the template should match exactly the site-specific instrument. Data collected includes:

- Cluster Name
- Cluster ID
- Interviewer ID
- date of completion of the instrument
- core questions and measures for Step 1 and 2 (and may include Step 3)
- expanded and/or optional questions.

Biochemical template

This template applies only to sites conducting Step 3 and who have recorded Step 3 data on a separate form.

Modifying the Templates

Introduction

If you have made any modifications to the generic STEPS Instrument in creating your site-specific instrument, you will probably need to modify the data entry template to reflect these changes. Possible changes to the generic STEPS Instrument that require modification of the data entry templates include:

- changing the response options for a question
- changing the wording of a question
- adding new questions
- excluding any core or expanded questions.

Role and responsibility

The data entry supervisor should be responsible for modifying the templates. The WHO Geneva STEPS team will also help in template modification upon request.

Preparing for template modification

Before making any modifications to the questionnaire, you must first do a thorough assessment of the differences between your site-specific instrument and the generic STEPS Instrument. If any differences are not accounted for, this may cause serious problems during data entry. The table below provides a series of steps to follow to ensure a thorough preparation for template modification.

Step	Action
1	Ensure that you have a complete and correct copy of the site-specific mapped instrument as well as a copy of the site-specific instrument.
2	Read carefully through the site-specific mapped instrument, highlighting all differences between the site-specific instrument and the generic STEPS Instrument.
3	Using the site-specific mapped instrument as a guide, read carefully through the site-specific instrument marking all questions that have been highlighted in the site-specific mapped instrument.

Modifying the templates

To make the actual changes to the templates, you will need to modify and update the appropriate EpiData files. The table below shows the type of modification and what corresponding data files need to be updated.

To	Update the following files
Alter response options for a question	.chk
Alter the wording of a standard question	.qes .rec
Add an optional question	.qes .rec .chk
Hide an unused question	.chk

Continued on next page

Modifying the Templates, Continued

Altering response options

Follow the steps below to change the wording of a response option or to add additional response options:

Step	Action
1	Open EpiData.
2	Click on "3.Checks" at the top of the screen.
3	Select the .rec file you wish to modify and click "Open".
4	Click on the yellow box to the right of the question you wish to edit.
5	When the box turns blue, click on "Edit" in the small dialogue window.
6	Locate the text that needs to be changed (e.g. "locally defined 1") and replace it with the new text, making sure to surround the new text with quotation marks. If additional response options are needed, add them below the list of existing options making sure to follow the same format.
7	When finished making changes, click on "Accept and Close" at the top of the window. The .chk file will be updated to reflect the changes made.

Alter question wording

Follow the steps below to change the wording of a question:

Step	Action
1	Open EpiData.
2	Click on "1.Define Data" at the top of the screen.
3	Select the .qes file you wish to modify and click "Open".
4	Alter the wording of the question as needed (it is just like modifying a text document).
5	When finished, click on "2. Make Data File" and follow the prompts to recreate the .rec file.

Continued on next page

Modifying the Templates, Continued

Adding a new question

Follow the steps below to add a new question to the data entry template:

Step	Action
1	Open EpiData.
2	Click on "1.Define Data" at the top of the screen.
3	Find the location in the file where the new question should be entered. Create a new line in which to insert the question and type: • the code for the question (e.g. X1); • the text for the question; • the response type for the question (e.g. ## for numeric, ___ for text). These three items should be delimited by at least one space. For help with the response type, the Field Pick List dialogue can be opened by clicking on the 2nd icon from the right at the top of the screen. Note that the number of characters entered for the response type reflects exactly the number of characters that may be entered in that field during data entry.
4	Click on "2. Make Data File" at the top of the screen.
5	Add checks for the new question by clicking on "3. Checks" at the top of the screen and selecting the .rec file that was just modified. Click on the response field for the new question to add/edit checks. The following page contains some sample check code.

Hiding an unused question

Unused questions should **not** be deleted from the template. Instead, they should be hidden. Follow the steps below to hide any unused questions:

Step	Action
1	Open EpiData.
2	Select "Open" from the "File" menu at the top of the screen and select the .chk file you wish to modify.
3	Find the text "BEFORE FILE" in the .chk file.

4	In this section of the file, list all the questions you wish to hide on a separate line, each preceded by the word "HIDE".
	
	Example (3 questions hidden):
	`BEFORE FILE`
	`  DEFINE varEntryBegun ########.#####`
	`  HIDE C5`
	`  HIDE C6`
	`  HIDE C10`
	`END`

5	Save the .chk file by going to File/Save in the menu at the top of the screen.

Continued on next page

Modifying the Templates, Continued

What not to modify

You must never:

- change field names (e.g. C1, C2) for existing questions
- delete questions from the data entry screen (.qes file).

If these items are modified, the template will not work.

Sample check code

Samples of the three types of check code are provided in the table below.

Type of check	Sample code	Function
Create value labels.	C1 COMMENT LEGAL 1 Male 2 Female END TYPE comment END	Creates a list of possible responses with their respective labels (e.g. yes/no).

Provide range checking of values and avoid missing data.	c3
	AFTER ENTRY
	IF (c3=.) THEN
	HELP "An age must be entered."
	GOTO c3
	EXIT
	ENDIF
	IF ((c3<15) OR (c3>74))
	AND(c3<>77)THEN
	GOTO c3
	EXIT
	ENDIF
	END
	END
		Ensures a value is entered within a range of values that are acceptable for data entry. This helps ensure more accurate data entry (e.g. this example allows values from 15 to 74, or 77 for don't know).

Provide skipping of questions.	T1 AFTER ENTRY IF T1=2 THEN GOTO T6 ENDIF END END	Mimics the skip pattern on the instrument. It will take the data entry person directly to the next applicable question.

Check your work

After each template is modified, it is important to make sure that the template is still in working order and ready for testing. To perform a quick check of your work, open the modified template by double-clicking on the .rec file. Scan through the data entry screen to ensure it appears as desired and ensure that appropriate data can be entered into the modified/added fields.

Additional Data Entry Files

Introduction

In addition to the data entry templates, there are 3 additional files that should be obtained from the STEPS website or CD, these are:

- interview_tracking_form.xls
- data_entry_log.xls
- data_entry_tracking_from.doc.

Interview Tracking Form

The Interview Tracking Forms should be completed by the interviewers during data collection. The data from these forms should be entered using the Excel file interview_tracking_form.xls. It is recommended that all Interview Tracking Forms be entered on the Master computer.

The interview_tracking_form.xls file is available from STEPS CD and the STEPS website. It will only need to be downloaded to the Master computer.

<table>
<tr><th>Download from …</th><th>Instructions</th></tr>
<tr><td>CD</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Click on "Data Entry Tools and Software" in the left-hand column of the home screen.</td></tr>
<tr><td>2</td><td>Click "Interview Tracking Spreadsheet".</td></tr>
<tr><td>3</td><td>Save the file in C:\STEPS\data.</td></tr>
</table>
</td></tr>
<tr><td>STEPS website</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Go to the resources section of the STEPS website: www.who.int/chp/steps/resources.</td></tr>
<tr><td>2</td><td>Click "Interview Tracking Spreadsheet".</td></tr>
<tr><td>3</td><td>Save the file in C:\STEPS\data.</td></tr>
</table>
</td></tr>
</table>

Data Entry Log Excel file

The data_entry_log.xls file should be completed by the data entry supervisor. The file enables the supervisor to record for each completed instrument received:

- Participant ID
- date received
- to whom the 1st keying was assigned
- to whom the 2nd keying was assigned
- problems, solutions, and additional notes

Continued on next page

Additional Data Entry Files, Continued

Data Entry Log Excel file (cont.)

The data_entry_log.xls file is available on the STEPS CD and the STEPS website. It will only need to be downloaded to the Master computer.

<table>
<tr><th>Download from …</th><th>Instructions</th></tr>
<tr><td>CD</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Click on "Data Entry Tools and Software" in the left-hand column of the home screen.</td></tr>
<tr><td>2</td><td>Click "Data Entry Log".</td></tr>
<tr><td>3</td><td>Save the file in C:\STEPS\office.</td></tr>
</table>
</td></tr>
<tr><td>STEPS website</td><td>
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<tr><td>2</td><td>Click "Data Entry Log".</td></tr>
<tr><td>3</td><td>Save the file in C:\STEPS\office.</td></tr>
</table>
</td></tr>
</table>

Data Entry Tracking Form

The Data Entry Tracking Form is available in both Word and Excel. Each computer should have one Data Entry Tracking Form which will be used by data entry staff to record for each instrument entered on that computer:

- Participant ID
- date of 1st keying
- date of 2nd keying
- errors found on instrument
- supervisor's decision to handle error (where applicable).

Continued on next page

Additional Data Entry Files, Continued

Data Entry Tracking Form (cont.)

The Data Entry Tracking Form is available on the STEPS CD and the STEPS website. One copy should be downloaded onto each data entry machine.

<table>
<tr><th>Download from …</th><th>Action</th></tr>
<tr><td>CD</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Click on "Data Entry Tools and Software" in the left-hand column of the home screen.</td></tr>
<tr><td>2</td><td>Click "Data Entry Tracking Form (Excel version)" or "Data Entry Tracking Form (Word version)".</td></tr>
<tr><td>3</td><td>Save the file in C:\STEPS\office.</td></tr>
</table>
</td></tr>
<tr><td>STEPS website</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
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<tr><td>2</td><td>Click "Data Entry Tracking Form (Excel version)" or "Data Entry Tracking Form (Word version)".</td></tr>
<tr><td>3</td><td>Save the file in C:\STEPS\office.</td></tr>
</table>
</td></tr>
</table>

Setting up the Data Entry Process

Introduction

Prior to receiving completed instruments in the STEPS office for data entry, you will need to set up a standard working method to ensure accurate and efficient handling of survey material and data entry.

Working method

Create a standard working method that includes the following elements:

- labels for computers being used for data entry
- boxes or folders for each computer to store instruments and tracking forms
- coversheets for computer-specific folders/boxes
- data entry guidelines and rules (protocols)
- a Data Entry Tracking Form specific to each data entry computer
- data entry staff assigned to specific data entry computers.

Labeling computers

Where there is more than one computer being used for data entry, you will need to label each machine so you can enter and track specific information as shown in the table below.

Computer	To enter
Master	• Instrument responses to Step 1, Step 2 and Step 3 (where appropriate) • Biochemical (if Step 3 not recorded on instrument) • Tracking information (Interview Tracking Forms)
A, B, C etc.	• Instrument responses to Step 1, Step 2 and Step 3 (where appropriate) • Biochemical (if Step 3 not recorded on instrument)

Continued on next page

Filing Process

Establish a system of boxes or folders to store the hard copies of the instruments that have been or will be entered on each computer. Label these with the coversheet (the coversheet template is provided in Part 6, Section 2). The table below describes the 3 folders that should be made for each data entry computer.

Folder	For instrument data that…	Folder name
1	Is not yet entered	1st key
2	Has first keying complete	2nd key
3	Has second keying complete	Completed

Note: If the Consent or Biochemical data entry templates will be used, a separate set of folders will be needed for each of these templates. If a machine is being used to enter data into more than one template, a set of folders should be created for each template for that machine.

Protocols

Create data entry protocols to cover each of the key stages in the data entry process, including:

Process	Guidelines or rules required to
Handling incoming instruments	Specify how to sort, label and handle the completed incoming instruments from the data collection team.
Data entry	Specify how data entry staff will perform the data entry process and what they should do when they find unexpected or ambiguous data.
Marking and filing	Ensure any paper can be easily located at any time, and all instruments and forms show on them their stage of processing.
Handling uncertain data	Obtain a supervisor's ruling on uncertain data and a method for documenting what decisions are made.
Documentation	Ensure an audit trail of all completed and altered records.

Data entry staff

You should permanently assign data entry staff to work at two specific computers for the entire data entry process. Each staff member will be responsible for first keying the instruments on one computer and for second keying the instruments on the other computer.

Testing

Introduction

Once the templates have been modified, the data entry screen and all data entry systems and processes must be thoroughly tested to identify and correct any problems prior to data entry.

The two test phases are:

- primary testing
- pilot testing of all data entry processes.

Overview

The table below gives an overview of the testing process.

Type of test	Who should be involved	Preparation	Time Frame
Primary test	Data entry supervisor or person responsible for modifying the templates	• Complete all planned modifications to data entry templates on the Master computer. • Have a copy of the site-specific instrument and site-specific mapped instrument ready for use during testing.	Half a day
Pilot test data entry processes	Data entry staff (and/or members of the data collection team if necessary) and the data entry supervisor	• Complete primary test of data entry templates. • Copy the modified data entry templates from the Master computer to the C:\STEPS\data folder on all other data entry computers.	1-2 days

Continued on next page

Primary test

Follow the steps below to run the primary test. This should be done on the Master computer and by the same person who modified the templates.

Step	Action
1	Using the finalized site-specific instrument, create 8-12 completed "interviews". • Use different coloured paper or otherwise distinguish between these test forms and real ones by labeling them as test. • Make them straightforward, correct and clear, but with a variety of "participants" (e.g. smokers & non-smokers, active & sedentary).
2	Create a new folder titled "C:\TestSTEPS" on the Master computer.
3	Copy the entire STEPS folder and paste it into the new test folder.
4	Use the "C:\TestSTEPS" for the testing phase.
5	Run an initial test to check the templates. **Step** / **Action** 5.1 Open EpiData. 5.2 Click "4. Enter Data". 5.3 Select the template to test. 5.4 Enter the 8-12 selected "interviews".
6	Update the templates in "C:\STEPS" with corrections as needed and repeat steps 3-5 above.
7	Once all templates have been tested and no further corrections are needed, proceed with preparations for the pilot test.

Continued on next page

Pilot test

After providing basic data entry training to your data entry team, a pilot test should be done to thoroughly test the modified templates and the entire data entry process. The data entry training and pilot test are covered in more detail in Part 3, Section 5. The pilot test entails:

- entering test data info the interview_tracking_form.xls file
- entering test data into the EpiData data entry templates
- testing all logging and sorting processes
- testing all error correction systems.

Finalizing the data entry process

Once the pilot test has been completed and any problems discovered have been fixed, copy all finalized templates to all computers.

Step	Action
1	On the Master computer copy the folder "C:\STEPS" and all its contents onto a CD or USB stick (flash disk).
2	Go to Machine A.
3	Open the C drive.
4	Copy folder from the CD or USB stick onto the C drive, replacing the C:\STEPS folder that exists there already.
5	Create a backup folder in a different location than the primary folder (we recommend D:\STEPS, if possible).
6	Repeat steps 2-5 until all data entry computer installations are complete.

Documentation

Introduction

Documentation is essential for an efficient and effective STEPS survey.

Documenting data entry

The data entry process must be documented to ensure:

- standardization of processes and procedures among all data entry team members;
- non-reliance on certain individuals to provide key information;
- easy access to essential information, regardless of absence;
- data entry and data analysis can be done when the person who created the database is not available;
- survey data comparisons are possible in the future.

The Data Entry Log and Data Entry Tracking Form (see page 2-4-14 and Part 3, Section 5) should be used to assist in documenting the data entry process. They are available in Excel format but should be printed regularly for backup purposes.

Other documentation requirements

All survey files and resources must be:

- stored systematically (both paper and electronic)
- fully documented continuously.

Don't plan to come back later to annotate: make it a habit to place comments on your files as you work.

File Security

Introduction

The information collected by STEPS needs to be kept in a secure location. This applies both to the paper copies and electronic information.

Paper copies

Paper copies should be locked up every night in a secure location.

Electronic information

The computers that are used for data entry and analysis need to be located in a secure location. If the computers are in a locked location it is not necessary to place a password on the machines.

If computers are in a shared space and cannot be locked up at night, it is best to place a logon password on each machine.

Note: If you decide to place passwords on the machines please make sure the data entry supervisor has a complete list of passwords for each machine.

Backup

At the end of **each day** of data entry you must backup all your data files. This is to avoid data loss.

Further details on backing up the data are provided in Part 3, Section 5.

Section 5: Preparing the Data Analysis Environment

Overview

Introduction

This section covers all the tasks that need to be conducted to setup and prepare for the analysis of the STEPS survey data.

Intended audience

This section is designed for use by people who have been assigned the following roles:

- data analyst
- statistical adviser
- STEPS Site Coordinator.

Timeframe

The set up of the data analysis environment can be done within one day. However, analysis of the survey data cannot proceed until data entry has been completed and the data entry supervisor has provided a finalized data set to the data analyst.

In this section

This section covers the following topics:

Epi Info

Introduction

To check and analyse the STEPS surveillance data, the STEPS team recommends and supports using Epi Info. Epi Info is a purpose-built, free, public-domain software package that allows users to:

- check the survey data for outliers and inconsistent data
- conduct a descriptive analysis of survey data
- easily generate output files from the analysis (*94*).

Rationale

The decision for choosing Epi Info was made in light of its advantages, including:

- Windows-based
- supported by developers
- has data analysis capability in line with STEPS requirements
- can appropriately adjust for complex sample designs.

Accessing Epi Info

The current release of Epi Info is available on the STEPS CD as well as on the STEPS website. Additionally, Epi Info can be downloaded and installed directly from the Epi Info website (http://cdc.gov/epiinfo/).

The table below provides instructions on how to get the Epi Info installation file onto your computer.

<table>
<tr><th>Source</th><th>Instructions</th></tr>
<tr><td>STEPS website</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Connect to the internet and go to: http://www.who.int/chp/steps/resources/EpiInfo .</td></tr>
<tr><td>2</td><td>Click on the link labeled "Epi Info 3.4.3".</td></tr>
<tr><td>3</td><td>Save the installation file, "setup_epiinfo.exe", to your desktop.</td></tr>
</table>
</td></tr>
<tr><td>STEPS CD</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Insert the CD into the CD-ROM drive and wait for the CD to launch in your internet browser. If the CD does not launch automatically, go to the list of all files on the CD and open the file "start.html".</td></tr>
<tr><td>2</td><td>Click on the link labeled "Data Analysis Tools and Software" in the left-hand column of the screen.</td></tr>
<tr><td>3</td><td>Click on the link labeled "Epi Info Software".</td></tr>
<tr><td>4</td><td>Click on the link labeled "Download Epi Info 3.4.3 ".</td></tr>
<tr><td>5</td><td>Save the installation file, "setup_epiinfo.exe", to your desktop.</td></tr>
</table>
</td></tr>
</table>

Continued on next page

Installing Epi Info

Once the Epi Info installation file (setup_epiinfo.exe) is on your desktop, follow the instructions below to install Epi Info on your machine.

Step	Action
1	Double click on the Epi Info installation file on your desktop.
2	Click "Next" on the Welcome to Epi Info 3.4.3 screen.
3	Click "Next" on the Destination folder screen, you should use the default C:\Epi_Info.
4	Click "Next" on the selected features screen.
5	Click "Next" on the ready to install screen.
6	After ensuring the installation is successful, it is safe to delete the Epi Info installation file from your desktop.

Learning Epi Info

The table below lists several resources available to help you learn to use Epi Info.

Resource	Content	Location
Data Analysis Guide	A brief summary of useful commands in the Analysis module of Epi Info.	STEPS Manual, Part 3, Section 6
Epi Info Training Guide and supporting materials	An in-depth Epi Info training manual with numerous examples and related training materials.	STEPS CD and STEPS website: http://www.who.int/chp/steps/resources/EpiInfoTraining/en/index.html
Epi Info Tutorials	Tutorials provided by CDC and links to other learning resources.	CDC website: http://cdc.gov/epiinfo/tutorials.htm

Software support

WHO provides some support for Epi Info and can provide assistance and training as needed. If you use software other than Epi Info, WHO will only be able to provide little, if any, support.

Setting Up the Computer Environment

Introduction

It is critical to properly set up your computer environment prior to attempting any analysis of your STEPS data in Epi Info.

Preparing Folders

The following folders must be created on the computer used for data analysis. The names listed for these folders in the table below are not optional. The folders **must** be named using the following naming conventions in order to use the analysis code provided by the STEPS team.

Step	Action	Required Folder Name
1	Create a primary folder (directory) for all your STEPS files, including: • data • analysis output.	C:\STEPS
2	Create a backup folder in a **different** location than the primary folder to store a backup copy of your STEPS dataset.	• D:\STEPS (or similar, if you have multiple drives or your disk is partitioned) • C:\BackupSTEPS (if you only have access to one drive)
3	Create a sub-folder under the STEPS primary folder to contain your STEPS dataset ready for analysis in Epi Info.	C:\STEPS\EpiInfo
4	Create a sub-folder under STEPS\EpiInfo to contain analysis output.	C:\STEPS\EpiInfo\ Output Tables
5	Create a folder under the STEPS primary folder for any additional data files (e.g. interview_tracking_form.xls).	C:\STEPS\data

Preparing the STEPS Data for Analysis

Introduction

Upon completion of the data entry process, the data entry supervisor should have a single data file containing all STEPS survey data as well as a completed interview_tracking_form.xls file containing all interview tracking information. Both of these files must be prepared for analysis by the data analyst.

Note: The instructions that follow assume that EpiData was used for data entry and that the final version of the complete STEPS survey data was exported from EpiData into a .dbf file. If this was not the case for your data, please contact the STEPS team for assistance.

Overview

In order to analyse your STEPS data in Epi Info using the generic programs available from the STEPS team, the data must be transported to a Microsoft Access database containing your survey data and the generic programs, each in a separate table. The instructions below describe one means to move your data into the Access database.

Preparing the STEPS survey data

Follow the steps below to prepare your STEPS data for analysis in Epi Info.

Step	Action
1	Rename the .dbf file containing your survey data to "STEPS.dbf" (right-click on the file and select "Rename" to edit the file name).
2	Open the .dbf file in Access. Note that your dataset is listed in the Database window as a linked table (indicated by a blue arrow followed by the letters dB).
3	Copy the dataset to a local table by right-clicking on the dataset and selecting "Copy". Then right-click on any white space in the Database window and select "Paste".
4	In the Paste Table As dialog window, type "MasterDataSet" in the space for Table Name and select "Structure and Data (Local Table)" from the Paste Options.
5	After ensuring the name is spelt correctly and the correct option is selected, click "OK".
6	You will now see the local data table, MasterDataSet, listed in your Database window. You may open it to have a look at your data.
7	Exit from Access. You will see that you now have a STEPS.mdb file listed along with your STEPS.dbf file.
8	Move the STEPS.mdb file to the C:\STEPS\EpiInfo folder.

Continued on next page

Preparing the interview tracking form Excel file

Follow the steps below to prepare the completed interview_tracking_form.xls for analysis in Epi Info.

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Save the interview_tracking_form.xls file to the C:\STEPS\EpiInfo\data folder.</td></tr>
<tr><td>2</td><td>Open the interview_tracking_form.xls file and click on the worksheet entitled "enter information". Check to see that this table has been filled in. If not, stop and contact the data entry supervisor.</td></tr>
<tr><td>3</td><td>After ensuring that the "enter information" worksheet has been completed, check to see if the worksheet "EpiInfo" exists. Refer to the table below to decide how to proceed:
<table>
<tr><th>If …</th><th>Then …</th></tr>
<tr><td>"EpiInfo" worksheet exists</td><td>Exit Excel.</td></tr>
<tr><td>"EpiInfo" worksheet does not exist</td><td>Go to the "Instructions" worksheet in the file and click on the button labeled "Format for Epi Info". After doing so, an "EpiInfo" worksheet should appear. You can now exit Excel.</td></tr>
</table>
</td></tr>
</table>

Data Analysis Programs

Introduction

Generic data analysis programs have been prepared by the STEPS team to complete basic descriptive analyses of STEPS survey data in Epi Info. These programs can be used to create all the output needed to complete the Fact Sheet and Data Book.

Accessing the Data Analysis Programs

The data analysis programs are available on the STEPS CD as well as on the STEPS website. As these are occasionally updated to meet country needs, it is best to check the updates page on the STEPS website (http://www.who.int/chp/steps/resources/updates/en/index.html) to see if a more recent version is available.

The table below provides instructions on how to get the analysis programs onto your computer.

<table>
<tr><th>Source</th><th>Instructions</th></tr>
<tr><td>STEPS website</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Connect to the internet and go to: http://www.who.int/chp/steps/resources/database/en/index.html.</td></tr>
<tr><td>2</td><td>Click on the link labeled " Epi Info Analysis Programs".</td></tr>
<tr><td>3</td><td>Save the zip file, "Epi_Info_Analysis_Programs.zip", to your desktop.</td></tr>
<tr><td>4</td><td>Open the zip file by double-clicking on it. Copy the Access file, Epi_Info_Analysis_Programs.mdb, to your desktop.</td></tr>
</table>
</td></tr>
<tr><td>STEPS CD</td><td>
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Insert the CD into the CD-ROM drive and wait for the CD to launch in your internet browser. If the CD does not launch automatically, go to the list of all files on the CD and open the file "start.html".</td></tr>
<tr><td>2</td><td>Click on the link labeled "Data Analysis Tools and Software" in the left-hand column of the screen.</td></tr>
<tr><td>3</td><td>Click on the link labeled "Epi Info Analysis Programs".</td></tr>
<tr><td>4</td><td>Save the Access file, Epi_Info_Analysis_Programs.mdb to your desktop.</td></tr>
</table>
</td></tr>
</table>

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Attaching the Data Analysis Programs to your Data

Once the analysis programs have been downloaded to your desktop, you will need to attach the programs to your STEPS.mdb file containing your STEPS data.

Step	Action
1	Open the Epi_Info_Analysis_Programs.mdb file and right click on the table "Programs".
2	Select "Export" and in the "Export Table 'Programs' To" window type "C:\STEPS\EpiInfo\STEPS.mdb" in the "File Name" field and click "Export".
3	Select the "Definition and Data" option in the dialogue window and click "OK".
4	If you are updating an older version of the programs, a dialogue window will pop up that asks if you want to replace the "Programs" table that already exists. Click "Yes".

Part 3: Training and Practical Guides

Overview

In this Part

This Part covers the following topics

Section 1: Trainer's Guide

Overview

Introduction

The trainer's guide provides guidance on how to plan, prepare for and deliver training to the data collection team, data entry team and data analyst.

Intended audience

This section is designed for use by people that fulfil the following roles:

- STEPS Site Coordinator
- data collection team supervisor
- data entry supervisor
- data analyst.

Purpose

The purpose of the training is to:

- explain the rationale of the STEPS surveillance
- ensure a uniform application of the STEPS surveillance materials
- motivate interviewers and survey staff
- ensure good overall quality of data
- ensure useful and meaningful results are reported.

In this section

This section covers the following topics:

Training Courses

Introduction

A combination of formal classroom training and hands-on experience is required to adequately train staff that have been recruited to work on STEPS survey.

Training courses to follow

The following three separate trainings will need to be conducted to ensure each member of the recruited teams and the data analyst receives appropriate training:

- interviewer training
- data entry training
- data analysis training.

Training course phases and durations

The table below provides a guideline for each of the training phases and durations to cover the material and train participants to a good level of understanding and proficiency in their specific area. Three training courses are provided, one for each team and one self-study schedule for the data analyst:

- data collection
- data entry
- data analysis.

Training phases	Recommended durations
Classroom training	2-4 days
Pilot test	1 day
Refresher prior to start (optional)	1 day
Total	**4-6 days**

Notes: Refresher training is optional but may be useful if:

- there is a significant gap between when the classroom training was completed and the start of the survey, or
- the pilot test shows up lots of knowledge gaps and some aspects of the training need to be repeated.

Training content and module durations

Suggested course content and training delivery timeframes for each module of learning are provided in the lesson plans below.

These may need adaptation for individual sites, for example some modules in the data entry course may be shorter if participants already have relevant experience, or longer if the participants have not used computers before.

Continued on next page

Training Courses, Continued

Participation

The training courses are intended primarily for members of the respective teams. To help with coordination, you may wish to consider having the team supervisors attend one or more of the training courses.

It is recommended that the statistical adviser complete at minimum the first day of the training for the data analyst and, if possible, he/she should attend the data entry and data collection trainings as well.

Training Preparation

Introduction

Training preparation involves the following tasks:

Task	Description
1	Finding and setting up a suitable training room
2	Scheduling training sessions
3	Coordinating training tasks and events
4	Preparing, printing and distributing training materials
5	Informing participants about course content, date, time and location details and prerequisite requirements

Note: Each of these tasks is described further below.

Training location requirements

A training room will need to be located and arrangements made for use over a three to four week period to train all recruited members of the data collection and data entry teams as well as the data analyst.

The room (or rooms) should be able to accommodate the number of people being trained, the number of trainers or facilitators, plus several extras, at a time.

Requirements for	Details
All rooms	• tables • chairs • blackboard, white board or flip chart • chalk, marker pens, or crayons • multi media projector (optional) • overhead projector (optional)
Data collection	• sufficient room to practice taking physical measurements • props to help with scenarios
Data entry	• computers (minimum 1:2 ratio) loaded with site-specific data entry software (EpiData)
Data analysis	• computer loaded with site-specific data analysis software (Epi Info)

Scheduling training sessions

You will need to schedule training sessions for data collection and data entry staff in advance to ensure each course is well attended and training is provided to all team members before the survey begins.

Provide each participant with a letter confirming the course agenda, including date and place of training.

Continued on next page

Training Preparation, Continued

Training coordination

You may need to plan for and arrange some or all of the following coordination tasks:

- selection of a pilot community;
- order and arrange teas/coffee and lunches for classroom training sessions;
- book accommodation and arrange transport (if necessary);
- develop and set up exercises to be used during classroom training;
- determine, develop and compile training and reference materials that will need to be used by course participants;
- obtain maps or list of households.

Preparing materials

Prior to training sessions, you will need to print out one set per participant of the relevant materials from the STEPS Manual. You may choose to print the whole manual for each participant. If you wish to print only relevant selected sections, use the table below as a guide.

Team Training	Topics	Part, Section
Data Collection	Introduction	Part 1, Section 1
	Planning and Preparing a STEPS Survey	Part 2, Section 1
	Preparing the Sample	Part 2, Section 2
	Preparing a STEPS Site	Part 2, Section 3
	Interviewer's Guide	Part 3, Section 2
	Guide to Physical Measurements	Part 3, Section 3
	Data Collection	Part 4, Section 1
	STEPS Instrument	Part 5, Section 1
	Question-by-Question Guide	Part 5, Section 2
	Show Cards	Part 5, Section 3
	Interview, Blood Collection and Data Entry Forms	Part 6, Section 2
Data Entry	Introduction	Part 1, Section 1
	Preparing the Data Entry Environment	Part 2, Section 4
	Data Entry Guide	Part 3, Section 5
	Data Entry	Part 4, Section 2
	STEPS Instrument	Part 5, Section 1
	Question-by-Question Guide	Part 5, Section 2
	Interview and Data Entry Forms	Part 6, Section 2
Data Analysis	Introduction	Part 1, Section 1
	Preparing the Sample	Part 2, Section 2
	Preparing the Data Analysis Environment	Part 2, Section 5
	Data Analysis Guide	Part 3, Section 6

Continued on next page

Preparing materials (cont.)

Team Training	Topics	Part, Section
Data Analysis cont.	Data Analysis	Part 4, Section 3
	Reporting and Disseminating Results	Part 4, Section 4
	STEPS Instrument	Part 5, Section 1
	Question-by-Question Guide	Part 5, Section 2
	Interview and Data Entry Forms	Part 6, Section 2

Participant preparation

Prior to attending a training session, all training participants will need to study the STEPS Instrument and appropriate sections in the STEPS Manual.

Training Lesson Plan: Data collection team

Introduction The following lesson plan is a guide for people responsible for delivering the data collection team training. This may be the STEPS Site Coordinator or the data collection team supervisor.

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Day 1				
Introductions, warm up, agenda and expectations	9.00-10.00	3-1-15	Establish a new team, set expectations and course agenda.	
Overview and Rationale of the WHO STEPwise approach to chronic disease risk factor surveillance	10.00 -12.30	1-1	Understand chronic diseases and their key risk factor, importance of surveillance framework, get an overview of what STEPS is and how it works.	
Lunch				
The data collection team	14.00 - 14.30	1-2 3-2-3 4-1-2	Understand staff core roles and responsibilities as well as the organization of the data collection team.	
Sampling	14.30 - 15.30	2-2	Understand how households are being sampled, understand the imperative of a random sample.	Talk through how the sample is being selected. Consider possible concerns or questions & how they could be handled. Explain that interviewer must stick to sample and not select a neighbour if their selected person is not at home.
Approaching selected households	15.30 - 16.30	4-1-7 6-2-2	Competently follow procedures for approaching households.	Scenarios, moving from simple to more difficult.

Day 2				
Review of day 1, warm up	9.00-9.30		Recognize previous day's learning. Identify and handle any queries.	
The Kish method	9.30-10.00	2-2-25 6-2-11	Understand how an individual within selected households is selected, know how to use the Kish method.	Explain the Kish method, participants to use the Kish method in practice exercises.
Interview tracking	10.00-11.00	2-2-28 4-1-12 6-2-12	Understand the importance of interview tracking (e.g., tracking of non-response) and know how to use the Interview Tracking Form. Understand how the information from the Interview Tracking Form will be used in data analysis.	Talk through examples on how to fill in the Interview Tracking Form.
Informing participants and obtaining consent	11.00-12.00	4-1-9 4-1-11 6-2-3 6-2-6	Know why and how to inform participants in detail. Understand ethical considerations and their relevance for interviewing. Follow guidelines to obtain consent.	Practice how to inform participants and obtain consent. Scenarios with e.g. reluctant, objecting, unwell, or over-busy respondents.
Lunch				
Interview skills	13.30-14.30	3-2-4	Understand and demonstrate good interview practices.	Use scenarios to demonstrate how responses can be swayed by different interview techniques.
STEPS Instrument, Question-by-Question Guide and show cards	14.30-16.00	3-2-10 5-1 5-2 5-3	Understand the Instrument, the different risk factors and what they aim to measure, response options (including don't know and refuse), skip instructions and show cards. Understand how to use the Question-by-Question Guide and the show cards.	Talk through the STEPS Instrument and Question-by-Question Guide section by section.

Day 3				
Review of day 2, warm up	9.00-9.30		Recognize previous day's learning. Identify and handle any queries.	
Recording information and checking paperwork	9.30 - 10.30	4-1-14	Understand how to record information on the STEPS Instrument and to do all paperwork properly.	Explain how to record information on the STEPS Instrument.
Collecting demographic and behavioural risk factor information (Step 1).	10.30 - 12.30	3-2	Understand the questions, know how to clarify. Record responses clearly and accurately, deal with different people, resolve inconsistencies and incomplete Instruments.	Explain how to collect demographic and behavioural risk factor information, demonstrate various difficulties and strategies. Practice interviews.
Lunch				
Collecting demographic and behavioural risk factor information (Step 1), cont.	14.00-15.00	3-2	Understand the questions, know how to clarify. Record responses clearly and accurately, deal with different people, resolve inconsistencies and incomplete Instruments.	Explain how to collect demographic and behavioural risk factor information, demonstrate various difficulties and strategies. Practice interviews.
Taking and recording physical measures (Step 2)	15.00 - 16.30	3-3	Assemble equipment and supplies for Step 2 measurements. Measure blood pressure, height, weight, waist and hip circumference (if applicable). Clearly and accurately record participant results.	Learn and practice on team members, all participants' measure independently then compare results.

Day 4				
Review of day 3, warm up	9.00-9.30			
Taking and recording physical measures (Step 2), cont.	9.30-11.00	3-3	Assemble equipment and supplies for Step 2 measurements. Measure blood pressure, height, weight, waist and hip circumference (if applicable). Clearly and accurately record participant results.	Learn and practice on team members, all participants' measure independently then compare results.
Completing the Participant Feedback Form (Step 2)	11.00-12.00	4-1-16 6-2-8 6-2-10	Understand how to record information on the Participant Feedback Form. Know how to use the BMI Classification Chart.	Explain how to record information on the Participant Feedback Form and how to use the BMI Classification Chart.
Lunch				
Referrals and procedures for biochemical measures (Step 3)	13.30 - 14.30	3-4 4-1-17 6-2-13 6-2-14	Know how to make appointments for those selected for Step 3, know what interviewees need to know for Step 3, know how to use forms related to Step 3.	Explain referrals and procedures related to biochemical measures.
Check-list for equipment and supplies, checking paperwork	14.30-15.30	2-2-28 2-3-4 4-1-6	Know what documents, equipment and supplies are needed for field work. Know how to organize the material.	Explain all equipment, supplies and documents and how to organize the material.
Preparing pilot test, Review of most important issues that arose during training, discussion	15.30-16.00	4-1 2-1-21	Clarification of final questions before interviewers do the pilot test.	Wrap-up, clarify all questions that have not been answered during the training.
Day 5				
Pilot test	9.00 - 16.00	2-1-21	Major aspects of data collection thoroughly tested. Identify weaknesses or failures in current systems and processes.	Go to a residential area, with a pre-determined sampling plan. Participants do a complete run-through of whole data collection process.
At a later date				
Refresher	9.00 - 16.00			

Training Lesson Plan: Data entry staff

Introduction The following lesson plan is a guide for people responsible for delivering the data entry staff training. This will usually be the data entry supervisor.

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Day 1				
Introductions, warm up, agenda and expectations	9.00 - 10.00	3-1-15	• establish new team • set expectations • review course agenda	
The data entry team (office setup and workflow)	10.00 - 11.00	3-5-5, 4-2-2	• understand main roles and organization of personnel • discuss data privacy issues • understand office workflow	Label computers, assign staff to computers for 1st & 2nd keying, create folders and coversheets for each computer.
Computer basics	11.00-12.00	3-5-3	• familiarization with computer parts and terms • address ergonomic considerations • review computer basics: logging on & off, using the keyboard and mouse, printing, etc.	Have staff sit at assigned computer for 1st keying and have them log on, take a small tour, create a text document, print, log off.
Lunch				
Data flow and the data entry process	14.00 - 15.30	3-5-5, 4-2-6	• understand overall data entry process • understand importance of good data flow in the office • review how instruments will flow through office • review data tracking forms • practice filing and retrieving instruments	Distribute copies of the Data Entry Tacking Form and Data Entry Log and show how to fill them out. Use a set of dummy instruments with only a participant ID completed to practice distribution, flow and tracking of instruments.

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Consulting your supervisor	15.30 - 16.00	3-5-7	• understand when to ask for clarification from supervisor • review roles and responsibilities of each team member • review data entry rules and guidelines	
Day 2				
Review, warm up, agenda and expectations	9.00-9.30		• review previous day and today's agenda	
EpiData templates	9.30-10.30	2-4-8, 3-5-10	• understand the purpose of different templates and the file structures	Relate site-specific instrument to the data entry templates.
Using EpiData (data entry software)	10.30 - 12.30	3-5-9, 3-5-10	• review how to open and navigate EpiData and how to open a data entry template in EpiData • review steps in process of 1st keying, 2nd keying preparations, and 2nd keying • review how to create consistency reports	Have staff practice on assigned computer opening and navigating EpiData and opening a data entry template for data entry. Have trainer demonstrate creation of consistency report on one computer with entered data.
Lunch				
Rules and guidelines for data entry	14.00-14.30	3-5-7	• understand and demonstrate rules and guidelines for data entry • be able to identify and correctly handle any problems that may arise during data entry	Present several examples of potential data entry problems (e.g. missing pages, illegible writing, out-of-range responses) and review as a group how each should be handled.

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
First and second keying data entry	14.30 - 15.30	3-5-10	• review in-depth how to do 1st keying and prepare for 2nd keying • assign staff 2nd keying computers and review how and when staff should swap computers • review in-depth how to do 2nd keying (data validation)	Have staff practice on assigned computer: completing first key and preparing for 2nd keying using a small number of completed dummy instruments. Have staff change seats so they are seated at computers for 2nd keying. Have staff practice 2nd keying on these computers.
Backing up data	15.30 - 16.00	3-5-16	• explain need for file protection and safety • demonstrate back-up procedures	Have staff practice backing up entered data on assigned computer.
Day 3				
Pilot testing	9.00 - 16.00	2-4-19, 3-5-17	• thoroughly review entire data entry process with set of completed dummy instruments • gain further practice handling instruments containing errors • identify any difficulties faced and discuss how to handle them	See 3-5-17 for exercise description.
At a later date				
Refresher training	Weekly meetings		• review procedures for processing and tracking all instruments • identify weaknesses/problems in current system and devise solutions • check consistency reports	

Training Lesson Plan: Data analyst

Introduction The following Lesson Plan is a self-study guide for the data analyst.

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Day 1				
Become familiar with relevant sections of the STEPS Manual.	9.00 - 10.30	2-2, 2-5, 3-6, 4-3	• understand what information is available and where it is located	
STEPS Instrument	10.30 - 11.30	5-1, 5-2	• become familiar with the site-specific instrument and the generic STEPS Instrument • become familiar with types of data collected and generic question codes	Print out both instruments and identify differences.
Preparing the fact sheet and data book	11.30-12.30	4-4-9, 4-4-12, 6-3	• become familiar with the Fact Sheet and Data Book • develop a basic understanding of how to complete these documents	Print out and review Fact Sheet, Fact Sheet Analysis Guide and Data Book.
Lunch				
Sample design and scope of STEPS survey and weighting your survey data	13.00 -15.00	2-1-5, 2-2, 4-3-19	• understand the sample design and scope of the survey • understand how to create weight and sample design variables for a weighted analysis	Review sections of manual listed and review all materials related to sample design of survey (e.g. Implementation Plan).
Introduction to Epi Info (data analysis software) and accessing survey data	15.00-16.00	3-6	• install Epi Info • perform basic tasks in Epi Info using Part 3, Section 6 as a guide	Create small dummy data set and practice basic commands in Epi Info.
Day 2				
In-depth Epi Info training	9.00-17.00	Epi Info Training Guide	• complete all exercises in Epi Info Training Guide • perform more advanced tasks in Epi Info	Follow exercises in Epi Info Training Guide using training files available from STEPS CD or STEPS website.

Training Delivery Tips

Introduction

The training delivery tips below may be useful for those that have been assigned the role of training, but are not in fact trained trainers.

Introductions and warm up

Before you start the training, it is important for team development to introduce yourself and find out a little about the people in the room. Use the table below to help with the introductions.

Step	Action
1	Introduce yourself and any other co-trainers to the participants.
2	If you don't already know everyone in the room, or they don't know each other, get each participant to briefly introduce themselves (or a person beside them).
3	Ask participants and adapt according to the class: • what they understand by 'chronic noncommunicable disease risk factors'; • what they think the biggest chronic disease health issues are in their country or area; • in what ways do those diseases impact on the health and welfare of the people in their communities. **Note:** Write the responses on a board. Acknowledge that there is not necessarily a 'correct' answer, it varies by time and community. Encourage discussion so you can gauge the level of understanding that the staff already have. The staff can begin to learn on what they and their colleagues will be working.
4	Ask participants if they have any questions or topics they would really like to have covered in the training. **Note:** Write the responses on the board and try and answer them during the training course.

Course agenda and setting expectations

Participants will need to know what to expect in terms of training content, how long it will take and what is expected of them during the course. Use the table below (and lesson plans) to help explain the agenda and set expectations:

Step	Action
1	Explain the aim of the training.
2	Outline what will be covered.
3	Tell them how long the training will take.
4	Explain what is expected of them during training.

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Using material

The STEPS Manual has been structured into modular sections that can be easily extracted and recompiled to provide customised manuals for training.

The manual content has been designed for use as both training material and in the field reference.

Exercises

You will need to create exercises that:

- are relevant to the local environment
- support the training material
- work through typical problems and issues that are likely to be encountered
- allow for hands on practice.

Encouraging participation

The course is not about how much you as the trainer fill it with content, but how much the participants take away in new learning and understanding of skills.
Continually encourage all attendees to participate. Use the table below for guidance.

Topic	Guidance
Comfort zones	Acknowledge that participants may be asked to do things out of their comfort zone (particularly in the interviewing course where scenarios are an important part of training).
Criticism	Ensure participants are not criticised or demoralised when offering comments and questions.
Experience	Develop or build on participants own experiences and understandings.
Fears	Recognize fears and concerns and offer strategies to handle them.
Support	Offer praise when appropriate and support when participants demonstrate feelings of inadequacy or difficulty.
Strengths and weaknesses	Assure everyone that we all have strengths and weaknesses and that they have been selected as a team, with skills that complement those of others.
Team work	Encourage teams to work together and communicate well.
Being self reliant	Once the survey starts, there will not always be an "expert" available to answer questions. Participants must understand enough to be self reliant and know when to seek advice or help from others.

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Beginning and ending sessions

It is always helpful to introduce each session with an introduction covering:

- the previous work that builds a foundation for this session
- the content and purpose of the session
- briefly the resources and format to be used.

At the end of the session, summarise:

- what topics and skills have been covered;
- whether that is the end of that topic or a future session will cover further material;
- acknowledge areas of good progress, but also areas where further work will be required.

Handling problems and participation issues

Use the guidance in the table below to help with some typical problems encountered in the training environment.

Problem/ situation	Guidance
Late arrivals	Recap briefly what has just been covered and politely make it clear that you want all participants to be punctual.
Interruptions	Remain patient at all times.
Participant does not seem to follow and understand.	Show patience and understanding. Repeat the point/topic in a different way and then ask if the participant understands better.
A participant is dominating the sessions, making it difficult for others to participate and learn.	First try commenting during discussions that you'd like everyone to contribute, even use the phrase "let's hear from someone else this time". If that does not achieve anything, take the staff member aside during a break and suggest that others also need to participate. Give a little praise, if warranted, about their grasp of the topic, but state that, as the trainer, you need to hear from other participants, too.
Participant is not keeping up with the others, or appears unable to "engage".	During a break, seek out the staff member to see whether anything is wrong, or if they are finding anything particularly difficult. If so, a short "catch-up" session may help. If the participant is unwell or troubled it might be best if they leave.

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Celebrating milestones

Within the context of the training course, as in the conduct of the survey itself, recognize milestones to encourage the participants and to help develop a sense of "team-ship".

Think particularly of those who may be regarded as outsiders in any way – perhaps they are from out-of-town, are not known to other members of a group, or are of a different language group or cultural background – who may be more hesitant to participate.

You may like to have markers of effort, mastery, achievement or other contribution - use your imagination to select small gifts, snack food treats or certificates to award to participants.

Section 2: Interviewer's Guide

Overview

Introduction

The quality of STEPS surveillance results and their usefulness for intra- and intercountry comparisons largely depends on the quality of the interviews. This section provides generic guidelines for interviewers. It does not cover step-by-step instructions on approaching households, informing participants and obtaining consent. This is covered in Part 4, Section 1. The following sections in this part, Section 3 and Section 4, give information on how to undertake the physical and biochemical measurements (Step 2 and 3).

Intended audience

This section is designed for use by those fulfilling the following roles:

- interviewers
- data collection team supervisors
- STEPS Site Coordinator
- data entry staff.

What you will learn

In this section, you will learn:

- the structure of the data collection team
- how to interview participants
- how to complete participants' instruments
- how to use the Question-by-Question Guide
- how to use the show cards.

Learning outcomes

The learning outcome of this module is to conduct consistent and effective interviews and record accurate data.

Instructional material

For the full process of an interview from knocking at the door to leaving the household, see Part 4, Section 1.

Other data collection materials

This Guide is to be used in conjunction with the following sections in the STEPS Surveillance Manual. These sections provide full instructional material on the following topics.

Topic	Part, Section
Preparing a STEPS site	Part 2, Section 3
Guide to Physical Measurements	Part 3, Section 3
Guide to Biochemical Measurements	Part 3, Section 4
Data Collection	Part 4, Section 1

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Overview, Continued

In this section This section covers the following topics:

Data Collection Team

Introduction

You will be assigned to work with a team of other interviewers in a specified area for the duration of data collection.

Interviewer identification

Each interviewer will have a unique ID.

This Interviewer ID will be filled in on all data collection forms (see Part 2, Section 2).

Supervision

Each team will work with a supervisor. The supervisor is responsible for:

- tracking your progress
- ensuring instruments are completed correctly
- keeping data collection to the specified timeframe
- handling any issues you encounter.

Note: For further details on the supervisor's role, please see Part 4, Section 1.

Interview Skills

Introduction

The STEPS interview is about finding out and recording a list of facts and behaviours relating to selected participants.

The participant needs to feel comfortable about the survey and can refuse to be interviewed as participation is voluntary. Your interview should therefore be as natural as possible and conducted politely, like a normal conversation.

Behaviour and tact

The table below provides guidelines on appropriate behaviour during an interview:

Behaviour	Guidelines
Respect confidentiality	Maintain the confidentiality of all information you collect.
Respect participants time	You are asking participants for their time so be polite and prepared to explain.
Tact	If you feel that a person is not ready to assist you, do not force them but offer to come back later.
Friendly disposition	Act as though you expect to receive friendly co-operation and behave accordingly.
Body language	Maintain good eye contact and adopt appropriate body language.
Pace of interview	Don't rush the interview. Allow the participant enough time to understand and answer a question. If pressured, a participant may answer with anything that crosses their mind.
Patience	Be patient and polite at all times during the interview.
Acceptance	No matter what the responses to questions, do not be judgemental of a participant's lifestyle. Expression of any criticism may lead to refusing or concealing important information.
Appreciation	Thank them for their help and cooperation.

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Asking questions

The table below provides guidelines for asking questions in an interview:

Topic	Guidelines
Issues relating to chronic diseases and their risk factors	Do not discuss or comment on issues relating to chronic diseases and their risk factors. Participants may not give correct answers to the questions but give the answers they think the interviewer is looking for.
Right or wrong answers	Point out that there are no right or wrong answers and that the interview is not a test.
Biased answers	Ask your questions according to guidelines given in the Question-by-Question Guide to avoid biased answers and ensure comparability of data (see Part 5, Section 2).
Read all options	All options must be read to the participant except for Don't know/Don't remember, Refused, and Other.
Reading questions	Questions should be read: • as they are written in the text; • slowly and clearly emphasizing key words in bold; • in a pleasant voice that conveys interest and professionalism; • entirely to make sure the participant has heard it completely. Do not change the: • wording • order of the questions.
Making assumptions	Don't make assumptions about the participants' answers with comments such as "I know this probably doesn't apply to you, but…". This practice may prevent accurate and unbiased information.

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Providing clarification

You may need to provide clarification when the participant:

- is unable to answer the question asked;
- does not seem to understand the question and gives an inappropriate reply;
- does not seem to have heard the question;
- is taking a long time to answer the question and hesitates;
- asks about a specific part of the question to be repeated (it is acceptable to repeat only that part);
- asks for one option to be repeated (read all options again but you may omit one option if it has clearly been eliminated by the participant);
- asks for one term to be clarified (refer to the explanations provided in the Question-by-Question Guide).

When to probe further

You will need to probe further to get an appropriate response when the participant:

- seems to understand the question but gives an inappropriate response
- does not seem to understand what is asked
- misinterprets the question
- cannot make up his or her mind
- digresses from the topic or gives irrelevant information
- needs to expand on what has been said or clarify the response
- gives incomplete information or an answer is unclear
- says that he or she doesn't know the answer.

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Common responses that need probing

The table below lists some common responses that may need further probing:

If the participant replies…	Then…
"I don't know" (DK)	Repeat the question.
"I still don't know"	Probe once before recording (DK), for example, ask "Could you give me your best estimate".
"I still don't know"	This may mean the participant: • is taking time to think and wants to gain time; • does not want to answer because of personal reasons; • in fact does not know or has no opinion.
"Not applicable" (NA)	• ask him/her why the question does not apply to him/her; • write down NA if it is clear that the question is irrelevant.

Notes:
- Don't know/Don't remember and Refuse should be used only as an absolute last resort.

Probing techniques

The table below provides a few techniques to use when probing further:

Technique	Guidelines
Repeat the question	The participant may come up with the right answer if he/she hears the question a second time.
Make a pause	This gives the participant time to collect his/her thoughts and expand on his/her answer.
Repeat the participant's reply	This is often a very effective way of having the participant reflect on the answer he/she has just given.
Use neutral probes	Avoid biased responses and probes. Never give the impression that you approve or disapprove what the participant says, or that their answer is right or wrong. Instead, if you want more information, ask "anything else?", or "could you tell me more about…?"

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Interruptions

Interruptions may occur during an interview. If they become too long or too many, suggest returning at another time to complete the interview.

Take care that even if interrupted or delayed, you should remain patient and polite at all times.

Refusal to answer

Some participants may refuse to be interviewed. Reasons for this are varied and differ from one participant to another. Some participants may not refuse outright but may express hesitancy, reservation or hostility.

You will learn to distinguish between refusals (e.g. hesitancy from a definite refusal). Success in obtaining cooperation will depend upon your manner and resourcefulness.

Participants must not be forced to respond to the whole interview or to any part of the survey process. However, the more refusals that are made, the less representative the survey is of the whole population.

Handling refusals

Be prepared to obtain cooperation from a participant who does not want to be interviewed. In general, be pleasant good-natured and professional and most participants will cooperate.

Use the table below to help you handle some refusal situations:

If...	Then…
The participant becomes defensive	• show patience and understanding; • provide token agreement and understanding of his/her viewpoint, that is, saying something like, "I can understand that" or "You certainly have the right to feel that way"; • convey the importance of the survey to the participant.
You may have visited at a bad time	Try again later.
The participant may have misunderstood the purpose of the visit	Try to explain the purpose again.
You think you may get a "no"	Try to leave and suggest coming back later before you get a partial or an absolute "no".

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Language issues

Be aware that if you use ‘interpreters of convenience’ (such as members of the participant’s family or household, the village headman, or domestic staff), you may get incorrect data being recorded.

If you don't get sufficient cooperation due to a language barrier, report this to your supervisor.

Completing the STEPS Instrument

Introduction

Once the standard STEPS Instrument has been adapted, translated and printed it is ready for use during the survey.

One instrument is to be completed for each participant you interview and measure. All items on the instrument must be completed for the response to be valid.

ID codes

When the interviewer receives the instruments, the following ID codes and information should be filled in already (see Part 2, Section 2, "Preparing Data Collection Forms"):

- Cluster ID
- Cluster name
- Interviewer ID
- Participant ID (on each page, first page twice).

Consent, Interview Language and Name

The second part on the first page of each instrument contains identification information, including the participant names. It is very important that these details are kept confidential at all times and you should tell the participant that they will be kept confidential.

Core and expanded items

The instrument contains **CORE** and **EXPANDED** questions and measurements. You will need to complete both.

Introductory statements

Where a section of items has an introductory statement, read this out to the participant before asking the questions in the section.

Entering the participant's response

For each item on the instrument, there may be one or more possible responses. Each possible response has an associated number. You will need to circle the appropriate response or fill in the appropriate response in the available box for each item. For example:

Questions		Response	Code
24	Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes?	Yes 1 No (2) *If No, go to T 6*	T1
45	How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD)*	Number of servings 0 5 Don't Know 77	D2

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Skip instructions

Skip instructions are located in the response column just next to the response. You will need to follow the instructions if the participant responds in a certain way to the question.

If you need to record notes, (for example, if the right arm was used instead of the left arm to take a blood pressure measurement) insert them in the left hand side margin.

"Don't know" responses

The table below shows what to enter as a last resort where the participant does not respond with a standard response.

If the participant responds with	And number of ⌊_⌋ is	Then enter
Don't know Don't remember	⌊_⌋⌊_⌋	77
Don't know Don't remember	⌊_⌋⌊_⌋⌊_⌋	777
Refused	⌊_⌋⌊_⌋	88
Refused	⌊_⌋⌊_⌋⌊_⌋	888

Question-by-Question Guide

Introduction

The Question-by-Question Guide (Q-by-Q) is a 'master' version of the standard STEPS instrument. It provides instructions and guidelines for each question.

A copy of the Q-by-Q Guide can be found in Part 5, Section 2.

Purpose of the Q-by-Q guide

The purpose of the Q-by-Q Guide is to provide background information, explanations and examples of correct information to help interviewers accurately complete each instrument with participants.

It is to be used as both a training and data collection tool.

Using the guide

Before conducting the interviews, data collection team staff should:

- read the Q-by-Q Guide many times over until you are comfortable with the information;
- practice asking the questions;
- become thoroughly familiar with the contents of the instrument.

Responding to questions for clarification

If participants request clarification about specific questions, use the Q-by-Q Guide to help, rather than offering your own interpretations.

Show Cards

Introduction

Show cards are useful tools to help explain what is meant by some of the questions on the Instrument. To be useful, they must be adapted to local settings.

Applicable show cards

For each interview you may need to have show cards that cover the following topics:

- list of work status
- list and/or show cards of tobacco products
- alcohol consumption (standard drink)
- diet (typical fruit and vegetables and serving sizes)
- types of physical activities.

Note: These show cards can be found in Part 5, Section 3.

Instructions for use

These cards will have been adapted so they are appropriate for your setting.

Use the show cards to:

- help clarify what you mean and what the terms used on the Instrument mean
- show participants examples of the kind of products you are talking about.

Demographic Information (Step 1)

Introduction

Accurate core demographic information is essential for analysing and reporting on the overall results of the STEPS survey.

If the age and sex of a participant has been missed out, their responses cannot be used in the analysis, as most analyses report results that are grouped by these criteria.

Core demographic information

The core demographic information that is captured with the STEPS instrument includes:

- sex
- age
- years spent at school.

Dates of birth and age

In some countries, some individuals may not know their exact dates of birth and/or age. In these situations their age has to be estimated. To estimate someone's age, you will need to ask them how old, or at what stage in life they were at the time that a number of widely known major local events occurred.

Expanded demographic information

Expanded demographic information includes:

- highest level of education
- ethnic/racial group
- marital status
- work status
- household earnings.

Please note that it will be easier for respondents to answer the question on work status if a list of work status is used (see Part 5, Section 3 "Show Cards".

Some of the expanded demographic questions will have been adapted for your site so the terms and phrases make sense to participants in your environment, e.g., insertion of country specific examples for work status.

Skip instructions

There are two skip instructions in the demographic information section of the STEPS Instrument:

- C2: If date of birth is known, C3 ("How old are you?") can be skipped;
- C10a-d: If average earnings of the household are known, C11 (income quintiles) can be skipped.

Behavioural Measurements (Step 1)

Introduction

The behavioural measures in the STEPS Instrument relate to risky behaviour with regards to chronic diseases. In particular, they are designed to record details about:

- tobacco use
- alcohol consumption
- fruit and vegetable consumption
- use of oil and fat
- physical activity
- history of raised blood pressure and diabetes.

For the rationale for capturing information on these topics, see Part 1, Section 1.

Core questions

The STEPS Instrument includes core questions for each of the following:

- tobacco use
- alcohol consumption
- fruit and vegetable consumption
- physical activity
- history of raised blood pressure and diabetes.

The core questions of each are explained in detail in this section below.

Expanded questions

The behavioural measurements section of the STEPS Instrument includes expanded questions for each of the following:

- tobacco use
- alcohol consumption
- use of oil and fat
- sedentary behavior
- history of raised blood pressure and diabetes.

The expanded questions of each are explained in detail in this section below.

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Core questions on tobacco use

The tobacco-related questions recommended for the STEPS approach are based on the WHO guidelines for tobacco use surveillance (*95*).

Even though in some countries it is only men who smoke, women as well as men must be asked these questions.

The questions in the STEPS Instrument ask about:

- current smoking
- daily smoking
- age when starting smoking
- number of items smoked per day.

The following skip instructions apply:

- T1: If a person does not currently smoke, go to the questions on past daily smoking (T6);
- T2: If a person does not smoke daily, go to the questions on past daily smoking (T6);
- T3: If a daily smoker tells you the age when he/she started smoking, T4a-c ("how long ago was this?") can be skipped;
- T5a-T5other: Once a daily smoker has answered how many items he/she smokes each day, you can continue with T9 (use of smokeless tobacco) and skip the questions on past smoking (T6-T8a-c).

Expanded questions on tobacco use

The expanded tobacco questions focus on past smoking, the use of smokeless tobacco and on exposure to smoke and include questions on

- past smoking and age stopped smoking
- current use of smokeless tobacco
- daily use of smokeless tobacco
- number of times smokeless tobacco is used per day
- past use of smokeless tobacco
- passive smoking.

The following skip instructions apply:

- T6: If a person has never smoked daily, go to the questions on use of smokeless tobacco;
- T7: If a past daily smoker tells you the age when he/she stopped smoking, T8a-c ("how long ago was this?") can be skipped;
- T9: If a person does not use smokeless tobacco, go to T12 (past use of smokeless tobacco);
- T10: If a person does not use smokeless tobacco daily, go to T12 (past use of smokeless tobacco);
- T11a-T11other: Once a daily user of smokeless tobacco has answered how many items he/she uses each day, you can continue with T13 (exposure to smoke) and skip the question on past use of smokeless tobacco (T12).

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Expanded questions on tobacco use (cont.)

In some settings, smokeless tobacco will be more prevalent than smoking tobacco. For these settings, it is strongly recommended to include the expanded questions on tobacco use.

Tobacco use show card

See Part 5, Section 3 for a list of tobacco products as well as tobacco show cards. It is recommended that countries develop their own show cards displaying country specific examples of tobacco products.

Core questions on alcohol consumption

The consumption of alcohol varies a lot within and across countries, and different patterns of alcohol consumption are associated with different levels of risk. Alcohol consumption can be episodic, and asking individuals about their average (daily) consumption can be problematic. In addition, while some communities abstain from alcohol entirely or may use alcohol on very rare and specific occasions, others usually consume it rather regularly. Even though in some countries, only men may consume alcohol, women as well as men must be asked these alcohol related questions.

Due to the above mentioned reasons, surveys of alcohol consumption should attempt to capture amount and frequency as well as patterns of drinking.

The questions in the STEPS Instrument ask about:

- lifetime consumption of alcohol;
- past 12 month consumption of alcohol and it's frequency;
- general consumption of alcohol in past 30 days;
- number of occasions of alcohol consumption in the past 30 days;
- average number of drinks per drinking occasion;
- largest number of drinks per drinking occasion;
- number of occasions with five or more (for men)/four or more (for women) drinks in one occasion.

The following skip instructions apply:

- A1a: If a person has never drunk, you don't have to ask the rest of the alcohol questions;
- A1b: If a person has not drunk within the past 12 months, you can skip to D1 (questions on fruit and vegetable consumption);
- A3: If a person has not drunk within the past 30 days, you can skip to D1 (questions on fruit and vegetable consumption).

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Expanded questions on alcohol consumption

The expanded alcohol questions focus on drinking with meals and on drinking in the past 7 days. They will only need to be answered by those who replied "yes " to A3.

Alcohol consumption show card

The definition of a "standard drink" will have to be reviewed and potentially modified by each site on the show cards, included in Part 5, Section 3, to reflect local types of alcohol. This will include:

- types and strengths of products
- common measures
- local terms used for both.

If domestic manufacture of beer, wine or spirits is common, information on the usual ethanol content of such products should also be available to help determine the volume of absolute alcohol that makes a "standard drink".

Core questions on diet

The STEPS questions on diet include:

- the number of days fruit is eaten in a typical week
- the number of servings on one of these days
- the number of days vegetables are eaten in a typical week
- the number of servings on one of those days.

The following skip instructions apply:

- D1: If a person reports 0 days of fruit consumption, go to D3 (vegetables consumption);
- D3: If a person reports 0 days of vegetables consumption, go to D5, if applicable, or to the physical activity questions.

Expanded questions on diet

The expanded diet questions ask about the type oil or fat most often used for cooking, and about the number of meals consumed outside a home.

Diet show card

The diet show card in Part 5, Section 3 will have to be updated to show examples of fruits and vegetables considered most typical for your site. For comparative purposes, serving size is standardized to represent 80 grams.

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Core questions on physical activity

The STEPS physical activity questions represent the Global Physical Activity Questionnaire, version 2 (GPAQ). This questionnaire assesses physical activity behaviour in three different domains: at work (which includes paid and unpaid work, in and outside of the home), for transport (to get to and from places), and during leisure time.

Some people will be physically active in all three domains, others may not be active in any of the settings. In any case, questions from all three domains should be asked.

The GPAQ questions include:

- involvement in vigorous activities at work;
- number of days in a typical week with vigorous physical activity at work, and time spent in this activity on one of those days;
- involvement in moderate activities at work;
- number of days in a typical week with moderate physical activity at work, and time spent in this activity on one of those days;
- involvement in physical activity for transport;
- number of days in a typical week with activity for transport, and time spent in this activity on one of those days;
- involvement in vigorous activities during leisure time;
- number of days in a typical week with vigorous physical activity during leisure time, and time spent in this activity on one of those days;
- involvement in moderate activities during leisure time;
- number of days in a typical week with moderate physical activity during leisure time, and time spent in this activity on one of those days.

The following skip instructions apply:

- P1: If a person has not been involved in vigorous physical activities at work, go to moderate physical activities at work (P4);
- P4: If a person has not been involved in moderate physical activities at work, go to physical activities for transport (P7);
- P7: If a person has not been involved in physical activities for transport, go to vigorous physical activities during leisure time (P10);
- P10: If a person has not been involved in vigorous physical activities during leisure time, go to moderate physical activities during leisure time (P13);
- P13: If a person has not been involved in moderate physical activities during leisure time, go to sedentary behaviour (P16).

Expanded question on physical activity

The expanded question on physical activity assesses the time spent sitting on a typical day.

Continued on next page

Physical activity show card

The physical activity show cards will have been adapted by each site to show types of physical activities.
See Part 5, Section 3 for a list of typical physical activities as well as a few examples on show cards that have been developed by countries and that display country specific examples of physical activities.

Core questions on history of raised blood pressure

The core questions on history of raised blood pressure include whether a person has ever had his/her blood pressure measured, whether he/she has been told that he/she has raised blood pressure, as well as whether this was in the past 12 months.

The following skip instructions apply:

- H1: If a person's blood pressure has never been measured, the rest of the history of blood pressure questions can be skipped;
- H2a: If a person has never been told that he/she has raised blood pressure, the rest of the history of blood pressure questions can be skipped.

Expanded questions on history of raised blood pressure

The expanded STEPS questions on history of raised blood pressure include:

- treatment of raised blood pressure
- traditional treatment of raised blood pressure.

Core questions on history of diabetes

The core questions on history of diabetes include whether a person has ever had his/her blood sugar measured, whether he/she has been told that he/she has raised blood sugar, as well as whether this was in the past 12 months.

The following skip instructions apply:

- H6: If a person's blood sugar has never been measured, the rest of the history of blood sugar questions can be skipped;
- H7a: If a person has never been told that he/she has raised blood sugar, the rest of the history of blood sugar questions can be skipped.

Expanded questions on history of diabetes

The expanded STEPS questions on history of raised blood sugar include:

- treatment of raised blood sugar
- traditional treatment of raised blood sugar.

Section 3: Guide to Physical Measurements (Step 2)

Overview

Introduction

This section provides information on and is a guide to working with the topics covered under Step 2 of the STEPS Instrument.

Intended audience

This section is designed for use by those fulfilling the following roles:

- interviewers
- data collection team supervisor
- STEPS Site Coordinator.

In this section

This section covers the following topics:

Physical Measurements Overview

Introduction

Step 2 of the STEPS Instrument includes selected physical measures to determine the proportion of adults that:

- have raised blood pressure
- are overweight and/or obese.

What you will learn

In this section, you will learn:

- what the physical measures are and what they mean
- what equipment you will need
- how to assemble and use the equipment
- how to take physical measurements and accurately record the results.

Learning outcomes objectives

The learning outcome of this section is to understand what the physical measures are and how to accurately take the measurements and record the results.

Physical Measurements

Introduction

Blood pressure is taken from the participants to determine the proportion of the population with raised blood pressure. Height and weight measurements are taken to calculate body mass index (BMI) that is used to determine the prevalence of overweight and obesity in the population.

Units of measurement

The table below shows the standard units of measurement for physical measurements used in STEPS and their upper and lower limits for data entry purposes.

Physical Measure	Unit	Minimum	Maximum
Systolic blood pressure (SBP)	mmHg	40	300
Diastolic blood pressure (DBP)	mmHg	30	200
Height	cm	100	270
Weight	Kg	20	350
BMI (body mass index)	Kg/m^2	11	75
Waist circumference	cm	30	200
Hip circumference	cm	45	300
Heart rate	beats/minute	30	200

Sequence of tests

In most sites, the physical measurements (Step 2) are done immediately after the behavioural measurements (Step 1). Since the participant must have rested for 15 minutes before the blood pressure measurement, it is most convenient to start the Step 2 measurements with blood pressure as the participant will have already been sitting for the duration of the interview. The Step 2 measurements should hence be taken from the participant in the following order:

1. Blood pressure (and heart rate, if measured)
2. Height
3. Weight
4. Waist circumference
5. Hip circumference (if measured).

Equipment required for tests

The equipment you will need for taking physical measurements include:

- blood pressure monitor and appropriate cuff sizes;
- height measuring board;
- weighing scales;
- wooden board (in case of uneven surfaces for scales);
- tape measure;
- pen;
- chair or coat rack for participant's clothes;
- curtain or screen to provide privacy if no private area is available for taking measurements.

Continued on next page

Physical Measurements, Continued

Privacy

Where possible, all physical measurements should be conducted in a private area. In some settings, a separate room in the household may be set up with the necessary equipment to take each measurement. Where this is not possible, a separate area should be screened off to provide privacy for waist and hip circumference measurements at minimum.

Allow the participant to select the degree of privacy – some may be concerned about going behind a screen or out of sight of others with people they do not know.

When to take physical measurements and record results

It is recommended that physical measurements are taken immediately after the Step 1 interviews. Results of Step 2 measures are to be recorded on the same participant instruments.

If physical measurements are taken some time after Step 1 interviews (not recommended), care should be taken to ensure data collection forms are correctly matched with their original instruments.

Introductions and explanations

Prior to taking physical measurements, explain that you will be taking the following measurements:

For Core
- blood pressure
- height
- weight
- waist circumference

For Expanded
- heart rate
- hip circumference.

Taking Blood Pressure and Recording Heart Rate

Introduction

Blood pressure is taken to determine the prevalence of raised blood pressure in the population.

Equipment

To take blood pressure you will need the following:

- digital automatic blood pressure monitor, e.g. OMRON
- appropriate size cuffs.

Preparing the participant

Ask the participant to sit quietly and rest for 15 minutes with his/her legs uncrossed. If physical measurements (Step 2) are done immediately after the behavioural measurements (Step 1), as recommended, the participant should have already been seated for at least 15 minutes, and the blood pressure measurements can be done immediately after finishing the Step 1 questions.

Three measurements

Three blood pressure measurements should be taken. During data analysis the mean of the second and third readings will be calculated. The participant will rest for three minutes between each of the readings.

Recording the blood pressure measurements

For recording the results of the blood pressure measurements, do the following:

- record your Interviewer ID (if not already filled in) in the participant's instrument;
- after each of the three measurements, record the results in the participant's instrument;
- check that all readings are correctly filled in the instrument;
- inform the participant on the blood pressure readings only after the whole process is completed.

Recording heart rate measurements

If a country/site decides to include the expanded measurement of heart rate, the recording should be done along with the recording of the blood pressure measurements after each of the three measurements. Heart rate and blood pressure results are displayed simultaneously.

OMRON procedure

The instructions below apply to the use of an OMRON blood pressure monitor. However, more detailed operating instructions are included with the device and should be reviewed before taking any blood pressure measurements.

Note that in case you use a different digital automatic blood pressure monitor, you should also read the instructions for the according machine carefully.

Continued on next page

Applying the OMRON cuff

Follow the steps below to select an appropriate size and apply the cuff:

Step	Action
1	Place the **left arm*** of the participant on the table with the palm facing upward.
2	Remove or roll up clothing on the arm.
3	Select the appropriate cuff size for the participant using the following table: **Arm Circumference (cm)** / **Cuff Size** 17 -22 / Small (S) 22-32 / Medium (M) > 32 / Large (L)
4	Position the cuff above the elbow aligning the mark *ART* on the cuff with the brachial artery.
5	Wrap the cuff snugly onto the arm and securely fasten with the Velcro. **Note:** The lower edge of the cuff should be placed 1.2 to 2.5 cm above the inner side of the elbow joint.
6	Keep the level of the cuff at the same level as the heart during measurement.

***Note:** If the right arm is used, note this in the right hand side margin on the participant's Instrument.

Taking the measurement with an OMRON

Follow the instructions below to take the blood pressure measurement:

Step	Action
1	Switch the monitor on (dark purple button) and press START (light purple button).
2	The monitor will start measuring when it detects the pulse and the "heart" symbol will begin to flash. The systolic and diastolic blood pressure readings should be displayed within a few moments (systolic above and diastolic below).
3	Record the reading in the participant's instrument.
4	Switch the monitor off, but leave the cuff in place.
5	Wait three minutes, then repeat steps 1-4 two more times.

Continued on next page

When to use a Sphygmomano-meter

The sphygmomanometer is generally **not recommended**, but may be used in the following circumstances:

- the OMRON is not functioning;
- the OMRON display shows multiple errors;
- to cross check OMRON blood pressure readings in various clinical states such as irregular pulse, peripheral circulatory disturbance, extreme hypotension;
- for calibration of the OMRON Monitor.

Procedure for Sphygmomano meter

Follow the steps below or refer to the operating instructions included with the device to measure the blood pressure of a participant using the sphygmomanometer.

Step	Action
1	Apply the cuff (as detailed above).
2	Put stethoscope earpieces in ear and set to bell.
3	Palpate pulse at either brachial or radial artery. Take a pulse count for one full minute.
4	Pump up pressure and inflate cuff until unable to feel pulse.
5	Continue to inflate cuff 30 mmHg beyond this point.
6	Apply the bell of the stethoscope to the right antecubital fossa.
7	Listen for pulse sounds while deflating the cuff slowly.
8	Record the systolic blood pressure (SBP) when a pulse is first audible.
9	Record the diastolic blood pressure (DBP) when the pulse sound disappears.
10	Deflate the cuff fully and let the arm rest for three minutes (between each of the readings).
11	Repeat Steps 2-10 twice to obtain three readings.
12	Check that all readings are correctly filled in on the instrument.
13	Record your Technician ID code on the participant's instrument.
14	Inform the participant the blood pressure readings only after the whole process is completed.

Measuring Height

Introduction

The height of eligible participants is taken to help calculate their body mass index (BMI), which is their weight relative to their height, and therefore to determine the prevalence of overweight and obese people in the population.

Equipment

To measure height, you need a portable height/length measuring board.

Assembling the measuring board

Follow the steps below to assemble the measuring board:

Step	Action
1	Separate the pieces of board (usually 3 pieces) by unscrewing the knot at the back.
2	Assemble the pieces by attaching each one on top of the other in the correct order.
3	Lock the latches in the back.
4	Position the board on a firm surface against a wall.

Procedures

Follow the steps below to measure the height of a participant:

Step	Action
1	Ask the participant to remove their: • footwear (shoes, slippers, sandals, etc) • head gear (hat, cap, hair bows, comb, ribbons, etc). **Note:** If it would be insensitive to seek removal of a scarf or veil, the measurement may be taken over light fabric.
2	Ask the participant to stand on the board facing you.
3	Ask the participant to stand with: • feet together • heels against the back board • knees straight.
4	Ask the participant to look straight ahead and not tilt their head up.
5	Make sure eyes are the same level as the ears.
6	Move the measure arm gently down onto the head of the participant and ask the participant to breathe in and stand tall.
7	Read the height in centimetres at the exact point.
8	Ask the participant to step away from the measuring board.
9	Record the height measurement in centimetres in the participant's Instrument.
10	Record your Technician ID code in the space provided in the participant's instrument.

Measuring Weight

Introduction

The weight of eligible participants is taken to help determine their body mass index (BMI), which is their weight relative to their height, and therefore to determine the prevalence of overweight and obese people in the population.

Equipment

To measure weight, you will need the following equipment:

- portable electronic weighing scale;
- a stiff wooden board to place under the scales, if you are likely to have problems with uneven surfaces (such as dirt or mud floors or carpet);
- a generator, if electronic scales are being used and electricity is not guaranteed in all survey areas (check if scale can work with batteries).

Set up requirements

Make sure the scales are placed on a firm, flat surface.

Do not place the scales on:

- carpet
- a sloping surface
- a rough, uneven surface.

Electronic scales

Follow the steps below to put electronic scales into operation:

Step	Action
1	Put the scale on a firm, flat surface.
2	Connect the adaptor to the main power line or generator.
3	Turn on the scale.
4	Switch the scale on and wait until the display shows 0.0.

Procedures

Follow the steps below to measure the weight of a participant:

Step	Action
1	Ask the participant to remove their footwear (shoes, slippers, sandals, etc) and socks.
2	Ask the participant to step onto scale with one foot on each side of the scale.
3	Ask the participant to: • stand still • face forward • place arms on the side and • wait until asked to step off.

Continued on next page

Procedures (cont.)

Step	Action
4	Record the weight in kilograms on the participant's instrument. If the participant wants to know his/her weight in pounds, convert by multiplying the measured weight by 2.2.

Measuring Waist Circumference

Introduction

Waist circumference measurements are also taken to provide additional information on overweight and obesity.

Equipment

To take waist circumference measurements you will need a:

- constant tension tape (for example, Figure Finder Tape Measure)
- pen
- chair or coat stand for participants to place their clothes.

Privacy

A private area is necessary for this measurement. This could be a separate room, or an area that has been screened off from other people within the household.

Preparing the participant

This measurement should be taken without clothing, that is, directly over the skin.

If this is not possible, the measurement may be taken over light clothing. It must not be taken over thick or bulky clothing. This type of clothing must be removed.

How to take the measurement

This measurement should be taken:

- at the end of a normal expiration;
- with the arms relaxed at the sides;
- at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest (hip bone).

Continued on next page

Measuring Waist Circumference, Continued

Procedure Follow the steps below to measure the waist circumference of a participant:

Step	Action
1	Standing to the side of the participant, locate the last palpable rib and the top of the hip bone. You may ask the participant to assist you in locating these points on their body.
2	Ask the participant to wrap the tension tape around themselves and then position the tape at the midpoint of the last palpable rib and the top of the hip bone, making sure to wrap the tape over the same spot on the opposite side. **Note:** Check that the tape is horizontal across the back and front of the participant and as parallel with the floor as possible.
3	Ask the participant to: • stand with their feet together with weight evenly distributed across both feet; • hold the arms in a relaxed position at the sides; • breathe normally for a few breaths, then make a normal expiration.
4	Measure waist circumference and read the measurement at the level of the tape to the nearest 0.1 cm, making sure to keep the measuring tape snug but not tight enough to cause compression of the skin.
5	Record the measurement on the participant's Instrument. **Note:** Measure only once and record.

Measuring Hip Circumference

Introduction

Hip circumference measurements are taken in some sites as an expanded option to measure overweight and obesity.

Equipment

To take hip circumference measurements you will need a:

- constant tension tape (for example, Figure Finder Tape Measure)
- pen
- chair or coat stand for participant's to place their clothes.

Privacy

A private area is necessary for this measurement. This could be a separate room, or an area that has been screened off from other people within the household. Hip measurements are taken immediately after waist circumferences.

Preparing the participant

This measurement should be taken without clothing, that is, directly over the skin.

If this is not possible, the measurement may be taken over light clothing. It must not be taken over thick or bulky clothing. This type of clothing must be removed.

How to take the measurement

This measurement should be taken:

- with the arms relaxed at the sides
- at the maximum circumference over the buttocks.

Continued on next page

Measuring Hip Circumference, Continued

Procedure Follow the steps below to take hip circumference measurements.

Step	Action
1	Stand to the side of the participant, and ask them to help wrap the tape around themselves.
2	Position the measuring tape around the maximum circumference of the buttocks.
3	Ask the participant to: • stand with their feet together with weight evenly distributed over both feet; • hold their arms relaxed at the sides.
4	Check that the tape position is horizontal all around the body and snug without constricting.
5	Measure hip circumference and read the measurement at the level of the tape to the nearest 0.1 cm.
6	Record the measurement on the participant's instrument. **Note:** Measure only once and record.

Section 4: Guide to Biochemical Measurements (Step 3)

Overview

Introduction

This section provides information on taking biochemical measures required under Step 3 of the STEPS Instrument.

Intended audience

This section is designed for use by those fulfilling the following roles:

- data collection team supervisor
- health professionals (for clinic setting)
- STEPS Site Coordinator.

In this section

This section covers the following topics:

Biochemical Measurements Overview

Introduction

Step 3 includes selected biochemical measurements that require taking blood samples.

Step 3 is usually conducted in a clinic setting. It is only conducted in countries where resources permit as Step 3 approximately doubles the overall cost of the survey.

What you will learn

In this module, you will learn:

- what the biochemical measures are and what they mean
- the fasting process and instructions for participants
- what equipment you will need
- how to take biochemical measurements
- how to record the results.

Learning outcome

The learning outcome of this section is to understand what the biochemical measures are and how to accurately prepare participants, take the measurements and record results.

Recording results

The same participant instruments that have been used for Step 1 and Step 2 should be used to record the Step 3 results. However, the page for collecting results from Step 3 may be separated so that Step 1 and Step 2 results can be sent to the data entry office once those Steps have been completed. The participant ID should already be filled in on the Step 3 results page of the instrument (see Part 2, Section 2 "Preparing Data Collection Forms").

Required forms

Where Step 3 is conducted in a clinic the following forms are also to be used:

- Clinic Registration Form
- Participant Feedback Form Step 3.

Note: These forms can be found in Part 6, Section 2.

Dry vs. wet chemistry

There are two main blood chemistry screening methods: dry and wet chemistry. Dry chemistry means that blood is taken from the fingertip, while wet chemistry means that a venous blood sample is drawn. See Part 2, Section 1 for further information on dry and wet chemistry.

Note: In this section, only the dry chemistry method is described since wet chemistry is done directly at the laboratory.

Blood Collection

Introduction

Blood samples are taken from eligible participants to be used to perform simple tests to measure blood glucose and blood lipids.

Infection control

Follow the infection control procedures appropriate for your facility.

Whole blood is more infective with regard to blood borne disease than centrifuged serum or plasma. There may be an increased risk in handling whole blood and universal precautions should be adopted.

Units of measurement

The table below shows the standard units of measurement for biochemical tests used in STEPS and their upper and lower limits for data entry purposes.

Blood Test	Unit	Minimum	Maximum
Fasting glucose	mmol/L	1	35.0
Random glucose	mmol/L	1	50.0
Total cholesterol	mmol/L	1.75	20.0
HDL	mmol/L	0.10	5.0
Fasting triglycerides	mmol/L	0.25	50.0
Total cholesterol/HDL ratio	mmol/L	1.10	30.0

Participant fasting requirements

To obtain accurate results, participants must fast for at least 12 hours before blood collection. This is particularly important for the measurements of blood glucose as well as triglycerides, if applicable.

Most blood samples are to be taken in the morning. This means participants must not to eat or drink anything (except plain water) from about 8 pm the night before.

Diabetic patients on medication are required to bring their tablets with them and to take them after their blood measurement if possible (if they have not done so, they should inform the relevant laboratory staff).

Note: Fasting Instructions for Step 3 can be found in Part 6, Section 2.

Continued on next page

Preparing the participant

After greeting the participant, and asking them to take a seat, follow the steps below to prepare the participant for a blood test:

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Fill in the following details on the Clinic Registration Form:

• Date
• Participant ID (if not already filled in)
• Participant Name (if not already filled in)
• check Consent Form if Consent Form 2 has been signed.</td></tr>
<tr><td>2</td><td>Ask the fasting question (first question on the instrument under Step 3, Code B1) and circle the answer.</td></tr>
<tr><td>3</td><td>If the participant has not fasted correctly, then:
• note "fasting default" on the participant’s instrument;
• explain that to get accurate results participants need to fast for a minimum of 12 hours;
• ask if they would try fasting again and come back for a blood test the following day.

If the participant agrees to come back the following day, then:
• give the participant an appointment time and fasting instructions;
• note the time of the new appointment in the Clinic Registration Form;
• inform the supervisor.</td></tr>
<tr><td>4</td><td><table><tr><th>If...</th><th>Then explain to the participant that…</th></tr><tr><td>The participant has fasted correctly</td><td>• blood is going to be collected from a small prick on the finger;
• tests will be done on: fasting blood sugar, cholesterol and fasting triglycerides.</td></tr></table></td></tr>
</table>

Blood Glucose Measurement

Introduction

Blood sugar tests are taken to measure for raised blood sugar levels which are a risk factor for diabetes.

Equipment required

Dry chemistry equipment and supplies required for blood glucose tests include:

- blood glucose measuring device (such as: Reflotron Plus, Accutrend Plus or HemoCue 201 DM);
- test strips;
- lancet;
- cotton balls;
- sterile swabs;
- gloves;
- disposable container.

Preparing the device

Follow the appropriate device instructions to set up, prepare and use the meter for blood glucose tests.

Blood glucose measurement procedure

Follow the steps below to take blood glucose measurements and record the results. Note that you should also read the instructions provided with the device carefully.

Step	Action
1	Put on gloves.
2	Remove a test strip.
3	Rub and kneed a fingertip to help withdraw blood (rub the side of the participant's finger closest to the thumb).
4	Wipe or swab the fingertip by using a sterile swab.
5	Lance the massaged place on the fingertip with lancing device.
6	Allow a hanging blood drop to form without applying too much pressure.
7	Carefully apply the drop of blood to the test field on top of the strip without touching the test field directly to the finger. **Note:** The test field must be completely covered with blood. If too little blood is applied, do not rub it in or apply a second drop, but repeat the measurement with a fresh test strip.
8	Give the participant a cotton ball to press on the puncture.
9	Put the test strip into the machine.
10	Wait for the measurement to be displayed (after a series of beeps followed by longer beep). The blood glucose results is usually displayed in mmol/L.
11	Record the results of the fasting blood sugar reading in the participant's instrument and in the Participant Feedback Form (Step 3). Also tick the corresponding box on this form.
12	Record Technician ID, Device ID, time of day and answer to medication question (B6) in the participant's instrument.

Cholesterol Measurement

Introduction

Blood cholesterol tests are taken to measure total cholesterol and HDL cholesterol levels.

Equipment required

Dry chemistry equipment and supplies required for cholesterol measurements include:

- cholesterol measuring device (such as: Reflotron Plus, Accutrend Plus, or Cholestech LDX);
- test strips;
- lancet;
- cotton balls;
- sterile swabs;
- gloves;
- disposable container.

Preparing the device

Follow the appropriate device instructions to set up, prepare and use the meter for cholesterol tests.

Cholesterol measurement procedure

Follow the steps below to take cholesterol measurements and record the results. Note that you should also read the instructions provided with the device carefully.

Step	Action
1	Put on gloves.
2	Remove a test strip.
3	Rub and kneed a fingertip to help withdraw blood (rub the side of the participant's finger closest to the thumb).
4	Wipe or swab the fingertip by using a sterile swab.
5	Lance the massaged place on the fingertip with lancing device.
6	Allow a hanging blood drop to form without applying too much pressure.
7	Carefully apply the drop of blood to the test field on top of the strip without touching the test field directly to the finger. **Note:** The test field must be completely covered with blood. If too little blood is applied, do not rub it in or apply a second drop, but repeat the measurement with a fresh test strip.
8	Give the participant a cotton ball to press on the puncture.
9	Put the test strip into the machine.
10	Wait for the measurement to be displayed (after a series of beeps followed by longer beep). The blood cholesterol results are usually displayed in mmol/L.
11	Record the results of the blood cholesterol reading in the participant's instrument and in the Participant Feedback Form (Step 3). Also tick the corresponding box on this form.
12	Record Device ID, and answer to medication question (B9) in the participant's instrument.

Triglyceride Measurement

Introduction

Triglyceride tests are taken to measure the fasting levels of natural fats and oils in the bloodstream.

Equipment required

Dry chemistry equipment and supplies required for triglyceride measurements includes:

- triglyceride measuring device (such as: Reflotron Plus, Accutrend Plus, or Cholestech LDX);
- test strips;
- lancet;
- cotton balls;
- sterile swabs;
- gloves;
- disposable container.

Preparing the device

Follow the appropriate device instructions to set up, prepare and use the meter for triglyceride tests.

Triglyceride measurement procedure

Follow the steps below to take triglyceride measurements and record the results. Note that you should also read the instructions provided with the device carefully.

Step	Action
1	Put on gloves.
2	Remove a test strip.
3	Rub and kneed a fingertip to help withdraw blood (rub the side of the participant's finger closest to the thumb).
4	Wipe or swab the fingertip by using a sterile swab.
5	Lance the massaged place on the fingertip with lancing device.
6	Allow a hanging blood drop to form without applying too much pressure.
7	Carefully apply the drop of blood to the test field on top of the strip without touching the test field directly to the finger. **Note:** The test field must be completely covered with blood. If too little blood is applied, do not rub it in or apply a second drop, but repeat the measurement with a fresh test strip.
8	Give the participant a cotton ball to press on the puncture.
9	Put the test strip into the machine.
10	Wait for the measurement to be displayed (after a series of beeps followed by longer beep). The triglyceride results are usually displayed in mmol/L.
11	Record the results of the triglyceride reading in the participant's instrument and in the Participant Feedback Form (Step 3). Also tick the corresponding box on this form.

Section 5: Data Entry Guide

Overview

Introduction

This section provides general guidelines and training for data entry staff. A suggested schedule for training data entry staff is located in Part 3, Section 1. Instructions for supervising data entry and creating the final data set are covered in Part 4, Section 2.

Intended audience

This section is designed for use by those fulfilling the following roles:

- data entry supervisor
- data entry staff
- STEPS Site Coordinator.

In this section

This section covers the following topics:

Overview

Introduction

Data entry staff play a key role in ensuring that data collected and recorded on the completed instruments is accurately entered into the survey database and all instruments and associated tracking forms are systematically sorted and filed.

Note: Please tailor this training guide according to the baseline level of knowledge of your data entry staff.

What you will learn

During this training, you will learn about:

- using the computer
- the data entry process
- how to enter data and manage instruments
- rules and guidelines for data entry
- using EpiData software and the generic templates
- how to handle problematic (e.g. incorrectly completed) instruments
- how to produce a consistency report on entered data
- how to back up entered data.

Learning outcomes

The learning outcome of this course is accurate, efficient and well-documented entry of STEPS survey data from the instruments and Interview Tracking Forms.

Other data entry materials

This guide is to be used in conjunction with the following Sections in the STEPS Surveillance Manual. These sections provide full instructional material on the following topics.

Topic	Location
Preparing the Data Entry Environment	Part 2, Section 4
Data Entry	Part 4, Section 2
STEPS Instrument	Part 5, Section 1
Interview and Data Entry Forms	Part 6, Section 2

Using the Computer

Introduction

To use the computer for data entry, and to be able to operate the data entry software, you need to know how to:

- work safely
- turn the computer on
- open up the software you will be using
- exit from the software
- shut down the computer.

Work safely

Computers are electrical equipment and must be operated in a safe manner. Guidelines for safely operating your personal computer include:

Safety Issue	Guideline
Water and dust	Ensure that at all times the location of your computer is dry and clean. Any moisture or build-up of dust can increase the chance of electric shocks that can damage you or your computer.
Ergonomics	Ensure that your chair and the immediate environment are ergonomically placed, that your neck and back especially are not twisted or strained while operating the machine.
Food and drinks	Keep food and drinks away from the computer. Drinks spilled onto the keyboard can damage under the keys.
Electrical storms	If electrical storms occur while operating the machines, it is safest for both you and the machine to switch them off and unplug them from the power source, in order to prevent electrical surges or spikes damaging the equipment.

Turning on the computer

Follow the steps below to start using your computer:

Step	Description
1	Check that the computer is plugged in to the wall and the environs seem safe before turning on the main switch of your computer.
2	When turned on, you will hear a whirring from the internal fan inside the box, and the screen should light up. Some screens have an additional switch which needs to be turned on.
3	Ensure that the CAPS LOCK light is **not lit.** If the light is on, press the CAPS LOCK key to **turn it off**.
4	If prompted, enter your user ID and password. The password will be assigned to you by your supervisor and must not be shared with others.
5	The screen will show the software that has been set up for you.

Continued on next page

Running your software packages

The icon for EpiData should be located on your desktop. Double click on the icon to open EpiData.

For tracking the stage, location, and comments from instruments as you enter them, you will use the data_entry_tracking.xls Excel file. The data entry supervisor should provide specific directions on how to open Excel on the computers.

Creating folders

While the data entry supervisor should have created all necessary folders on each machine prior to training, it is still important that data entry staff understand how to create a folder on their computers. Follow the steps below to create a folder if you have a mouse that has two buttons:

Step	Action
1	Go to the desktop on your computer.
2	Locate an empty space on the screen and right click on the mouse.
3	Select New>Folder from the list.
4	Type the name of the new folder below the icon for the new folder.
5	To create a folder within the new folder open the new folder and complete steps 2-4.

Note: If your mouse does not have 2 buttons, you can create a new folder by opening Windows Explorer and selecting File>New>Folder from the menu options.

Caring for your computer

Occasional care of your computer may be necessary including:

- wiping the keyboard and external surfaces of the box with a soft cloth (not damp or wet) when the power is off;
- cleaning the screen surface with a lint- and static-free cloth;
- vacuuming external vents to the computer box in dusty environments to reduce chances of dust-caused faults.

Closing down your computer

At the end of the day follow the steps below to safely turn off your computer:

Step	Action
1	Close EpiData and Excel.
2	Use the cursor to go to the lower left corner of the screen.
3	Select 'Start', then 'Shut down'.

Note: The machine may do some processing before shutting down. The screen should turn off and then the noises from the internal fan should cease as it closes down.

Data Entry Process

Introduction

Data entry is a systematic process that covers the following main stages:

- receiving and logging
- data entry
- validation
- error correction
- filing.

Overview of process

The table below gives a very general overview of the data entry process.

Step	Description
1	Completed instruments received, logged, and sorted by content.
2	Instruments are 1st keyed, using EpiData.
3	Instruments are 2nd keyed, using EpiData.
4	Data checked by data entry supervisor and combined into one dataset.

Using several data entry operators

To complete the survey within the given timeframe it is recommended that a team of data entry staff work together. The team needs to be well supervised and managed to ensure:

- each person completes a varied range of tasks each day;
- good workflow to keep up with completed instruments and forms and keep to scheduled timeframes.

Second Keying

It is strongly recommended that all instruments be keyed (entered) twice. A second keying decreases the chance of data entry errors being present in the final dataset. If a team of data entry staff is available, it is recommended to have two different staff members perform one keying of each instrument. With multiple staff members, the second keying process would be implemented as follows:

Step	Description
1	Staff member 1 is assigned to Computer A and completes the 1st keying for all instruments assigned to Computer A.
2	Staff member 1 and Staff member 2 swap computers. Staff member 2 is now assigned to Computer A.
3	Staff member 2 completes the 2nd keying for all instruments assigned to Computer A.

Continued on next page

Data Entry Process, Continued

Overview of handling Instruments

Instruments need to be handled systematically to maintain a good workflow, to make sure all problems and queries have been resolved, and to ensure that originals can be easily retrieved once completed. A system should be developed that provides explicit directions for how:

- instruments are received and logged by the supervisor;
- instruments are sorted and assigned to a data entry computer;
- data entry staff members log receipts of instruments;
- data entry staff members track the data entry process using the Data Entry Tracking Form;
- instruments are filed as data entry is completed for each instrument;
- instruments are locked away each night and redistributed each morning.

Handling queries

All queries should be addressed to the data entry supervisor. When you have a query make sure you:

- collect all necessary information about the query prior to contacting your supervisor;
- log any decision about the query on the Data Entry Tracking Form.

Data Entry Rules and Guidelines

Introduction

To ensure consistently high-quality data and to minimize delays, some general rules need to be observed during the data entry process to handle any difficulties that may be encountered with a given instrument. The table below provides some general guidelines for the data entry team.

<table>
<tr><th>Problem</th><th>Guideline</th></tr>
<tr><td>Instrument not correctly filled out</td><td>The data entry protocols and guidelines will not work if the instrument is not filled out correctly by the data collection team. If you come across an instrument that is not correctly filled out, immediately consult your supervisor.

(For example: The participant replies that he/she does not currently smoke but then provides values for how many cigarettes they smoke each day.)</td></tr>
<tr><td>Missing data</td><td>Some questions may be blank. Follow the guidelines below to handle missing data:

<table>
<tr><th>If…</th><th>Then…</th></tr>
<tr><td>Data is missing in a field where data is expected.</td><td>Enter 99 or 999 accordingly. Do NOT enter 0.</td></tr>
<tr><td>Complete date of birth or age is not provided.</td><td>Enter what is given. If any date is available, it will usually be the year.</td></tr>
<tr><td>Year of birth (only) is provided</td><td>• Calculate the estimated age of participant (survey year - birth year) and enter into age.
• Log calculation in Data Entry Tracking Form.</td></tr>
</table>
</td></tr>
<tr><td>Surplus data</td><td>If a decimal value (e.g. 7.5) has been entered where a non-decimal value is expected, enter the non-decimal part of the response (e.g. 7). For any other problems, consult your supervisor.</td></tr>
<tr><td>Participant ID (PID) crossed out</td><td>If you come across an instrument where the PID has been crossed out and another has been written in pen, then:

• skip the entire instrument and start entering a new one;
• record both PIDs in the Data Entry Tracking Form and note if you entered any data;
• contact your supervisor.</td></tr>
</table>

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Topic	Guideline
Value out of range	If an instrument contains a value that is not possible, such as 1600 for height instead of 160, the value needs to be coded as out of range using 99, 999, or in the special case for weight: 666.6. The data entry tool will not allow an implausible value to be entered.
Other problems	You may come across other situations that are not easy to resolve. If your supervisor is not immediately available for consultation, follow the guidelines below: • do not process the form • skip and go on to the next instrument • record the PID number and nature of the problem • consult the supervisor when he/she becomes available.

Special data entry codes

Special codes have been allocated for use in STEPS to show the reasons data are unavailable. The codes include:

Codes	For response
77 or 777	Don't know
88 or 888	Refused
99 or 999	Missing

Introduction to EpiData

Introduction

EpiData is a program for entering data. Although you do not need to be an expert in EpiData in order to use this program, it is important that you are able to navigate the program.

Opening EpiData

Prior to training, the data entry supervisor should have downloaded and installed EpiData on all data entry computers. Instructions for downloading and installing EpiData can be found in Part 2, Section 4.

To open EpiData or any templates associated with EpiData you need to open the EpiData program. To open EpiData either:

- click on the EpiData icon on your desktop, or
- go to C:\Program Files\EpiData and click on EpiData.exe.

EpiData toolbars

The opening screen of EpiData is blank and contains 6 buttons across the top of the screen. These buttons and their functions are described in the table below.

Button	Used to…
1. Define Data	Access the .qes file and make changes to the look/content of the data entry templates.
2. Make Data File	Create data entry template (.rec file) from the .qes file.
3. Checks	Access the .chk file and define the value ranges and skip patterns used during data entry.
4. Enter Data	Enter data. Use this during pilot testing as well as for actual data entry.
5. Document	Print out a codebook to provide all the information associated with a template.
6. Export Data	Export data after data entry is complete.

Using EpiData for Data Entry

EpiData templates

The STEPS team in Geneva has created generic templates for data entry which should be modified by the data entry supervisor to match your site-specific instrument. The table below lists the templates.

Template	To record
Survey	• Cluster (centre/village) Name • Cluster (centre/village) ID • Interviewer ID • date of completion of the instrument • core questions and measures for Step 1, 2 and Step 3, as applicable • expanded and/or optional questions
Consent	Confidential (personal identification) data
Biochemical	Step 3 measurements, if recorded on a separate form

Note: Further details on the templates, including instructions for modifying them, are provided in Part 2, Section 4.

Location of data entry templates

Prior to training, the data entry supervisor is responsible for ensuring that a copy of the data entry templates has been placed on all data entry computers at the following location:

- C:\STEPS\data

Note: Once training is completed, the data entry templates on all data entry computers should be replaced with new copies so that test data is not included with the STEPS survey data.

Performing the first keying

The table below provides step-by-step instructions on how to do the 1st keying for a completed Instrument.

Step	Action
1	Open the EpiData program and click on the "4. Enter Data" button at the top of the screen.
2	Open the appropriate EpiData template (e.g. survey.rec) from the C:/STEPS/data folder.
3	Take the top instrument from your folder containing instruments ready for 1st keying and locate the Participant ID in your computer's Data Entry Tracking Form (either in Excel or Word).

Continued on next page

Performing the first keying (cont.)

Step	Action
4	Beginning with the Participant Identification Number (PID) at the top of the STEPS Instrument, enter data into the database **exactly** as it is written. Use the TAB key to move from one question to the next on the data entry screen. **Note:** Missing values are not allowed for the following items: • PID (Participant Identification Number) • I1 (Cluster Number) • I4 (Date of completion of Instrument) • C1 (Sex) • C2 or C3 (Age)
5	Continue using the TAB key to move from one question to the next until you reach the very end of the data entry form. When the last field is reached, EpiData will prompt you to save the current record. Click "Yes" to save the record and get a clean data entry form ready for entering data from the next instrument.
6	Log all discrepancies, questions and problems (irregularities) that you cannot resolve into the Data Entry Tracking Form. Include: • code (general identifier for a question, e.g. T1, P5…) • brief description of problem • supervisor's decision.
7	When you have completed entering the data from your section of the instrument, move the paper copy to the "second key" folder and update the Data Entry Tracking Form.
8	Continue entering the instruments and repeat steps 3-7.
9	At the end of the day, give the folders to the supervisor to lock up.

Note: At the bottom of the EpiData window is an indicator of how many records (instruments) have been entered in the current .rec file. Initially, this space will read "New/0" but the text will change as more records are entered. It is a good idea to periodically confirm that this number matches the number of records that have been entered (e.g. "New/5" indicates that you have finished and saved 5 instruments and are currently entering your 6th instrument).

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Returning to a specific record

Occasionally you may need to return to a specific record in your data file. This may be necessary if you had to set aside a problematic instrument to await your supervisor's assistance or if you notice that you have skipped a section of an instrument you have entered. Follow the steps below to return to a specific record.

Step	Action
1	Open the EpiData program and click on the "4. Enter Data" button at the top of the screen.
2	Open the appropriate EpiData template (e.g. survey.rec) from the C:/STEPS/data folder.
3	Select "Find Record" from the Goto menu at the top of the screen.
4	Enter the Participant ID of the instrument of interest in the Criteria column next to ID.
5	Click "OK".
6	Once all changes/corrections have been made either close EpiData or select "New Record" from the Goto menu at the top of the screen to continue entering instruments. Click "Yes" to save the modified record when prompted.

Preparing for the second keying

A second keying should be done only after a large number of instruments have been first keyed on a given computer. If there is a significant amount of time between the arrival of new sets of instruments from the data collection team, a second keying can be done on all instruments received while awaiting new instruments. Otherwise, it is best to wait until the first keying has been completed on all instruments before proceeding to the second keying.

In order to minimize the potential for error, each instrument should be second keyed on the same computer on which it was first keyed. If multiple data entry staff are available, one staff member should use a given computer to complete the first keying and another staff member should use the same computer to complete the second keying (i.e. staff members should swap computers when doing second keying).

The table below provides step-by-step instructions on how to prepare for the second keying. It is important to keep in mind that the file generated from this process can **only** be used for the second keying of those instruments entered in the .rec file prior to making this file. If more instruments are received at a later time, these instruments should be first keyed and second keyed in completely separate files.

Continued on next page

Preparing for the second keying (cont.)

Step	Action
1	Open EpiData and select "Prepare Double Entry Verification" from the Tools menu at the top of the screen.
2	Select the original .rec file (e.g. survey.rec) that needs to be second keyed.
3	Note that the name of the new data file for double entry has been automatically generated in the "File Name" field. It has the same name as your original file except that "_dbl" has been added to the name.
4	In the "Create Data File" dialog window, select the option "match records by field" in the lower left-hand corner. Double click "ID" in the "Select key-field" dialog window.
5	Click "OK" when the "Information" dialog window appears. Note that the name of the file for the second keying is listed at the bottom of this window again.

Performing the Second Keying

The table below provides step-by-step instructions on how to do the 2nd keying.

Step	Action
1	Open EpiData and click on the '4. Enter Data' button at the top of the screen.
2	Select the _dbl.rec file created following the instructions above. A dialog window should appear over the data entry screen stating that you are in data entry verification mode. The window will state which data file you are comparing with and which field is used to match records in each file (i.e. ID). Click "OK".
3	Complete the second keying in the same manner as the first keying, starting with the first instrument in your pile and using the TAB key to move between fields when entering data (refer to steps 3-6 from the instructions for first keying).
4	If a value entered does not match with the first keying, follow the guidelines on the next page.
5	Move completed instruments to the "completed" folder and update the Data Entry Tracking Form.
6	Continue second keying instruments until all instruments in the "second key" folder have been entered and moved to the "completed" folder.

Note: When the second keying is completed, the verified data will be stored in the _dbl.rec file, **not** the original .rec file.

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Validation and error correction

During second keying, if there are any discrepancies between the data from the first keying and data from the second keying, the EpiData will immediately highlight the data that does not match. Follow the guidelines below on what to do when discrepancies arise.

If…	Then…	By…
An error is found in the **second keying.**	Keep the original value and continue.	Clicking '3. Original' on data entry screen.
An error is found in the **first keying** and is a minor typing error.	Keep the new value and continue.	Clicking '2. New' on data entry screen.
Neither the **first** nor **second keying** is correct.	Correct the error and continue.	Clicking '1. Edit' on data entry screen.
You are not sure which interpretation of the participant's response is correct.	Notify the supervisor and log any decision in the Data Entry Tracking Form.	
A high number of errors are found in the **first keying**.	Notify the supervisor.	

Consistency Reports

Introduction

At the end of each week, each data entry staff member entering data should run a consistency report on the survey.rec file on their computer to check the data for:

- missing data for Participant ID
- missing data for Cluster ID (I1)
- missing data for date of interview (I4)
- missing data for sex (C1)
- missing data for age (C2 or C3).

Instructions

In EpiData there is a consistency check file that searches for problematic records and provides the Participant ID (PID) (or record number for those records missing PID) for each record that fails the check. Follow the steps below to create a consistency report.

Step	Action
1	Open EpiData.
2	Select "Consistency Checks" from the "Document" menu at the top of the screen.
3	Select survey.rec (or survey_dbl.rec if second keying has been completed) for "data file to check".
4	Select consistency.chk for the "file containing checks".
5	Click "OK".
6	Save report under C:/STEPS/data/reports and use the current date as the file name.
7	Print a copy of the report for your supervisor.

Backing up Data

Introduction

All data files must be backed up on a daily basis to avoid data loss.

Backup

At the end of each day of data entry you must backup all your data files. This is to avoid data loss. Follow the steps below to back up the files electronically using EpiData:

Step	Action
1	Open EpiData.
2	Select "Backup" from the "Data in/out" menu at the top of the screen.
3	Select a .rec file that was used during the day for the "data file to backup" field.
4	Type "D:\STEPS" in "destination directory" (or name of backup directory, see Part 2, Section 4).
5	Click "OK".
6	Repeat steps 1-4 until all .rec files used on your computer have been backed up.

Note: Electronically backing up the data should be enough, however if your computers are not in a safe environment and you need to have another copy offsite, create a copy of the main STEPS folder for each machine on a disk at least once a week.

Pilot Test

Introduction

After data entry staff have been given a brief introduction to EpiData, a pilot test should be done to practice the entire data entry process.

Test Data

Test data will need to be generated for the pilot test. If possible, the instruments completed by data collection staff during their training can be used. Otherwise, the data entry supervisor should fill in enough instruments so that each data entry staff member has several instruments to enter.

Additionally, Interview Tracking Forms should be generated for the pilot test. These should contain the same Participant IDs as are on the instruments used for the pilot test in order to properly simulate actual data collection forms.

Procedure

The table below summarizes all aspects of the data entry process that should be thoroughly tested during the pilot test.

Step	Action
1	**Create a full set of data collection forms including:** • Interview Tracking Forms • 10-20 site-specific instruments • if Step 3 data is collected separately: Step 3 data collection forms. **Include some errors in these forms, e.g.:** • torn pages • incorrectly filled out instruments • out-of-range responses • non-existent clusters • invalid participant ID and cluster numbers.
2	**Test all logging and sorting processes.** • Use the Data Entry Log to sort and distribute all instruments. • Use the Data Entry Tracking Form to document data entry.
3	**Test all error correction systems including**: • documentation • creating and reading consistency reports • backing up data • data recovery.
4	At each step, report errors to the supervisor and refine the original EpiData template and instructions for handling different scenarios.
5	When testing is complete and error free, delete all test materials from the computers and replace them with new copies of the finalized data entry files.

Section 6: Data Analysis Guide

Overview

Introduction

This section provides general guidelines for the data analyst as well as a basic introduction to Epi Info. For more specific instructions on how to proceed with the analysis of your STEPS data, see Part 4, Section 2.

Intended audience

This section is designed for use by those fulfilling the following roles:

- data analyst
- STEPS Site Coordinator
- statistical adviser.

In this section

This section covers the following topics:

Overview

Introduction

The data analyst is responsible for :

- creating the database
- cleaning and weighting the data
- producing the completed fact sheet and data book.

What you will learn

In this course you will learn how to setup and use Epi Info to analyse your STEPS survey data.

Learning outcomes

The learning outcomes of this section are to be able to:

- navigate the Epi Info Analysis module
- run basic commands in Epi Info Analysis
- run the generic analysis programs provided by the Geneva STEPS team.

The generic analysis programs perform basic calculations needed to complete the Fact Sheet, Data Book, and site report.

Other data analyst materials

This guide is to be used in conjunction with the following sections in the STEPS surveillance manual. These sections provide full background detail and instructional material on the following topics.

Topic	Part, Section
Preparing the Sample	Part 2, Section 2
Preparing the Data Analysis Environment	Part 2, Section 5
Data Analysis	Part 4, Section 3
Fact Sheet Analysis Guide	Part 6, Section 3B
Data Book Template	Part 6, Section 3D

General Information

Introduction

It is important that the data analyst has some background information on the STEPS survey as this may impact the way they analyse the data. The general information that the analyst needs and where they can find this information is described below.

Scope of survey

The scope of the survey should be available in the implementation plan. The STEPS Site Coordinator will also have this information. The data analyst must understand the scope of the survey so that the results of the analysis reflect the scope.

Sample method

It is essential that the data analyst understands what sampling method was used for the STEPS survey so that the data can be properly weighted. The analyst should be familiar with the Interview Tracking Form Excel workbook (interview_tracking_form.xls) and the STEPS sampling Excel workbook (STEPSsampling.xls).

The sampling information should already be documented in the STEPS Implementation Plan and/or supporting documents and available for the analyst. If it is not documented, consult the STEPS Site Coordinator and make sure the information is documented right away. It is critical information and needs to be documented.

Assisting with fact sheet and site report

The data analyst should also assist the Site Coordinator with the Fact Sheet and site report. Liaise with the Site Coordinator to identify the data analyst's roles and responsibilities, see Part 4, Section 4 for more information.

Introduction to Epi Info

Introduction

For the analysis of data, the STEPS team recommends and supports Epi Info, a purpose-built, free, public-domain software package. While Epi Info has a broader range of functions, this manual will only explain how to perform data analysis in Epi Info using the Analysis module in Epi Info.

Rationale

The decision for choosing Epi Info was made in light of its advantages, some of which are listed below.

- Windows-based
- recent release of Epi Info, supported by developers
- has data analysis capability in line with STEPS requirements
- can appropriately adjust for complex sampling designs.

Topics covered

The following topics are covered in this tour of Epi Info:

- basic terminology
- opening the Analysis module and Analysis module screen components
- software settings and basic commands
- creating a new or derived variable
- displaying a variable
- obtaining basic descriptive statistics on a variable
- recoding a variable
- displaying data in a graph
- running saved programs
- selecting a subset of records in a dataset
- saving and printing outputs.

Downloading & Installing Epi Info

For instructions on downloading and installing Epi Info, please see Part 2, Section 5, Preparing the Data Analysis Environment.

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Terminology

Some of the specific Epi Info terms used are described in the table below.

Term	Description
Command	Predefined term in Epi Info syntax (language) that tells Epi Info how to manipulate or analyse your data (e.g. LIST, SELECT).
Program (.pgm)	Syntax files that can be saved in a separate text file or within an Access database. Contain a series of commands in Epi Info syntax to manipulate and analyse data.
Project	The name of the actual Access database (.mdb) file. All the data and related programs are stored within the project.
Variable	Any characteristic or attribute that can be measured. For STEPS datasets, most variables correspond to one question on the Instrument.

To open Epi Info

To open the Epi Info Analysis module double click on the Epi Info icon on your desktop and click the "Analyze Data" button in the lower left-hand section of the screen.

Alternatively, you can open the Analysis module directly by navigating to your Epi Info program folder (e.g. C:\Epi_Info) and double-clicking on the "analysis.exe" file.

Screen Components

The Analysis module of Epi Info has three main components divided into the following three windows:

Window	Function
Analysis	Contains all the commands that can be used during analysis.
Analysis Output	Displays the results of a program once it has been run.
Program Editor	Displays the code of saved programs and can be used to write new programs.

Continued on next page

Software Settings

Follow the steps below to set Epi Info to exclude missing data and to provide the appropriate output for weighted analyses.

Step	Action
1	In the Analysis window, click on Analysis Commands> Options>Set. It is located at the very bottom the Analysis window.
2	In the SET window, set "Yes as" to "Yes", "No as" to "No", and "Missing as" to "Missing.
3	Ensure all 6 check boxes immediately beneath the "Yes as" drop-down box are checked.
4	Set "Statistics" to "Advanced".
5	Ensure the check box for "Include missing" is NOT checked.
6	Set "Process records" to "Normal (undeleted)".
7	Click "Save all".

Open a dataset

Follow the steps below to open a dataset that is stored as a data table within an Access database.

Step	Action
1	In the Analysis window, click on Analysis Commands>Data> Read (Import) to open the READ window.
2	Set the "Data format" to "Epi 2000".
3	Click on "Change Project" and find and select your Access .mdb file (e.g. STEPS.mdb).
4	Click on the name of your dataset (e.g. MasterDataSet) from those listed.
5	Click "OK".

Note: The file path, number of records and date/time will be displayed in the Analysis Output window once the dataset is opened.

Continued on next page

Create a new or derived variable

Follow the steps below to create and assign values to a new or derived variable (e.g. BMI).

Step	Action
1	In the Analysis window, click on Analysis Commands>Variables> Define to open the DEFINE window.
2	In the DEFINE window, type the name of your new variable in the space provided (e.g. BMI).
3	Ensure "Scope" is set to Standard and click "OK".
4	In the Analysis window, click on Analysis Commands>Variables> Assign to open the ASSIGN window.
5	In the "Assign Variable" field, select your newly defined variable (e.g. BMI) from the drop-down list.
6	In the "Expression" field type the formula to compute the values of your new variable (e.g. weight/height*height). To use existing variables (e.g. weight and height) in your formula, select them from the "Available Variable" drop-down list.
7	Click "OK".

List all variable values

Follow the steps below to list the value of a variable for all records in the analysis output.

Step	Action
1	In the Analysis window, click on Analysis Commands>Statistics> List to open the LIST window.
2	Choose the variable(s) you wish to list from the "Variables" drop-down list or click the check box "All (*) Except" to list all variables.
3	Click "OK". A list of the chosen variables will be displayed in the Analysis Output window.

Create a frequency table for a variable

Follow the steps below to create a frequency table for a variable containing a list of all values for a given variable and the frequency of each value.

Step	Action
1	In the Analysis window, click on Analysis Commands>Statistics> Frequencies to open the FREQ window.
2	Choose the variable(s) you wish to list from the "Frequency of" drop-down list (select * to list all variables).
3	Click "OK". A frequency table(s) will be displayed in the Analysis Output window.

Continued on next page

Create a means analysis for a variable

Follow the steps below to perform a means analysis on a variable. The output of this command provides a frequency table as well as the mean, variance, standard deviation, and quartile values for the variable.

Step	Action
1	In the Analysis window, click on Analysis Commands>Statistics> Means to open the MEANS window.
2	Choose the variable(s) you wish to list from the "Means of" drop-down list (select * to list all variables).
3	Click "OK". A frequency table(s) and means analysis will be displayed in the Analysis Output window.

Recode a variable

Follow the steps below to recode a variable (e.g. age to Agerange).

Step	Action
1	In the Analysis window, click on Analysis Commands>Variables> Recode to open the RECODE window.
2	Select the variable **from** which you want to recode (e.g. age) from the "From" drop-down list.
3	Select the variable **to** which you want to recode (e.g. Agerange) from the "To" drop-down list.
4	Complete one line in the table for each value or range of values for your "From" variable that you wish to recode. It is recommended that all possible values for the "From" variable are assigned a corresponding value in the "To" variable to avoid missing values in the "To" variable. **Example:** To recode age values of 25 to 34 to the Agerange value of "25-34", type 25 for "Value", type 34 for "To Value", and type 25-34 for "Recode Value". To create further values for Agerange (e.g. 35-44, 45-54), complete additional rows in the table as needed.
5	Click "OK" when finished.

Graph variables

Follow the steps below to graph variables.

Step	Action
1	In the Analysis window, click on Analysis Commands>Statistics> Graph to open the GRAPH window.
2	Select "Graph type" from the drop-down list (e.g. bar for binary or points to depict continuous variables).
3	In the "X axis" section, select the X axis variable from the "Main variable(s)" drop-down list.
4	In the "Y axis" section, set "show value of" to "Count".
5	Fill in labels and titles if desired and click "OK".

Continued on next page

Run programs

Follow the steps below to run a saved program.

Step	Action
1	In the Analysis window, click on Analysis Commands>User-Defined Commands>Run Saved Program to open the RUNPGM window.
2	Your program can either be stored in a program file (.pgm) or within an Access database file (.mdb). The table below shows how to run a program depending on the type of file in which it is saved.

Program (.pgm) file		Access Database	
Step	**Action**	**Step**	**Action**
2.1a	Click on the grey box to the right of the "Filename" field to search for your .pgm file.	2.1b	Click on the grey box to the right of the "Filename" field to search for your .mdb file.
2.2a	Set "Files of type" to .pgm.	2.2b	Set "Files of type" to .mdb.
2.3a	Once you have found your file, click "OK" in the RUNPGM window.	2.3b	Once you have found the database, select the program from the "Program" drop-down list and click "OK".

Select a subset of a dataset

Follow the steps below to select a subset of a dataset. The SELECT command will stay in effect until another SELECT command is called.

Step	Action
1	In the Analysis window, click on Analysis Commands>Select/If >Select to open the SELECT window.
2	Complete the "Select Criteria" field with the desired equation (e.g. C1=1), use the drop-down list in the "Available Variables" field to select variables in your dataset for your equation.
3	When your equation is complete, click "OK".
4	To cancel the SELECT command, open the SELECT window again and click "OK", leaving the "Select Criteria" field blank.

Continued on next page

Save a dataset

Follow the steps below to save a dataset after you have opened it and modified it.

Step	Action
1	In the Analysis window, click on Analysis Commands>Data> Write (Export) to open the WRITE window.
2	Set "Output Mode" to "Replace".
3	Click on the grey box next to the "File Name" field to search and select your data file (e.g. STEPS.mdb).
4	Select the name of the data table to which you would like to write in the drop-down list (e.g. MasterDataSet) or write the name of a new table in the "Data Table" field.

Save outputs

Follow the steps below to save the output in one file.

Step	Action
1	In the Analysis window, click on Analysis Commands>Output> RouteOut to open the ROUTEOUT window.
2	Define or browse for an output filename where your analysis is to be stored and click "OK".

Print outputs

Follow the steps below to print outputs.

Step	Action
1	In the Analysis window, click on Analysis Commands>Output> PrintOut to open the RPRINTOUT window.
2	Click "OK". The results will be printed.

Part 4: Conducting the Survey, Data Entry, Data Analysis and Reporting and Disseminating Results

Overview

In this Part

This Part covers the following topics

Section 1: Data Collection

Overview

Introduction

This section covers all the tasks that need to be undertaken to:

- supervise data collection
- approach the selected households
- inform participants and obtain consent
- track participation
- conduct the interviews
- take the measurements
- record the data collected
- fill in the Participant Feedback Form
- schedule clinic visits for Step 3 measurements.

Intended audience

This section is designed for use by those fulfilling the following roles:

- data collection team supervisor
- data collection staff
- STEPS Site Coordinator.

Timeframes

Data collection takes approximately 8-12 weeks. This depends, however, on the number of staff available as well as on the logistics in a country / site.

In this section

This section covers the following topics:

Supervising Data Collection

Introduction

Members of the data collection team may have different levels of skills, experience and varying strengths and abilities. To ensure high standards of data collection, appointing one or more persons to lead and supervise the data collection team(s) is necessary.

Core tasks

The core tasks of a data collection team supervisor are provided in the checklist below. General roles are identified in Part 1, Section 2.

Tasks	Description	✓
1	Train data collection team staff.	
2	Obtain lists of the selected sample and maps for each area and assign interview teams to locations.	
3	Contact local authorities.	
4	Make travel arrangements for data collection teams.	
5	Obtain and prepare data collection forms and copies of the questionnaire.	
6	Distribute forms and supplies to interviewers.	
7	Track interviews.	
8	Supervise data collection.	
9	Supervise human resources.	
10	Provide progress updates to the STEPS site coordinator and / or the STEPS coordination committee.	
11	Provide feedback.	

Note: The main tasks are further described below.

Train staff

Train the data collection team staff in:

- interview skills
- approaching households
- keeping track of interviews and non-response
- informing participants and obtaining consent
- conducting interviews for Step 1
- taking measurements for Step 2
- completing the instruments
- giving feedback to the participant
- using the forms and available tools, including making appointments for Step 3.

Note: Details on training are discussed in Part 3, Sections 2-4.

Continued on next page

Supervising Data Collection, Continued

Assign interview teams to locations

Create a list of the areas to be surveyed and assign data collection teams to each location. When assigning locations:

- schedule interview teams to survey one location before moving to another;
- schedule time to revisit each location to finish interviews;
- keep a record of all interviewers that need transport and schedule the transport;
- keep track of which locations were visited by which interview team.

Contact local authorities

The data collection team supervisor will need to contact appropriate local authorities to inform them about the survey and gain their support and cooperation.

Obtain and prepare data collection forms and questionnaires

Ensure there are sufficient quantities of the printed instruments, Kish Household Coversheets, Interview Tracking Forms, and all necessary forms and STEPS tools required for the interviewers to use. Please see Part 6, Section 2 for all available data collection templates.

Prior to beginning data collection, the Kish Household Coversheet as well as the Interview Tracking Form must have specific parts completed. It is recommended that the data collection supervisor and the statistical adviser collaborate on this task to ensure the forms are correctly filled out and properly organized for data collection. See the final topic of Part 2, Section 2, entitled "Preparing Data Collection Forms", for specific instructions on how to partly fill out the collection forms to prepare field work.

In addition, the following parts of the instruments should be completed prior to beginning data collection:

- Participant ID on each page
- Cluster ID
- Cluster name
- Interviewer ID.

Distribute Data Collection Forms

Distribute to each interviewer all the instruments, data collection forms and equipment required prior to interviewers going into the field.

Tracking Interviews

Interviewers should use the Interview Tracking Form, available in Part 6, Section 2, to track household and participant response information on a daily basis. Collect the forms on a regular basis and give to the data entry team supervisor.

For other details not included on these forms, set up a log book.

Continued on next page

Supervising Data Collection, Continued

Supervise data collection

To ensure high-quality data collection, the supervisor will need to observe a certain proportion of the interviews conducted by each interviewer, particularly at the beginning of the data collection period.

The proportion may vary depending on the interviewers' experience, the timeframe and the budget involved.

The supervisors should also check that each instrument has been completed properly.

Ensure all instruments and other forms are accounted for and in order before sending them to the STEPS office for data entry.

Manage Human Resources

Manage and support the data collection team to ensure :

- good quality interviews are conducted and Instruments are complete
- interview timeframes are adhered to
- interviewers are supported if participant issues arise
- performance issues are dealt with appropriately
- confidentiality of all STEPS surveillance material is respected at all times
- feedback is provided to data collection staff
- sick leave and annual leave is appropriately covered.

Progress reports

During the data collection stage, you will need to provide regular updates to the STEPS site coordinator and / or the coordination committee. This should include:

- updates on progress against scheduled data collection timeframes
- issues and problems encountered.

Feedback

When data collection is completed, get together with the data collection teams to debrief and gain valuable feedback. This will be useful for processing and analysing the data and for revising the Instrument and manuals for the next round of STEPS surveillance.

Data Collection Process and Interviewer Tasks

Introduction

Data collection starts in the field only when the actual planning of the STEPS survey has been done. Each of the stages for data collection needs to be undertaken appropriately to ensure accurate data is being collected.

Interviewers have a key role to play in the STEPS surveillance process. The quality of the data collected and therefore the available results depends on successful interviews.

Interviewer Tasks during Data Collection Process

An overview of the tasks of an interviewer are included in the following checklist.

Task	Description	✓
1	Door knock selected households.	
2	Brief household members on purpose of the survey.	
3	Record all eligible participants on the Kish Household Coversheet and select one using the Kish Method.	
4	Record information on the Interview Tracking Form.	
5	Inform the selected participant using the Participant Information Form and obtain written consent.	
6	Conduct the interview and record results for Step 1.	
7	Double check completed Step 1 questions.	
8	Take measurements and record results for Step 2 (if applicable).	
9	Double check completed Step 2 information.	
10	Fill in Participant Feedback Form on results of Step 2 measurements for the participant.	
11	Make appointment for Step 3 (if applicable) and inform participant on fasting.	
12	Check all completed forms and hand to supervisor.	
13	Report any difficulties to supervisor.	

Note: Each of these tasks is described in more detail below and in Part 3, Sections 2-4.

Continued on next page

Data Collection Process and Interviewer Tasks, Continued

What the interviewer will need

The forms and resources the interviewer will need for data collection are listed in the following checklist:

For Step			Form	✓
1	2		Map or list of households in sample	
1	2		Name tag	
1	2		Notification of WHO STEPS surveillance visit	
1	2		Kish Household Coversheet	
1	2	3	Participant Information Form	
1	2		Consent Form 1	
		3	Consent Form 2	
1	2		Interview Tracking Form	
1	2	3	STEPS Instrument	
1	2	3	Question-by-Question Guide	
1	2		Show cards	
		3	Clinic Appointment Card (with map if necessary)	
		3	Fasting instructions	
	2		Participant Feedback Form (Step 2)	
		3	Participant Feedback Form (Step 3)	
		3	Clinic Registration Form	

Approaching Selected Households and Participants

Introduction

For Step 1 and Step 2 of the instrument, the interviewers will need to physically visit individual households to conduct the survey.

Contact process

See the table below for an overview of the contact process.

<table>
<tr><th>Stage</th><th>Description</th></tr>
<tr><td>1</td><td>Obtain household lists with associated addresses (and map if necessary) from your supervisor.</td></tr>
<tr><td>2</td><td>Physically knock on the door.</td></tr>
<tr><td>3</td><td><table><tr><th>If …</th><th>Then …</th></tr><tr><td>Nobody is home</td><td>Leave a Notification Card and record on the Interview Tracking Form.</td></tr><tr><td>Somebody is home</td><td>Introduce yourself and exchange greetings.</td></tr></table></td></tr>
<tr><td>4</td><td>Explain the reason for your visit and purpose of the STEPS surveillance.</td></tr>
<tr><td>5</td><td>Record each person living in the house between the ages of 25-64 on the Kish Household Coversheet.</td></tr>
<tr><td>6</td><td>Select household participant using the Kish Household Coversheet (unless pre-selected).</td></tr>
</table>

Note: Each of these stages is described in more detail below.

Door knocking procedure

Contact attempts must be made by actually knocking on the door of the household, simply walking by and thinking that no one is at home cannot be counted as an attempted contact.

Use the following table to help with different situations when you knock on the door.

If…	Then…
Someone is at home	Speak to the first adult you encounter in the household.
Nobody answers the door-knock	Look round side of house to see if someone is nearby.
Nobody is at home	Leave a notification of WHO STEPS surveillance visit and record details in the Interview Tracking Form (see below how to complete this form).
Household members are not available at the time of the first visit.	Make at least 2 different visits to obtain an interview. Choose times that are different – early morning or late afternoon.

Continued on next page

Recording household details

Record if anyone is home and the date and time of the visit on the Interview Tracking Form. See "Completing the Interview Tracking Form" on page 4-1-12 below.

Introducing yourself

Make sure your name tag is attached and clearly visible.
Introduce yourself and explain the reason for your visit as follows:

> My name is _____ and this is_____. We are employees of the <Ministry of Health> and we are working in a team to conduct a survey on health issues. We are hoping that the people in this house will participate in this survey. We would like to find out the number of people usually residing in this house between the ages of 25-64. Can you please give me the first name of those who usually live in this house between the ages 25-64 (starting, for example, with the oldest male)?

Explaining purpose of the survey

Explain that the purpose of this study is to determine the extent of chronic noncommunicable diseases (i.e. long-standing diseases not caused by infections) major risk factors in your country. These risk factors include:

- tobacco use
- alcohol consumption
- low intake of fruit and vegetable
- physical inactivity
- obesity
- raised blood pressure
- raised fasting blood glucose
- high levels of fat in the blood.

Explain that once the study data has been collected and analysed, this will help your health services plan and determine public health priorities to:

- prevent chronic disease epidemics before they occur
- monitor and evaluate population-wide chronic disease programmes.

Record all eligible household members

For each eligible person in the household record the following details on the Kish Household Coversheet (see Part 6, Section 2):

- sex
- age.

Select participant using Kish Method

Select one participant from the household using the Kish Household Coversheet (see Part 6, Section 2). Details on how to select a participant in a household are provided in Part 2, Section 2, under "The Kish Method".

Informing Participants

Introduction

After having chosen a study participant from a household, this participant needs to be informed on the details of the study before he/she will be asked to sign the Consent Form. For informing the participant, the Participant Information Form can be read out (see Part 6, Section 2).

Explaining aim of the survey

Explain that the aim of the survey is to determine population levels of major chronic disease risk factors. Also explain how the information will be used, i.e. for policy making in order to decrease risk factor levels.

Explaining survey process

Explain that you will collect information from a number of pre-selected households throughout the country. Explain how data will be collected, as appropriate, i.e. through:

- interview questions (Step 1)
- measurements of height, weight, waist, and blood pressure (Step 2)
- blood tests for sugar and fats (Step 3).

Explaining collection methods

Use the table below to help run through the whole data collection process with the participant:

Stage	Description
1	Step 1, asking questions about participant's: • age; • education; • employment (if appropriate); • income (if appropriate); • tobacco and alcohol use; • fruit and vegetable intake; • physical activity; • knowledge and history of high blood pressure and diabetes (if appropriate).
2	Step 2, taking the following measurements: • height and weight • waist circumference • blood pressure • hip circumference (if appropriate) • heart rate (if appropriate).
3	Step 3 (if appropriate), taking a small amount of blood from a prick on your finger or a vein in your arm to determine blood sugar and blood lipid levels.* ***Note**: This may cause some mild pain
4	Respond to any questions the participant may have.

Continued on next page

Survey timeframe

It is estimated that each part (i.e. Step 1, Step 2 and then, Step 3) of the survey will take approximately the following timeframes:

Step	Timeframe
1	30 minutes
2	30 to 45 minutes
3	5 minutes

Other items to explain to participants

Use the table below to help explain to each participant the benefits, their rights and how confidentiality will be handled.

In terms of…	You will need to explain to each participant that…
Community benefits	The results of this study will be used to assist the Ministry of Health develop public health programs that target efforts to lower the risk factors that lead to chronic diseases.
Individual rights	Participants may: • decline to take part in the study; • withdraw their consent at any time; • not answer any questions in the interview that they do not wish to answer.
Confidentiality	• Participants should provide their name and contact information so they can be contacted if there is any problem following the analysis of the information and follow-up is necessary. • Participation and data provided will be completely confidential. • While the data from this study may be sent elsewhere for analysis, no personally identifiable information will be provided for this analysis. • Their name and their household or village will not be used in any report of the study.

Obtaining Consent

Introduction

Each participant must provide both verbal and written consent before taking part in the survey.

Obtain consent

For those who will take part in the study, follow the steps below to obtain verbal and written consent.

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Use the following table to select the appropriate consent form for each person taking part:

<table><tr><th>In…</th><th>Then use Consent Form…</th></tr><tr><td>Step 1 only</td><td>1</td></tr><tr><td>Step 1 and 2 only</td><td>1</td></tr><tr><td>Step 1, 2 and 3</td><td>1 and 2</td></tr></table>
Note: See Part 6, Section 2 for suggested drafts of consent forms.</td></tr>
<tr><td>2</td><td>For each participant, use two copies of the consent form(s) as follows:
• one for the participant to keep
• one for the STEPS coordination office.</td></tr>
<tr><td>3</td><td>Allow the participant to read the consent form(s) or, in case of poor eyesight or illiteracy, read it out to them.</td></tr>
<tr><td>4</td><td>Use the table below to help with the following situations:

<table><tr><th>If…</th><th>Then...</th></tr><tr><td>The intended participant answers NO to any question in the consent form.</td><td>Ask the participant whether he/she understands the questions.</td></tr><tr><td>The participant does not understand the question.</td><td>Rephrase the question.</td></tr><tr><td>The participant understands the question and the answer is still NO.</td><td>Circle NO in the consent form and record age and sex as best you can.*</td></tr></table>
*This means that the household member will not participate in the survey. However, you must still include him / her in the Interview Tracking Form, then move to the next selected household.</td></tr>
<tr><td>5</td><td>Get the participant to sign both copies.</td></tr>
<tr><td>6</td><td>As the interviewer, you must sign as a witness.</td></tr>
<tr><td>7</td><td>Thank him/her for agreeing to take part in the survey.</td></tr>
</table>

Completing the Interview Tracking Form

Introduction

You need to record every household visited on the Interview Tracking Form.

For a copy of the Interview Tracking Form, see Part 6, Section 2.

Purpose of Interview Tracking Form

The purpose of the Interview Tracking Form is to document and be able to report on:

- number of households visited;
- number of eligible individuals in each household;
- Participant ID;
- if the participant was at home on either the first or second visit;
- age group and sex of the participant;
- participant eligibility for Step 1, Step 2, and Step 3 and if they consented or declined each step;
- appointment date and time for a scheduled interview (in case participant was not at home at the first visit);
- individual comments.

Note: The Interview Tracking Form is used during analysis. If this form is not used, you will not be able to properly weight your data which will reduce the quality of your results.

Completion guidelines

Depending on the sample design the Interview Tracking Form may already be partially completed (see Part 2, Section 2 "Preparing Data Collection Forms"). Use the following table for guidance on how to finish completing this form.

Column	Guidelines for completion
Cluster ID	ID code associated with the cluster. Separate forms need to be used for different clusters.
Household ID	Use the predetermined codes, see Part 2 Section 2.
Number eligible in household	Record the number of eligible people (aged 25 to 64) in the household.
Participant ID	Mark the Participant ID that is written on the instrument to be used.
At home (visit 1 and visit 2)	• If participant is at home, then mark "Y". • If participant is not at home, then mark "N".
Male/female by age group	Mark an "X" in the box according to the sex and age group of the participant.

Continued on next page

Completing the Interview Tracking Form, Continued

Completion guidelines (cont.)

Column	Guidelines for completion
Step 1 (Yes, Decline)	• Mark an "X" if participant consents to the interview (yes column). • Mark an "X" if participant declines.
Step 2 (Yes, Decline)	• Mark an "X" if participant consents to the interview (yes column). • Mark an "X" if participant declines.
Step 3 (Yes, Decline)	• Mark an "X" if participant consents to the interview (yes column). • Mark an "X" if participant declines.
Appointment Time	If you schedule an appointment with a participant, record the date and time here.
Individual Comment	Free area for interviewers to record comments. Some reasons to use this field may be that the participant: • has a communication problem (e.g. speaks a local dialect only, has hearing impairment); • refuses to consider participation; • is ill, cannot obtain consent; • has a disability; • cannot miss work; • refuses to take part in Step 3 (e.g. is afraid of needles or has cultural/religious preference not to provide blood).

Notes:

- If you altered the age range of your survey you will need to reflect those changes on the interview tracking form (for example, if you sample 15-24 year olds you will need to add 2 other columns to the tracking form).
- If your country/site does not do Step 3 measurements, the Interview Tracking Form should be altered by removing the according columns.
- If your country/site does Step 3 with a sub-sample, a column "not applicable" should be added under Step 3.

Recording Information

Introduction

All results that are recorded on the instruments must be written as clearly as possible to avoid ambiguity and confusion when checking and entering the results.

Requirements

Some general requirements for recording survey information are as follows:

- use a pencil, not a pen for writing;
- record the identification number on each instrument and each page;
- do not erase any notes made;
- if a question has been skipped by mistake, correct it;
- if a participant changes his / her mind on one of the options, record the new answer;
- record only answers that are relevant to the survey;
- record comments or explanations in brackets in the instrument next to the corresponding question;
- don't get too absorbed recording, keep the participant's interest by saying the participant's response aloud as you write it down;
- reach an agreement on how to write numbers (notably 1s and 7s).

Handling issues

Use the table below to help with some common issues you may encounter.

If…	Then…
You are uncertain about a response.	Repeat the question and record the answer exactly. Do not paraphrase a response.
If the participant doesn't know the answer to a question.	Record 77 or 777 (depending on number of spaces) for "don't know".
You have missed a question.	Go back and ask the question, making a note in the margin that the question was asked out of sequence.
Missing data is not discovered until after the interview.	If possible, re-contact the participant and ask the question. Note in the margin that the question was asked out of sequence. If not possible, for example the team has moved on from the village, then record 99 or 999 (depending on the number of spaces) and make a note that the question was skipped due to interviewer error.
The participant refuses to answer a question.	Record 88 or 888 (depending on the number of spaces). **Note:** Before accepting a refusal explain the objective of the question to the participant.

Continued on next page

Recording Information, Continued

Checking and editing

Before leaving the household or the clinic setting, check the instrument and make sure that:

- all the questions have been answered and all the measurements have been taken (if applicable);
- the information recorded is clear and legible;
- probing comments are indicated;
- all the information has been completed including the Participant ID on every page.

Interviewer's Guide

See more information on how to record information in Part 3, Section 2 "Completing the STEPS Instrument".

Completing the Participant Feedback Form

Introduction

After having completed the Step 2 measurements, the participant should be informed on his/her results. You can use the Participant Feedback Form (Step 2) in order to give the participant feedback on his body measurements (see Part 6, Section 2). This form stays with the participant after having completed the survey.

Filling in the Participant Feedback Form

Please follow the following guidelines when completing the Participant Feedback Form:

- blood pressure: record reading 3 for both systolic and diastolic blood pressure;
- blood pressure classification: tick the appropriate box;
- heart rate: record reading 3;
- height and weight: record height in cm and weight in kg;
- body mass index: calculate the body mass index and record (weight in kg divided by meters squared: kg/m^2), the BMI Classification Chart helps calculating the BMI (see Part 6 Section 2);
- BMI classification: tick the appropriate box, the BMI Classification Chart helps finding the BMI category;
- waist and hip circumference: record waist and hip circumference (if applicable) in cm.

Scheduling Clinic Visits for Step 3 Measurements

Scheduling Step 3 measurements

If your site plans to take biochemical measurements for Step 3, you will need to schedule those for participants that have been selected to visit the clinic for tests.

Scheduling

Follow the steps below to schedule and brief participants:

Step	Action
1	Ask the participant the day and time they would like to come in to the clinic or designated place for blood tests (Step 3) using the times assigned to your team.
2	If necessary, provide a map showing the venue.
3	Record the time in the appropriate box on the Clinic Appointment Card (see Part 6, Section 2). Leave this card with the participant. Take note of the appointment time for communication to the data collection team supervisor.
4	Provide a copy of the Fasting Instructions and explain the importance of fasting properly.
5	Remind the participant to bring to the clinic their own copy of the signed consent form as well as the Clinic Appointment Card as a means of identification.
6	In cases where participants need transportation to the clinic or designated place for blood tests, make the arrangement and inform your supervisor.

Section 2: Data Entry

Overview

Introduction

This section covers all the tasks that need to be conducted to enter the STEPS surveillance data as recorded on the STEPS Instrument and check and correct data errors.

Intended audience

This section is designed for use by those fulfilling the following roles:

- data entry supervisor
- data entry staff
- STEPS Site Coordinator
- data analyst.

Tasks and timeframes

The chart below shows the main tasks and timelines covered in this section.

Task Name	Duration	Month 3	Month 4	Month 5
Enter data (1st and 2nd key entry)	8 weeks			
Check and clean data	8 weeks			
Merge data	1 day			

In this section

This section covers the following topics:

Supervising Data Entry

Introduction

Members of the data entry team may have different levels of skills, experience and varying strengths and abilities. To ensure high standards in this environment, the appointment of one person to lead the team and supervise the work is necessary.

Core tasks

The core tasks of the data entry supervisor are listed in the table below. General roles are identified in Part 1, Section 2.

Tasks	Description
1	Train data entry staff in daily operations.
2	Receive, log and assign instruments from data collection team.
3	Assign data entry staff to computers and instrument components for data entry.
4	Create folders with coversheets to track and manage entry of instrument data.
5	Distribute and manage folders on a daily basis.
6	Check and correct data entry anomalies and review consistency reports.
7	Regularly liaise with data collection team supervisors.
8	Supervise human resources and hold regular team meetings.
9	Supervise technical requirements including: • daily backup of data on each computer • regular virus scanning and virus software updates • software support.
10	Provide regular progress reports to the STEPS site coordinator and/or the STEPS Coordination Committee.
11	Create final data set.

Note: Tasks 1-8 are further described below. Task 11 is described on page 4-2-10.

Training

For more information on training data entry staff, please see Part 3, Sections 1 and 5.

Continued on next page

Supervising Data Entry, Continued

Receive, log, and assign Instruments

At the end of each day, data collection team supervisors should supply all completed instruments to the data entry office. The data entry supervisor should receive and log them as follows:

Step	Action
1	Log receipt of instruments in the data_entry_log.xls file.
2	Assign each instrument to a specific computer and record this assignment in the data_entry_log.xls file.

Assign computers and staff

Set up the data entry computers and assign staff so that:

- the Interview Tracking Form information is entered into the interview_tracking_form.xls files;
- the main instrument data (i.e. Step 1, Step 2 and Step 3) and interview location and date information are entered into survey.rec and biochemical.rec (if applicable);
- identifying information is entered into consent.rec (if applicable);
- different data entry staff are assigned to conduct first key and second key entries on each computer (staff can swap computers to do the second keying).

Create folders (or boxes)

For each data entry computer, prepare three folders (or boxes), each with a coversheet (see coversheet template Part 6, Section 2) for the different stages of data entry as follows:

Folder	For Instrument data that…	Folder name
1	Is not yet entered.	1st key
2	Has first keying complete.	2nd key
3	Has second keying complete.	Completed

Note: Once folders have been assigned to a computer for data entry, they should remain with that computer.

Continued on next page

Distribute and manage folders

Follow the steps below to distribute and manage the folders on a daily basis.

Step	Action
1	Each morning give data entry staff their computer folders and a pile of instruments to enter from your general folders/boxes. **Note:** We suggest 30-40 instruments per staff or as many as can be realistically entered by one person in one day.
2	Log distribution of new instruments in the data_entry_log.xls file.
3	At the end of each day, collect all folders from each data entry staff, check that the coversheet is attached and labeled, and lock these away.

Check and correct anomalies

Check and handle all data entry errors and corrections by:

- making decisions on alterations to data from completed instruments where necessary;
- ensuring data entry staff use the Data Entry Tracking Form (located in Part 6, Section 2) to record all ambiguous or unclear data entry results, questions and problems;
- clearly annotating original forms for an audit trail;
- referring to data collection staff where necessary;
- creating a list of potential problems and frequently asked questions (FAQs);
- working with data analyst (where appropriate) to systematically work through data anomalies.

Consistency report

Review weekly consistency reports for each data entry computer to detect problematic data. Data entry staff should be trained how to produce a consistency report for the data entered on their computer. Instructions for producing a consistency report are provided on Part 3, Section 5.

Liaise with data collection team

Once data entry has started, you should have regular discussions with the data collection team supervisor to provide feedback on:

- data quality
- workflow and receipt of instruments
- issues and anomalies that may arise.

See page 4-2-9 for further details on reporting back to the data collection team supervisor.

Continued on next page

Supervising Data Entry, Continued

Manage human resources

Manage and support the data entry team to ensure :

- good workflow
- high quality of data entry
- high level of cooperation between team members
- different data entry operators are scheduled for first and second key entry
- performance issues are dealt with appropriately
- confidentiality of all STEPS surveillance material is respected at all times
- feedback is provided to data entry staff
- sick leave and annual leave is appropriately covered.

Team meetings

Schedule weekly meetings to discuss the data entry process and report results to the data entry team. These meetings should be used to:

- discuss problems or concerns
- collect and review data entry tracking forms
- collect and review consistency reports
- discuss progress in data entry process.

Data Entry

Introduction

STEPS survey data on the completed instruments is to be entered by trained data entry staff into a series of predefined data entry templates using EpiData.

EpiData templates

For Step 1, 2 and 3 you will need to use the following data entry templates:

- Consent (if applicable)
- Survey
- Biochemical*

* If Step 3 results are recorded on forms separate from the main STEPS Instrument, then the biochemical template will need to be used. Otherwise, biochemical results are entered into the Survey template.

Interview Tracking Form Excel File

Data from the Interview Tracking Forms are to be entered into the interview_tracking_form.xls Excel file. See Part 2, Section 4 for downloading information.

It is recommended that all Interview Tracking Forms be entered on the Master Computer by the data entry supervisor.

Note: This Excel spreadsheet should not be modified because it will be imported into your database and used to calculate the non-response weight for your data. If any modifications are needed (e.g. additional age groups or fewer age groups) please contact the STEPS team for assistance.

Data entry process

Data entry is a systematic process that covers the following main stages:

Stage	Description
1	Receiving, logging and assigning
2	First key data entry
3	Second key data entry
4	Validation and error correction
5	Backing up
6	Storing and filing the instruments

Continued on next page

Receiving, logging and assigning

The data entry supervisor should log all received instruments on a daily basis and distribute these to data entry staff. See page 4-2-3 for further details.

Data entry staff are responsible for regularly updating the Data Entry Tracking Form for their computer, ensuring that for each instrument the current status is correct and any data entry problems are recorded.

Entering Data

At each computer, the data entry process should proceed as follows:

Step	Action
1	Complete first keying on all instruments in "1st key" folder and move each entered instrument to "2nd key" folder.
2	After all instruments in "1st key" folder have been entered, prepare for second keying.
3	Complete second keying and move each entered instrument to "Completed" folder.

Specific instructions for each of these steps is covered in detail in Part 3, Section 5. Prior to beginning data entry, it is essential that data entry staff have been thoroughly trained and the procedures for handling potential problems during the data entry process have been well established.

Validation and error correction

During second keying, if there are any discrepancies between the data from the first keying and data from the second keying the data entry program will immediately inform you that the data does not match. Part 3, Section 5 provides specific instructions for handling these discrepancies. Prior to beginning data entry, data entry staff must be thoroughly trained to know exactly what to do when these discrepancies arise.

Backing up data

Every computer should be backed up at the end of each day. It is the responsibility of the data entry team member to back up the computer they used. For more detailed information on backing up the computers see Part 3, Section 5.

Storing and filing the Instruments

At the end of each day all folders should be placed in a secure location. More detailed information on filing can be found on the following page.

Backup and Filing

Introduction

All files associated with the STEPS survey need to be properly filed and all electronic data backed up on a daily basis to avoid data loss.

Filing completed STEPS Instruments

At the end of each day of data entry, all the instruments that have been entered need to be filed in the appropriate folders (first keying, second keying, or completed) designated for each computer.

All data that has not been entered needs to be returned to the supervisor to be stored in the collective folders.

Backup

At the end of each day of data entry, each data entry staff member should backup all data files on their computers. This is to avoid data loss. Detailed instructions for backing up the data files using EpiData are provided in Part 3, Section 5.

Archiving

For details on archiving all STEPS surveillance files, please see Part 4, Section 5.

Reporting

Introduction

The data entry supervisor should regularly liaise with and report progress and issues to the:

- data collection team supervisor
- STEPS Site Coordinator
- STEPS Coordinating Committee.

What to report to whom

Use the table below for guidance on what to report to whom.

What to report	To whom	When
• errors on completed instruments • data collection timeframes not being met	Data collection team supervisors	At least weekly
• progress • issues that need resolving • timeframe and budget updates	STEPS Site Coordinator	Weekly
• progress • timeframe and budget updates	STEPS Coordinating Committee	Monthly

Creating the Final Dataset

Introduction

Once all the survey data have been entered twice and checked on each computer, all the files used on each computer need to be combined into a single dataset (except the consent information) so the data can be analysed.

In EpiData this process is called appending and merging.

Requirements

This process should be conducted:

- by the supervisor (or a single senior staff member)
- on the Master computer
- after all data has been backed up.

Process

The appending and merging process includes the following stages:

Stage	Description
1	Listing each data entry computer and what data was entered on it
2	Performing a record count for each .rec file on each data entry computer
3	Copying files to the Master computer
4	Appending the data
5	Merging the datasets
6	Checking the final dataset

Create list of computers

In a log book or somewhere safe, list each data entry template and the computers on which it was entered. For ease of use, list the computers in alphabetical order starting with Master, then A, B, C, etc., for each template. For example:

Template	Computer
Survey	• Master • A • B • C
Biochemical	• D • E

Continued on next page

Record count on each computer

Perform a record count for each .rec file on each data entry machine to check the record count. Follow the steps below to perform a record count:

Step	Action
1	Open EpiData.
2	Select "Count Record" from the "Document" menu at the top of the screen.
3	Select one .rec file of interest and click 'add to list'.
4	Repeat step 3 until all the .rec files on the computer have been added to the list.
5	Select 'id' in the' field to evaluate' list.
6	Select "OK".
7	The screen will then show a list of all IDs used in any of the .rec files selected and indicate the number of instances of each ID in each .rec file selected.
7	Click Save and save document under C:/STEPS/data with the title recordcount + machine label (e.g. recordcountA).

Copying files to the Master computer

All the data files that have been saved under the STEPS folders on each computer must be copied to the Master computer so they can be appended and merged. Follow the steps below to copy the files.

Step	Action
1	Create a new folder on the Master computer labeled: MainSTEPS (C:\MainSTEPS).
2	Under C:\MainSTEPS create a folder for each data entry computer as follows: • C:\MainSTEPS\Master • C:\MainSTEPS\A • C:\MainSTEPS\B, etc.
3	Make a copy of the C:\STEPS\data folder (on the Master computer) and add to the C:\MainSTEPS\Master folder.
4	Copy and paste the C:\STEPS\data folders from each machine (one at a time) and place in the folder that is labeled with the original machine name (e.g. the C:\STEPS\data folder from computer A would be copied to C:\MainSTEPS\A on the Master computer).

Note: Never move the folders to the Master computer, create copies only. This will allow you to backtrack in case of errors.

Continued on next page

Appending the data

All the files stored on the Master computer must be appended to combine the data from each computer (A, B, C, etc.) into single files. Follow the steps below to append your data. At the end of this process you should have one combined data (.rec) file for each template used.

Step	Action
1	In EpiData, select "Append/Merge" from the "Data in/out" menu at the top of the screen.
2	In the dialog box, click "Name of first data file" and select the Master computer file. If the data entry template was not entered on the Master computer, select the first computer in your list on which the template was used.
3	Click on "Select name of second data file" and select the next computer listed in your list of computers on which the template was used.
4	Click "OK".
5	Type the merged data file name (e.g. SurveyMasterA) in the "Resulting data file" field.
6	Click on "append only data fields in data file B that also exist in data file A" on the "Append" tab in the lower left-hand corner of box.
7	Click "Append" and enter data file description (e.g. Appended Master + A).
8	Make note of the second paragraph of the Information window "Appended and saved as:". This tells you the name and location of the appended file.
9	Repeat steps 3-8, using the new file created each time. Repeat the steps until each computer's files have been appended into one master file (e.g. SurveyMasterABCDEF).
10	Upon completing these steps for all data entry templates used, you should have one .rec file for each template used in your C:\STEPS\MainSTEPS folder. Rename each of these .rec files "Master" followed by the name of the specific template. Your C:\STEPS\MainSTEPS folder should now have: • MasterConsent.rec (if used) • MasterSurvey.rec • MasterBiochemical.rec (if applicable)

Continued on next page

Checking the appended data

Check the results of the append process for each master data file. Each master data file should have the same number of records, which should equal the total number of correctly completed instruments.

Follow the steps below to check the appended data files:

Step	Action
1	Perform a record count for each appended master data file you have just created (see page 4-2-11 for instructions on performing a record count).
2	Using the record counts obtained earlier from each computer, sum the record counts across all computers for each template.
3	Confirm that the record count is the same number for each master data file and that this number equals the sum calculated from all data entry computers. If there are any discrepancies, further investigation is needed before continuing with the creation of the final data set.

Merging files into one dataset

The table below describes how to merge the master data files containing the appended data into one master dataset. This will only need to be done if you used both the survey.rec and biochemical.rec templates.

Step	Action
1	In EpiData, select "Append/Merge" from the "Data in/out" menu at the top of the screen.
2	In the dialog box, click "Name of first data file" and choose C:\STEPS\MainSTEPS\MasterSurvey.rec.
3	Click "Select name of the second data file" and choose C:\STEPS\MainSTEPS\MasterBiochemical.rec.
4	Click "OK".
5	Type the merged data file name "MasterDataSet" in the "Resulting data file" field.
6	Click on the "Merge" tab in the lower left-hand corner of box.
7	Select "Merge only records from data file B that match records in data file A".
8	Select ID in the "Select key field(s)" list.
9	Click "Merge" and enter data file description (e.g. Merged survey + biochemical).
10	Make note of the second paragraph of the Information window "Merged and saved as:". This tells you the name and location of the merged file.

Note: If the consent information was entered electronically (which is not recommended) **DO NOT** merge this information into the MasterDataSet.

Continued on next page

Checking the merged data

Check the results of the merge process by evaluating the record count and making sure all variables are included. Follow the steps below to check your MasterDataSet.rec file.

Step	Action
1	Perform a record count for MasterDataSet.rec (see page 4-2-11).
2	Compare this figure to the sum of the record counts obtained from all data entry machines.
3	If results do not match, further investigation is needed.
4	Open the MasterDataSet.rec file in EpiData by selecting "Open" from the "File" menu at the top of the screen.
5	Scroll down through the data entry screen to confirm that fields from all used templates are present in this file, if any fields are missing, further investigation is needed.

Export the dataset for analysis

The dataset needs to be exported into a format that is readable by Epi Info. Follow the steps below to export the dataset.

Step	Action
1	Open EpiData.
2	Click on "6. Export Data".
3	Select "dBase III" from the list.
4	Select MasterDataSet.rec as the file to open.
5	In the "Export data file to dBase III file" window: **Step** / **Action** 5.1 Select "all records". 5.2 Check "skip deleted records". 5.3 Click "All" from the Select Fields section.
6	Click "OK".

Note: There are many different export formats available from EpiData. If you are using another analysis package other than Epi Info you will need to select the appropriate format from the list of formats offered in step 3.

Continued on next page

Creating the Final Dataset, Continued

Preparing the interview tracking form Excel file

The interview_tracking_form.xls file should be on the Master computer and it should contain the information from all completed Interview Tracking Forms. If the data was entered on multiple computers then you will need to merge all the different documents into one spreadsheet by copying and pasting the records from one spreadsheet into another.

Once you have confirmed that all interview tracking information is in one interview_tracking_form.xls file on the Master computer, click on the "Format for Epi Info" button in the "Instructions" worksheet of the file to generate the worksheet "EpiInfo" to be used during analysis.

The "EpiInfo" in the interview_tracking_form.xls file worksheet will be attached to the database later on and will not be part of the MasterDataSet. For more information about attaching the information to your database see Part 4, Section 3.

Technical Assistance

The WHO Geneva STEPS team will provide technical support during this process if needed. Please contact the team at steps@who.int with your questions.

Section 3: Data Analysis

Overview

Introduction

This section covers the tasks that need to be completed to analyse the STEPS survey data. The results of the analysis will be presented in the Fact Sheet and Data Book, which will be used to create the site report.

Intended audience

This section is designed for use by those fulfilling the following roles:

- data analyst
- statistical adviser
- STEPS Site Coordinator.

Statistical adviser

If the data analyst is not a survey statistician, it is important that he/she has access to a survey statistician for advice and support. The statistician should be a member of the STEPS Coordinating Committee and have regular contact with the data analyst.

If there is not a statistician available or further assistance is required please contact the WHO Geneva STEPS team at steps@who.int .

Analysis reports

The following reports are the key outputs of the data analysis:

- Data Book
- Fact Sheet
- site report.

Timeframes for analysis

The table below is a guide to when specific parts of the analysis process should begin.

When…	Then…
The data entry templates have been tested.	Begin tailoring the Epi Info code to match your site instrument.
The data is all entered, checked and edited.	Finalize dataset and analyses for the Fact Sheet, main site report, and Data Book.

Continued on next page

Overview, Continued

Data analysis software

WHO STEPS recommends using Epi Info for data analysis (version 3.3 or higher), supplemented by Microsoft Access.

Other software packages that are available to the data analysis team may be considered for statistical analyses. However, any alternative packages must be able to handle complex sample designs and will not necessarily be supported by the WHO Geneva STEPS team.

Additional Resources

In addition to the brief introduction to Epi Info presented in Part 3, Section 6 of this manual, there is an Epi Info Training Guide available on the STEPS website and CD that provides more in-depth training.

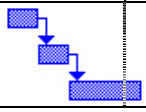
If you wish to gain a better understanding of the Epi Info analysis programs provided by the STEPS team or you would like to translate these programs into a different statistical package, the Analysis Programs Documentation file is available on the STEPS CD and on the STEPS website here: http://www.who.int/chp/steps/resources/database/en/index.html.

Technical support

The WHO Geneva STEPS team can provide technical assistance and training for Epi Info to aid the data analyst in the cleaning, weighting, and analysis of the data.

Tasks and timeframes

The chart below shows the main tasks and timelines covered in this section.

Task Name	Duration	Month 5	Month 6
Prepare and clean the data	7 days		
Calculate response proportions & weight data	7 days		
Create fact sheet and data book	2 weeks		

In this section

This section covers the following topics:

Data Analysis Process

Introduction

The data analysis process ranges from creating the database to producing the final results for the site report.

Data analysis should be conducted in a very standardized and methodical way, using the guidelines suggested by the STEPS team. Standardizing certain aspects of the data analysis will allow trend analysis in the future between STEPS surveys and also allow comparisons between STEPS sites.

Process

The table below shows each of the stages in the data analysis process.

Stage	Description
1	Preparing the STEPS data for Epi Info
2	Cleaning the data
3	Weighting the data
4	Producing the Fact Sheet and Data Book

Note: Stages 1-3 are described in this section, stage 4 is described in the following section of the manual.

Preparing the Survey Data

Introduction

Once data entry is complete, the data needs to be prepared for cleaning and analysis in Epi Info and the interview tracking information needs to be attached to the survey data. Note that much of this topic is a review of material covered in Part 2, Section 5 of this manual.

Instructions for importing data from EpiData

Upon completion of the data entry process, the data entry supervisor will produce a single database file (.dbf) containing all the entered data from the instruments. This .dbf file must be transformed into a data table called MasterDataSet in an Access file called STEPS.mdb in order for the provided analysis programs to work properly. The table below describes how to transform your data from the .dbf file to the Access database file.

Step	Action
1	Rename the .dbf file containing your survey data to "STEPS.dbf".
2	Open the .dbf file in Access. Note that your dataset is listed in the Database window as a linked table (indicated by a blue arrow followed by the letters dB).
3	Copy the dataset to a local table by right-clicking on the dataset and selecting Copy. Then right-click on any white space in the Database window and select Paste.
4	In the Paste Table As dialog window, type "MasterDataSet" in the space for Table Name and select "Structure and Data (Local Table)" from the Paste Options.
5	After ensuring the name is spelt correctly and the correct option is selected, click OK.
6	You will now see the local data table "MasterDataSet" listed in your Database window. You may open it to have a look at your data.
7	Exit from Access. You will see that you now have a STEPS.mdb file listed along with your STEPS.dbf file.
8	Move the STEPS.mdb file to the C:\STEPS\Epi Info folder.

Epi Info analysis programs

The data analysis programs are available on the STEPS CD as well as on the STEPS website. As these are occasionally updated to meet country needs, it is best to check the updates page on the STEPS website (http://www.who.int/chp/steps/resources/updates/en/index.html) to see if a more recent version is available.

The following table describes how to download the Epi Info analysis programs from the internet and attach them to your STEPS.mdb file containing your survey data.

Continued on next page

Epi Info analysis programs (cont.)

Step	Action
1	Connect to the internet and go to: http://www.who.int/chp/steps/resources/database/en/index.html
2	Click on the link labeled " Epi Info Analysis Programs".
3	Save the zip file, "Epi_Info_Analysis_Programs.zip", to your desktop.
4	Open the zip file by double-clicking on it. Copy the Access file, Epi_Info_Analysis_Programs.mdb, to your desktop.
5	Open the Epi_Info_Analysis_Programs.mdb file and right click on the table "Programs".
6	Select "Export" and in the "Select Table to Export to" window select STEPS.mdb (this should be located in your C:\STEPS\Epi Info folder).
7	Select the "Definition and Data" option in the dialogue window and click "OK". If you are replacing an older version of the programs, a dialogue window will appear asking if you want to replace the old "Programs" table. Click "Yes".

Import interview tracking form

If interview tracking information has been collected and entered into the interview_tracking_form.xls Excel file, import the information contained in this file into your STEPS.mdb file by following the steps below.

Step	Action
1	Confirm that the interview_tracking_form.xls file is located in your C:\STEPS\data folder and that it is complete and ready to be imported into Epi Info (see Part 2, Section 5 for more detailed instructions).
2	Open Epi Info Analysis and click on Analysis Commands>User-Defined Commands>Run Saved Program in the Analysis window.
3	Click the grey box to the right of the Filename field and find and select your STEPS.mdb file.
4	Select "ImportInterviewTracking" from the drop down menu and click "OK".

Note: This process uses one of the generic programs written for Epi Info and therefore must be done after the programs have been attached to your dataset.

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Create backup of database

It is important to create a backup of your database. During the analysis process you will be writing and saving different tables within your database. If something happens to your working copy of the database you will need a backup copy. Follow the steps below to create a backup of your database.

Step	Action
1	Open STEPS.mdb.
2	From the File menu click on "Back up Database".
3	Select a location on your machine to back up the database.
4	Click "Save".

Cleaning the Data

Introduction

The dataset needs to be cleaned prior to data analysis. This includes:

- checking ranges and combinations of variables
- detecting and handling missing data
- detecting and handling outliers.

Checking Age and Sex Variables

The variables Age and Sex should be checked first, prior to checking the data in any other variable. Age and Sex are needed in order to analyse the survey data by age-sex groups and can also be useful in cleaning the remaining variables.

There are a set of programs available in the provided Epi Info analysis programs that help to automate the process of checking the Age and Sex variables. These are:

- AgeRange2564 (or AgeRange1564)
- Rerun_AgeRange2564 (or Rerun_AgeRange1564)
- MissingAgeSex

The table below explains how to use these programs to check your age and sex variables.

Step	Action
1	Open Epi Info Analysis and click on Analysis Commands>User-Defined Commands>Run Saved Program in the Analysis window.
2	Click the grey box to the right of the Filename field and find and select your STEPS.mdb file.
3	Select "AgeRange2564" from the drop-down list in the Program field and click "OK".
4	**If the program result is…** / **Then…** There are no records missing age or sex → Run MissingAgeSex There are records missing age or sex that cannot be resolved → Run MissingAgeSex There are records missing age or sex that can be resolved → • Resolve records • Run Rerun_AgeRange2564 • Run MissingAgeSex

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Checking Age and Sex Variables (cont.)

Step	Action
5	Upon completion of this process, your STEPS dataset will contain the following new variables: • AgeRange, containing text values "25-34", "35-44", etc. • Age, containing numeric age values • Sex, containing text values "Men" and "Women" • Valid, containing numeric values 1 (valid) and 2 (not valid) In order to have a value of 1 (valid) for the variable Valid, a record must have a valid Age and Sex value.

Note: If the overall age range for your survey is neither 15-64 nor 25-64, or you have not planned to report estimates for 10-year age groups, contact the STEPS team for help in modifying the AgeRange2564 and Rerun_AgeSex2564 programs.

Checking variables needed for weighting

If data will be weighted for probability of selection, variables indicating the location of each record (e.g. Cluster Number) must be checked for missing or outlying values. As the name and value of these variables vary from country to country, no automated program exists for this cleaning.

The table below is provided as a general guideline to check the location variables in your dataset, please contact the STEPS team for more specific help with checking your location variables.

Step	Action
1	Consult with the data entry supervisor to identify all variables in the dataset containing location information and the accepted range of values for each.
2	For each variable, confirm that all records contain data within the accepted range of values. (In Epi Info, the LIST and FREQ (frequency) commands may be useful. See Part 3, Section 6 for help with Epi Info commands.)
3	Confirm that location information is consistent within each record (In Epi Info, the SELECT and FREQ (frequency) commands may be useful.)
4	If missing or inconsistent data is encountered while checking the location variables, contact the data entry supervisor to discuss the possibility of correcting the errors. If the data cannot be corrected, the record will not be able to be included in the weighted analyses.

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Cleaning the Data, Continued

Automated cleaning

There is some basic cleaning code embedded within most of the provided Epi Info analysis programs which will clean the data for:

- basic outliers;
- completeness;
- consistency (e.g. if a participant said No to currently smoking and then Yes to smoking daily).

For each program, records with outlying data or incomplete or inconsistent responses (where more than one question is needed for analysis) are temporarily removed during the analysis.

Even though this basic cleaning is incorporated into most of the provided programs, it is still highly recommended that each variable and set of variables be checked for outliers, completeness, and consistency prior to any analyses.

Missing data

While most problems related to missing data should be handled during the data entry process (see Part 4, Section 2), it is still very likely that the final dataset will contain records with missing data. Thus, the data analyst will need to explore the missing data in greater depth so that the data analysis is properly completed with attention to this missing data.

Guidelines for handling missing data

In general, how missing data is handled depends upon the importance of the variable and how much data is missing. Use the table below when considering how to handle missing data in the following situations.

If…	Then…
A record is missing data for age, sex, or any location variable (if data are weighted).	Review the completed instrument and discuss with the data entry supervisor to try to recover the missing data. If the data cannot be recovered, the record should be dropped and counted as a non-responder for weighting purposes.
A record is missing data for a variable other than age, sex or location.	Exclude the record from all analyses relating to this variable (the automated Epi Info programs will do this automatically). For analyses in which records are excluded, include a footnote stating the number of records omitted due to missing data.

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Imputation

An alternative method of handling missing data, that 'creates' data where none exists, is called imputation. Imputation should **not** be done for STEPS.

Outliers

An outlier is a value of a variable that appears to deviate significantly from the observed values in other participants. It may be correct, and the person truly has an unusual value, or it may be incorrectly recorded or entered. In any case, it is good practice to investigate the outliers before analysis in order to avoid having those extreme values unduly influencing the results being reported.

Identifying outliers

The data entry templates provided for EpiData do not allow data to be entered outside of an expected range of values for nearly all questions on the STEPS Instrument. Therefore using the provided templates should minimize the presence of outliers in the dataset.

Most Epi Info analysis programs also ensure that the values for a given variable of interest fall within an expected range. The value ranges used in the Epi Info programs match those used in the EpiData templates. These values are listed in the table below.

Variable Description	Standard Variable Code	Accepted Values
Age, in years	C3	Age range of survey
Years of education	C4	0-30
Number of people ≥18 yrs. in household	C9	1-30
Age started/stopped smoking daily	T3; T7	10-74
Time since starting/stopping smoking daily	T4a-c; T8a-c	1-64 years 1-12 months 1-30 days
Number of tobacco products smoked/used each day	T5a-e; T11a-e	0-50
Number of occasions alcohol consumed	A4	1-50
Number of drinks consumed on given occasion	A5; A6	1-50
Number of occasions alcohol consumed in large quantities	A7	0-50
Number of drinks consumed per day	A9a-g	0-50
Number of servings of fruit or vegetables consumed on a given day	D2; D4	1-20

Continued on next page

Identifying outliers (cont.)

Variable Description	Standard Variable Code	Accepted Values
Number of meals eaten outside the home	D6	0-30
Amount of physical activity per day	P3a-P3b; P6a-P6b; P9a-P9b; P12a-P12b; P15a-P15b	00:10-16:00
Amount of sedentary activity per day	P16a-P16b	00:00-24:00
Height	M3	100-270 cm
Weight	M4	20-350 kg
Waist circumference	M7	30-200 cm
Systolic blood pressure	M11a; M12a; M13a	40-300 mmHg
Diastolic blood pressure	M11b; M12b; M13b	30-200 mmHg
Hip circumference	M15	45-300 cm
Fasting blood glucose	B5	1-35 mmol/l 18.0-630.0 mg/dl
Total cholesterol	B8	1.75-20.00 mmol/l 67.0-773.0 mg/dl
Fasting triglycerides	B10	0.25-50.00 mmol/l 22.0-4428.0 mg/dl
HDL cholesterol	B11	0.1-5.0 mmol/l 3.8-190.0 mg/dl

If the EpiData templates and/or Epi Info analysis programs are not used, each variable should be checked for outliers before any analysis is completed. The table below provides some suggestions on how to check for outliers in Epi Info. More information about these commands are provided in Part 3, Section 6 of this manual and in the STEPS Epi Info Training Guide available on the STEPS website.

Command Name	Use
FREQUENCY	To list the frequency of all values for a categorical or continuous variable.
MEANS	To list the frequency of values, the mean value, the standard deviation, and the quartile values of a continuous variable.
GRAPH	To obtain a visual representation (e.g. histogram or scatter plot) of all values for a categorical or continuous variable.

Calculating Response Proportions

Introduction

Response proportions (often known as response rates) indicate the level of participation in your STEPS survey. They are an important indicator of the quality of your data.

Interview Tracking Form

Response proportions are calculated from the information entered in the Interview Tracking Form. This form should already have been:

- entered into the interview_tracking_form.xls file by the data entry team (see Part 4, Section 2);
- imported into Epi Info (see page 4-3-5).

Since response rates for Step 3 typically differ from those of Step 1 and Step 2, the generic programs compute the response rate for Step 3 separately (if applicable for your survey). If the response rate for your survey differs markedly between Step1 and Step 2, contact the STEPS team for assistance in computing separate response rates for these Steps.

Calculating response proportions in Epi Info

Follow the steps below to run the Epi Info Programs necessary to calculate the response proportions for each Step.

Step	Action
1	Open Epi Info Analysis and click on Analysis Commands>User-Defined Commands>Run Saved Program in the Analysis window.
2	Click the grey box to the right of the Filename field and find and select your STEPS.mdb file.
3	Select "ResponseOverall" from the drop down menu and click "OK".
4	Repeat the above steps to run the program "ResponseStep3" if appropriate.

Weighting the Data

Introduction

The data from your STEPS survey only represents the participants sampled. If you want your data to be representative of the target population then you will need to apply weights to your data.

What is a weight

A weight is a value given to a data record to adjust the importance given to it in analysis. It may be thought of as the number of persons in the population that are represented by each individual in the sampled unit. Weights are calculated to adjust for the following aspects of a survey:

- probability of selection (sample weight);
- non-response (non-response weight);
- differences between the sample population and target population (population weight).

Types of weights

The table below lists the 3 different types of weights and where the information for these weights comes from.

Type of Weight	Used to…	Required when …	Information available in…
Sample weight	adjust for the probability of selection of each participant.	only a sample of the population is selected for the survey.	STEPSsampling.xls and interview_tracking_form.xls
Non-response weight	adjust for differential response proportions.	there is a low response rate for your survey overall or within a specific age-sex group.	interview_tracking_form.xls
Population weight	adjust for differences in the sample vs. target population in age-sex composition.	the sample vs. target population differ markedly in age-sex composition.	STEPSsampling.xls

Overall weight

All the weights described in the table above are calculated for each record and multiplied together. Using the abbreviations of w1 for sample weight, w2 for non-response weight, and w3 for population weight, the overall weight would be calculated as follows:

Overall weight = w1 * w2 * w3

Continued on next page

Overall weight (cont.)

If differences exist in the response rates for each Step or if a subsample is used for Step 3, then a separate overall weight will need to be calculated for each Step of the survey. If, for example, only a subsample of the overall sample participated in Step 3, then the overall weights would be calculated as follows:

Overall weight for Step 1 & 2 = w1Step12 * w2Step12 * w3Step12
Overall weight for Step 3 = w1Step3 * w2Step3 * w3Step3

Stratum and PSU

If your sample design was anything other than a simple random sample, you will need to create variables that contain information about your sample design. These variables are conventionally named Stratum and PSU and their values depend on the sample design of your survey. These variables should be calculated and attached to your dataset **before** calculating and attaching the weights.

The table below explains what the values of Stratum and PSU should be for 3 common sample designs (for more information about sample designs, see Part 2, Section 2), if you do not see your sample design listed here or would like assistance in determining the values of your Stratum and PSU variables, contact the STEPS team.

Sample Design	Stratum Values	PSU Values
Stratified multi-stage cluster sampling	1 unique value for each stratum	1 unique value for each first-stage sampling unit within each stratum
Multi-stage sampling without stratification*	1 unique value for each first-stage sampling unit	1 unique value for each second-stage sampling unit within each first-stage sampling unit
Two-stage sampling without stratification.	Stratum not needed	1 unique value for each first-stage sampling unit

***Note:** Refer to the instructions in the "Info for Weighting" worksheet in STEPSsampling.xls for more detailed directions on assigning Stratum and PSU values for this type of sample design.

Sample weight

The sample weight is the most difficult weight to calculate due to the amount of information needed. While there are some tools available to help with the calculation of these weights, it is not possible to automate the process entirely due to differences in sample design between STEPS surveys.

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Sample weight (cont.)

If you used the STEPSsampling.xls file to draw your sample, you can use it to partially calculate the sample weights for your dataset. The worksheet "Info for Weighting" within the STEPSsampling.xls file contains directions for calculating the probability of selection up to the household or individual level (if individuals were selected directly).

If individuals were selected using the Kish Method (recommended) or other within-household sampling method, you will need to also calculate the probability of selection for each participant within the household. This information can be found in the completed interview_tracking_form.xls file, which contains the participant ID along with the number of eligible individuals in each participant's household.

To calculate the final sample weight for each participant, follow the steps below:

Step	Action
1	Calculate the probability of selection at all stages of sampling before the household level.
2	Multiply together the probabilities calculated in step 1 above. This product should be the same for participants selected from the same sampling units (e.g. districts, villages).
3	Calculate the within-household probability of selection for each participant and multiply this by the product obtained in step 2 above.
4	Take the inverse of the product obtained in step 3 above to obtain the final sample weight.

Non-response weight

For STEPS, it is recommended to examine the non-response rate for each age-sex group. If one or more age-sex groups have a low response rate, a non-response weight should be calculated for each age-sex group and applied accordingly to all records in the dataset.

The non-response weight is simply the inverse of the response rate for each age-sex group. It can be calculated automatically in Epi Info if the interview_tracking_form.xls file has been completed. If you have not used the interview_tracking_form.xls file, contact the STEPS team for assistance in calculating and attaching the non-response weights for your data.

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Non-response weight (cont.)

To use the provided Epi Info program to automatically calculate the non-response weight and attach the weight to the dataset, follow the steps below.

Step	Action
1	Ensure that the interview_tracking_form.xls file has been attached to your STEPS database (see 4-3-5 for instructions).
2	Open Epi Info Analysis and click on Analysis Commands>User-Defined Commands>Run Saved Program in the Analysis window.
3	Click the grey box to the right of the Filename field and find and select your STEPS.mdb file.
4	Select "NonresponseWeight" from the drop down menu and click "OK". The program will generate the variables W2s1, W2s2, and W2s3 which contain the non-response weight for Step 1, 2, and 3, respectively.

Note: The non-response weights calculated by the Epi Info program do not take into consideration records that may be excluded due to missing location variables or due to non-fasting for Step 3. Therefore, these weights may need adjustment to take into consideration any records excluded for these reasons.

Population weight

Prior to calculating the population weight, you must first check to see if there are marked differences between the age-sex structure of your sample and the age-sex structure of your target population. It is possible, for example, that your sample has a much smaller proportion of men in the 55-64 year age group than your target population does. The population weight will help to correct for such differences.

To compute the proportion of your sample and target population comprised of each age-sex group of interest, follow the steps below.

Step	Action
1	Calculate the total number of individuals in your sample.
2	Calculate the total number of individuals in each 10-year age-sex group in your sample.
3	Divide the total number of individuals in each age-sex group by the total number of individuals in your sample to obtain the proportion of your sample comprised of each age-sex group.
4	Repeat steps 1-3 above for the target population to obtain the proportion of your target population comprised of each 10-year age-sex group.
5	For each 10-year age-sex group, compare the proportion in the sample to that in the target population. If there are marked differences in any age-sex group, population weights should be calculated for your dataset.

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Population weight (cont.)

If the above calculations reveal that population weights are needed for your dataset, the weights can be calculated for each 10-year age-sex group by dividing its proportion in the total population by its proportion in the target population. There is an Epi Info program that will do this calculation for you automatically and attach the population weight to your dataset.

Follow the steps below to calculate population weights and attach them to your dataset.

Step	Action
1	Complete the "Population Info" spreadsheet in the STEPSsampling.xls file. Be sure to keep a record of the data source for your target population (e.g. 2005 Census) as this information is needed for the site report.
2	Click on the "Format for Epi Info" button on this spreadsheet to generate the "PopulationEst" spreadsheet that will be read by Epi Info.
3	Close your STEPSsampling.xls file and ensure that it is located in your C:\STEPS\data folder.
4	Open Epi Info Analysis and click on Analysis Commands>User-Defined Commands>Run Saved Program in the Analysis window.
5	Click the grey box to the right of the Filename field and find and select your STEPS.mdb file.
6	Select "PopulationWeight" from the drop down menu and click "OK". The program will generate the population weight variable W3.

Note: The EpiInfo program calculates the population weight using all valid records in the dataset. If a only a subset of your sample participated in Step 3, then a separate Step 3 population weight should be calculated.

Overall weights

Once the sample, non-response, and population weights have been calculated and attached to your dataset (as needed), you will need to multiply these together to arrive at the overall weight for each Step of your survey. The Epi Info weighted analysis programs expect the overall weight for each Step to be named:

- WStep1
- WStep2
- WStep3

Continued on next page

Calculating overall weights (cont.)

Follow the steps below to calculate the overall weights in Epi Info once you have attached the sample, non-response, and population weights to your dataset. It may help to refer to Part 3, Section 6 for more information about the Epi Info commands used.

Step	Action
1	Open Epi Info Analysis and click on Analysis Commands>Data> Read (Import) in the Analysis window.
2	Find and select your MasterDataSet data table in your STESP.mdb file.
3	Use the DEFINE command to create the variable "WStep1".
4	Use the ASSIGN command to set "WStep1" equal to the product of the sample, non-response, and population weights (as applicable) calculated for Step 1.
5	Repeat steps 3-4 to define and assign variables "WStep2" and "WStep3" as needed.
6	Save your dataset by going to Analysis Commands>Data>Write (Export).

Finalizing the Dataset

Introduction

Before proceeding with any analyses, consult the table below to ensure that your dataset has been properly prepared for unweighted or weighted analysis.

Step	Action
1	Ensure your database is named STEPS.mdb and is located in your C:\STEPS\EpiInfo folder.
2	Ensure that your dataset within your STEPS.mdb file is called "MasterDataSet".
3	Ensure that the variables Age, Sex, AgeRange, and Valid have been created using the AgeRange2564 (or AgeRange1564) and MissingAgeSex programs.
4	Ensure any outliers and missing data cannot be corrected or recovered from the original instruments.
5	If weighted analyses are to be done, ensure the variables Stratum, PSU, WStep1, WStep2, and WStep3 (as applicable) have been created in your dataset.

Next step

Once all you have confirmed that all of the above steps have been completed, you may proceed to create the Fact Sheet and Data Book. Continue to the next section, Part 4, Section 4, for more information about this process.

Section 4: Reporting and Disseminating Results

Overview

Introduction

This section covers the tasks that are needed to prepare reports and disseminate the results of your STEPS survey.

Requirement

The reports need to be produced in a timely manner after the completion of your survey. The results should be presented in a clear, concise and usable way to help:

- raise awareness about preventing chronic disease and their risk factors
- guide public health policy and interventions to address chronic diseases
- assist and inform future health research.

Intended audience

This section is primarily designed to be used by those fulfilling the following roles:

- STEPS Site Coordinator
- data analyst
- STEPS Coordinating Committee.

Useful resources

Some sections of the manual that may be useful in compiling and disseminating the results include:

- Part 1, Section 1 : "Introduction";
- Part 2, Section 2 : "Preparing the Sample";
- Part 6, Section 3A-E: "Report Templates" (includes Fact Sheet, Data Book, Site Report Template);
- Part 7, Section 1 : "Glossary of Terms Used in STEPS".

PowerPoint Presentation

There is a useful PowerPoint presentation available on the STEPS CD and website (www.who.int/chp/steps) that provides information on interpreting data and disseminating your results. It is advised that you look at this presentation prior to writing your site report. The PowerPoint presentation includes information on:

- summarizing data in a meaningful way;
- making good graphics (including tables, bar graphs, line graphs and pie charts);
- interpretation of results;
- confidence intervals and standard error;
- using confidence intervals to test for subgroup differences.

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The reports

The main reporting documents that need to be produced are listed in the table below. More information for each reporting document is also provided in this section further below.

Report	Brief description	Audience
Fact Sheet	Short summary of key results	• Stakeholders • Media • STEPS teams
Data Book	Detailed results presented in generic tables	• STEPS teams
Site report	Main comprehensive report	• Stakeholders • Media • Wider community • STEPS teams
Progress report (optional)	Report on surveillance progress	• Site Coordinator • Coordinating Committee • WHO Geneva STEPS team • WHO Regional Office

Reporting process

The table below shows each of the key stages in the reporting process once data have been entered, checked and analysed.

Stage	Description
1	Preparing and distributing the Fact Sheet to cover the essential results.
2	Preparing the Data Book.
3	Extracting specific tables from the Data Book that are suitably weighted and needed for the main site report.
4	Drafting the main site report, section by section, based on the content guidelines (see Part 6, Section 3E) and Data Book.
5	Circulating drafts of the site report to members of the coordinating committee, WHO and other interested parties for comment, discussion and review.
6	Reviewing and finalizing the site report in light of comments and discussions.
7	Preparing circulation lists, preparing press releases and promotion fliers to announce results of the STEPS Survey.
8	Presenting results, through slide presentations and meetings with organizations and groups that have an interest and impact on population health including relevant government departments, sponsors, tertiary institutions and health conferences in order to widen awareness of the STEPS findings.

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Overview, Continued

In this section This section covers the following topics.

Summarizing Data

Introduction

STEPS data on chronic disease risk factors that have been collected from individuals need to be summarized in a meaningful way in order to give relevant information on levels of risk factors in a population.

Summary statistics that are used for summarizing STEPS data include:

- mean
- median
- prevalence.

When using the STEPS EpiInfo Programs, your output tables will display these summary statistics. The three summary statistics are described in more detail below.

Mean

The mean is a measure of central tendency and is computed by adding all the individual values in the group and dividing by the number of values in the group. It gives information on a population's average of a specified variable, such as waist circumference or blood sugar level (*96*).

Median

The median is another measure of central tendency that is often used for non-normally distributed variables. It is the simplest division of a set of sorted measurements into two halves - the lower and the upper half (*96*).
The median is often reported along with the 25^{th} and 75^{th} percentiles, which are the values that separate the lowest 25% and highest 75% of values, respectively, in the set of measurements (*96*).

Prevalence

Prevalence is defined as the number of persons with a disease or an attribute in a given population at a designated time, e.g. % daily smoker in a country in 2008 (*96*).

Standard cut-offs for prevalence

In order to determine the prevalence of those persons in a specified population that are at risk to develop a chronic disease, cut-off points have been set up to distinguish between "at risk" and "not at risk". STEPS uses those cut-offs that are evidence-based, widely used and therefore recommended by the World Health Organization. See below the standard cut-offs STEPS uses for the eight main risk factors.

Cut-offs for tobacco use

The two main tobacco indicators that are associated with an increased risk of developing chronic diseases are

- current use of tobacco
- daily use of tobacco (97,*98*).

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Cut-offs for alcohol consumption

Five main indicators should be reported for alcohol consumption, including

- lifetime abstainer;
- last year abstainer;
- hazardous drinking, defined as consuming 40-59.9g of pure alcohol on average per day for men, and 20-39.9g for women;
- harmful drinking, defined as consuming ≥60g of pure alcohol on average per day for men, and ≥40g for women;
- binge drinking, defined as drinking ≥5 drinks in a row for men, and ≥4 drinks in a row for women (*18, 99, 100*).

Cut-offs for fruit and vegetable intake

Eating less than five servings of fruit and/or vegetables per day is considered being a low fruit and vegetable intake and increases the risk to develop chronic diseases (*46*).

Cut-offs for physical activity

A person not meeting any of the following criteria is considered being physically inactive and therefore at risk of chronic disease:

- 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 (*101-103*).

Cut-offs for obesity and overweight

The body mass index (BMI) is a statistical measure of the weight of a person scaled according to height. It is defined as the individual's body weight divided by the square of the height (kg/m^2).
A BMI ≥25 indicates that a person is overweight, while a BMI ≥30 indicates that the person is obese (*57, 104-107*).

Cut-offs for raised blood pressure

Blood pressure is commonly measured in mmHg. A person is considered being mildly hypertensive if the systolic value (SBP) ≥140 mmHg and/or the diastolic value (DBP) ≥90 mmHg.
Moderate hypertension has been defined as SBP ≥160 mmHg and/or DBP ≥100 mmHg (*108*).

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Cut-offs for raised blood glucose

Blood glucose is commonly measured after fasting. It can be measured either by determining the glucose value in the venous blood, or in the capillary blood. The corresponding cut-offs are slightly different. Raised blood glucose has been defined as

- plasma venous value ≥7 mmol/l (equivalent to ≥126 mg/dl)
- capillary whole blood value ≥6.1 mmol/l (equivalent to ≥110 mg/dl) (*109*).

Cut-offs for abnormal blood lipids

The two main lipids in the blood are cholesterol and triglycerides and therefore, different indicators should be reported for blood lipids:

- total blood cholesterol ≥190 mg/dl (equivalent to 5.0 mmol/L);
- total blood cholesterol ≥240 mg/dl (equivalent to 6.2 mmol/L);
- HDL cholesterol < 50 mg/dl for men and <40 mg/dl for women (equivalent to 1.3 mmol/L for men and 1.0 mmol/L for women);
- triglycerides ≥180 mg/dl (equivalent to 2.0 mmol/L);
- triglycerides ≥150 mg/dl (equivalent to 1.7 mmol/L) (*110-113*).

Estimates and true values

Prevalence, mean and median are estimated values, as they usually derive from a sample, and not from the target population (for more on sampling, see Part 2, Section 2). In order to give information on how uncertain estimated values are, confidence intervals are computed around the estimate.

Standard error and Confidence Interval (CI)

A standard error is the standard deviation of an estimate, e.g. a mean. It can be used to calculate confidence intervals.

A confidence interval is a computed interval with a given probability, e.g. 95%, that the true value of a variable such as a mean or a prevalence is contained within the interval (*96*).

Displaying Results

Introduction

Results can be displayed by either describing summary statistics such as prevalence, mean or median in words, or by using tables and graphs. Sometimes, visual methods can make the point much stronger than simply describing the data. However, they need to prepared with sufficient care. See the guidelines below for making good tables and graphs.

Guidelines for making good tables and graphs

The general guidelines below may help when preparing tables and graphs.

- Each table or graph should contain enough information so that it can be interpreted without reference to the text.
- Titles of tables and graphs should specifically describe the numbers included.
- Decide on the point you wish to present, then choose the appropriate method.
- Specify the units being used clearly.

Guidelines for making good tables

See guidelines below for making good tables.

- Tables should always include, for all age groups, the number of respondents / the denominator for which the table is made.
- The total age group should be highlighted.
- Confidence intervals, if available, should be included in tables.
- Vertical lines in tables should be avoided.

See an example of a prevalence table below.

Example table 1. Percentage of daily smoker in country x, both sexes, 2006.

Age group	n	% daily smoker	95% CI
25-34	1000	20.0	18.0-22.0
35-44	1500	19.5	18.5-20.5
45-54	1500	23.6	22.6-24.6
55-64	1000	15.4	13.4-17.4
25-64	**5000**	**19.7**	**19.2-20.2**

Guidelines for making good graphs

See guidelines below for making good graphs.

- Mention the number of respondents for which the graph is made.
- Be sparing and consistent with use of colors and fonts.
- Emphasize one idea at a time in a graph.
- Examples of graphs include pie charts, bar charts or line graphs.

Interpretation of Results

Introduction

In order to deliver a meaningful message, results need to be interpreted carefully. Influence factors such as sample size, response percentages, season of data collection or potential biases need to be thought through and taken into account when interpreting results. Below are a few bullet points that help when interpreting results.

Representativeness of results

Results should only be applied to the surveyed target population, and not be generalized to a broader population.

Uncertainty of results

Confidence intervals help to determine the uncertainty of the estimates. The shorter the interval the better (*114*).

Influence on results

Think through carefully what could have influenced the results when interpreting them. Potential influence factors include:

- sample sizes (Are they high enough to have produced robust results for all subgroups?);
- response rates (Are they high or low? Are they the same for all subgroups, or have some subgroups lower response rates than others? If so, why?);
- social pressure (May people have answered in a specific way to certain questions because of social desirability?);
- survey methodology (Could flaws/problems in survey methods have influenced results, e.g. problems in reaching working population during data collection?);
- participant comprehension (Are there specific questions in the questionnaire that seemed not to be understood by respondents?);
- season of data collection.

Results in a context

When interpreting results, it is useful to put results in a context. As an example, you may want to find out about the amount of cigarettes being sold when looking into results for prevalence of cigarette smokers in a country.

Preparing and Distributing the Fact Sheet

Introduction

The Fact Sheet is a short summary of the key results of the STEPS chronic disease risk factor survey.

Purpose

The purpose of the Fact Sheet is to provide interested parties with the key findings of the survey and to highlight the issues that the main report will cover in more depth.

Intended audience

It is recommended that you distribute the Fact Sheet widely. Consider sending copies to:

- relevant government bodies and sponsoring organizations;
- agencies and organizations who are likely to use the information to promote healthy lifestyles or determine health policies;
- public, governmental and institutional (university) libraries;
- press and other media (newspapers, radio and television);
- websites dealing with chronic diseases and related health issues;
- WHO Regional Office, STEPS focal point and the WHO Geneva STEPS team.

Standardized format and results

A STEPS Fact Sheet Template is available in Part 6, Section 3C. Use this template to present the summarized results in a standardized format.

If you have added optional questions that are not represented in this template, only include these in the Fact Sheet if they are particularly significant.

Fact Sheet layout

The STEPS Fact Sheet contains a short paragraph that briefly describes when and where the STEPS survey has been carried out, the scope of the survey, as well as age groups covered, overall sample size and response rates, and a short description of the sampling method.

The Fact Sheet table contains blocks of results on tobacco use, alcohol consumption, fruit and vegetable consumption, physical activity, physical and biochemical measurements, and a summary of combined risk factors. Lines in this table include brief descriptions of the most important indicators of each risk factor, followed by results columns for both sexes, males and females.

The last lines on the Fact Sheet display contact details of the respective STEPS country focal point.

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Preparing and Distributing the Fact Sheet, Continued

Fact Sheet Analysis Guide

The Fact Sheet Analysis Guide has been developed to help preparing the Fact Sheet. It looks similar to the STEPS Fact Sheet, but instead of the results columns, it contains one column that displays the standard question code of the questions required to calculate results, and one column that includes the names of the Epi Info Programs that need to be run to produce the results.

Process

The table below lists the processes required to prepare your Fact Sheet and to generate the results for the Fact Sheet after all cleaning of the data has been completed. Generic code for Epi Info has been written to generate all the indicators presented on the Fact Sheet.

Stage	Description
1	Insert site name and year of STEPS survey in the heading of the Fact Sheet
2	Insert the following in the text above the table on the Fact Sheet: • site name • months and year of STEPS survey • sampling design • sample size • response rate • year of planned repeat survey. In addition, all necessary adjustments need to be made to the text, such as to indicate whether or not Step 3 has been done.
3	Insert contact details of your STEPS country focal point below the table.
4	Determine which indicators on the Fact Sheet can be computed for your site using a copy of your site instrument and the column "Questions required to calculate result" on the Fact Sheet Analysis Guide.
5	Using the Fact Sheet Analysis Guide, circle the names of the programs associated with the indicators that can be computed.
6	Remove those rows from the Fact Sheet for which results can not be produced because the required questions have not been asked.
7	Run all Epi Info programs circled on the Fact Sheet Analysis Guide (see Part 3, Section 6 for help with running programs in Epi Info).

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Process (cont.)

Stage	Description
8	Copy the corresponding results (including confidence intervals) for both sexes, males and females for all indicators that can be computed from the output of the Epi Info programs into the Fact Sheet. Prevalence, mean and median values should be in bold. Note that the Epi Info outputs are arranged in the way that results for men are displayed first, then women, then both sexes. • For lines on the Fact Sheet displaying prevalence values: Fill in the "Row %" along with the confidence intervals ("LCL" and "UCL") from the Epi Info outputs for the total age groups for both sexes, men and women. • For lines on the Fact Sheet displaying mean values: Fill in the mean values along with the confidence intervals ("Confidence Limits", "Lower" and "Upper") from the Epi Info outputs for the total age groups for both sexes, men and women. Note that for outputs displaying mean values, the values for total age groups are displayed in separate tables. • For the lines on the Fact Sheet displaying median values: Fill in the median values along with the 25th and 75th percentile ("25%" and "75%") from the Epi Info outputs for the total age groups for both sexes, men and women.

Note: The generic Epi Info programs AgeRange2564 (or AgeRange1564) and MissingAgeSex should be run prior to running any other programs (see Part 3, Section 6).

Preparing and Distributing the Data Book

Introduction

The Data Book is a full tabulation of all the results from the questions and measurements in the STEPS Instrument.

Purpose

The purpose of the Data Book is to:

- compile a complete, standardized set of results relating to each question and measurement in the instrument;
- provide a first step in the reporting process from which results for the site report can be extracted.

Intended audience

The Data Book should not be considered as a final document for presenting your STEPS survey results. It is simply an intermediate step and helps in preparing your site report. For a review of your Data Book, it is recommended that you share copies with:

- WHO Regional Office, STEPS focal point and the
- WHO Geneva STEPS team.

Standardized format and results

The STEPS Data Book template is available in Part 6, Section 3D. Use this template to present the results of your STEPS survey in a standardized format.

If you have added optional questions that are not represented in this template, you should add additional tables displaying results for those.

Data Book layout

The Data Book consists of:

- the title page;
- the second page including the table of contents and information on what Epi Info programs need to be run first;
- ten topics, one for each section of your questionnaire.

Under each topic, there are several tables that relate to the topic and the corresponding questions. The table headings include a brief description of what is contained in the table, followed by the instrument question(s) that are needed to prepare these results.

All tables in the Data Book include another brief heading in the first row, an indication on whether the table is for men, women, both sexes, or all three, a column with the age groups, a column with the "n" for the subgroups, and columns with the actual results (mean, median or prevalence) with confidence intervals. Note that the tables in the section Demographic Information Results don't contain confidence intervals.

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Data Book layout (cont.)

The analysis information below each table displays the standard codes of the questions used and the Epi Info program names for the programs that need to be run to get the results for the corresponding table.

Process

Generic programs in Epi Info have been written to generate all the tables for the Data Book. The table below lists the process required to fill in the tables in the Data Book.

Stage	Description
1	Insert the name of your site/country in the title page of the Data Book.
2	Identify which tables can be completed in the Data Book by referring to the "Analysis Information" section below each data table and using your site-specific instrument.
3	Run the program for each table identified in step 1 above, and save the output (for information on how to run Epi Info programs see Part 3, Section 6).
4	Copy the output of each program into the corresponding table in the Data Book. Note that the Epi Info outputs are arranged in the way that results for men are displayed first, then women, then both sexes. • Fill in the "n" for all age groups. The "n" indicates the number of individuals that have responded to a specific question; it is the denominator for the prevalence/mean/median values for each age group. In Epi Info outputs displaying prevalence values, you can find the "n" in the "TOTAL" column for each age group, in the outputs displaying mean and median values, you can find the "n" in the "Obs" or "Count" column. • For tables displaying prevalence values: Fill in the "Row %" along with the confidence intervals ("LCL" and "UCL") from the Epi Info outputs for the corresponding age groups. • For tables displaying mean values: Fill in the mean values along with the confidence intervals ("Confidence Limits", "Lower" and "Upper") from the Epi Info outputs for the corresponding age groups. Note that for outputs displaying mean values, those values for total age groups are displayed in a separate table. • For the tables displaying median values: Fill in the median values along with the 25th and 75th percentile ("25%" and "75%") from the Epi Info outputs for the corresponding age groups.

Note: The generic Epi Info programs AgeRange2564 (or AgeRange1564) and MissingAgeSex should be run prior to running any other programs (see Part 3, Section 6).
For assistance in generating code to analyse site-specific questions, contact the STEPS team.

Preparing and Distributing the Site Report

Introduction

The site report is the main comprehensive report for the whole STEPS chronic disease risk factor survey and must be produced at the end of the STEPS survey.

A template that helps preparing the STEPS site report is in Part 6, Section 3E.

Purpose

Use the site report to present the following information:

- the overall rationale
- scope of the survey
- the sampling design used
- detailed methods of data collection
- detailed results of the survey
- implications for future health and planning
- appendices including the site-specific instrument.

Intended audience

It is recommended that you distribute the site report widely. Consider sending copies to:

- relevant government bodies and sponsoring organizations;
- agencies and organizations that are likely to use the information to promote chronic disease prevention and control;
- public, governmental and institutional (university) libraries;
- press and other media (newspapers, radio and television);
- websites of any sponsoring bodies;
- WHO STEPS Regional Office and the WHO Geneva STEPS team.

Content guide

The table below lists each of the main parts that should be included in the site report.

- cover and content pages
- executive summary
- background
- rationale of the survey
- scope, sampling methods and implementation
- analytical methods
- results
- discussion
- conclusions and recommendations
- references
- appendices

Note: Guidelines for completing each of these parts are provided in the STEPS site report template in Part 6, Section 3E.

Progress Report

Introduction

A progress report may be prepared, but only where interviewing takes longer than the usual eight week time period. The report should explain the reason for delays and provide an update on participation rates and data collection quality.

Intended audience

Progress reports are intended for the STEPS team and STEPS Coordinating Committee only, although details may be used to inform stakeholders of progress.

Content guide

Progress reports should be prepared in conjunction with data collection teams and the data entry supervisor.

Follow the guidelines in the table below to help prepare content for a progress report.

Heading	Guidelines for completion
Tables and plots	Describe in tables and/or plots: • locations where interviewing is: – complete – ongoing – awaited; • number of people selected in the sample to date; • number and proportion who have completed; • number who have refused or are not able to be contacted (non-response); • number for whom no attempt has yet been made to contact.
Successes and problems	Identify successes and problems with: • data collection • data entry • data analysis.

Section 5: Archiving

Archiving your STEPS Materials

Introduction

Once the survey is completed and before the team is disbanded, all records need to be properly stored in order to prevent loss.

Policies and systems

Most governments and large organisations will have their own established archival systems, in which case their facilities are likely to be your best long-term storage option. Investigate storing your data at:

- Ministry of Health
- WHO country office
- WHO regional office.

Archival period

Decide on the archival period. The duration may have been specified by your ethics authority. If not, consider twelve years.

This is long enough for data to be available for further STEPS surveys, and long enough to investigate query from the results.

Checklist

Use the checklist below to help ensure all necessary steps have been completed.

Step	Action	✓
1	Decide on the duration of storage.	
2	Box up all: • instruments • manuals • interviewing materials • printed versions of all files.	
3	Label all the boxes clearly with: • name and date of the project; • box contents; • names and contact details of site coordinator and one other member of the coordinating committee.	
5	Determine who is entitled to have access to the archive.	
6	Place a copy of the form to apply for access in each box.	
7	Provide copies of electronic files (without personal identifiers) to WHO Geneva STEPS team.	
3	Inform all interested parties where the information is stored.	

Note: Make sure that participant identification information is never stored in the same location (electronically and in paper form) with the rest of the dataset.

Part 5: STEPS Instrument

Overview

In this Part This Part covers the following topics

Pan American Version of the STEPS Instrument

(Core and Expanded)

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

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

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

World Health Organization

Pan American Health Organization
Regional Office of the World Health Organization

Pan American STEPS Instrument

Overview

Introduction

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

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

Core Items

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

- current daily smokers
- mean BMI.

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

Expanded items

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

- use of smokeless tobacco
- sedentary behaviour.

Guide to the columns

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

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

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

Pan American STEPS Instrument for Chronic Disease Risk Factor Surveillance

<insert country/site name>

Survey Information

Location and Date		Response	Code
1	Cluster/Centre/Village ID	⌊_⌊_⌊_⌋	I1
2	Cluster/Centre/Village name		I2
3	Interviewer ID	⌊_⌊_⌊_⌋	I3
4	Date of completion of the instrument	⌊_⌊_⌋ ⌊_⌊_⌋ ⌊_⌊_⌊_⌊_⌋ dd mm year	I4

✂ ---------- ✂

Participant Id Number ⌊_⌊_⌊_⌊_⌊_⌊_⌋

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

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

Step 1 Demographic Information

CORE: Demographic Information

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

EXPANDED: Demographic Information

15	What is the **highest level of education** you have completed? *[INSERT COUNTRY-SPECIFIC CATEGORIES]*	No formal schooling 1 Less than primary school 2 Primary school completed 3 Secondary school completed 4 High school completed 5 College/University completed 6 Post graduate degree 7 Refused 88	C5
16	What is your *[insert relevant ethnic group / racial group / cultural subgroup / others]* **background**?	[*Locally defined*] 1 [*Locally defined*] 2 [*Locally defined*] 3 Refused 88	C6
17	What is your **marital status**?	Never married 1 Currently married 2 Separated 3 Divorced 4 Widowed 5 Cohabitating 6 Refused 88	C7
18	Which of the following best describes your **main work** status over the past 12 months? *[INSERT COUNTRY-SPECIFIC CATEGORIES]* (*USE SHOWCARD)*	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88	C8
19	How many people older than 18 years, including yourself, live in your household?	Number of people ⌊_⌊_⌋	C9

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

Step 1 Behavioural Measurements

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

EXPANDED: Tobacco Use			
Question		**Response**	**Code**
27	In the past, did you **ever** smoke **daily**?	Yes 1 No 2 *If No, go to T9*	T6
28	How old were you when you **stopped** smoking **daily**?	Age (years) ⌊_⌋⌊_⌋ Don't Know 77 *If Known, go to T9*	T7
29	How **long ago** did you stop smoking daily? *(RECORD ONLY 1, NOT ALL 3)* *Don't Know 77*	Years ago ⌊_⌋⌊_⌋ *If Known, go to T9*	T8a
		OR Months ago ⌊_⌋⌊_⌋ *If Known, go to T9*	T8b
		OR Weeks ago ⌊_⌋⌊_⌋	T8c
30	Do you **currently use** any **smokeless tobacco** such as *[snuff, chewing tobacco, betel]*? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T12*	T9
31	Do you **currently use smokeless tobacco** products **daily?**	Yes 1 No 2 *If No, go to T12*	T10
32	On average, how many **times a day** do you use …. *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 77*	Snuff, by mouth ⌊_⌋⌊_⌋	T11a
		Snuff, by nose ⌊_⌋⌊_⌋	T11b
		Chewing tobacco ⌊_⌋⌊_⌋	T11c
		Betel, quid ⌊_⌋⌊_⌋	T11d
		Other ⌊_⌋⌊_⌋ *If Other, go to T12other, else go to T13*	T11e
		Other (specify) ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T13*	T11other
33	In the **past**, did you **ever use** smokeless tobacco such as *[snuff, chewing tobacco, or betel]* **daily**?	Yes 1 No 2	T12
34	During the past 7 days, on how many days did someone **in your home** smoke when you were present?	Number of days Don't know 77 ⌊_⌋⌊_⌋	T13
35	During the past 7 days, on how many days did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office) when you were present?	Number of days Don't know or don't work in a closed area 77 ⌊_⌋⌊_⌋	T14

CORE: Alcohol Consumption

The next questions ask about the consumption of alcohol.

Question		Response	Code
36	Have you **ever** consumed an alcoholic drink such as beer, wine, spirits, fermented cider or *[add other local examples]*? *(USE SHOWCARD OR SHOW EXAMPLES)*	Yes 1 No 2 *If No, go to D1*	A1a
37	Have you consumed an alcoholic drink within the **past 12 months**?	Yes 1 No 2 *If No, go to D1*	A1b
38	During the past 12 months, **how frequently** have you had at least one alcoholic drink? *(READ RESPONSES, USE SHOWCARD)*	Daily 1 5-6 days per week 2 1-4 days per week 3 1-3 days per month 4 Less than once a month 5	A2
39	Have you consumed an alcoholic drink within the **past 30 days**?	Yes 1 No 2 *If No, go to D1*	A3
40	During the past 30 days, on how many **occasions** did you have at least one alcoholic drink?	Number Don't know 77 ⌊_⌋⌊_⌋	A4
41	During the past 30 days, when you drank alcohol, **on average**, how many **standard alcoholic drinks** did you have during one drinking occasion? *(USE SHOWCARD)*	Number Don't know 77 ⌊_⌋⌊_⌋	A5
42	During the past 30 days, what was the **largest number** of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number Don't Know 77 ⌊_⌋⌊_⌋	A6
43	During the past 30 days, how many times did you have for **men**: **five or more** for **women**: **four or more** standard alcoholic drinks in a single drinking occasion?	Number of times Don't Know 77 ⌊_⌋⌊_⌋	A7

EXPANDED: Alcohol Consumption

44	During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks.	Usually with meals 1 Sometimes with meals 2 Rarely with meals 3 Never with meals 4	A8
45	During each of the **past 7 days**, how many standard alcoholic drinks did you have each day? *(USE SHOWCARD)* *Don't Know 77*	Monday ⌊_⌋⌊_⌋	A9a
		Tuesday ⌊_⌋⌊_⌋	A9b
		Wednesday ⌊_⌋⌊_⌋	A9c
		Thursday ⌊_⌋⌊_⌋	A9d
		Friday ⌊_⌋⌊_⌋	A9e
		Saturday ⌊_⌋⌊_⌋	A9f
		Sunday ⌊_⌋⌊_⌋	A9g

CORE: Diet

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

Question		Response	Code
46	In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)*	Number of days ⌊_⌋⌊_⌋ Don't Know 77 *If Zero days, go to D3*	D1
47	How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD)*	Number of servings ⌊_⌋⌊_⌋ Don't Know 77	D2
48	In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)*	Number of days ⌊_⌋⌊_⌋ Don't Know 77 *If Zero days, go to D3*	D3
49	How many **servings** of vegetables do you eat on one of those days? *(USE SHOWCARD)*	Number of servings ⌊_⌋⌊_⌋ Don't know 77	D4

EXPANDED: Diet

50	What type of **oil or fat is most often** used for meal preparation in your household? *(USE SHOWCARD)* *(SELECT ONLY ONE)*	Vegetable oil Lard or suet Butter or ghee Margarine Other None in particular None used Don't know	1 2 3 4 5 6 7 77	*If Other, go to D5 other*	D5
		Other	⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋		D5other
51	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	⌊_⌋⌊_⌋		D6

CORE: Physical Activity

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

	Question	Response	Code
Work			
52	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? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 4*	P1
53	In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days ⌊_⌋	P2
54	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	P3 (a-b)
55	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? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 7*	P4
56	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ⌊_⌋	P5
57	How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	P6 (a-b)
Travel to and from places			
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. *[Insert other examples if needed]*			
58	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
59	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
60	How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	P9 (a-b)

CORE: Physical Activity, Continued			
Question		**Response**	**Code**
Recreational activities			
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure), *[Insert relevant terms]*.			
61	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? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 13*	P10
62	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational *(leisure)* activities?	Number of days └─┘	P11
63	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)
64	Do you do any moderate-intensity sports, fitness or recreational *(leisure)* activities that cause a small increase in breathing or heart rate such as brisk walking, *[cycling, swimming, volleyball]* for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P16*	P13
65	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational *(leisure)* activities?	Number of days └─┘	P14
66	How much time do you spend doing moderate-intensity sports, fitness or recreational *(leisure)* activities on a typical day?	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	P15 (a-b)

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

CORE: History of Raised Blood Pressure			
Question		**Response**	**Code**
68	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
69	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
70	Have you been told in the past 12 months?	Yes 1 No 2	H2b

EXPANDED: History of Raised Blood Pressure			
71	Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?		
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2	H3a
	Advice to reduce salt intake	Yes 1 No 2	H3b
	Advice or treatment to lose weight	Yes 1 No 2	H3c
	Advice or treatment to stop smoking	Yes 1 No 2	H3d
	Advice to start or do more exercise	Yes 1 No 2	H3e
72	Have you ever seen a traditional healer for raised blood pressure or hypertension?	Yes 1 No 2	H4
73	Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes 1 No 2	H5

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

CORE: History of Diabetes			
Question		**Response**	**Code**
74	Have you ever had your blood sugar measured by a doctor or other health worker?	Yes 1 No 2 *If No, go to M1*	H6
75	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 M1*	H7a
76	Have you been told in the past 12 months?	Yes 1 No 2	H7b

EXPANDED: History of Diabetes			
77	Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?		
	Insulin	Yes 1 No 2	H8a
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2	H8b
	Special prescribed diet	Yes 1 No 2	H8c
	Advice or treatment to lose weight	Yes 1 No 2	H8d
	Advice or treatment to stop smoking	Yes 1 No 2	H8e
	Advice to start or do more exercise	Yes 1 No 2	H8f
78	Have you ever seen a traditional healer for diabetes or raised blood sugar?	Yes 1 No 2	H9
79	Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1 No 2	H10
80	When was the last time your eyes were examined as part of your diabetes control?	Within the past 2 years 1 More than 2 years ago 2 Never 3 Don't know 77	H11
81	When was the last time your feet were examined as part of your diabetes control?	Within the past year 1 More than 1 year ago 2 Never 3 Don't know 77	H12

EXPANDED: History of raised total cholesterol			
Questions		**Response**	**Code**
82	Have you ever had your cholesterol measured by a doctor or other health worker?	Yes 1 No 2 *If No, go to F1a*	L1a
83	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 F1a*	L2a
84	Were you told in the past 12 months?	Yes 1 No 2	L2b
Are you currently receiving any of the following treatments/advice for raised cholesterol prescribed by a doctor or other health worker?			
85	Oral treatment (medication) taken in the last 2 weeks	Yes 1 No 2	L3a
	Special prescribed diet	Yes 1 No 2	L3b
	Advice or treatment to lose weight	Yes 1 No 2	L3c
	Advice or treatment to stop smoking	Yes 1 No 2	L3d
	Advice to start or do more exercise	Yes 1 No 2	L3e
86	During the past 12 months have you seen a traditional healer for raised cholesterol?	Yes 1 No 2	L4
87	Are you currently taking any herbal or traditional remedy for your raised cholesterol?	Yes 1 No 2	L5

EXPANDED: Family history			
Questions		**Response**	**Code**
88	Have some of your family members been diagnosed with the following diseases?		
	Diabetes or raised blood sugar	Yes 1 No 2	F1a
	Raised Blood pressure	Yes 1 No 2	F1b
	Stroke	Yes 1 No 2	F1c
	Cancer or malignant tumor	Yes 1 No 2	F1d
	Raised Cholesterol	Yes 1 No 2	F1e
	Early Heart attack (below age 55 for men and below age 65 for women)	Yes 1 No 2	F1f

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

Step 2 Physical Measurements

CORE: Height and Weight			
Question		**Response**	**Code**
89	Interviewer ID	⌊_⌊_⌊_⌋	M1
90	Device IDs for height and weight	Height ⌊_⌊_⌋ Weight ⌊_⌊_⌋	M2
91	Height	in Centimetres (cm) ⌊_⌊_⌊_⌋.⌊_⌋	M3
92	Weight *If too large for scale 666.6*	in Kilograms (kg) ⌊_⌊_⌊_⌋.⌊_⌋	M4
93	**For women:** Are you pregnant?	Yes 1 *If Yes, go to M 8* No 2	M5
CORE: Waist			
94	Device ID for waist	⌊_⌊_⌋	M6
95	Waist circumference	in Centimetres (cm) ⌊_⌊_⌊_⌋.⌊_⌋	M7
CORE: Blood Pressure			
96	Interviewer ID	⌊_⌊_⌊_⌋	M8
97	Device ID for blood pressure	⌊_⌊_⌋	M9
98	Cuff size used	Small 1 Medium 2 Large 3	M10
99	Reading 1	Systolic (mmHg) ⌊_⌊_⌊_⌋	M11a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M11b
100	Reading 2	Systolic (mmHg) ⌊_⌊_⌊_⌋	M12a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M12b
101	Reading 3	Systolic (mmHg) ⌊_⌊_⌊_⌋	M13a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M13b
102	During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	M14

EXPANDED: Hip Circumference and Heart Rate			
103	Hip circumference	in Centimeters (cm) ⌊_⌊_⌊_⌋.⌊_⌋	M15
104	Heart Rate		
	Reading 1	Beats per minute ⌊_⌊_⌊_⌋	M16a
	Reading 2	Beats per minute ⌊_⌊_⌊_⌋	M16b
	Reading 3	Beats per minute ⌊_⌊_⌊_⌋	M16c

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

Step 3 Biochemical Measurements

CORE: Blood Glucose			
Question		**Response**	**Code**
105	During the past 12 hours have you had anything to eat or drink, other than water?	Yes 1 No 2	B1
106	Technician ID	⌊_⌊_⌊_⌋	B2
107	Device ID	⌊_⌊_⌋	B3
108	Time of day blood specimen taken (24 hour clock)	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	B4
109	Fasting blood glucose	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B5
110	Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose?	Yes 1 No 2	B6
CORE: Blood Lipids			
111	Device ID	⌊_⌊_⌋	B7
112	Total cholesterol	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B8
113	During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	B9

EXPANDED: Triglycerides, HDL Cholesterol and Oral Glucose Tolerance			
114	Triglycerides	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B10
115	HDL Cholesterol	mmol/l ⌊_⌋ . ⌊_⌊_⌋	B11
116	Oral Glucose Tolerance	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B12

World Health Organization

Pan American Health Organization
Regional Office of the World Health Organization

Step 1 Optional module

Section: Health Screening		Response		Code
117	Have you ever had your feces examined to look for hidden blood?	Yes No	1 2	S1
118	Have you ever had a colonoscopy?	Yes No	1 2	S2
119	**This question is for men only:** Have you ever had an examination of your prostate?	Yes No	1 2	S3
120	**The following questions are for women only:** Have you been shown how to examine your breasts?	Yes No	1 2	S4
121	When was the last time you had an examination of your breasts?	1 year or less Between 1 and 2 years More than 2 years Never Don't know	1 2 3 4 77	S5
122	When was the last time you had a mammogram?	1 year or less Between 1 and 2 years More than 2 years Never Don't know	1 2 3 4 77	S6
123	When was the last time you had a Pap test?	1 year or less Between 1 and 2 years More than 2 years Never Don't know	1 2 3 4 77	S7

Pan American STEPS Question-by-Question Guide

(Core and Expanded)

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

World Health Organization
20 Avenue Appia, 1211 Geneva 27, Switzerland
For further information: www.who.int/chp/steps

Pan American STEPS Question-by-Question (Q-by-Q) Guide

Overview

Introduction

The Question-by-Question Guide presents the STEPS Instrument with a brief explanation for each of the questions.

Purpose

The purpose of the Question-by-Question Guide is to provide background information to the interviewers and supervisors as to what is intended by each question.

Interviewers can use this information when participants request clarification about specific questions or they do not know the answer.

Interviewers and supervisors should refrain from offering their own interpretations.

Guide to the columns

The table below is a brief guide to each of the columns in the Q-by-Q Guide.

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

Participant Identification Number |__|__|__| |__|__|__| |__|__|__|

Pan American STEPS Q-by-Q Guide
for Chronic Disease Risk Factor Surveillance
<insert country/site name>

Survey Information

Location and Date		Response	Code
1	Cluster/Centre/Village ID *Record Cluster, Centre or Village ID from list provided*	|__|__|__|	I1
2	Cluster/Centre/Village name *Insert Cluster, Centre or Village name as appropriate*		I2
3	Interviewer ID *Record interviewer's identification*	|__|__|__|	I3
4	Date of completion of the instrument *Record date when instrument actually completed*	|__|__| |__|__| |__|__|__|__| dd mm year	I4

For further guidance on obtaining consent, see Part 4, Section 1, Page 4-1-11.

Participant Id Number |__|__|__| |__|__|__| |__|__|__|

Consent, Interview Language and Name		Response	Code
5	Consent has been read and obtained *Circle relevant response.*	Yes 1 No 2 **If NO, END**	I5
6	Interview Language [Insert Language] *Circle relevant response.*	English 1 [Add others] 2 [Add others] 3 [Add others] 4	I6
7	Time of interview (24 hour clock) *Record time interview started.*	|__|__| : |__|__| hrs mins	I7
8	Family Surname *Write family surname (reassure the participant on the confidential nature of this information and that this is only needed for follow up).*		I8
9	First Name *Write first name of respondent.*		I9
Additional Information that may be helpful			
10	Contact phone number where possible *Record phone number.*		I10

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

Step 1 Demographic Information

For further guidance on completing demographic information, see Part 3, Section 2.

CORE: Demographic Information

Question		Response	Code
11	Sex (*Record Male / Female as observed*) *Circle Male / Female as observed.*	Male 1 Female 2	C1
12	What is your date of birth? *Don't Know 77 77 7777* *Record date of birth of participant.*	⌊_⌊ ⌊_⌊ ⌊_⌊_⌊_⌊ *If known, Go to C4* dd mm year	C2
13	How old are you? *Help participant estimate their age by interviewing them about their recollection of widely known major events.*	Years ⌊_⌊	C3
14	In total, how many years have you spent at school or in full-time study (excluding pre-school)? *Record total number of years of education (excluding pre-school and kindergarten).*	Years ⌊_⌊	C4

EXPANDED: Demographic Information

15	What is the **highest level of education** you have completed? [*INSERT COUNTRY-SPECIFIC CATEGORIES*] *If a person attended a few months of the first year of secondary school but did not complete the year, record "primary school completed". If a person only attended a few years of primary school, record "less than primary school".* *Circle appropriate response.*	No formal schooling 1 Less than primary school 2 Primary school completed 3 Secondary school completed 4 High school completed 5 College/University completed 6 Post graduate degree 7 Refused 88	C5
16	What is your [*insert relevant ethnic group / racial group / cultural subgroup / others*] **background**? *Circle the relevant ethnic/cultural group to which the participant belongs.*	[*Locally defined*] 1 [*Locally defined*] 2 [*Locally defined*] 3 Refused 88	C6
17	What is your **marital status**? *Circle the appropriate response.*	Never married 1 Currently married 2 Separated 3 Divorced 4 Widowed 5 Cohabitating 6 Refused 88	C7
18	Which of the following best describes your **main work status** over the past 12 months? [*INSERT COUNTRY-SPECIFIC CATEGORIES*] (*USE SHOWCARD*) *The purpose of this question is to help answer other questions such as whether or not health status contributes to unemployment, or whether people in different kinds of occupations may be confronted with different risk factors.* *Circle appropriate response.*	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88	C8
19	How many people older than 18 years, including yourself, live in your household? *Record the total number of people living in the household who are 18 years or older.*	Number of people ⌊_⌊	C9

EXPANDED: Demographic Information, Continued			
Question		**Response**	**Code**
20	Taking **the past year**, can you tell me what the average earnings of the household have been? *(RECORD ONLY ONE, NOT ALL 3)* *Record the average earnings of the household by week, month, or year. If refused to answer, skip to C11.*	Per week ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1*	C10a
		OR per month ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1*	C10b
		OR per year ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1*	C10c
		Refused 88	C10d
21	If you don't know the amount, can you give an **estimate** of the annual household income if I read some options to you? Is it *[INSERT QUINTILE VALUES IN LOCAL CURRENCY]* *(READ OPTIONS)* *Circle the quintile value which is the closest to the annual household income.*	≤ Quintile (Q) 1 1 More than Q 1, ≤ Q 2 2 More than Q 2, ≤ Q 3 3 More than Q 3, ≤ Q 4 4 More than Q 4 5 Don't Know 77 Refused 88	C11

Step 1 Behavioural Measurements

For further guidance on completing Behavioural Measurements, see Part 3, Section 2.

CORE: Tobacco Use			
Now I am going to ask you some questions about various health behaviours. This includes things like smoking, drinking alcohol, eating fruits and vegetables and physical activity. Let's start with tobacco.			
Question		**Response**	**Code**
22	Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes? *(USE SHOWCARD)* *Ask the participant to think of any tobacco products he/she is smoking currently.*	Yes 1 No 2 *If No, go to T6*	T1
23	Do you currently smoke tobacco products **daily**? *This question is only for current smokers of tobacco products.*	Yes 1 No 2 *If No, go to T6*	T2
24	How old were you when you **first started** smoking daily? *For current daily smokers only. Ask the participant to think of the time when he/she started to smoke any tobacco products daily.*	Age (years) Don't know 77 ⌊_⌋ *If known, go to T5a*	T3
25	Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* *Don't know 77* *If the participant doesn't remember his/her age when started smoking, then record the time in years, months or weeks as appropriate.*	In Years ⌊_⌋⌊_⌋ *If known, go to T5a*	T4a
		OR in Months ⌊_⌋⌊_⌋ *If known, go to T5a*	T4b
		OR in Weeks ⌊_⌋⌊_⌋	T4c
26	On average, **how many** of the following do you smoke each day? *(RECORD FOR EACH TYPE)* *Don't know 77* *For current daily smokers only.* *Specify zero if no products were used in each category instead of leaving categories blank. Then go to T9 .* *Daily smokers don't have to answer questions on past smoking T6-T8c.*	Manufactured cigarettes ⌊_⌋⌊_⌋	T5a
		Hand-rolled cigarettes ⌊_⌋⌊_⌋	T5b
		Pipes full of tobacco ⌊_⌋⌊_⌋	T5c
		Cigars, cheroots, cigarillos ⌊_⌋⌊_⌋	T5d
		Other ⌊_⌋⌊_⌋ *If Other, go to T5other, else go to T9*	T5e
		Other (please specify): ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T9*	T5other

EXPANDED: Tobacco Use				
Question		**Response**		**Code**
27	In the past, did you **ever** smoke **daily**? *Ask the participant to think of the time when he/she may have been smoking tobacco products on a daily basis.*	Yes No	1 2 *If No, go to T9*	T6
28	How old were you when you **stopped** smoking **daily**? *Ask the participant to think of the time when he/she stopped smoking tobacco products on a daily basis.*	Age (years) Don't Know 77	⌊_⌊_⌋ *If Known, go to T9*	T7
29	Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* *Don't know 77* *If the participant doesn't remember his/her age when they started smoking, then record the time in weeks, months or years as appropriate.*	In Years OR in Months OR in Weeks	⌊_⌊_⌋ *If Known, go to T9* ⌊_⌊_⌋ *If Known, go to T9* ⌊_⌊_⌋	T8a T8b T8c
30	Do you **currently use** any **smokeless tobacco** such as [*snuff, chewing tobacco, betel*]? *(USE SHOWCARD)* *Ask the participant to think of any smokeless tobacco products the he/she is using currently.*	Yes No	1 2 *If No, go to T12*	T9
31	Do you **currently use smokeless tobacco** products **daily?** *For current users of smokeless tobacco products only.*	Yes No	1 2 *If No, go to T12*	T10
32	On average, how many **times a day** do you use …. *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 77* *For daily users of smokeless tobacco products only. Record for each type of smokeless tobacco products. Record zero if no products were used in each category instead of leaving categories blank. Then go to T13 . Daily users of smokeless tobacco don't have to answer the question on past use T12.*	Snuff, by mouth Snuff, by nose Chewing tobacco Betel, quid Other Other (specify)	⌊_⌊_⌋ ⌊_⌊_⌋ ⌊_⌊_⌋ ⌊_⌊_⌋ ⌊_⌊_⌋ *If Other, go to T14 other, else go to T13* ⌊_⌊_⌊_⌊_⌊_⌋ *Go to T13*	T11a T11b T11c T11d T11e T11other
33	In the past, did you **ever use** smokeless tobacco such as *[snuff, chewing tobacco, or betel]* **daily**? *Ask the participant to think of the time when he/she may have been using smokeless tobacco products on a daily basis.*	Yes No	1 2	T12
34	During the past 7 days, on how many days did someone **in your home** smoke when you were present? *Record the number of days.*	Number of days Don't know 77	⌊_⌊_⌋	T13
35	During the past 7 days, on how many days did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office) when you were present? *Record the number of days. For those not working in a closed area, record 77.*	Number of days Don't know or don't work in a closed area 77	⌊_⌊_⌋	T14

CORE: Alcohol Consumption

The next questions ask about the consumption of alcohol.

	Question	Response	Code
36	Have you **ever** consumed an alcoholic drink such as beer, wine, spirits, fermented cider or *[add other local examples]*)? *(USE SHOWCARD OR SHOW EXAMPLES)* *Think of any drinks that contain alcohol.*	Yes 1 No 2 *If No, go to D1*	A1a
37	Have you consumed an alcoholic drink within the **past 12 months**? *Think of any drinks that contain alcohol.*	Yes 1 No 2 *If No, go to D1*	A1b
38	During the past 12 months, **how frequently** have you had at least one alcoholic drink? *(READ RESPONSES, USE SHOWCARD)* *Think of the past year only.*	Daily 1 5-6 days per week 2 1-4 days per week 3 1-3 days per month 4 Less than once a month 5	A2
39	Have you consumed an alcoholic drink within the **past 30 days**? *Circle the appropriate response.*	Yes 1 No 2 *If No, go to D1*	A3
40	During the past 30 days, on how many **occasions** did you have at least one alcoholic drink? *Think of the past 30 days only. Record the number of occasions. Note that there can be more than one occasion in which alcohol is consumed in a given day.*	Number ⌊_⌋⌊_⌋ Don't know 77	A4
41	During the past 30 days, when you drank alcohol, **on average**, how many **standard alcoholic drinks** did you have during one drinking occasion? *(USE SHOWCARD)* *Help the respondent by averaging out the total number of drinks.*	Number ⌊_⌋⌊_⌋ Don't know 77	A5
42	During the past 30 days, what was the **largest number** of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together? *Think of the past 30 days only.*	Largest number ⌊_⌋⌊_⌋ Don't Know 77	A6
43	During the past 30 days, how many times did you have for **men**: **five or more** for **women**: **four or more** standard alcoholic drinks in a single drinking occasion? *Think of the past 30 days only. Be sure to read the correct number of times: 5 or more for MEN, 4 or more for WOMEN.*	Number of times ⌊_⌋⌊_⌋ Don't Know 77	A7

EXPANDED: Alcohol Consumption

44	During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks. *Think of the past 30 days only.*	Usually with meals Sometimes with meals Rarely with meals Never with meals	1 2 3 4	A8
45	During each of the **past 7 days**, how many standard drinks of any alcoholic drink did you have each day? *(USE SHOWCARD)* *Don't know 77* *Think of the past week only.* *A "standard drink" is the amount of ethanol contained in standard glasses of beer, wine, fortified wine such as sherry, and spirits.* *Depending on the country, these amounts will vary between 8 and 13 grams of ethanol. See showcard.* *Record for each day the number of standard drinks. If no drinks record 0.*	Monday	⌊_⌋⌊_⌋	A9a
		Tuesday	⌊_⌋⌊_⌋	A9b
		Wednesday	⌊_⌋⌊_⌋	A9c
		Thursday	⌊_⌋⌊_⌋	A9d
		Friday	⌊_⌋⌊_⌋	A9e
		Saturday	⌊_⌋⌊_⌋	A9f
		Sunday	⌊_⌋⌊_⌋	A9g

CORE: Diet

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

Question		Response	Code
46	In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)* *Think of any fruit on the show card. A typical week means a "normal" week when your diet is not affected by cultural, religious, or other events. Do not report an average over a period.*	Number of days ⌊_⌋⌊_⌋ *If Zero days, go to D3* Don't Know 77	D1
47	How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD)* *Think of one day the participant can recall easily.*	Number of servings ⌊_⌋⌊_⌋ Don't Know 77	D2
48	In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)* *Think of any vegetable on the show card. A typical week means a "normal" week when your diet is not affected by cultural, religious, or other events. Do not report an average over a period.*	Number of days ⌊_⌋⌊_⌋ *If Zero days, go to D5* Don't Know 77	D3
49	How many **servings** of vegetables do you eat on one of those days? *(USE SHOWCARD)* *Think of one day the participant can recall easily.*	Number of servings ⌊_⌋⌊_⌋ Don't know 77	D4

EXPANDED: Diet

50	What type of **oil or fat is most often** used for meal preparation in your household? *(USE SHOWCARD, SELECT ONLY ONE)* *Circle the appropriate response.*	Vegetable oil 1 Lard or suet 2 Butter or ghee 3 Margarine 4 Other 5 *If Other, go to D5other* None in particular 6 None used 7 Don't know 77	D5
		Other ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	D5other
51	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. *Record the number of meals.*	Number ⌊_⌋⌊_⌋ Don't know 77	D6

CORE: Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.
Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. *[Insert other examples if needed].* In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.
Read this opening statement out loud. It should not be omitted. The respondent will have to think first about the time he/she spends doing work (paid or unpaid work, household chores, harvesting food, fishing or hunting for food, seeking employment [Insert other examples if needed]), then about the time he/she travels from place to place, and finally about the time spent in vigorous as well as moderate physical activity during leisure time.
Remind the respondent when he/she answers the following questions that '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. Don't forget to use the showcard which will help the respondent when answering to the questions.

	Question	Response	Code
52	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? *Activities are regarded as vigorous intensity if they cause a large increase in breathing and/or heart rate.* *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 4*	P1
53	In a typical week, on how many days do you do vigorous-intensity activities as part of your work? *"Typical week" means a week when a person is doing vigorous intensity activities and not an average over a period. Valid responses range from 1-7.*	Number of days ⌊_⌋	P2
54	How much time do you spend doing vigorous-intensity activities at work on a typical day? *Think of one day you can recall easily. Consider only those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.*	Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	P3 (a-b)
55	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? *Activities are regarded as moderate intensity if they cause a small increase in breathing and/or heart rate.* *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 7*	P4
56	In a typical week, on how many days do you do moderate-intensity activities as part of your work? *Valid responses range from 1-7*	Number of days ⌊_⌋	P5
57	How much time do you spend doing moderate-intensity activities at work on a typical day? *Think of one day you can recall easily. Consider only those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.*	Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	P6 (a-b)

Travel to and from places

The next questions exclude the physical activities at work that you have already mentioned.
Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. [insert other examples if needed]
*The introductory statement to the following questions on transport-related physical activity is very important. It asks and helps the participant to now think about how they travel around getting from place-to-place. This statement **should not** be omitted.*

58	Do you walk or use a bicycle (*pedal cycle*) for at least 10 minutes continuously to get to and from places? *Circle the appropriate response.*	Yes 1 No 2 *If No, go to P 10*	P7
59	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? *Valid responses range from 1-7*	Number of days ⌊_⌋	P8

60	How much time do you spend walking or bicycling for travel on a typical day? *Think of one day you can recall easily. Consider the total amount of time walking or bicycling for trips of 10 minutes or more. Probe very high responses (over 4 hrs) to verify.*	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P9 (a-b)

Recreational activities

The next questions exclude the work and transport activities that you have already mentioned.
Now I would like to ask you about sports, fitness and recreational activities (leisure),[insert relevant terms].
This introductory statement directs the participant to think about recreational activities. This can also be called discretionary or leisure time. It includes sports and exercise but is not limited to participation competitions. Activities reported should be done regularly and not just occasionally. It is important to focus on only recreational activities and not to include any activities already mentioned. This statement ***should not*** *be omitted.*

Question		Response	Code
61	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? *Activities are regarded as vigorous intensity if they cause a large increase in breathing and/or heart rate.* *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 13*	P10
62	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (*leisure*) activities? *Valid responses range from 1-7.*	Number of days ⌊_⌋	P11
63	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day? *Think of one day you can recall easily. Consider the total amount of time doing vigorous recreational activities for periods of 10 minutes or more. Probe very high responses (over 4 hrs).*	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P12 (a-b)
64	Do you do any moderate-intensity sports, fitness or recreational *(leisure*) activities that causes a small increase in breathing or heart rate such as brisk walking,(*cycling, swimming, volleyball*)for at least 10 minutes continuously? *Activities are regarded as moderate intensity if they cause a small increase in breathing and/or heart rate.* *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P16*	P13
65	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (*leisure*) activities? *Valid responses range from 1-7*	Number of days ⌊_⌋	P14
66	How much time do you spend doing moderate-intensity sports, fitness or recreational (*leisure*) activities on a typical day? *Think of one day you can recall easily. Consider the total amount of time doing moderate recreational activities for periods of 10 minutes or more. Probe very high responses (over 4 hrs).*	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P15 (a-b)

EXPANDED: Physical Activity

Sedentary behavior

The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping.
[INSERT EXAMPLES] (USE SHOWCARD)

67	How much time do you usually spend sitting or reclining on a typical day? *Consider total time spent at work sitting, in an office, reading, watching television, using a computer, doing hand craft like knitting, resting etc. Do not include time spent sleeping.*	Hours : minutes	⌊_⌊_⌋ : ⌊_⌊_⌋ hrs min s	P16 (a-b)

CORE: History of Raised Blood Pressure			
Question		**Response**	**Code**
68	Have you ever had your blood pressure measured by a doctor or other health worker? *Circle the appropriate response.*	Yes 1 No 2 *If No, go to H6*	H1
69	Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension? *Circle the appropriate response.*	Yes 1 No 2 *If No, go to H6*	H2a
70	Have you been told in the past 12 months? *Circle the appropriate response.*	Yes 1 No 2	H2b

EXPANDED: History of Raised Blood Pressure			
71	Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker? *Circle the appropriate response for each of the following.*		
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2	H3a
	Advice to reduce salt intake	Yes 1 No 2	H3b
	Advice or treatment to lose weight	Yes 1 No 2	H3c
	Advice or treatment to stop smoking	Yes 1 No 2	H3d
	Advice to start or do more exercise	Yes 1 No 2	H3e
72	Have you ever seen a traditional healer for raised blood pressure or hypertension? *Circle the appropriate response.*	Yes 1 No 2	H4
73	Are you currently taking any herbal or traditional remedy for your raised blood pressure? *Circle the appropriate response.*	Yes 1 No 2	H5

CORE: History of Diabetes

Question		Response		Code
74	Have you ever had your blood sugar measured by a doctor or other health worker? *Circle the appropriate response.*	Yes 1 No 2	*If No, go to M1*	H6
75	Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes? *Circle the appropriate response.*	Yes 1 No 2	*If No, go to M1*	H7a
76	Have you been told in the past 12 months? *Circle the appropriate response.*	Yes 1 No 2		H7b

EXPANDED: History of Diabetes

77	Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker? *Circle the appropriate response for each of the following.*			
	Insulin	Yes 1 No 2		H8a
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2		H8b
	Special prescribed diet	Yes 1 No 2		H8c
	Advice or treatment to lose weight	Yes 1 No 2		H8d
	Advice or treatment to stop smoking	Yes 1 No 2		H8e
	Advice to start or do more exercise	Yes 1 No 2		H8f
78	Have you ever seen a traditional healer for diabetes or raised blood sugar? *Circle the appropriate response.*	Yes 1 No 2		H9
79	Are you currently taking any herbal or traditional remedy for your diabetes? *Circle the appropriate response.*	Yes 1 No 2		H10
80	When was the last time your eyes were examined as part of your diabetes control? *Circle the appropriate response.*	Within the past 2 years 1 More than 2 years ago 2 Never 3 Don't know 77		H11
81	When was the last time your feet were examined as part of your diabetes control? *Circle the appropriate response.*	Within the past year 1 More than 1 year ago 2 Never 3 Don't know 77		H12

EXPANDED: History of raised total cholesterol

Questions		Response		Code
82	Have you ever had your cholesterol measured by a doctor or other health worker? *Circle the appropriate response.*	Yes 1 No 2	*If No, go to F1a*	L1a
83	Have you ever been told by a doctor or other health worker that you have raised cholesterol? *Circle the appropriate response.*	Yes 1 No 2	*If No, go to F1a*	L2a
84	Were you told in the past 12 months? *Circle the appropriate response.*	Yes 1 No 2		L2b
85	Are you currently receiving any of the following treatments/advice for raised cholesterol prescribed by a doctor or other health worker? *Circle the appropriate response for each of the following.*			
	Oral treatment (medication) taken in the last 2 weeks	Yes 1 No 2		L3a
	Special prescribed diet	Yes 1 No 2		L3b
	Advice or treatment to lose weight	Yes 1 No 2		L3c
	Advice or treatment to stop smoking	Yes 1 No 2		L3d
	Advice to start or do more exercise	Yes 1 No 2		L3e
86	During the past 12 months have you seen a traditional healer for raised cholesterol?	Yes 1 No 2		L4
87	Are you currently taking any herbal or traditional remedy for your raised cholesterol?	Yes 1 No 2		L5

EXPANDED: Family history

Questions		Response	Code
88	Have some of your family members been diagnosed with the following diseases? *Circle the appropriate response for each of the following.*		
	Diabetes or raised blood sugar	Yes 1 No 2	F1a
	Raised Blood pressure	Yes 1 No 2	F1b
	Stroke	Yes 1 No 2	F1c
	Cancer or malignant tumor	Yes 1 No 2	F1d
	Raised Cholesterol	Yes 1 No 2	F1e
	Early Heart attack *Heart Attack, also known as myocardial infarction, in a first degree relative male aged less than 55 years or female aged less than 65 years.*	Yes 1 No 2	F1f

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

Step 2 Physical Measurements

For guidance on taking and completing physical measurements, see Part 3, Section 3.

CORE: Height and Weight

Question		Response	Code
89	Interviewer ID *Record interviewer ID (for height, weight and waist circumference).*	⌊_⌋⌊_⌋⌊_⌋	M1
90	Device IDs for height and weight *Record device IDs.*	Height ⌊_⌋⌊_⌋ Weight ⌊_⌋⌊_⌋	M2
91	Height *Record participant's height in cm.*	in Centimetres (cm) ⌊_⌋⌊_⌋⌊_⌋.⌊_⌋	M3
92	Weight *If too large for scale, code 666.6* *Record participant's weight in kg.*	in Kilograms (kg) ⌊_⌋⌊_⌋⌊_⌋.⌊_⌋	M4
93	**For women:** Are you pregnant? *If yes, skip to M8.*	Yes 1 *If Yes, go to M 8* No 2	M5

CORE: Waist

94	Device ID for waist *Record device ID.*	⌊_⌋⌊_⌋⌊_⌋	M6
95	Waist circumference *Record participant's waist circumference in centimetres.*	in Centimetres (cm) ⌊_⌋⌊_⌋⌊_⌋.⌊_⌋	M7

CORE: Blood Pressure

96	Interviewer ID *Record interviewer's ID (in most cases technician would be the same as for height, weight and waist circumference).*	⌊_⌋⌊_⌋⌊_⌋	M8
97	Device ID for blood pressure *Record device ID.*	⌊_⌋⌊_⌋⌊_⌋	M9
98	Cuff size used *Circle size used*	Small 1 Medium 2 Large 3	M10
99	Reading 1 *Record first measurement after the participant has rested for 15 minutes. Wait 3 minutes before taking second measurement.*	Systolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M11a
		Diastolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M11b
100	Reading 2 *Record second measurement. Ask the participant to rest for another 3 minutes before taking the third measurement.*	Systolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M12a
		Diastolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M12b
101	Reading 3 *Record third measurement.*	Systolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M13a
		Diastolic (mmHg) ⌊_⌋⌊_⌋⌊_⌋	M13b
102	During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker? *Circle appropriate response.*	Yes 1 No 2	M14

EXPANDED: Hip Circumference and Heart Rate

103	Hip circumference *Record participant's hip circumference in cm.*	in Centimeters (cm) ⌊_⌋⌊_⌋⌊_⌋.⌊_⌋	M15
104	Heart Rate *Record the three heart rate readings.*		
	Reading 1	Beats per minute ⌊_⌋⌊_⌋⌊_⌋	M16a
	Reading 2	Beats per minute ⌊_⌋⌊_⌋⌊_⌋	M16b
	Reading 3	Beats per minute ⌊_⌋⌊_⌋⌊_⌋	M16c

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

Step 3 Biochemical Measurements

For guidance on taking and completing physical measurements, see Part 3, Section 4.

CORE: Blood Glucose			
Question		**Response**	**Code**
105	During the past 12 hours have you had anything to eat or drink, other than water? *It is essential that the participant has fasted.*	Yes 1 No 2	B1
106	Technician ID	⌊_⌊_⌊_⌋	B2
107	Device ID	⌊_⌊_⌋	B3
108	Time of day blood specimen taken (24 hour clock)	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	B4
109	Fasting blood glucose *Double check that the participant has fasted.*	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B5
110	Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose?	Yes 1 No 2	B6
CORE: Blood Lipids			
111	Device ID	⌊_⌊_⌋	B7
112	Total cholesterol	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B8
113	During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	B9

EXPANDED: Triglycerides, HDL Cholesterol and Oral Glucose Tolerance			
114	Triglycerides	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B10
115	HDL Cholesterol	mmol/l ⌊_⌋ . ⌊_⌊_⌋	B11
116	Oral Glucose Tolerance	mmol/l ⌊_⌊_⌋ . ⌊_⌊_⌋	B12

World Health Organization

Pan American Health Organization
Regional Office of the World Health Organization

Step 1 Optional module

Section: Health Screening		Response		Code
117	Have you ever had your feces examined to look for hidden blood?	Yes No	1 2	S1
118	Have you ever had a colonoscopy? *Explain a colonoscopy is a medical examination in which a tube is introduced in the rectum to be able to visualize the intestine in order to know if there are alterations or problems.*	Yes No	1 2	S2
119	**This question is for men only:** Have you ever had an examination of your prostate? *Explain that this is done by a medical exam of the rectum in which a physician or health professional carries out with gloves in order to explore the prostate of the patient and look at the size, shape or hardness.*	Yes No	1 2	S3
120	**The following questions are for women only:** Have you been shown how to examine your breasts?	Yes No	1 2	S4
121	When was the last time you had an examination of your breasts?	1 year or less Between 1 and 2 years More than 2 years Never Don't know	1 2 3 4 77	S5
122	When was the last time you had a mammogram? *Explain that a mammogram is an x-ray of each breast to check for the possibility of a breast cancer.*	1 year or less Between 1 and 2 years More than 2 years Never Don't know	1 2 3 4 77	S6
123	When was the last time you had a Pap test? *Explain that a pap test or a cytological test is an exam to detect cervical cancer.*	1 year or less Between 1 and 2 years More than 2 years Never Don't know	1 2 3 4 77	S7

Section 3: Show Cards

Overview

Introduction

Show cards are to be used during the interviews to show or explain the meanings of some of the items asked. While example show cards are presented in this section, it is strongly recommended that countries develop their own ones displaying country specific examples. This will help respondents when answering to the questions.

Show cards

The section contains the following show cards:

List of Work Status

For use with This show card relates to:

Step	Section	Items
Step 1, demographic information	C	C8

Work Status	Description
Government employee	An individual who is hired by a government office or agency and paid a salary. This includes employees of: • Federal • State, or • Municipal governments and their agencies. • Parastatal enterprises, and • Semi-autonomous institutions (such as social security institutions) that are owned by the government. • Institutions like religious schools (if paid by the government).
Non-government employee	An individual who is hired to work and is paid a salary or wages. This includes any employees not working for the government.
Self-employed	An individual who produces goods for sale or earns an income through provision of services to different people or firms. The individual works alone or with intermittent assistance from others, but does not employ anyone for a paid wage or salary on a regular basis.
Non-paid - subsistence farming etc	An individual who spends significant amount of time working for a volunteer organization, family business, family farm or other similar activity without pay.
Student	An individual whose primary activity is engaging in studies at elementary, secondary, university or technical schools.
Homemaker (household chores)	An individual whose primary activity is in carrying out household tasks without being paid.
Retired	An individual who has earned income during some period in the workforce or as an employer and who is no longer working due to age.
Unemployed - able to work	An individual who could work but does not currently have a job or business (excluding homemaker).
Unemployed - unable to work	An individual who cannot work because of his/her health status.

List of Tobacco Products

For use with This show card relates to:

Step	Section	Items
Step 1, tobacco use	T	T1 to T14

• **Cigarettes**
• **Cigarillos**
• **Cigars**
• **Cheroots**
• **Chuttas**
• **Bidis**
• **Goza / Hookah**
• **Local tobacco products** (each country to add to the list)
• **Local tobacco products** (each country to add to the list)
• **Local tobacco products** (each country to add to the list)

Tobacco Show Cards

Examples

The following pictures show a few selected examples of tobacco products. Sites are to develop show cards including specific examples of local tobacco products. These show cards relate to:

Step	Section	Items
Step 1, tobacco use	T	T1 to T14

Manufactured cigarettes.

Roll-your-own (RYO) cigarettes.

Snuff, available in wet and dry form.

Cigars, e.g., cigarillos, double coronas, cheroots, stumpen, chutts and dhumtis.

Continued on next page

Tobacco Show Cards, Continued

Pipe.

Bidi.

Chewing tobacco, e.g., plug, loose-leaf, chimo, toombak, gutkha or twist.

Betel nut.

Water pipe, also known as shisha, hookah or hubble-bubble.

Alcohol Consumption

For use with This show card relates to:

Step	Section	Items
Step 1, alcohol consumption	A	A1 to A9a-g

1 standard drink =

1 standard bottle of **regular beer** (285ml)

1 single measure of **spirits** (30ml)

1 medium size glass of wine (120ml)

1 measure of **aperitif** (60ml)

Note: net alcohol content of a **standard drink is approximately 10g** of ethanol. However, standard drinks in different countries can contain different amounts of ethanol. Therefore, countries may have to adapt this measure according to their own standards and will report this measure if different from the standard mentioned above.

Diet (Typical Fruit and Vegetables and Serving Sizes)

For use with This show card relates to:

Step	Section	Items
Step 1, diet	D	D1 to D4

VEGETABLES are considered to be:	1 Serving =	Examples
Raw green leafy vegetables	1 cup	Spinach, salad, etc.
Other vegetables, cooked or chopped raw	½ cup	Tomatoes, carrots, pumpkin, corn, Chinese cabbage, fresh beans, onion, etc. 
Vegetable juice	½ cup	

FRUIT Is considered to be:	1 Serving =	Examples
Apple, banana, orange	1 medium size piece	
Chopped, cooked, canned fruit	½ cup	
Fruit juice	½ cup	Juice from fruit, not artificially flavoured

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

Note: Tubers such as potatoes and cassava should not be included.

Typical Physical Activities

For use with This show card relates to:

Step	Section	Items
Step 1, physical activity	P	P to P15

WORK RELATED PHYSICAL ACTIVITY		LEISURE/ SPARE TIME RELATED PHYSICAL ACTIVITY	
MODERATE Intensity Activities Makes you breathe somewhat harder than normal	**VIGOROUS Intensity Activities** Makes you breathe much harder than normal	**MODERATE Intensity Activities** Makes you breathe somewhat harder than normal	**VIGOROUS Intensity Activities** Makes you breathe much harder than normal
Examples: • Cleaning (vacuuming, mopping, polishing, scrubbing, sweeping, ironing) • Washing (beating and brushing carpets, wringing clothes (by hand) • Gardening • Milking cows (by hand) • Planting and harvesting crops • Digging dry soil (with spade) • Weaving • Woodwork (chiselling, sawing softwood) • Mixing cement (with shovel) • Labouring (pushing loaded wheelbarrow, operating jackhammer) • Walking with load on head • Drawing water • Tending animals	**Examples:** • Forestry (cutting, chopping, carrying wood) • Sawing hardwood • Ploughing • Cutting crops (sugar cane) • Gardening (digging) • Grinding (with pestle) • Labouring (shovelling sand) • Loading furniture (stoves, fridge) • Instructing spinning (fitness) • Instructing sports aerobics • Sorting postal parcels (fast pace) • Cycle rickshaw driving	**Examples:** • Cycling • Jogging • Dancing • Horse-riding • Tai chi • Yoga • Pilates • Low-impact aerobics • Cricket	**Examples** • Soccer • Rugby • Tennis • High-impact aerobics • Aqua aerobics • Ballet dancing • Fast swimming

Examples of Typical Physical Activities Developed by Different Countries

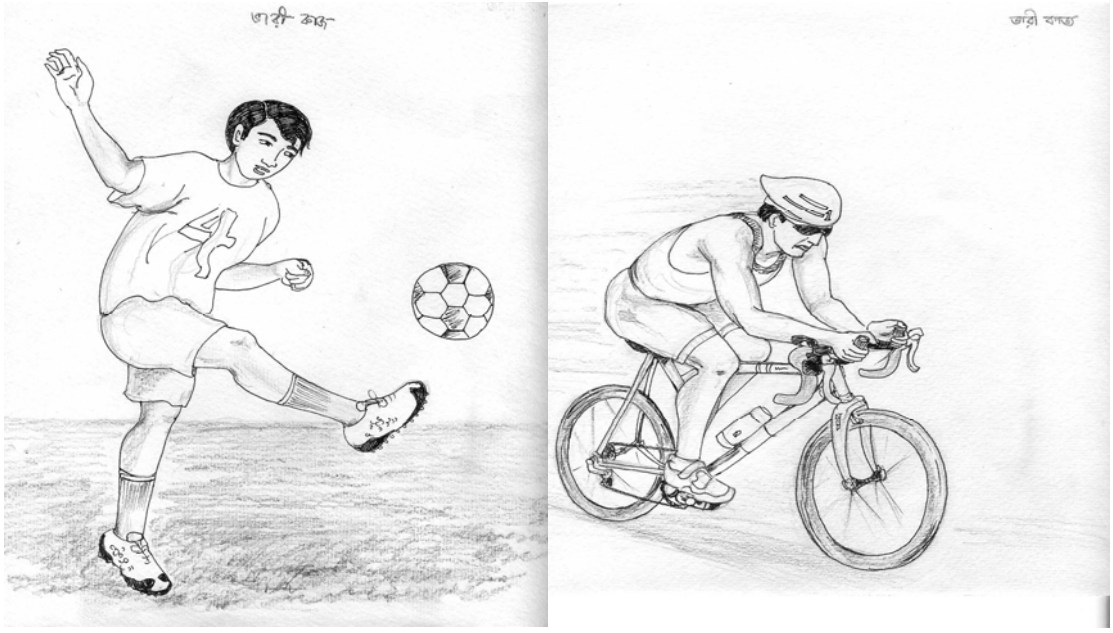
Examples

The following pictures show a few selected examples of physical activity show cards that have been developed and used by different countries. These show cards relate to:

Step	Section	Items
Step 1, physical activity	P	P1 to P15

Bangladesh, examples for vigorous activities at work

Bangladesh, examples for vigorous activities during leisure time



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Examples of Typical Physical Activities Developed by Different Countries, Continued

Indonesia, examples for moderate activities

Section 4: Optional Modules

Overview

Introduction

There are optional modules available that cover specific topics that can be assessed in STEPS surveys. These modules can be used if a country/site wishes to go beyond the core and expanded STEPS Instrument, and to describe population level indicators for these specific topics.

Data Books, a full tabulation of all the results from the questions specific to these modules, are available on the STEPS website: http://www.who.int/chp/steps/resources/en/index.html

Optional Modules

This section contains the following optional modules:

Oral health

CORE: Oral health

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

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

CORE: Oral health, Continued			
Question		Response	Code
9	How often do you clean your teeth?	Never 1 *If Never, go to O13a* Once a month 2 2-3 times a month 3 Once a week 4 2-6 times a week 5 Once a day 6 Twice or more a day 7	O9
10	Do you use toothpaste to clean your teeth?	Yes 1 No 2 *If No, go to O12a*	O10
11	Do you use toothpaste containing fluoride?	Yes 1 No 2 Don't know 77	O11
12	Do you use any of the following to clean your teeth? *(RECORD FOR EACH)*		
	Toothbrush	Yes 1 No 2	O12a
	Wooden toothpicks	Yes 1 No 2	O12b
	Plastic toothpicks	Yes 1 No 2	O12c
	Thread (dental floss)	Yes 1 No 2	O12d
	Charcoal	Yes 1 No 2	O12e
	Chewstick / miswak	Yes 1 No 2	O12f
	Other	Yes 1 *If Yes, go to O12other* No 2	O12g
	Other (please specify) ⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋		O12other
13	Have you experienced any of the following problems during the past 12 months because of the state of your teeth? *(RECORD FOR EACH)*		
	Difficulty in chewing foods	Yes 1 No 2	O13a
	Difficulty with speech/trouble pronouncing words	Yes 1 No 2	O13b
	Felt tense because of problems with teeth or mouth	Yes 1 No 2	O13c
	Embarrassed about appearance of teeth	Yes 1 No 2	O13d
	Avoid smiling because of teeth	Yes 1 No 2	O13e
	Sleep is often interrupted	Yes 1 No 2	O13f
	Days not at work because of teeth or mouth	Yes 1 No 2	O13g
	Difficulty doing usual activities	Yes 1 No 2	O13h
	Less tolerant of spouse or people close to you	Yes 1 No 2	O13i
	Reduced participation in social activities	Yes 1 No 2	O13j

Violence and Injury

CORE: Injury

The next questions ask about different experiences and behaviours that are related to road traffic injuries.

Question		Response			Code
1	In the past 30 days, how often did you use a seat belt when you were the driver or passenger of a motor vehicle?	All of the time Sometimes Never Have not been in a vehicle in past 30 days No seat belt in the car I usually am in Don't Know Refused	1 2 3 4 5 77 88		V1
2	In the past 30 days, how often did you wear a helmet when you drove or rode as a passenger on a motorcycle or motor-scooter?	All of the time Sometimes Never Have not been on a motorcycle or motor-scooter in past 30 days Do not have a helmet Don't Know Refused	1 2 3 4 5 77 88		V2
3	In the past 12 months, have you been involved in a road traffic crash as a driver, passenger, pedestrian, or cyclist?	Yes (as driver) Yes (as passenger) Yes (as pedestrian) Yes (as a cyclist) No Don't know Refused	1 2 3 4 5 77 88	 *If No, go to V5* *If don't know, go to V5* *If Refused, go to V5*	V3
4	Did you have any injuries in this road traffic crash which required medical attention?	Yes No Don't know Refused	1 2 77 88		V4
The next questions ask about the most serious accidental injury you have had in the past 12 months.					
5	In the past 12 months, were you injured accidentally, other than the road traffic crashes which required medical attention?	Yes No Don't know Refused	1 2 77 88	 *If No, go to V8* *If don't know, go to V8* *If Refused, go to V8*	V5
6	Please indicate which of the following was the cause of this injury.	Fall Burn Poisoning Cut Near-drowning Animal bite Other (specify) Don't know Refused	1 2 3 4 5 6 7 77 88		V6
		Other (please specify)	⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋		V6other

CORE: Injury, Continued				
Question		**Response**		**Code**
7	Where were you when you had this injury?	Home School Workplace Road/Street/Highway Farm Sports/athletic area Other (specify) Don't know Refused	1 2 3 4 5 6 7 77 88	V7
		Other (please specify)	⌊_____⌋	V7other

EXPANDED: Unintentional Injury				
The next questions ask about behaviours related to your safety and whether or not you drink alcohol while driving or being a passenger.				
Question		**Response**		**Code**
8	In the past 30 days, how often did you wear a helmet when you rode a bicycle or pedal cycle?	Always Sometimes Never Did not ride in the past 30 days Don't Know Refused	1 2 3 4 77 88	V8
9	In the past 30 days, how many times have you driven a motorized vehicle when you have had 2 or more alcoholic drinks? *(USE SHOWCARDS)*	Number of times Don't Know Refused	⌊__⌋ 77 88	V9
10	In the past 30 days, how many times have you ridden in a motorized vehicle where the driver has had 2 or more alcoholic drinks? *(USE SHOWCARDS)*	Number of times Don't Know Refused	⌊__⌋ 77 88	V10

CORE: Violence

The following questions are about different experiences and behaviours that are related to violence.

Question		Response			Code
11	In the past 12 months, how many times were you in a violent incident in which you were injured and required medical attention?	Never	1	*If never, go to V14*	V11
		Rarely (1- 2 times)	2		
		Sometimes (3 – 5 times)	3		
		Often (6 or more times)	4		
		Don't know	77	*If don't know, go to V14*	
		Refused	88	*If Refused, go to V14*	
The next questions ask about the most serious violent incidence you have had in the past 12 months.					
12	Please indicate which of the following caused your most serious injury in the last 12 months. *(USE SHOWCARDS)*	Being shot with a firearm	1		V12
		A weapon (other than a firearm) was used by the person who injured me	2		
		Being injured without any weapon (slapped, pushed…)	3		
		Don't know	77		
		Refused	88		
13	Please indicate the relationship between yourself and the person(s) who caused your injury.	Intimate partner	1		V13
		Parent	2		
		Child, sibling, or other relative	3		
		Friend or acquaintance	4		
		Unrelated caregiver	5		
		Stranger	6		
		Official or legal authorities	7		
		Other (specify)	8		
		Refused	88		
		Other (please specify)	|_|_|_|_|_|_|_|_|		V13other
14	Looking back on your childhood (before age 18 years), did a parent or adult in the household ever push, grab, shove, slap, hit, burn, or throw something at you?	Never	1		V14
		Very rarely	2		
		Once a month	3		
		Once a week	4		
		Almost daily	5		
		Don't know	77		
		Refused	88		
15	Looking back on your childhood, did an adult or anyone at least five years older than you ever touch you sexually or try to make you touch them sexually or force you to have sex?	Yes	1		V15
		No	2		
		Refused	88		
16	Since your 18th birthday, have you ever experienced a sex act involving either vaginal, oral, or anal penetration **against your will**?	Never	1		V16
		Once	2		
		A few times (2 to 3 times)	3		
		Many times (4 or more times)	4		
		Don't know	77		
		Refused	88		

EXPANDED: Violence				
The next questions ask about behaviours related to your safety.				
Question		**Response**		**Code**
17	In the past 12 months, have you been frightened for the safety of yourself or your family because of the anger or threats of another person(s)?	Yes No Refused	1 2 *If no, go to V19* 88 *If refused, go to V19*	V17
18	Please specify of whom you were most often frightened.	Intimate partner Parent Child, sibling, or other relative Friend or acquaintance Unrelated caregiver Stranger Official or legal authority Other (specify) Refused	1 2 3 4 5 6 7 8 88	V18
		Other (please specify)	⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌊_⌋	V18other
19	Have you carried a loaded firearm on your person outside the home in the last 30 days?	No Yes, for protection Yes, for work Yes, for sport (e.g. hunting target practice) Refused	1 2 3 4 88	V19

Part 6: Templates and Forms

Overview

In this Part

This Part covers the following topics

Section 1: Planning and Set Up Templates

Overview

Introduction

This section includes some document templates that can be used during the stage that involves planning and preparing a STEPS survey.

Intended audience

This section is primarily designed to be used by those fulfilling the following roles:

- STEPS Site Coordinator
- Coordinating committee

In this section

This section contains the following topics.

STEPS Implementation Plan

Executive Summary

Introduction

Current situation

Goals

Scope

Resources

Budget

Current Situation

Introduction

Previous risk factor surveys Specify if a risk factor survey has already been conducted in this setting.

Data availability Specify risk factor data availability in this setting.

Infrastructure and capacity Specify if there already an infrastructure (human capacity, equipment, other) on which STEPS could be built.

Rationale Specify the rationale for conducting chronic disease risk factor surveillance. (See Part 1, Section 1, Rationale for Surveillance).

Goals and Objectives

Introduction	
Goals	Identify the planned goals or use for the information gathered. For example, as a contribution to ongoing data collection to: • Describe the current levels of risk factors for chronic diseases in this population • Track the direction and magnitude of trends in risk factors • Plan or evaluate a health promotion or preventive campaign • Collect data from which to predict likely future demands for health services
Objectives	Specify objectives that support gathering 'essential' information only.

Scope

Introduction	
Overview of scope	Specify the scope of surveillance to be conducted over time, ie Step 1, Step 2 or Step 3, plus coverage of core, expanded and optional items.
Sample size	Identify the sample size and sample frame that will be used
Geographical coverage	Identify geographical coverage
Timeframe	Describe the broad timeframes
Sustainability and future surveys	Specify if STEPS sustainability can be assured and plans for future surveys.

Resources

Introduction	
Personnel required	Specify required resources in terms of all personnel required for the surveillance.
Equipment	Specify required resources in terms of all equipment required for the surveillance.
Facilities	Specify required resources in terms of all facilities required for the surveillance.
Resources already committed	Describe resources that have already been committed or which are expected, including support from WHO
Resources required from other organizations	Specify resources required from other organisations involved

Action Plan

Introduction	
Plan	Provide a chart of the main tasks with estimated start dates and timeframes for completion of each phase.

Communication Strategy and Publicity

Introduction	
Publicity plan	Specify methods for informing and involving community leaders and community groups in the STEPS surveillance project.

Reporting and Disseminating Results

Introduction

Reporting

Describe to whom and how the results will be reported and disseminated.

Budget

Introduction

Budget

Provide a detailed budget that includes:

- total funds required for each year planned to implement all STEPS activities as identified in the scope,
- source of funds, and
- funding gap.

Item	USD

Ethical Approval Form

Part 1: General Information

Introduction

Survey tile

The title of the proposed survey is:

STEPS Chronic Disease Risk Factor Surveillance.

Key personnel

A STEPS coordinating committee has been set up to oversee and manage the planning, preparation and implantation of the proposed survey and includes the following people.

Name	Organization and qualifications

Dates

The proposed survey dates are:

Phase	Dates
Start Date	
Completion Date	
Survey duration	6 - 7 months

Part 2: Scientific Assessment

Introduction	
Scientific basis	
Summary of report	

Part 3: Survey Scope

Introduction	
Goals	Identify the planned goals or use for the information gathered. For example, as a contribution to ongoing data collection to: • Describe the current levels of risk factors for chronic diseases in this population • Track the direction and magnitude of trends in risk factors • Plan or evaluate a health promotion or preventive campaign • Collect data from which to predict likely future demands for health services
Objectives	Specify objectives that support gathering 'essential' information only.
Overview of scope	Specify the scope of surveillance to be conducted over time, i.e. Step 1, Step 2 or Step 3, plus coverage of core, expanded and optional items.
Sample size	Identify the sample size and sample frame that will be used.
Geographical coverage	Identify geographical coverage of the survey.
Resources	Describe resources that: • are required, • have already been committed, and • are expected, including support from WHO.
Cultural/ethical issues	Describe any aspects of the survey that might raise specific cultural or ethical issues.
Reporting and use of results	Describe: • To whom and how the results will be reported and disseminated • Any restrictions on results • Confidentiality of personal identification information • Use of results once the survey is complete • Methods for informing and involving community leaders and community groups in the STEPS surveillance project

Continued on next page

Budget

Provide a detailed budget that includes:

- total funds required for each year planned to implement all STEPS activities as identified in the Scope,
- source of funds, and
- funding gap.

Item	USD

Part 4: Declarations

Introduction

Declaration by principal investigator

The information supplied in this application is, to the best of my knowledge and belief, accurate. I have considered the ethical issues involved in this research and believe that I have adequately addressed them in this application. I understand that if the protocol for this research changes in any way I must inform the Research Ethics Review Committee.

Name:

Signature:

Date:

Declaration by head of department

I have read the application and believe it to be scientifically and ethically sound. I approve the research design. I give my consent for the application to be forwarded to the Ethics Committee.

Name:

Signature:

Date:

Note: Where the head of department is also one of the investigators, the head of department declaration must be signed by the appropriate Dean, or relevant senior officer.

Section 2: Interview, Blood Collection and Data Entry Forms Overview

Introduction

This section includes some document templates that can be used during the interview, measurement, and data entry stages.

In this section

This section contains the following forms for use during the survey.

Notification of WHO STEPS Surveillance Visit

World Health Organization

Notification of WHO STEPS Surveillance Visit		
Today Ministry of Health employees visited your household to conduct a survey of people between the ages of 25 to 64 on health issues. We will try to return on the date indicated below. If this is not convenient, please contact us to make a suitable time for the survey.		
Date of Visit		
Household Number		
Next Visit	Day/Date:	Time:
Contact		
[name of site] Ministry of Health, [address]		

World Health Organization

Notification of WHO STEPS Surveillance Visit		
Today Ministry of Health employees visited your household to conduct a survey of people between the ages of 25 to 64 on health issues. We will try to return on the date indicated below. If this is not convenient, please contact us to make a suitable time for the survey.		
Date of Visit		
Household Number		
Next Visit	Day/Date:	Time:
Contact		
[name of site] Ministry of Health, [address]		

Participant Information Form (Step 1, 2 and 3)

Introduction

This form describes what participation in the WHO STEPS survey means.

Title of survey

The title of this survey is the STEPS Surveillance of Risk Factors for Chronic Non-Communicable Diseases (NCDs)

Aim of the survey

This survey will determine the extent in [name of site] of several of the major risk factors for major chronic non-communicable diseases (e.g. diseases not caused by infections). These diseases and their risk factors include:

- Tobacco use
- Alcohol consumption
- Low intake of fruit and vegetable
- Physical inactivity
- Raised blood pressure
- Raised fasting blood glucose
- Obesity
- High levels of fat in the blood

Data collection methods

We will collect information from [insert sample size] participants throughout the area in which the survey is being conducted.

Information will be gathered through (X number of) steps of data collection:

- Step 1 - Interview questions
- Step 2 - Measurements of height, weight, waist & blood pressure
- Step 3 - Blood tests for sugar and fats

What's involved

The table below shows each of the steps involved. You will be given time to consider your participation.

Step	Action
1	We will describe the STEPS surveillance to you.
2	You may ask any questions you may have.
3	We will ask you to sign a consent form.

Continued on next page

Participant Information Form (Step 1, 2 and 3), Continued

What's involved (cont.)

Step	Action
4	You will be asked to participate in Step 1. This will involve a Ministry of Health employee asking you some questions about your: • Age • Education • Employment and income • Tobacco and alcohol use • Fruit and vegetable intake • Physical activity • History of diabetes and or raised blood pressure
5	You will then be asked to participate in Step 2. This will involve a Ministry of Health employee taking some simple measurements of your: • Height • Weight • Waist circumference • Blood pressure
6	You may also be asked to participate in Step 3. This will involve taking a small amount of blood from (a vein in your arm / the tip of your finger) to test for sugar and fat levels in your blood. This may cause some mild pain.

Timeframe

It is estimated that Step 1 and 2 of the survey will take approximately 1 hour.

Community benefits

The results of this study will be used to assist the Ministry of Health in developing public health programmes that target efforts to lower the risk factors that lead to chronic non-communicable diseases.

Your rights

It is your right to:

- decline to take part in the study
- withdraw your consent at any time
- decline to answer any questions in the interview that you do not wish to answer.

Continued on next page

Participant Information Form (Step 1, 2 and 3), Continued

Confidentiality	You will provide your name and contact information so that you can be contacted if there is any need to follow up with you after the survey is conducted. Your participation and data provided will be completely confidential. Your name will not be used in any report of the study.
Results	The results of this survey will be used to help plan strategies in reducing the risk factors that contribute to chronic non-communicable diseases in your community. The results will be published in research publications, media briefings, fact sheets, and reports and can be made available to you through the local researchers.
Ethical approval	This study has received ethical approval from the Research Ethics Review Committee of [insert name of institution and of location].

Consent Form 1 (Steps 1 and 2)

Dear Participant,

Random selection

You have been randomly selected to be part of this survey and this is why we would like to interview you. This survey is conducted by the World Health Organization in collaboration with the Ministry of Health and the WHO Regional Office and will be carried out by professional interviewers from [name of institution]. This survey is currently taking place in several countries around the world.

Confidentiality

The information you provide is totally confidential and will not be disclosed to anyone. It will only be used for research purposes. Your name, address, and other personal information will be removed from the instrument, and only a code will be used to connect your name and your answers without identifying you. You may be contacted by the survey team again only if it is necessary to complete the information on the survey.

Voluntary participation

Your participation is voluntary and you can withdraw from the survey after having agreed to participate. You are free to refuse to answer any question that is asked in the questionnaire. If you have any questions about this survey you may ask me or contact [name of institution and contact details] or [Principal Investigator at site].

Consent to participate

Signing this consent indicates that you understand what will be expected of you and are willing to participate in this survey.

Read by Participant		Interviewer	
Agreed		Refused	

Signatures

I hereby provide INFORMED CONSENT to take part in Steps 1 and 2 of the Risk Factors Study. For participants under 21 years old, a parent or guardian must also sign this form.

Name: Sign:

Parent/Guardian: Sign:

Witness: Sign:

Consent Form 2 (Step 3)

Dear Participant

Random selection

You have been randomly selected to be part of this survey and this is why we would like to interview you. This survey is conducted by the World Health Organization in collaboration with the Ministry of Health and the WHO Regional Office and will be carried out by professional interviewers from [name of institution]. This survey is currently taking place in several countries around the world.

Confidentiality

The information you provide is totally confidential and will not be disclosed to anyone. It will only be used for research purposes. Your name, address, and other personal information will be removed from the instrument, and only a code will be used to connect your name and your answers without identifying you. You may be contacted by the Survey Team again only if it is necessary to complete the information on the survey.

Voluntary participation

Your participation is voluntary and you can withdraw from the survey after having agreed to participate. You are free to refuse to answer any question that is asked in the questionnaire. If you have any questions about this survey you may ask me or contact [name of institution and contact details] or [Principal Investigator at site].

What's involved

You will have a small amount of blood taken from (the tip of your finger / a vein in your arm) to be tested for sugar and fat. This may cause some mild pain. You will be informed about the kind of tests which will be done on your blood sample.

Consent to participate

Signing this consent indicates that you understand what will be expected of you and are willing to participate in this survey.

Read by Participant		Interviewer	
Agreed		Refused	

Signatures

I hereby provide INFORMED CONSENT to take part in Step 3 of the Chronic Disease Risk Factor Study.

Name: _____ Sign: _____

Witness: _____ Sign: _____

Participant Feedback Form (Step 2)

Dear Participant,

We thank you very much for participating in the STEPS Surveillance of Risk Factors for Chronic Diseases in [name of site], conducted by [name of institution].
This study was undertaken in order to gather information on the following risk factors for chronic diseases in [name of site]: tobacco use, alcohol consumption, low intake of fruit and vegetables, physical inactivity, raised blood pressure, obesity, raised fasting blood glucose, and high levels of blood cholesterol.

We would like to provide you with an overview of your results from the physical measurements.

Blood pressure

Systolic: _____ mmHg (reading 3)

Diastolic: _____ mmHg (reading 3)

Blood pressure classification

- ☐ Normal (SBP< 140 and DBP< 90)
- ☐ Elevated (SBP 140-159 and/or DBP 90-99)
- ☐ Raised (SBP≥160 and/or DBP≥100)
- ☐ Currently on medication

Heart rate

Beats per minute: _____ (reading 3)

Height

Height: _____ cm

Weight

Weight: _____ kg

Body Mass Index

BMI: _____ kg/m^2 (weight in kg divided by height in meters squared; ex. for height 170 cm and weight 68 kg BMI=$(68/(1.7^2)=23.5)$

BMI classification

- ☐ Underweight (BMI< 18.5)
- ☐ Normal weight (BMI 18.5-24.9)
- ☐ Overweight (BMI 25-29.9)
- ☐ Obese (BMI≥30)

Waist circumference

Waist: _____ cm

Hip circumference

Hip: _____ cm

Participant Feedback Form (Step 3)

Dear Participant,

We thank you very much for participating in the STEPS Surveillance of Risk Factors for Chronic Diseases in [name of site], conducted by [name of institution].
This study was undertaken in order to gather information on the following risk factors for chronic diseases in [name of site]: tobacco use, alcohol consumption, low intake of fruit and vegetables, physical inactivity, raised blood pressure, obesity, raised fasting blood glucose, and high levels of blood cholesterol.

We would like to provide you with an overview of your results from the biochemical measurements.

Fasting blood glucose

Fasting blood glucose: _____ mmol/l

Fasting blood glucose classification

- ☐ Normal (< 7.0 mmol/l)
- ☐ Raised (≥7.0 mmol/l)
- ☐ Currently on medication

Total blood cholesterol

Total cholesterol: _____ mmol/l

Total blood cholesterol classification

- ☐ Normal (< 5.0 mmol/l)
- ☐ Elevated (5.0-6.1 mmol/l)
- ☐ High (≥6.2 mmol/l)

HDL cholesterol

HDL cholesterol: _____ mmol/l

HDL cholesterol classification

- ☐ Normal (≥1.03 mmol/l for Men, ≥ 1.29 mmol/l for Women)
- ☐ Low (< 1.03 mmol/l for Men, < 1.29 for Women)

Triglycerides

Triglycerides: _____ mmol/l

Triglycerides classification

- ☐ Normal (< 2.0 mmol/l)
- ☐ Raised (≥2.0 mmol/l)

BMI Classification Chart

Weight (kg)

Height (cm)	30	32.5	35	37.5	40	42.5	45	47.5	50	52.5	55	57.5	60	62.5	65	67.5	70	72.5	75	77.5	80	82.5	85	87.5	90	92.5	95	97.5	100	102.5	105	107.5	110	112.5	115	117.5	120	122.5	125	127.5	130
140	15	17	18	19	20	22	23	24	26	27	28	29	31	32	33	34	36	37	38	40	41	42	43	45	46	47	48	50	51	52	54	55	56	57	59	60	61	63	64	65	66
142	15	16	17	19	20	21	22	24	25	26	27	29	30	31	32	33	35	36	37	38	40	41	42	43	45	46	47	48	50	51	52	53	55	56	57	58	60	61	62	63	64
144	14	16	17	18	19	20	22	23	24	25	27	28	29	30	31	33	34	35	36	37	39	40	41	42	43	45	46	47	48	49	51	52	53	54	55	57	58	59	60	61	63
146	14	15	16	18	19	20	21	22	23	25	26	27	28	29	30	32	33	34	35	36	38	39	40	41	42	43	45	46	47	48	49	50	52	53	54	55	56	57	59	60	61
148	14	15	16	17	18	19	21	22	23	24	25	26	27	29	30	31	32	33	34	35	37	38	39	40	41	42	43	45	46	47	48	49	50	51	53	54	55	56	57	58	59
150	13	14	16	17	18	19	20	21	22	23	24	26	27	28	29	30	31	32	33	34	36	37	38	39	40	41	42	43	44	46	47	48	49	50	51	52	53	54	56	57	58
152	13	14	15	16	17	18	19	21	22	23	24	25	26	27	28	29	30	31	32	34	35	36	37	38	39	40	41	42	43	44	45	46	48	49	50	51	52	53	54	55	56
154	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	50	51	52	53	54	55
156	12	13	14	15	16	17	18	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
158	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
160	12	13	14	15	16	17	18	19	20	21	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
162	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
164	11	12	13	14	15	16	17	18	19	20	20	21	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39	40	41	42	43	44	45	46	46	47	48
166	11	12	13	14	15	15	16	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	33	34	34	35	36	37	38	39	40	41	42	43	44	44	45	46	47
168	11	12	12	13	14	15	16	17	18	19	19	20	21	22	23	24	25	26	27	27	28	29	30	31	32	33	34	35	35	36	37	38	39	40	41	42	43	43	44	45	46
170	10	11	12	13	14	15	16	16	17	18	19	20	21	22	22	23	24	25	26	27	28	29	29	30	31	32	33	34	35	35	36	37	38	39	40	41	42	42	43	44	45
172	10	11	12	13	14	14	15	16	17	18	19	19	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35	36	37	38	39	40	41	41	42	43	44
174	10	11	12	12	13	14	15	16	17	17	18	19	20	21	21	22	23	24	25	26	26	27	28	29	30	31	31	32	33	34	35	35	36	37	38	39	40	40	41	42	43
176	10	10	11	12	13	14	15	15	16	17	18	19	19	20	21	22	23	23	24	25	26	27	27	28	29	30	31	31	32	33	34	35	36	36	37	38	39	40	40	41	42
178	9	10	11	12	13	13	14	15	16	17	17	18	19	20	21	21	22	23	24	24	25	26	27	28	28	29	30	31	32	32	33	34	35	36	36	37	38	39	39	40	41
180	9	10	11	12	12	13	14	15	15	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	32	33	34	35	35	36	37	38	39	39	40
182	9	10	11	11	12	13	14	14	15	16	17	17	18	19	20	20	21	22	23	23	24	25	26	26	27	28	29	29	30	31	32	32	33	34	35	35	36	37	38	38	39
184	9	10	10	11	12	13	13	14	15	16	16	17	18	18	19	20	21	21	22	23	24	24	25	26	27	27	28	29	30	30	31	32	32	33	34	35	35	36	37	38	38
186	9	9	10	11	12	12	13	14	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	27	28	29	30	30	31	32	33	33	34	35	35	36	37	38
188	8	9	10	11	11	12	13	13	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30	30	31	32	33	33	34	35	35	36	37
190	8	9	10	10	11	12	12	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	24	24	25	26	26	27	28	28	29	30	30	31	32	33	33	34	35	35	36
192	8	9	9	10	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	22	22	23	24	24	25	26	26	27	28	28	29	30	31	31	32	33	33	34	35	35
194	8	9	9	10	11	11	12	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	28	29	30	31	31	32	33	33	34	35
196	8	8	9	10	10	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	27	27	28	29	29	30	31	31	32	33	33	34
198	8	8	9	10	10	11	11	12	13	13	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	24	24	25	26	26	27	27	28	29	29	30	31	31	32	33	33
200	8	8	9	9	10	11	11	12	13	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	24	25	26	26	27	28	28	29	29	30	31	31	32	33
202	7	8	9	9	10	10	11	12	12	13	13	14	15	15	16	17	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31	32
204	7	8	8	9	10	10	11	11	12	13	13	14	14	15	16	16	17	17	18	19	19	20	20	21	22	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31

Underweight (<18.5) Normal weight (18.5-24.9) Overweight (25-29.9) Obese (30-39.9) Morbidly Obese (≥ 40)

Kish Household Coversheet

Directions

List the sex and age of all adults in the household aged 25-64 years in the empty table below. To complete the Rank column, order all adults in the list by:

- males in order of decreasing age (oldest to youngest)
- females in order of decreasing age (oldest to youngest)

Example:

Sex	Age		Rank
M	45		**1**
F	47		**3**
M	26		**2**
F	35		**4**

In the **Kish Selection Table** find the square whose column heading matches the last digit of the Household Number and whose row heading matches the total number of eligible persons in the household. The person whose Rank matches this number is the selected participant for this household.

List all persons age 25-64 in household

Sex	Age		Rank	Selected Respondent

Full physical household address:

_____

_____

_____

Household ID _____

Participant ID _____

Kish Selection Table:

Number of Eligible Persons in Household	Last Digit of Household ID Number									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	1	1	1	1	1	1	1	1	1	1
2	1	2	1	2	1	2	1	2	1	2
3	3	1	2	3	1	2	3	1	2	3
4	1	2	3	4	1	2	3	4	1	2
5	1	2	3	4	5	1	2	3	4	5
6	6	1	2	3	4	5	6	1	2	3
7	5	6	7	1	2	3	4	5	6	7
8	1	2	3	4	5	6	7	8	1	2
9	8	9	1	2	3	4	5	6	7	8
10	9	10	1	2	3	4	5	6	7	8

Interview Tracking Form

Cluster No. _____

Interviewer ID _____

Household ID Number	No. Eligible in Household	Participant ID	At Home		Male				Female				Step 1		Step 2		Step 3		Appointment Time	Individual Comment
			Visit 1	Visit 2	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64	Yes	Decline	Yes	Decline	Yes	Decline		

Note:
- Fill in form by using "y/n" for At home (corresponds with participant at home yes/no) and using an "x" for the correct responses in Male, Female, Step 1, Step 2, Step 3"

Clinic Appointment Card (Step 3)

APPOINTMENT TIME

Thank you for agreeing to participate in the STEPS survey.

Participant ID: _____

CLINIC APPOINTMENT

Centre: _____

Date: _____

Time: _____

PLEASE BRING THIS FORM WITH YOU
WHEN YOU COME FOR AN APPOINTMENT

Fasting Instructions (Step 3)

Introduction	To get accurate results from the blood test it is very important that you have fasted.
Fasting instructions	Please ensure that you DO NOT have anything to eat or drink including chewing gum (except plain water) for at least 12 hours BEFORE blood collection. This means that if you have your clinic appointment in the morning, please do not eat or drink after 8:00 PM the night before the appointment.
Note for diabetics	If you have diabetes controlled with tablets and/or insulin, please AVOID taking these on the morning of your appointment, but bring them with you to take after testing is completed. Please take any other morning medications as usual.

Clinic Registration Form (Step 3)

Date	Participant ID	Name	Consent form (place a √)	If did not fast properly, appointment of next visit

Data Entry Tracking Form

Computer Label _____

Participant ID	Date 1st Keying Completed	Date 2nd Keying Completed	Error on Instrument	Supervisor's decision	Individual Comment

Note: This form is available electronically in Excel and can be downloaded with the data entry templates available from www.who.int/chp/steps/resources

STEPS Data Entry

Folder Coversheet

Topic	Tracking Information
Computer (Write the label)	
Phase of data entry: First key, second key entry or complete. *(Circle one)*	1st Key Entry 2nd Key Entry Complete
Instrument section entered and template being used. *(Circle only one)*	Survey Consent Biochemical
Data entry staff name or ID number	
Start Date	
End Date	

Section 3: Reporting Templates (Fact Sheet, Data Book and Site Report Template)

Overview

Introduction

This section includes two templates that can be used to report both the comprehensive and summary results of the STEPS survey.

In this section

This section contains the following Report Templates:

Country (Site) STEPS Survey <year>

Fact Sheet Analysis Guide

Please use this as a guide when you are altering your instrument as it will provide you with a guideline for which questions are needed in order to calculate these basic indicators.

To calculate the basic indicators that are presented on the Fact Sheet refer to the Data Analysis section of the user manual (Part 4, Section 3)

Results for adults aged 25-64 years (incl. 95% CI) *(adjust if necessary)*	**Questions required to calculate result (based on coding column)**	**Epi Info Program Name**
Step 1 Tobacco Use		
Percentage who currently smoke tobacco	T1, T2	TsmokestatusWT
Percentage who currently smoke tobacco daily	T1, T2	TsmokestatusWT
For those who smoke tobacco daily		
Average age started smoking (years)	T1, T2, T3, T4a-c	TsmokeagetimeWT
Percentage of daily smokers smoking manufactured cigarettes	T1, T2, T5a	TsmokemanWT
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	T1, T2, T5a	TsmoketypeWT
Step 1 Alcohol Consumption		
Percentage who are lifetime abstainers	A1a	AconsumptionWT
Percentage who are past 12 month abstainers	A1a-b	AconsumptionWT
Percentage who currently drink (drank alcohol in the past 30 days)	A1a-b, A3	AconsumptionWT
Percentage who engage in heavy episodic drinking (men who had 5 or more / women who had 4 or more drinks on any day in the past 30 days)	A1a-b, A3, A7	AepisodicmenWT, AepisodicwomenWT
Step 1 Fruit and Vegetable Consumption (in a typical week)		
Mean number of days fruit consumed	D1, D3	DdaysWT
Mean number of servings of fruit consumed on average per day	D1, D2, D3, D4	DservingsWT
Mean number of days vegetables consumed	D1, D3	DdaysWT
Mean number of servings of vegetables consumed on average per day	D1, D2, D3, D4	DservingsWT
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	D1, D2, D3, D4	DfiveormoreWT
Step 1 Physical Activity		
Percentage with low levels of activity (defined as < 600 MET-minutes per week)*	P1-P15b	PtotallevelsWT
Percentage with high levels of activity (defined as ≥ 3000 MET-minutes per week)*	P1-P15b	PtotallevelsWT
Median time spent in physical activity on average per day (minutes)	P1-P15b	PtotalmedianWT
Percentage not engaging in vigorous activity	P1-P15b	PnovigorousWT

* For complete definitions of low and high levels of physical activity, other conditions are specified in the GPAQ Analysis Guide, available at: http://www.who.int/chp/steps/GPAQ/en/index.html

Country (Site) STEPS Survey <year>

Fact Sheet Analysis Guide

Results for adults aged 25-64 years (incl. 95% CI) *(adjust if necessary)*	Questions required to calculate result (based on coding column)	Epi Info Program Name
Step 2 Physical Measurements		
Mean body mass index - BMI (kg/m^2)	M3, M4, M5	MbmiWT
Percentage who are overweight (BMI ≥ 25 kg/m^2)	M3, M4, M5	MbmiclassWT
Percentage who are obese (BMI ≥ 30 kg/m^2)	M3, M4, M5	MbmiclassWT
Average waist circumference (cm)	M5, M7	MwaistWT
Mean systolic blood pressure - SBP (mmHg) , including those currently on medication for raised BP	M11a-b, M12a-b, M13a-b, M14	MbloodpressureWT
Mean diastolic blood pressure - DBP (mmHg) , including those currently on medication for raised BP	M11a-b, M12a-b, M13a-b, M14	MbloodpressureWT
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	M11a-b, M12a-b, M13a-b, M14	MraisedbpWT
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg) who are not currently on medication for raised BP	M11a-b, M12a-b, M13a-b, M14	MraisedbpWT
Step 3 Biochemical Measurements		
Mean fasting blood glucose, including those currently on medication for raised blood glucose [choose accordingly: mmol/L or mg/dl]	B1, B5	BglucoseWT (mmol/L) BglucoseMgWT (mg/dl)
Percentage with impaired fasting glycaemia as defined below • plasma venous value ≥6.1 mmol/L (110 mg/dl) and <7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥5.6 mmol/L (100 mg/dl) and <6.1 mmol/L (110 mg/dl)	B1, B5, B6	BglucoseWT (mmol/L) BglucoseMgWT (mg/dl)
Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose • plasma venous value ≥ 7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥ 6.1 mmol/L (110 mg/dl)	B1, B5, B6	BglucoseWT (mmol/L) BglucoseMgWT (mg/dl)
Mean total blood cholesterol, including those currently on medication for raised cholesterol [choose accordingly: mmol/L or mg/dl]	B8	BtotallipidsWT (mmol/L) BtotallipidsMgWT (mg/dl)
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	B8, B9	BtotallipidsWT (mmol/L) BtotallipidsMgWT (mg/dl)
Summary of combined risk factors • current daily smokers • less than 5 servings of fruits & vegetables per day • low level of activity • overweight (BMI ≥ 25 kg/m^2) • raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	**Codes used for summary of combined risk factors:** T1, T2, D1-D4, P1-P15b, M3, M4, M5, M11a-b, M12a-b, M13a-b, M14	
Percentage with none of the above risk factors	See above	RaisedriskWT
Percentage with three or more of the above risk factors, aged 25 to 44 years	See above	RaisedriskWT
Percentage with three or more of the above risk factors, aged 45 to 64 years	See above	RaisedriskWT
Percentage with three or more of the above risk factors, aged 25 to 64 years	See above	RaisedriskWT

For additional information, please contact:
STEPS country focal point [name, email addresses]

<Country> (Site) STEPS Survey <year>

Fact Sheet

The STEPS survey of chronic disease risk factors in [country/site name] was carried out from [insert month and year] to [insert month and year]. [country/site name] carried out Step 1, Step 2 [and Step 3 if applicable]. Socio demographic and behavioural information was collected in Step 1. Physical measurements such as height, weight and blood pressure were collected in Step 2. [If applicable, biochemical measurements were collected to assess blood glucose and cholesterol levels in Step 3.] The STEPS survey in [insert site, country] was a population-based survey of adults aged 25-64 [adjust as necessary]. A [insert type of sampling design] sample design was used to produce representative data for that age range in [insert country/site name]. A total of [insert sample size] adults participated in the [country/site name] STEPS survey. The overall response rate was [insert response rate (x%)]. A repeat survey is planned for [insert year] if funds permit.

Results for adults aged 25-64 years (incl. 95% CI) *(adjust if necessary)*	**Both Sexes**	**Males**	**Females**
Step 1 Tobacco Use			
Percentage who currently smoke tobacco	**77.1%** (66.2 – 88.1)	**77.2%** (66.2 – 88.1)	**77.4%** (66.2 – 88.1)
Percentage who currently smoke tobacco daily			
For those who smoke tobacco daily			
Average age started smoking (years)			
Percentage of daily smokers smoking manufactured cigarettes			
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)			
Step 1 Alcohol Consumption			
Percentage who are lifetime abstainers			
Percentage who are past 12 month abstainers			
Percentage who currently drink (drank alcohol in the past 30 days)			
Percentage who engage in heavy episodic drinking (men who had 5 or more / women who had 4 or more drinks on any day in the past 30 days)			
Step 1 Fruit and Vegetable Consumption (in a typical week)			
Mean number of days fruit consumed			
Mean number of servings of fruit consumed on average per day			
Mean number of days vegetables consumed			
Mean number of servings of vegetables consumed on average per day			
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day			
Step 1 Physical Activity			
Percentage with low levels of activity (defined as < 600 MET-minutes per week)*			
Percentage with high levels of activity (defined as ≥ 3000 MET-minutes per week)*			
Median time spent in physical activity on average per day (minutes) (presented with inter-quartile range)			
Percentage not engaging in vigorous activity			

* For complete definitions of low and high levels of physical activity, other conditions are specified in the GPAQ Analysis Guide, available at: http://www.who.int/chp/steps/GPAQ/en/index.html

<Country> (Site) STEPS Survey <year >

Fact Sheet

Results for adults aged 25-64 years (incl. 95% CI) *(adjust if necessary)*	Both Sexes	Males	Females
Step 2 Physical Measurements			
Mean body mass index - BMI (kg/m^2)			
Percentage who are overweight (BMI ≥ 25 kg/m^2)			
Percentage who are obese (BMI ≥ 30 kg/m^2)			
Average waist circumference (cm)			
Mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised BP			
Mean diastolic blood pressure - DBP (mmHg) , including those currently on medication for raised BP			
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)			
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg) who are not currently on medication for raised BP			
Step 3 Biochemical Measurement			
Mean fasting blood glucose, including those currently on medication for raised blood glucose [choose accordingly: mmol/L or mg/dl]			
Percentage with impaired fasting glycaemia as defined below • plasma venous value ≥6.1 mmol/L (110 mg/dl) and <7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥5.6 mmol/L (100 mg/dl) and <6.1 mmol/L (110 mg/dl)			
Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose • plasma venous value ≥ 7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥ 6.1 mmol/L (110 mg/dl)			
Mean total blood cholesterol, including those currently on medication for raised cholesterol [choose accordingly: mmol/L or mg/dl]			
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)			
Summary of combined risk factors • current daily smokers • less than 5 servings of fruits & vegetables per day • low level of activity • overweight (BMI ≥ 25 kg/m^2) • raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)			
Percentage with none of the above risk factors			
Percentage with three or more of the above risk factors, aged 25 to 44 years			
Percentage with three or more of the above risk factors, aged 45 to 64 years			
Percentage with three or more of the above risk factors, aged 25 to 64 years			

For additional information, please contact:
STEPS country focal point [name, email addresses]

WHO STEPS

Chronic Disease Risk Factor Surveillance

DATA BOOK FOR <INSERT COUNTRY/SITE NAME>

Table of Contents

IMPORTANT:

- You need to run the Epi Info programs **AgeRange2564** (or **AgeRange1564**) and **MissingAgeSex** prior to running any of the programs in the data book. You should only need to run these programs one time. If age and/or sex can be entered for any records missing this information, then enter this missing information and run **Rerun_AgeRange2564** (or **Rerun_AgeRange1564**) followed by **MissingAgeSex**.
- ALL questions that report results by age and/or sex use the variables **AgeRange**, **Sex**, and **Valid**. These variables are created in the above AgeRange and MissingAgeSex programs using the variables **C1**, **C2**, and **C3**.
- ALL weighted programs use the variables **PSU, Stratum,** and one of either **WStep1, WStep2,** or **WStep3**.
- Unweighted tables will not have confidence intervals associated with them.

Sampling and Response Proportions

Response proportions

Description: Summary results for overall response proportions.

Response proportions									
Age Group (years)	Men			Women			Both Sexes		
	Eligible	Responded		Eligible	Responded		Eligible	Responded	
	n	n	%	n	n	%	n	n	%
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: interview tracking form
- Epi Info program name: ResponseOverall (unweighted)

Step 3 response proportions

Description: Summary results for the response proportions for Step 3 for countries that have done Step 3 with a sub-set of the sample.

Response proportions for Step 3									
Age Group (years)	Men			Women			Both Sexes		
	Eligible	Responded		Eligible	Responded		Eligible	Responded	
	n	n	%	n	n	%	n	n	%
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: interview tracking form (if applicable)
- Epi Info program name: ResponseStep3 (unweighted)

Demographic Information Results

Age group by sex

Description: Summary information by age group and sex of the respondents.

Instrument question:

- Sex
- What is your date of birth?

Age group and sex of respondents						
Age Group (years)	Men		Women		Both Sexes	
	n	%	n	%	n	%
25-34						
35-44						
45-54						
55-64						
25-64						

Analysis Information:

- Questions used: C1, C2
- Epi Info program name: Cagesex (unweighted)

Education

Description: Mean number of years of education among respondents.

Instrument question:

- In total, how many years have you spent at school or in full-time study (excluding pre-school)?

Mean number of years of education						
Age Group (years)	Men		Women		Both Sexes	
	n	Mean	n	Mean	n	Mean
25-34						
35-44						
45-54						
55-64						
25-64						

Analysis Information:

- Questions used: C4
- Epi Info program name: Ceduyears (unweighted)

Highest level of education

Description: Highest level of education achieved by the survey respondents.

Instrument question:

- What is the highest level of education you have completed?

Highest level of education								
	Men							
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
25-34								
35-44								
45-54								
55-64								
25-64								

Highest level of education								
	Women							
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
25-34								
35-44								
45-54								
55-64								
25-64								

Highest level of education								
	Both Sexes							
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
25-34								
35-44								
45-54								
55-64								
25-64								

Analysis Information:

- Questions used: C5
- Epi Info program name: Ceduhigh (unweighted)

Ethnicity Description: Summary results for the ethnicity of the respondents.

Instrument Question:

- What is your [insert relevant ethnic group/racial group/cultural subgroup/others] background?

Ethnic group of respondents					
Age Group (years)	Both Sexes				
	n	% Ethnic group 1	% Ethnic group 2	% Ethnic group 3	% Other ethnic group
25-34					
35-44					
45-54					
55-64					
25-64					

Analysis Information:

- Questions used: C6
- Epi Info program name: Cethnic (unweighted)

Martial status

Description: Marital status of survey respondents.

Instrument question:

- What is your marital status?

Marital status							
	Men						
Age Group (years)	n	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
25-34							
35-44							
45-54							
55-64							
25-64							

Marital status							
	Women						
Age Group (years)	n	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
25-34							
35-44							
45-54							
55-64							
25-64							

Marital status							
	Both Sexes						
Age Group (years)	n	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: C7
- Epi Info program name: Cmaritalstatus (unweighted)

Employment status

Description: Proportion of respondents in paid employment and those who are unpaid. Unpaid includes persons who are non-paid, students, homemakers, retired, and unemployed.

Instrument question:

- Which of the following best describes your main work status over the past 12 months?

Employment status					
	Men				
Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
25-34					
35-44					
45-54					
55-64					
25-64					

Employment status					
	Women				
Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
25-34					
35-44					
45-54					
55-64					
25-64					

Employment status					
	Both Sexes				
Age Group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
25-34					
35-44					
45-54					
55-64					
25-64					

Analysis Information:

- Questions used: C8
- Epi Info program name: Cworkpaid (unweighted)

Unpaid work and unemployed

Description: Proportion of respondents in unpaid work.

Instrument question:

- Which of the following best describes your main work status over the past 12 months?

Unpaid work and unemployed							
	Men						
Age Group (years)	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34							
35-44							
45-54							
55-64							
25-64							

Unpaid work and unemployed							
	Women						
Age Group (years)	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34							
35-44							
45-54							
55-64							
25-64							

Unpaid work and unemployed							
	Both Sexes						
Age Group (years)	n	% Non-paid	% Student	% Home-maker	% Retired	Unemployed	
						% Able to work	% Not able to work
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: C8
- Epi Info program name: Cworknotpaid (unweighted)

Per capita annual income

Description: Mean reported per capita annual income of respondents in local currency.

Instrument question:

- How many people older than 18 years, including yourself, live in your household?
- Taking the past year, can you tell me what the average earning of the household has been?

Mean annual per capita income	
n	Mean

Analysis Information:

- Questions used: C9, C10a-d
- Epi Info program name: Cmeanincome (unweighted)

Estimated household earnings

Description: summary of participant household earnings by quintile.

Instrument question:

- If you don't know the amount, can you give an estimate of the annual household income if I read some options to you?

Estimated household earnings					
n	% Quintile 1: Under $.....	% Quintile 2: $.....-$.....	% Quintile 3: $.....-$.....	% Quintile 4: $.....-$.....	% Quintile 5: Over $.....

Analysis Information:

- Questions used: C11
- Epi Info program name: Cquintile (unweighted)

Tobacco Use

Current smoking

Description: Current smokers among all respondents.

Instrument questions:

- Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes?

Percentage of current smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	% Current smoker	95% CI	n	% Current smoker	95% CI	n	% Current smoker	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T1
- Epi Info program name: Tsmokestatus (unweighted); TsmokestatusWT (weighted)

Smoking Status

Description: Smoking status of all respondents.

Instrument questions:

- Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes?
- Do you currently smoke tobacco products daily?

Smoking status							
	Men						
Age Group (years)	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34							
35-44							
45-54							
55-64							
25-64							

Smoking status							
	Women						
Age Group (years)	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34							
35-44							
45-54							
55-64							
25-64							

Smoking status							
	Both Sexes						
Age Group (years)	n	Current smoker				% Does not smoke	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: T1, T2
- Epi Info program name: Tsmokestatus (unweighted); TsmokestatusWT (weighted)

Frequency of smoking

Description: Percentage of current daily smokers among smokers.

Instrument question:

- Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes?
- Do you currently smoke tobacco products daily?

Current daily smokers among smokers									
Age Group (years)	Men			Women			Both Sexes		
	n	% Daily smokers	95% CI	n	% Daily smokers	95% CI	n	% Daily smokers	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T1, T2
- Epi Info program name: Tsmokefreq (unweighted); TsmokefreqWT (weighted)

Initiation of smoking

Description: Mean age of initiation and mean duration of smoking, in years, among daily smokers (no total age group for mean duration of smoking as age influences these values).

Instrument questions:

- How old were you when you first started smoking daily?
- Do you remember how long ago it was?

Mean age started smoking									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean age	95% CI	n	Mean age	95% CI	n	Mean age	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Mean duration of smoking									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean duration	95% CI	n	Mean duration	95% CI	n	Mean duration	95% CI
25-34									
35-44									
45-54									
55-64									

Analysis Information:

- Questions used: T1, T2, T3, T4a-c
- Epi Info program name: Tsmokeagetime (unweighted); TsmokeagetimeWT (weighted)

Manufactured cigarette smokers

Description: Percentage of smokers who use manufactured cigarettes among daily smokers.

Instrument question:

- On average, how many of the following do you smoke each day?

Manufactured cigarette smokers among daily smokers									
	Men			Women			Both Sexes		
Age Group (years)	n	% Manu-factured cigarette smoker	95% CI	n	% Manu-factured cigarette smoker	95% CI	n	% Manu-factured cigarette smoker	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T1, T2, T5a
- Epi Info program name: Tsmokeman (unweighted); TsmokemanWT (weighted)

Amount of tobacco used among smokers by type

Description: Mean amount of tobacco used by daily smokers per day, by type.

Instrument question:

- On average, how many of the following do you smoke each day?

Mean amount of tobacco used by daily smokers by type											
	Men										
Age Group (years)	n	Mean # of manu-factured cig.	95% CI	n	Mean #of hand-rolled cig.	95% CI	n	Mean # of pipes of tobacco	95% CI	n	Mean # of other type of tobacco	95% CI
25-34												
35-44												
45-54												
55-64												
25-64												

Mean amount of tobacco used by daily smokers by type											
	Women										
Age Group (years)	n	Mean # of manu-factured cig.	95% CI	n	Mean #of hand-rolled cig.	95% CI	n	Mean # of pipes of tobacco	95% CI	n	Mean # of other type of tobacco	95% CI
25-34												
35-44												
45-54												
55-64												
25-64												

Mean amount of tobacco used by daily smokers by type											
	Both Sexes										
Age Group (years)	n	Mean # of manu-factured cig.	95% CI	n	Mean #of hand-rolled cig.	95% CI	n	Mean # of pipes of tobacco	95% CI	n	Mean # of other type of tobacco	95% CI
25-34												
35-44												
45-54												
55-64												
25-64												

Analysis Information:

- Questions used: T1, T2, T5a-other
- Epi Info program name: Tsmoketype (unweighted); TsmoketypeWT (weighted)

Percentage of ex daily smokers in the population

Description: Percentage of ex-daily smokers among all respondents and the mean duration, in years, since ex-daily smokers quit smoking daily.

Instrument question:

- In the past did you ever smoke daily?
- How old were you when you stopped smoking daily?

Ex-daily smokers among all respondents									
Age Group (years)	Men			Women			Both Sexes		
	n	% ex daily smokers	95% CI	n	% ex daily smokers	95% CI	n	% ex daily smokers	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Mean years since cessation									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean years	95% CI	n	Mean years	95% CI	n	Mean years	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T2, T6, T7, T8a-c
- Epi Info program name: Tsmokeexdaily (unweighted); TsmokeexdailyWT (weighted)

Current Users of smokeless tobacco

Description: Percentage of current users of smokeless tobacco among all respondents.

Instrument question:

- Do you currently use any smokeless tobacco such as [snuff, chewing tobacco, betel]?

Current users of smokeless tobacco									
Age Group (years)	Men			Women			Both Sexes		
	n	% Current users	95% CI	n	% Current users	95% CI	n	% Current users	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T9, T10
- Epi Info program name: Tsmokelessstatus (unweighted); TsmokelessstatusWT (weighted)

Smokeless tobacco use

Description: Status of using smokeless tobacco among all respondents.

Instrument questions:

- Do you currently use any smokeless tobacco such as [snuff, chewing tobacco, betel]?
- Do you currently use smokeless tobacco products daily?

Smokeless tobacco use							
	Men						
Age Group (years)	n	Current user				% Does not use smokeless tobacco	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34							
35-44							
45-54							
55-64							
25-64							

Smokeless tobacco use							
	Women						
Age Group (years)	n	Current user				% Does not use smokeless tobacco	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34							
35-44							
45-54							
55-64							
25-64							

Smokeless tobacco use							
	Both Sexes						
Age Group (years)	n	Current user				% Does not use smokeless tobacco	95% CI
		% Daily	95% CI	% Non-daily	95% CI		
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: T9, T10
- Epi Info program name: Tsmokelessstatus (unweighted); TsmokelessstatusWT (weighted)

Percentage of ex daily users of smokeless tobacco in the population

Description: Percentage of ex-daily users of smokeless tobacco among all respondents.

Instrument question:

- In the past, did you ever use smokeless tobacco such as [snuff, chewing tobacco, betel] daily?

Ex-daily smokeless tobacco users									
Age Group (years)	Men			Women			Both Sexes		
	n	% Ex daily users	95% CI	n	% Ex daily users	95% CI	n	% Ex daily users	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T9, T10, T12
- Epi Info program name: Tsmokelessexdaily (unweighted); TsmokelessexdailyWT (weighted)

Frequency of smokeless tobacco use among users by type

Description: Mean times per day smokeless tobacco used by smokeless tobacco users per day, by type.

Instrument question:

- On average, how many times a day do you use…?

Mean times per day smokeless tobacco used by daily smokeless tobacco users by type												
Age Group (years)	Men											
	n	Snuff by mouth	95% CI	n	Snuff by nose	95% CI	n	Chewing tobacco	95% CI	n	Betel, quid	95% CI
25-34												
35-44												
45-54												
55-64												
25-64												

Mean times per day smokeless tobacco used by daily smokeless tobacco users by type												
Age Group (years)	Women											
	n	Snuff by mouth	95% CI	n	Snuff by nose	95% CI	n	Chewing tobacco	95% CI	n	Betel, quid	95% CI
25-34												
35-44												
45-54												
55-64												
25-64												

Mean times per day smokeless tobacco used by daily smokeless tobacco users by type												
Age Group (years)	Both Sexes											
	n	Snuff by mouth	95% CI	n	Snuff by nose	95% CI	n	Chewing tobacco	95% CI	n	Betel, quid	95% CI
25-34												
35-44												
45-54												
55-64												
25-64												

Analysis Information:

- Questions used: T9, T10, T11a-other
- Epi Info program name: Tsmokelesstype (unweighted); TsmokelesstypeWT (weighted)

Current tobacco users

Description: Percentage of daily and current (daily plus non-daily) tobacco users, includes smoking and smokeless, among all respondents.

Instrument questions:

- Do you currently smoke tobacco products daily?
- Do you currently use smokeless tobacco products daily?

Daily tobacco users									
Age Group (years)	Men			Women			Both Sexes		
	n	% Daily users	95% CI	n	% Daily users	95% CI	n	% Daily users	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Current tobacco users									
Age Group (years)	Men			Women			Both Sexes		
	n	% Current users	95% CI	n	% Current users	95% CI	n	% Current users	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T1, T2, T9, T10
- Epi Info program name: Tdailyuser (unweighted); TdailyuserWT (weighted)

Exposure to ETS in home in past 7 days

Description: Percentage of respondents exposed to environmental tobacco smoke in the home on one or more days in the past 7 days.

Instrument question:

- In the past 7 days, how many days did someone in the house smoke when you were present?

Exposed to ETS in home on 1 or more of the past 7 days									
Age Group (years)	Men			Women			Both Sexes		
	n	% Exposed	95% CI	n	% Exposed	95% CI	n	% Exposed	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T13
- Epi Info program name: Tetshome (unweighted); TetshomeWT (weighted)

Exposure to ETS in the workplace in past 7 days

Description: Percentage of respondents exposed to environmental tobacco smoke in the workplace on one or more days in the past 7 days.

Instrument question:

- In the past 7 days, how many days did someone smoke in closed areas in your workplace (in the building, in a work area or a specific office) when you were present?

Exposed to ETS in the workplace on 1 or more of the past 7 days									
Age Group (years)	Men			Women			Both Sexes		
	n	% Exposed	95% CI	n	% Exposed	95% CI	n	% Exposed	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: T14
- Epi Info program name: Tetswork (unweighted); TetsworkWT (weighted)

Alcohol Consumption

Alcohol consumption status

Description: Alcohol consumption status of all respondents.

Instrument questions:

- Have you ever consumed an alcoholic drink such as …?
- Have you consumed an alcoholic drink in the past 12 months?
- Have you consumed an alcoholic drink in the past 30 days?

Alcohol consumption status									
	Men								
Age Group (years)	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
25-34									
35-44									
45-54									
55-64									
25-64									

Alcohol consumption status									
	Women								
Age Group (years)	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
25-34									
35-44									
45-54									
55-64									
25-64									

Alcohol consumption status									
	Both Sexes								
Age Group (years)	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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: A1a, A1b, A3
- Epi Info program name: Aconsumption (unweighted); AconsumptionWT (weighted)

Frequency of alcohol consumption

Description: Frequency of alcohol consumption in the past 12 months among those respondents who have drank in the last 12 months.

Instrument question:

- During the past 12 months, how frequently have you had at least one alcoholic drink?

Frequency of alcohol consumption in the past 12 months											
	Men										
Age Group (years)	n	% Daily	95% CI	% 5-6 days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
25-34											
35-44											
45-54											
55-64											
25-64											

Frequency of alcohol consumption in the past 12 months											
	Women										
Age Group (years)	n	% Daily	95% CI	% 5-6 days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
25-34											
35-44											
45-54											
55-64											
25-64											

Frequency of alcohol consumption in the past 12 months											
	Both Sexes										
Age Group (years)	n	% Daily	95% CI	% 5-6 days p. week	95% CI	% 1-4 days p. week	95% CI	% 1-3 days p. month	95% CI	% < once a month	95% CI
25-34											
35-44											
45-54											
55-64											
25-64											

Analysis Information:

- Questions used: A1a, Alb, A2
- Epi Info program name: Afrequency (unweighted); AfrequencyWT (weighted)

Drinking occasions in the past 30 days

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

Instrument question:

- During the past 30 days, on how many occasions did you have at least one alcoholic drink?

Mean number of drinking occasions 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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: A1a. A1b, A3, A4
- Epi Info program name: Aoccasions (unweighted); AoccasionsWT (weighted)

Standard drinks per drinking day

Description: Mean number of standard drinks consumed on a drinking occasion among current (past 30 days) drinker.

Instrument question:

- During the past 30 days, when you drank alcohol, on average, how many standard alcoholic drinks did you have during one occasion?

Mean number of standard drinks per 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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: A1a, A1b, A3, A5
- Epi Info program name: Anumdrinkperday (unweighted); AnumdrinkperdayWT (weighted)

Average volume drinking categories among all respondents

Description: Percentage of respondents engaging in category II and category III drinking.
Category III is defined as drinking ≥60g of pure alcohol on average per day for men and ≥40 g for women.
Category II is defined as drinking 40-59.9g of pure alcohol on average per day for men and 20-39.9g for women.
A standard drink contains approximately 10g of pure alcohol.

Instrument questions:

- During the past 30 days, on how many occasions did you have at least one alcoholic drink?
- During the past 30 days, when you drank alcohol, on average, how many standard alcoholic drinks did you have during one occasion?

Category III drinking among all respondents									
Age Group (years)	Men			Women			Both Sexes		
	n	% Category III	95% CI	n	% Category III	95% CI	n	% Category III	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Category II drinking among all respondents									
Age Group (years)	Men			Women			Both Sexes		
	n	% Category II	95% CI	n	% Category II	95% CI	n	% Category II	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: A1a, A1b, A3, A4, A5
- Epi Info program name: Acategories (unweighted); AcategoriesWT (weighted)

Average volume drinking categories among current (past 30 days) drinkers

Description: Percentage of current (last 30 days) drinker engaging in category I, category II and category III drinking.
Category III is defined as drinking ≥60g of pure alcohol on average per day for men and ≥40 g for women.
Category II is defined as drinking 40-59.9g of pure alcohol on average per day for men and 20-39.9g for women.
Category I is defined as drinking <40g of pure alcohol on average per day for men and <20 for women.
A standard drink contains approximately 10g of pure alcohol.

Instrument questions:

- During the past 30 days, on how many occasions did you have at least one alcoholic drink?
- During the past 30 days, when you drank alcohol, on average, how many standard alcoholic drinks did you have during one occasion?

Category I, II and III drinking among current (past 30 days) drinkers							
	Men						
Age Group (years)	n	% Category III	95% CI	% Category II	95% CI	% Category I	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Category I, II and III drinking among current (past 30 days) drinkers							
	Women						
Age Group (years)	n	% Category III	95% CI	% Category II	95% CI	% Category I	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: A1a, A1b, A3, A4, A5
- Epi Info program name: Acategories (unweighted); AcategoriesWT (weighted)

Largest number of drinks in the past 30 days

Description: Largest number of drinks consumed during a single occasion in the past 30 days among current (past 30 days) drinker).

Instrument question:

- During the past 30 days what was the largest number of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together?

Mean maximum number of drinks consumed on one occasion in the past 30 days									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: A1a, A1b, A3, A6
- Epi Info program name: Alargestnum (unweighted); AlargestnumWT (weighted)

Five/four or more drinks on a single occasion

Description: Percentage of men who had five or more/women who had four or more drinks on any day in the past 30 days during a single occasion among the total population.

Instrument question:

- During the past 30 days, how many times did you have
for men: **five or more**
for women: **four or more**
standard alcoholic drinks in a single drinking occasion?

Five/four or more drinks on a single occasion at least once during the past 30 days among total population						
Age Group (years)	Men			Women		
	n	% ≥ 5 drinks	95% CI	n	% ≥ 4drinks	95% CI
25-34						
35-44						
45-54						
55-64						
25-64						

Analysis Information:

- Questions used: A1a, A1b, A3, A7
- Epi Info program name: Aepisodicmen and Aepisodicwomen (unweighted); AepisodicmenWT and AepisodicwomenWT (weighted)

Five/four or more drinks on a single occasion

Description: Mean number of times in the past 30 days on which current (past 30 days) drinker drank five (for men)/four (for women) or more drinks during a single occasion among current (past 30 days) drinkers.

Instrument question:

- During the past 30 days, how many times did you have
for men: **five or more**
for women: **four or more**
standard alcoholic drinks in a single drinking occasion?

Mean number of times with five/four or more drinks during a single occasion in the past 30 days among current drinkers						
Age Group (years)	Men			Women		
	n	Mean number of times	95% CI	n	Mean number of times	95% CI
25-34						
35-44						
45-54						
55-64						
25-64						

Analysis Information:

- Questions used: A1a, A1b, A3, A7
- Epi Info program name: Aepisodicmen and Aepisodicwomen (unweighted); AepisodicmenWT and AepisodicwomenWT (weighted)

Drinking with meals

Description: Percentage of current (past 30 days) drinkers who usually, sometimes, rarely or never drink with meals.

Instrument questions:

- During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks.

Drinking with meals among current drinker									
Age Group (years)	Men								
	n	% Usually with meals	95% CI	% Sometimes with meals	95% CI	% Rarely with meals	95% CI	% Never with meals	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Drinking with meals among current drinker									
Age Group (years)	Men								
	n	% Usually with meals	95% CI	% Sometimes with meals	95% CI	% Rarely with meals	95% CI	% Never with meals	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Drinking with meals among current drinker									
Age Group (years)	Men								
	n	% Usually with meals	95% CI	% Sometimes with meals	95% CI	% Rarely with meals	95% CI	% Never with meals	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: A1a, A1b, A3, A8
- Epi Info program name: Ameals (unweighted); AmealsWT (weighted)

Past 7 days drinking

Description: Frequency and quantity of drinks consumed in the past 7 days by current (past 30 days) drinkers, grouped into three categories.

Instrument question:

- During each of the past 7 days, how many standard drinks of any alcoholic drink did you have each day?

Frequency and quantity of drinks consumed in the past 7 days							
	Men						
Age Group (years)	n	% Drank on 4+ days	95% CI	% 5+ drinks on any day	95% CI	% 20+ drinks in 7 days	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Frequency and quantity of drinks consumed in the past 7 days							
	Women						
Age Group (years)	n	% Drank on 4+ days	95% CI	% 4+ drinks on any day	95% CI	% 15+ drinks in 7 days	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Frequency and quantity of drinks consumed in the past 7 days			
	Both Sexes		
Age Group (years)	n	% Drank on 4+ days	95% CI
25-34			
35-44			
45-54			
55-64			
25-64			

Analysis Information:

- Questions used: A1a, A1b, A3, A9a-g
- Epi Info program name: Aheavydrinking (unweighted); AheavydrinkingWT (weighted)

Fruit and Vegetable Consumption

Mean number of days of fruit and vegetable consumption

Description: mean number of days fruit and vegetables consumed.

Instrument questions:

- In a typical week, on how many days do you eat fruit?
- In a typical week, on how many days do you eat vegetables?

Mean number of days fruit consumed in a typical week									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Mean number of days vegetables consumed in a typical week									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: D1, D3
- Epi Info program name: Ddays (unweighted); DdaysWT (weighted)

Mean number of servings of fruit and vegetable consumption

Description: mean number of fruit, vegetable, and combined fruit and vegetable servings on average per day.

Instrument questions:

- In a typical week, on how many days do you eat fruit?
- How many servings of fruit do you eat on one of those days?
- In a typical week, on how many days do you eat vegetables?
- How many servings of vegetables do you eat on one of those days?

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: D1, D2 , D3, D4
- Epi Info program name: Dservings (unweighted); DservingsWT (weighted)

Fruit and vegetable consumption per day

Description: Frequency of fruit and/or vegetable consumption.

Instrument questions:

- In a typical week, on how many days do you eat fruit?
- How many servings of fruit do you eat on one of those days?
- In a typical week, on how many days do you eat vegetables?
- How many servings of vegetables do you eat on one of those days?

Number of servings of fruit and/or vegetables on average per day									
	Men								
Age Group (years)	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Number of servings of fruit and/or vegetables on average per day									
	Women								
Age Group (years)	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Number of servings of fruit and/or vegetables on average per day									
	Both Sexes								
Age Group (years)	n	% no fruit and/or vegetables	95% CI	% 1-2 servings	95% CI	% 3-4 servings	95% CI	% ≥5 servings	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: D1, D2 , D3, D4
- Epi Info program name: Dfiveormore (unweighted); DfiveormoreWT (weighted)

Fruit and vegetable consumption per day

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

Instrument questions:

- In a typical week, on how many days do you eat fruit?
- How many servings of fruit do you eat on one of those days?
- In a typical week, on how many days do you eat vegetables?
- How many servings of vegetables do you eat on one of those days?

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: D1, D2 , D3, D4
- Epi Info program name: Dfiveormore (unweighted); DfiveormoreWT (weighted)

Type of oil used most frequently

Description: 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).

Instrument question:

- What type of oil or fat is most often used for meal preparation in your household?

Type of oil or fat most often used for meal preparation in household								
n (house -holds)	% Vegetable oil	95% CI	% Lard	95% CI	% Butter	95% CI	% Margarine	95% CI

Type of oil or fat most often used for meal preparation in household						
n (house -holds)	% none in particular	95% CI	% None used	95% CI	% Other	95% CI

Analysis Information:

- Questions used: D5
- Epi Info program name: Doil (unweighted); DoilWT (weighted)

Eating outside home

Description: Mean number of meals per week eaten outside a home.

Instrument question:

- 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.

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: D6
- Epi Info program name: Dmealsout (unweighted); DmealsoutWT (weighted)

Physical Activity

Introduction

A population's physical activity (or inactivity) can be described in different ways. The two most common ways are
(1) to estimate a population's mean or median physical activity using a continuous indicator such as MET-minutes per week or time spent in physical activity, and
(2) to classify a certain percentage of a population as 'inactive' by setting up a cut-point for a specific amount of physical activity.

When analyzing GPAQ data, both continuous as well as categorical indicators are used.

Metabolic Equivalent (MET)

METs (Metabolic Equivalents) are commonly used to express the intensity of physical activities, and are also used for the analysis of GPAQ data.

Applying MET values to activity levels allows us to calculate total physical activity. 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. 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.

Therefore, for the calculation of a person's total physical activity using GPAQ data, the following MET values are used:

Domain	MET value
Work	• Moderate MET value = 4.0 • Vigorous MET value = 8.0
Transport	Cycling and walking MET value = 4.0
Recreation	• Moderate MET value = 4.0 • Vigorous MET value = 8.0

Categorical indicator

For the calculation of a categorical indicator, the total time spent in physical activity during a typical week, the number of days as well as the intensity of the physical activity are taken into account.
The three levels of physical activity suggested for classifying populations are low, moderate, and high. The criteria for these levels are shown below.

- **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.

Levels of total physical activity

Description: Percentage of respondents classified into three categories of total physical activity.

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

Level of total physical activity							
Age Group (years)	Men						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Level of total physical activity							
Age Group (years)	Women						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Level of total physical activity							
Age Group (years)	Both Sexes						
	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: P1-P15b
- Epi Info program name: Ptotallevels (unweighted); PtotallevelsWT (weighted)

Total physical activity-mean

Description: Mean minutes of total physical activity on average per day.

Instrument questions

- activity at work
- travel to and from places
- recreational activities

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: P1-P15b
- Epi Info program name: Ptotal (unweighted); PtotalWT (weighted)

Total physical activity-median

Description: Median minutes of total physical activity on average per day.

Instrument questions

- activity at work
- travel to and from places
- recreational activities

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)
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: P1-P15b
- Epi Info program name: Ptotal (unweighted); PtotalmedianWT (weighted)

Domain-specific physical activity-mean

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

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

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**
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: P1-P15b
- Epi Info program name: Psetspecific (unweighted); PsetspecificWT (weighted)

Domain-specific physical activity - median

Description: Median minutes spent on average per day in work-, transport- and recreation-related physical activity.

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

Median minutes of work-related 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)
25-34									
35-44									
45-54									
55-64									
25-64									

Median minutes of transport-related 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)
25-34									
35-44									
45-54									
55-64									
25-64									

Median minutes of recreation-related 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)
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: P1-P15b
- Epi Info program name: Psetspecific (unweighted); PsetspecificmedianWT (weighted)

No physical activity by domain

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

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: P1-P15b
- Epi Info program name: Pnoactivitybyset (unweighted); PnoactivitybysetWT (weighted)

Composition of total physical activity

Description: Percentage of work, transport and recreational activity contributing to total activity.

Instrument questions:

- activity at work
- travel to and from places
- recreational activities

Composition of total physical activity							
	Men						
Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Composition of total physical activity							
	Women						
Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Composition of total physical activity							
	Both Sexes						
Age Group (years)	n	% Activity from work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: P1-P15b
- Epi Info program name: Pcomposition(unweighted); PcompositionWT (weighted)

No vigorous physical activity

Description: Percentage of respondents not engaging in vigorous physical activity.

Instrument questions:

- activity at work
- recreational activities

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: P1-P15b
- Epi Info program name: Pnovigorous(unweighted); PnovigorousWT (weighted)

Sedentary Description: Minutes spent in sedentary activities on a typical day.

Instrument question:

- sedentary behaviour

Minutes spent in sedentary activities on average per day					
	Men				
Age Group (years)	n	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25-P75)
25-34					
35-44					
45-54					
55-64					
25-64					

Minutes spent in sedentary activities on average per day					
	Women				
Age Group (years)	n	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25-P75)
25-34					
35-44					
45-54					
55-64					
25-64					

Minutes spent in sedentary activities on average per day					
	Both Sexes				
Age Group (years)	n	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25-P75)
25-34					
35-44					
45-54					
55-64					
25-64					

Analysis Information:

- Question used : P16a-b
- Epi Info program name: Psedentary (unweighted);
  - PsedentaryWT (weighted)
  - PsedentarymedianWT (weighted)

Blood Pressure and Diabetes History

Blood pressure measurement and diagnosis

Description: Blood pressure measurement and diagnosis among all respondents.

Instrument questions:

- Have you ever had your blood pressure measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?
- Have you been told in the past 12 months?

Blood pressure measurement and diagnosis									
	Men								
Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Blood pressure measurement and diagnosis									
	Women								
Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Blood pressure measurement and diagnosis									
	Both sexes								
Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Question used: H1, H2a, H2b
- Epi Info program name: Hbloodpressure (unweighted); HbloodpressureWT (weighted)

Blood pressure treatment among those diagnosed

Description: raised blood pressure treatment results among those previously diagnosed with raised blood pressure.

Instrument questions:

- Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?
- Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?
- Drugs (medication) that you have taken in the last 2 weeks?

Currently taking blood pressure drugs prescribed by doctor or health worker among those diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	% taking meds	95% CI	n	% taking meds	95% CI	n	% taking meds	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: H1, H2a, H3a
- Epi Info program name: Hraisedbpadvice (unweighted); HraisedbpadviceWT (weighted)

Blood pressure lifestyle advice

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

Instrument questions:

- When was your blood pressure last measured by a health professional?
- Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?
- Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?

Advised by doctor or health worker to reduce salt intake among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Advised by doctor or health worker to lose weight among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Advised by doctor or health worker to stop smoking among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Advised by doctor or health worker to start or do more exercise among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: H1, H2a, H3(b-e)
- Epi Info program name: Hraisedbplifestyle (unweighted); HraisedbplifestyleWT (weighted)

Blood pressure advice by a traditional healer

Description: Percentage of respondents who have sought advice or received treatment from traditional healers for raised blood pressure among those previously diagnosed with raised blood pressure.

Instrument questions:

- When was your blood pressure last measured by a health professional?
- Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?
- Have you ever seen a traditional healer for raised blood pressure?
- Are you currently taking any herbal or traditional remedy for your high blood pressure?

Seen a traditional healer among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Currently taking herbal or traditional remedy for high blood pressure among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: H1, H2a, H4, H5
- Epi Info program name: Hraisedbptrad (unweighted); HraisedbptradWT (weighted)

Diabetes measurement and diagnosis

Description: Diabetes measurement and diagnosis among all respondents.

Instrument questions:

- Have you ever had your blood sugar measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?
- Have you been told in the past 12 months?

Blood sugar measurement and diagnosis									
	Men								
Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Blood sugar measurement and diagnosis									
	Women								
Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Blood sugar measurement and diagnosis									
	Both sexes								
Age Group (years)	n	% Never measured	95% CI	% measured, not diagnosed	95% CI	% diagnosed, but not within past 12 months	95% CI	% diagnosed within past 12 months	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Question used: H6, H7a, H7b
- Epi Info program name: Hdiabetes (unweighted); HdiabetesWT (weighted)

Diabetes treatment among those diagnosed

Description: Diabetes treatment results among those previously diagnosed with raised blood sugar or diabetes.

Instrument questions:

- Have you ever had your blood sugar measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?
- Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?

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
25-34									
35-44									
45-54									
55-64									
25-64									

Currently taking oral drugs 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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: H6, H7a, H8a, H8b
- Epi Info program name: Hdiabetes (unweighted); HdiabetesWT (weighted)

Diabetes lifestyle advice

Description: Percentage of respondents who received diabetes lifestyle advice from a doctor or health worker among those previously diagnosed with diabetes.

Instrument questions:

- Have you ever had your blood sugar measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?
- Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?

Advised by doctor or health worker to have special prescribed diet among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Advised by doctor or health worker to lose weight among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Advised by doctor or health worker to stop smoking among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Advised by doctor or health worker to start or do more exercise among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: H6, H7a, H8c-f
- Epi Info program name: Hdiabeteslifestyle (unweighted); HdiabeteslifestyleWT (weighted)

Diabetes advice by traditional healer

Description: Percentage of respondents who are have sought advice or treatment from traditional healers for diabetes among those previously diagnosed.

Instrument questions:

- Have you ever had your blood sugar measured by a doctor or other health worker?
- Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?
- Have you ever seen a traditional healer for diabetes or raised blood sugar?
- Are you currently taking any herbal or traditional remedy for your diabetes?

Seen a traditional healer for diabetes among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Currently taking herbal or traditional treatment for diabetes among those previously diagnosed									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: H6, H7a, H9, H10
- Epi Info program name: Hdiabetestrad (unweighted); HdiabetestradWT (weighted)

Physical Measurements

Height, weight and BMI

Description: Mean height, weight, and body mass index among all respondents (excluding pregnant women for weight and BMI).

Instrument questions:

- Height
- Weight

Mean height (cm)							
Age Group (years)	Men			Women			
	n	Mean	95% CI		n	Mean	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Mean weight (kg)							
Age Group (years)	Men			Women			
	n	Mean	95% CI		n	Mean	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Mean BMI (kg/m^2)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: M3, M4, M5
- Epi Info program name: Mbmi (unweighted); MbmiWT (weighted)

BMI categories

Description: Percentage of respondents (excluding pregnant women) in each BMI category.

Instrument questions:

- Height
- Weight

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
25-34									
35-44									
45-54									
55-64									
25-64									

BMI classifications									
	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
25-34									
35-44									
45-54									
55-64									
25-64									

BMI classifications									
	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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: M3, M4, M5
- Epi Info program name: Mbmiclass (unweighted); MbmiclassWT (weighted)

BMI ≥25 Description: Percentage of respondents being classified as overweight (BMI≥25)

Instrument questions:

- Height
- Weight

BMI≥25									
Age Group (years)	Men			Women			Both Sexes		
	n	% BMI≥25	95% CI	n	% BMI≥25	95% CI	n	% BMI≥25	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: M3, M4, M5
- Epi Info program name: Mbmiclass (unweighted); MbmiclassWT (weighted)

Waist circumference

Description: Mean waist circumference among all respondents (excluding pregnant women).

Instrument question:

- Waist circumference measurement

Waist circumference (cm)							
Age Group (years)	Men				Women		
	n	Mean	95% CI		n	Mean	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: M5, M7
- Epi Info program name: Mwaist (unweighted); MwaistWT (weighted)

Hip circumference

Description: Mean hip circumference among all respondents (excluding pregnant women).

Instrument question:

- Hip circumference measurement

Hip circumference (cm)							
Age Group (years)	Men				Women		
	n	Mean	95% CI		n	Mean	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: M5, M15
- Epi Info program name: Mhip (unweighted); MhipWT (weighted)

Waist / hip ratio

Description: Mean waist-to-hip ratio among all respondents (excluding pregnant women).

Instrument question:

- Waist and hip circumference measurement

Mean waist / hip ratio							
Age Group (years)	Men				Women		
	n	Mean	95% CI		n	Mean	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: M5, M7, M15
- Epi Info program name: Mwaisthipratio (unweighted); MwaisthipratioWT (weighted)

Blood pressure

Description: Mean blood pressure among all respondents, including those currently on medication for raised blood pressure.

Instrument question:

- Reading 1-3 systolic and diastolic 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
25-34									
35-44									
45-54									
55-64									
25-64									

Mean diastolic blood pressure (mmHg)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: M11a, M11b, M12a, M12b, M13a, M13b
- Epi Info program name: Mbloodpressure (unweighted); MbloodpressureWT (weighted)

Raised blood pressure

Description: Percentage of respondents with raised blood pressure.

Instrument question:

- During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?
- Reading 1-3 systolic and diastolic 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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: M11a, M11b, M12a, M12b, M13a, M13b, M14
- Epi Info program name: Mraisedbp (unweighted); MraisedbpWT (weighted)

Treatment and control of raised blood pressure

Description: 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.

Instrument questions:

- During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?
- Reading 1-3 systolic and diastolic blood pressure

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/orDBP≥90	95% CI	% Not on medication and SBP≥140 and/orDBP≥90	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Respondents with treated and/or controlled raised blood pressure							
	Women						
Age Group (years)	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/orDBP≥90	95% CI	% Not on medication and SBP≥140 and/orDBP≥90	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Respondents with treated and/or controlled raised blood pressure							
	Both Sexes						
Age Group (years)	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP≥140 and/orDBP≥90	95% CI	% Not on medication and SBP≥140 and/orDBP≥90	95% CI
25-34							
35-44							
45-54							
55-64							
25-64							

Analysis Information:

- Questions used: M11a, M11b, M12a, M12b, M13a, M13b, M14
- Epi Info program name: Mraisedbp (unweighted); MraisedbpWT (weighted)

Mean heart rate

Description: Mean heart rate (beats per minute).

Instrument question:

- Reading 1-3 heart rate

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: M16a, M16b, M16c
- Epi Info program name: Mheartrate (unweighted); MheartrateWT (weighted)

Biochemical Measurements

Mean fasting blood glucose

Description: mean fasting blood glucose results including those currently on medication for diabetes (non-fasting recipients excluded).

Instrument questions:

- During the last 12 hours have you had anything to eat or drink, other than water?
- Blood glucose measurement

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: B1, B5
- Epi Info program name:
  - measurement in mmol/L: Bglucose (unweighted); BglucoseWT (weighted)
  - measurement in mg/dl: BglucoseMg (unweighted); BglucoseMgWT (weighted)

Raised blood glucose

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

Instrument questions:

- Are you currently receiving any of the following treatments for diabetes prescribed by a doctor or other health worker? Insulin? Oral drugs (medication) that you have taken in the last 2 weeks?
- During the last 12 hours have you had anything to eat or drink, other than water?
- Blood glucose measurement
- Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker?

Impaired Fasting Glycaemia*									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

Currently on medication for diabetes									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

* Impaired fasting glycaemia is defined as either

- plasma venous value: ≥6.1mmol/L (110mg/dl) and <7.0mmol/L (126mg/dl)
- capillary whole blood value: ≥5.6mmol/L (100mg/dl) and <6.1mmol/L (110mg/dl)

** Raised blood glucose is defined as either

- plasma venous value: ≥ 7.0 mmol/L (126 mg/dl)
- capillary whole blood value: ≥ 6.1 mmol/L (110 mg/dl)

Analysis Information:

- Questions used: H8a, H8b, B1, B5, B6

Epi Info program name:

- measurement in mmol/L: Bglucose (unweighted); BglucoseWT (weighted)
- measurement in mg/dl: BglucoseMg (unweighted); BglucoseMgWT (weighted)

Total cholesterol

Description: Mean total cholesterol among all respondents including those currently on medication for raised cholesterol.

Instrument questions:

- Total cholesterol measurement

Mean total cholesterol (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Mean total cholesterol (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: B8
- Epi Info program name:
  - measurement in mmol/L: Btotallipids (unweighted); BtotallipidsWT (weighted)
  - measurement in mg/dl: BtotallipidsMg (unweighted); BtotallipidsMgWT (weighted)

Raised total cholesterol

Description: Percentage of respondents with raised total cholesterol and percentage of respondents currently on medication for raised cholesterol.

Instrument questions:

- Total cholesterol measurement
- During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?

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
25-34									
35-44									
45-54									
55-64									
25-64									

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
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: B8, B9
- Epi Info program name:
  - measurement in mmol/L: Btotallipids (unweighted); BtotallipidsWT (weighted)
  - measurement in mg/dl: BtotallipidsMg (unweighted); BtotallipidsMgWT (weighted)

High density lipoprotein (HDL)

Description: Mean HDL among all respondents and percentage of respondents with low HDL.

Instrument question:

- HDL cholesterol measurement

Mean HDL (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Mean HDL (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Percentage of respondents with HDL <1.03mmol/L or <40 mg/dl			
Age Group (years)	Men		
	n	%	95% CI
25-34			
35-44			
45-54			
55-64			
25-64			

Percentage of respondents with HDL <1.29mmol/L or <50 mg/dl			
Age Group (years)	Women		
	n	%	95% CI
25-34			
35-44			
45-54			
55-64			
25-64			

Analysis Information:

- Questions used: B11
- Epi Info program name:
  - measurement in mmol/L: Bhdlipids (unweighted); BhdlipidsWT (weighted)
  - measurement in mg/dl: BhdlipidsMg (unweighted); BhdlipidsMgWT (weighted)

Triglycerides Description: Mean fasting triglycerides among all respondents and percentage of respondents with raised fasting triglycerides (non-fasting recipients excluded).

Instrument questions:

- During the last 12 hours have you had anything to eat or drink, other than water?
- Triglyceride measurement

Mean fasting triglycerides (mmol/L)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Mean fasting triglycerides (mg/dl)									
Age Group (years)	Men			Women			Both Sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Percentage of respondents with fasting triglycerides ≥ 1.7 mmol/L or ≥ 150 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Percentage of respondents with fasting triglycerides ≥ 2.0 mmol/L or ≥ 180 mg/dl									
Age Group (years)	Men			Women			Both Sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
25-34									
35-44									
45-54									
55-64									
25-64									

Analysis Information:

- Questions used: B1, B10
- Epi Info program name:
  - measurement in mmol/L: Btriglyceride (unweighted); BtriglycerideWT (weighted)
  - measurement in mg/dl: BtriglycerideMg (unweighted); BtriglycerideMgWT (weighted)

Summary of Combined Risk Factors

Summary of Combined Risk Factors

Description: Percentage of respondents with 0, 1-2, or 3-5 of the following risk factors:

- current daily smoker
- less than 5 servings of fruits & vegetables per day
- low level of activity (<600 MET -minutes)
- overweight or obese (BMI ≥ 25 kg/m^2)
- raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP).

Instrument questions: combined from Step 1 and Step 2

Summary of Combined Risk Factors							
	Men						
Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44							
45-64							
25-64							

Summary of Combined Risk Factors							
	Women						
Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44							
45-64							
25-64							

Summary of Combined Risk Factors							
	Both Sexes						
Age Group (years)	n	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
25-44							
45-64							
25-64							

Analysis Information:

- Questions used: T1, T2, D1-D4, P1-P15b, M3, M4, M5, M11a-M13b, M14
- Epi Info program name: Raisedrisk (unweighted); RaisedriskWT (weighted)

[Country] STEPS Report [year]

Cover and Content Pages

Introduction

The cover and content pages at the front of the site report provide the formal information needed for library indexing and purchasing, and give the reader an idea of the structure and content of the report.

Content guide

Follow the guidelines in the table below to help prepare the title page and other leading pages.

Part	Include
Title page	• title of the report • authors' names • institution(s) involved • release date
Publication details	• copyright details • publishing and indexing information • address to obtain further copies • citation of the report
Table of Contents	• part and/or section headings with page numbers • sub level headings • appendices • list of tables • list of figures
Other leading pages (optional)	• list of abbreviations or terms used • brief notes about the authors • preface or foreword from a leading authority who endorses the report
Acknowledgments	• all sponsors, including government and other bodies • consultants and advisers • staff who have contributed to the survey and the report • others providing services and/or support • participants in the survey

Executive Summary

Introduction

The executive summary provides an overview of the entire report in one to two pages. It should outline the rationale, methodology, key results and recommendations.

Content guide

Follow the guidelines in the table below to help complete the sections of the executive summary.

Heading	Guidelines for completion
Rationale	Outline the main reasons for the STEPS survey.
Methodology	Briefly describe: • the scope of the survey; • the sampling method used; • methods of data collection and data analysis; • how the results are presented, for example "weighted to represent the total national population aged 25 to 64 years".
Key results	• Briefly describe the study population and its characteristics. • Mention response-rates. • Select the most important variables (chosen according to those of most relevance to chronic diseases in your country) and present the key results for those variables. • Mention the other variables that are also included in the report, but limit results for them.
Conclusion / Recommendations	• Identify the reasons why the findings are important, and the impact they are likely to be having on the health of the population. • Briefly discuss how the results may be useful and recommended actions.

Introduction

Introduction

The introduction should include introductory comments to the report, outlining the background and purpose for your STEPS survey, and provide a brief description of STEPS and what the survey results will be used for.

Content guide

Follow the guidelines in the table below to help complete the sections of the introduction.

Heading	Guidelines for completion
Introduction	• Introduce the Site Report as the main report of your STEPS survey.
Background	• Provide the reader with background information on chronic diseases and their risk factors in your site/country. • Include previous surveys that have been done as well as gaps in knowledge with regards to chronic diseases and their risk factors. • Describe the relevance of each risk factor/item that will be captured by your STEPS survey.
Description of STEPS	• Provide a brief description of what STEPS is (i.e. surveillance of key risk factors for chronic disease).
Purpose	• Explain the general purpose as well as specific objectives of the STEPS survey in your site.

Methods

Introduction

The methods should explain the scope of the STEPS survey, the methods used for data collection, and the implementation process. Also describe the sample and analytical methods in sufficient detail to demonstrate that the survey results are reliable and represent the intended population(s).

Content guide

Follow the guidelines in the table below to help complete the methods section.

Heading	Guidelines for completion
Scope	• Identify which core Steps (1-3) were covered and if any expanded and optional items have been added.
Study population	• Explain who the results/findings will be representative for (Geographical coverage, age-groups, general population). • Mention inclusion/exclusion criteria (e.g., pregnant women excluded for height and weight measurements). • If the whole country was not covered, explain the reasons.
Sample size	• Explain how the initial sample size was calculated.
Sampling	• Describe the sampling method used for the survey • Mention what sampling frame was used. • Describe how the sampling units were derived, and how this was applied in the field. • Detail the use of clusters (if relevant).
Timeframes	• Include information on the overall starting and completion dates of the survey. • Specify dates/seasons of data collection.
Staff recruitment and training	• Describe the training programmes provided for the survey personnel, the number of persons trained, and the background of trainees. • Describe the format, content and duration of the training provided for the survey.
Pilot study	• Mention whether a pilot study was done before conducting the actual survey. • Explain how the pilot study has been conducted.

Continued on next page

Content guide (cont.)

Heading	Guidelines for completion
Instrument and data collection	• Describe the STEPS Instrument used. • Describe how the measurements (Step 2 and/or 3) were done. • Outline which core and expanded items were covered. • Describe any adaptations made to the standard STEPS Instrument and any optional items added. • Mention if/add pictures of show-cards that have been used. • Specify languages used (and translation issues) in the survey. • Describe the organization of data collection teams including supervision, numbers involved, quality control, timeframe for data collection, etc. • Explain how and where the data collection teams made contact with survey participants. Describe the data collection setting(s).
Data entry	• Describe the data entry processes, methods, timeframes and software used. • Mention how data entry was verified (double data entry).
Analysis information	• Describe the data analysis processes, methods (such as cleaning of data), timeframes and software used. Refer to the software capability to handle complex sampling design. • Explain that most results generated are presented as means or percentages, with associated standard errors and derived confidence intervals. • Describe which methods (i.e. weighting) were used to adjust the results for non-response, population structure and the sampling design so they represent the population. • Insert the weighting formulas used. • Describe which statistical tests were used, if any, to test for differences between groups.
Response proportions	• Describe how response proportions were calculated.

Results

Introduction

The results should describe the actual sample obtained and the levels of participation achieved. Describe the demographic characteristics of the participants, as well as the results for each risk factor covered in the Instrument.

Demographic and response information

Follow the guidelines in the table below to help prepare information on demographics and response proportions of the results section.

Heading	Guidelines for completion
Demographic characteristics	• Describe the demographic characteristics of the participants, using the data book for examples. • Include: – age-sex distribution – geographic distribution – ethnic groups.
Population distribution	• Show the age groups and sex distribution of the population at the last census if available, e. g., in a pyramid chart.
Response proportions	• Present the response proportions achieved for Step 1, 2, and 3 as appropriate, using the data book for examples.

Continued on next page

Risk factors

Present results for each of the following individual risk factors covered in the Instrument:

- tobacco use
- alcohol consumption
- low fruit and vegetable consumption
- physical inactivity
- overweight and obesity
- raised blood pressure
- raised blood glucose
- abnormal blood lipids.

Risk factor content guide

Follow the guidelines in the table below to help prepare content for each of the risk factors listed above.

Heading	Guidelines for completion
Text description of main findings	• State the main findings in relation to each risk factor. • Describe any key subgroup differences, e.g., based on confidence intervals. • Refer for detail to specific tables from the data book.
Tables and figures	• Present in tables, plots or graphs as appropriate the results, by age and sex groups. Use the data book as a guide on how to present information in tables. • Include sample sizes (n) for all age- and sex groups presented. • Label carefully to identify if the data are weighted. • Include measures of confidence when appropriate (confidence intervals or standard errors).
Additional description	• Describe in words any interesting results. • If these vary by age or sex, then consider presenting separately.

Continued on next page

Combined risk factors

Follow the guidelines in the table below to help prepare content on combined risk factors.

Heading	Guidelines for completion
Relevance of combining risk factors	• Briefly outline the relevance of looking at a combination of risk factors in your site. • See data book and fact sheet for the risk factors to combine.
Text description of main findings	• State the main findings in relation to both low risk (none of the risk factors present) and raised risk (presence of three or more of the selected risk factors). • Describe any key subgroup differences. Refer for detail to specific tables from the data book.
Tables	• Present in tables, plots or graphs as appropriate the results, by age and sex group. Use the data book as a guide on how to present information in tables. • Include sample sizes (n) for all age- and sex groups presented. • Label carefully to identify if the data are weighted. • Include measures of confidence when appropriate (confidence intervals or standard errors).
Additional description	• Describe in words any interesting results. • If these vary by age or sex, then consider presenting separately.

Discussion

Introduction

In this part of the STEPS report, any new knowledge derived from the STEPS survey as well as importance of the findings should be discussed. Discuss the strengths and weaknesses of the methods used and the results presented, and any reservations in their interpretation or use.

Content guide

Follow the guidelines in the table below to help prepare content of the discussion.

Heading	Guidelines for completion
Representation	• Comment on the extent to which the results apply to the whole population or only to the individuals who were surveyed (depends on if data are weighted).
Comment on participation	Discuss the impact on the interpretation of results of any sampling or participation issues such as: • the participation levels varied between population groups such as older vs. younger men; • recruiting did not proceed as planned and a non-random sample was selected.
Key results and new knowledge	Repeat key results, mention their importance and how they can be used for prevention planning and to formulate policy. Include, for example: • what was known before about these topics for this population? • what is added by this report? • what are the key new findings of importance and why are these important? • what impact will these have on the health of the population, in particular in respect to the burden of chronic noncommunicable diseases either currently or in the future?
Previous surveys	• Mention any previous STEPS surveys or similar surveys and how the findings relate.
Limitations and strengths	• Comment on the quality of the survey and measures, and therefore their reliability. • Identify where issues have arisen during data collection or analysis that may mean caution is needed when interpreting some results. • Also mention the strengths of the survey, such as representativeness, Step 2 and 3 measurements, etc.

Conclusions and Recommendations

Introduction

The conclusion and recommendations should wrap up the STEPS report and indicate briefly how results should be used and what should be the next steps following the survey.

Content guide

Follow the guidelines in the table below to help prepare the conclusion and recommendations.

Heading	Guidelines for completion
Conclusion	The conclusion should briefly summarize the most important findings and explain their importance.
Recommendations	Include, for example: • policies that might be impacted upon by these findings; • actions that should derive from these findings; • Who should be appraised of the findings • any further research that is recommended to be undertaken.

References

Introduction

The reference section should contain a reference list of any sources used to write the report.

Note: All figures used in the report that are not the results of the current survey need to have accompanying references in the reference section of the report.

Appendices

Appendix A	Site specific STEPS Instrument
Appendix B	Show cards used
Appendix C	Survey Implementation Plan
Appendix D	Fact Sheet
Appendix E	Data Book

Part 7: Glossary and References

Overview

In this Part This Part covers the following topics

Section 1: Glossary of Terms Used in STEPS

Introduction This section provides an alphabetical list of all the terms used in a STEPS surveillance with definitions that are appropriate for STEPS.

Term	Definition
Age-standardisation	A process of statistically adjusting rates or prevalence values from two or more populations with different age structures in order to facilitate comparisons or understand differences between the populations.
Archive	A depository containing records or documents.
Average	See Mean
Bias	Distortion of a population estimate away from the true value. Bias can arise for many reasons such as measurement error or non-response.
Cluster	A (usually geographical defined) group of individuals.
Cluster sampling	A sampling method where the target population is divided into clusters/groups and a subset of each cluster is selected instead of the entire cluster. Cluster sampling often uses enumeration areas for the primary cluster
Confidence interval (CI)	A range of values around the sample estimate in which the true population value is likely to fall. For example, a 95% confidence interval indicates that for 95 out of 100 surveys, the population mean would fall into this range of values around the sample mean.
Cross-sectional design	A study design based on observations at a single point in time. STEPS surveys will be cross-sectional unless they are especially being extended to follow the sample over time.
Database	A large amount of information stored in a file that is easily searched by a computer. STEPS uses Microsoft Access.
Dataset	An electronic file consisting of a table in which each row contains data for one individual and each column represents one variable.
Demographic characteristics	The characteristics of a population, for example, age, sex, ethnicity and place of residence.
Distribution	The complete summary of the frequencies of the values or categories of a measurement made on a group of persons. The distribution tells either how many or what proportion of the group was found to have each value (or each range of values) out of all the possible values that the quantitative measure can have.
Enumeration Area	A small to medium sized geographic area that has been defined in a census.
EpiData	A freely available software package designed to facilitate data entry of survey data. Functions include immediate checking of ranges and legal values and ability to export data to a range of analysis packages.
Epi Info	A freely available statistical software package providing basic statistical functions and capable of handling complex sample designs.
Estimate	A calculated guess of the true value of a population characteristic deriving from data obtained from a sample of the population.
Household composition	The age and sex of all the residents in the household who are within the age range of the survey.

Term	Definition
Instrument	This refers to the STEPS Instrument which includes a questionnaire (Step 1), physical measurements (Step 2), and biochemical measurements (Step 3).
Inter-quartile range	The difference between the upper and lower quartiles (25^{th} and 75^{th} percentiles) in a set of values. They separate the lowest 25% and highest 75% of values, respectively, in the set of measurements
Kish Method	The Kish Method is a sampling method for selecting an individual randomly from a household. It uses a pre-determined table to select an individual based on the number of individuals living in the household.
Mean	The arithmetic mean is the average of a set of values, that is, the sum of all the values divided by number of values. Because of its simplicity and its statistical properties, it is used more than any of the other measures of central tendency (e.g. median).
Measurement device	A tool used for measurement purposes, for example a blood pressure monitor.
Median	The median is a measure of central tendency that is often used for non-normally distributed variables. It is the simplest division of a set of sorted measurements into two halves - the lower and the upper half.
MET	Metabolic equivalent (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.
Moderate intensity physical activity	Refers to activities which take moderate physical effort and that make you breathe somewhat harder than normal. Examples include cleaning, vacuuming, polishing, gardening, cycling at a regular pace or horse-riding. Moderate intensity activities require an energy expenditure of approximately 3-6 METs.
Multi-stage sampling	Multi-stage indicates that sampling is done in several steps. First larger sampling units are selected then smaller sampling units are selected within the selected larger units.
Non-probability	Methods of sampling a population in which the probability of selection of each every individual is not known, and therefore from which reliable population estimates are not calculable. A non-probability sample is not desirable for STEPS.
Non-response	In a sample survey, the failure, for any reason, to obtain information from a designated participant.
Non-response bias	Also known as coverage bias, the error introduced by non-response.
Outlier	An observation differing so widely from the rest of the data as to lead one to suspect that a gross error may have been committed or suggesting that this value comes from a different population.
Participant	An individual who responds to the STEPS Instrument.
Pilot test	A small trial run or "dress rehearsal" of an entire process, e.g. data collection or data entry, completed before the process officially begins.
Post-stratification	A means of making sample estimates more representative of the target population after data have been collected. For STEPS surveys, it is recommended to do a post-stratification for age and sex so that differences in the age-sex distribution between the sample and the target population can be accounted for.

Term	Definition
Precision	The quality of the estimate obtained from the STEPS survey. The standard error of the estimates can be taken as an indicator of the precision of the estimates with a smaller standard error indicating greater precision. See standard error.
Prevalence	The number of persons with a disease or an attribute in a given population at a designated time, e.g. % daily smoker in a country in 2008.
Primary sampling unit (PSU)	The sampling units for the first stage of sampling in a multi-stage sample design. See multi-stage sample design.
Probability	A number between 0 and 1 which represents how likely some event is to occur. A probability of 0 means an event will never occur, while a probability of 1 means the event will always occur.
Probability sample	A sample of a population (or sub-population) that has the property that each individual has an equal and known chance of being selected, and in which the chance of one item being selected does not alter or affect the selection of any other individual. Examples of probability sampling include simple random sample, cluster sampling and stratified sampling.
Probability proportional to size (PPS)	Probability proportional to size (PPS) sampling is a method for selecting a sampling unit in which the probability of selection for a given sampling unit is proportional to its size (most often the number of individuals or households within the sampling unit).
Range	The difference between the largest and the smallest in a set of values, for example in a sample in which height was measured from 135 cm to 180 cm, the range would be 45 cm.
Rank	The position of a member within a sorted set.
Rate	The occurrence of an event over a defined time amongst a defined sample or population. It may be expressed as number of events per person-years, for example 310 injury accidents per 10,000 person-years, which may be imagined as 310 of 1000 people over 10 years, or 310 of 2000 people over 5 years.
Representativeness	The extent to which a sample has the same distribution of the characteristics of interest as the target population from which it was selected.
Response proportion	The proportion or percentage of the eligible individuals sampled who did participate.
Risk Factor	Refers to any attribute, characteristic, or exposure of an individual, which increases the likelihood of developing a disease, or other unwanted condition/event.
Sample	The subset of the target population that is selected for inclusion in the survey.
Sample design	The methodology used to select the part of the population to be included in the survey. See probability sample and non-probability sample.
Sample population	The sample population is the group of individuals who have been selected from the target population (see target population) to participate in the survey.
Sample size	Sample size is the number of people selected for the sample. It should be calculated prior to conducting the survey.

Term	Definition
Sampling error	Sampling errors arise from estimating a population characteristic by looking at only one portion of the population rather than the entire population. It refers to the difference between the estimate derived from a sample survey and the 'true' value that would result if a census of the whole population were taken under the same conditions.
Sampling frame	A list of the units in the target population, for example an electoral roll, a population register, or a telephone book. For the sample to be representative of the target population, the sampling frame should include all people in the population (or sub-population) only once, will not include people who do not belong to that population, and will be up-to-date.
Sampling unit	The objects being selected for a survey. These units must cover the whole of the population and not overlap, i.e. every element in the population belongs to one, and one only, unit. In a simple random sample, the sampling units are the individuals themselves. In cluster sampling, it may be villages or other localities. In multi-stage sampling, the sampling units differ at each level of sampling.
Sampling weight	Sampling weights are weights that denote the inverse of the probability of selection.
Secondary sampling units (SSU)	The sampling units used for selection after the primary sampling units.
Serving (of fruit or vegetable)	For vegetables this refers to one cup of raw, leafy green vegetables, (spinach, salad etc.), one half cup of other vegetables, cooked or raw (tomatoes, pumpkin, beans etc.), or a half cup of vegetable juice. For fruits, this refers to one medium-sized piece of fruit (banana, apple, kiwi etc.) or a half cup of raw, cooked or canned fruit or a half cup of juice from a fruit (not artificially flavored).
Simple random sampling (SRS)	A probabilistic sampling method with only one stage of selection in which every member of the population has an equal chance.
Skew	A distribution of values that is asymmetric and therefore non-normal. Because many of the formulae for estimation are based on assumptions about normal distributions, skewness can seriously distort population estimates, and there must be a strategy for checking and coping with skewed data.
Standard deviation (SD)	A measure of dispersion, or variation. It is equal to the positive square root of the variance. It is a summary of how widely dispersed the values are around the mean.
Standard drink	The net alcohol content of a standard drink is generally 10g of ethanol depending on the country/site. This is the equivalent of 1 regular beer (285ml), a single measure of spirits (30 ml), a medium-sized glass of wine (120 ml), or a measure of aperitif (60 ml).
Standard error (SE)	A standard error is the standard deviation of an estimate, e.g. a mean. It can be used to calculate confidence intervals.
Strata	The plural form of stratum.

Term	Definition
Stratification	Process of dividing the sampling frame into mutually exclusive subgroups or strata. The sample is then drawn either proportionately or disproportionately from all strata.
Stratum	A partition of the population used in stratified sampling.
Systematic error	Systematic (one-sided) variation of measurements from the true values, leading to a biased estimate.
Systematic sampling	A probability sample selection method in which the sample is obtained by selecting every kth unit of the population, where k is an integer greater than 1. For example if k is 15 and the first unit is number 13, then subsequent units are 28, 43, 58 and so on. The first member of the sample must be selected randomly from within the first k units (a random start). If the target sample size is reached before all the kth members have been surveyed, recruitment must continue until all those selected have been surveyed.
Target population	The population from which the sample population is drawn. If the sample has been drawn correctly, the estimates obtained from the survey should be representative of the target population.
Variable	One item of information stored in a dataset, for example age or sex. Variables may be categorical or continuous, but should be clearly defined and consistently recorded.
Variance	A measure of the variation shown by a set of observations. The standard deviation is calculated by taking the square root of the variance.
Vigorous intensity activity	Refers to activities which take hard physical effort and which make you breathe much harder than normal. Examples include loading furniture, digging, playing football, tennis or fast swimming. Vigorous activities require an energy expenditure of greater than 6 METs.

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