MINISTRY OF HEALTH
ERITREA

NATIONAL NON COMMUNICABLE DISEASE (NCD) RISK FACTOR BASELINE SURVEY
(USING WHO STEPSwise APPROACH)

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DRAFT

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1   INTRODUCTION:

1.1   BACKGROUND / JUSTIFICATIONS TO THE STUDY

The rapid rise of Non-communicable diseases (NCDs) represents one of the major health challenges to global development. Non-communicable Diseases (NCDs) were estimated to have contributed to almost 60% of deaths in the world and 43% of the global burden of disease in 1999. Based on current trends, by the year 2020 these diseases are predicted to account for 73% of deaths and 60% of the disease burden. It is further estimated that by 2020 over 70% of the global burden of disease will be caused by NCDs (especially cancer, diabetes, cardiovascular diseases and chronic respiratory diseases), mental health disorders and injuries.

NCDs, are already of major importance in developed countries and are rapidly becoming a major public health threat in the developing world. According to a recent WHO NCD Surveillance Strategy report, over a period of 30 years the burden of disease from NCDs for developing and newly industrialized countries is expected to rise by more than 60% by 2020, compared to a rise of less than 10% in developed countries

(http://www.who.int/entity/ncd_surveillance/strategy/en/).(http://www.who.int/entity/ncd_surveillance/strategy/en/).

NCDs particularly cardiovascular diseases, diabetes, cancer, chronic obstructive pulmonary diseases and injuries, are increasing in epidemic proportions in the African region. According to the World Health Report 2001, NCDs accounted for 22% of the total deaths in Africa.   Cardiovascular diseases alone were responsible for 9.2% of the deaths, killing even more people than malaria did. Hypertension prevalence for example, ranges from 10% to 40% in urban areas of some African countries; mortality and disability due to stroke, which is mainly

caused by hypertension, is higher in most countries of the region than in industrialized countries. Rheumatic fever/rheumatic heart disease is still the main cause of acquired cardiovascular disease in children and young adults in Africa. Eritrea is no exception.

1.2 ERITREAN HEALTH SITUATION

1.2.1. CHANGING BURDEN OF DISEASE

Eritrea is already experiencing something of a shift in the pattern of diseases. The efforts made in the control of communicable diseases and the changes in the living standards and lifestyles of Eritrean people as well as environmental factors are leading to an epidemiological shift from communicable to non-communicable diseases

Already there has been some improvement in some key health status and health service indicators in Eritrea compared to rest of sub-Saharan Africa. All these are indicative of improvement in the control of communicable diseases. It is thus expected that non-communicable diseases will become increasingly important as a cause of morbidity and mortality. The status of the indicators is shown in Table 1.

Table 1.1: Some key health status and health service indicators in Eritrea

Indicator	1995 EDHS	2002 EDHS	Sub-Saharan Africa
Infant mortality/1000	72	47.7	94
Under five mortality/1000	136	93.3	151
MMR/100000	998		1100
Life expectancy at birth		51	45.4

Though the disease burden in Eritrea, as in many other developing countries is still dominated by communicable diseases, non-communicable diseases are rapidly becoming an important cause of morbidity and mortality. Although, ARI,

diarrhoea and other communicable diseases were the major causes of outpatient and inpatient morbidity and mortality, their percentage occurrence remained consistent or decreased compared to other causes of morbidity. The situation indicates that the combined effort or interventions of the Ministry and other partners in controlling the occurrence of these diseases is already having an impact. The most recent report of Health Services Activity from Health Management Information System for 2003 bears this out.

Among the ten leading causes of outpatient morbidity in hospitals and health centres in 2002, in those under five years, oro-dental infection and disorder plus bronchitis/emphysema (COPD) combined (2.4%)were 7th above malaria (2.1%). Over the same period, in those five years and above, non-communicable diseases namely, gastritis/DU, oro-dental infection and disorders plus rheumatoid arthritis combined (12.8%) were the second overall cause of outpatient morbidity in hospitals and health centers surpassed only by ARIs (21.1%).

Again during 2002, among the ten leading causes of admissions in hospitals and health centers; in those under five years, two non-communicable disorders, cataracts and other lens disorders combined with asthma (1.7%) ranked 7th above TB and HIV/AIDS. In those over 5 years, non-communicable diseases namely, cataracts and other lens disorders plus gastritis/duodenal ulcer plus hypertension (6.8%) ranked 4th after malaria, abortion and ARI.

Among the ten leading causes of deaths in hospitals and health centers in 2003; In those over 5 years, hypertension, heart failure, diabetes mellitus and liver diseases combined (35.5%) were by far the leading causes of deaths in hospitals and health centers. In addition, hypertension, heart failure and diabetes mellitus were each ranked above malaria as a cause of death. The distribution is shown in Table 2.

Table 1.2: Ten leading causes of deaths in hospitals and health centers in 2003

Rank	Under five years	Deaths		Five years and above	Deaths	
		No	%		No	%
1	ARI	199	33.6	HIV/AIDS	182	18.4
2	Anaemia and malnutrition	133	22.5	TB	137	13.8
3	Diarrhoea all forms	122	20.6	ARI	127	12.8
4	Septicaemia	74	12.5	Hypertension	101	10.2
5	Malaria all types	29	4.9	Heart Diseases	100	10.1
6	HIV/AIDS	22	3.7	Other liver diseases	90	9.1
7	Heart failure	4	0.7	Anaemia malnutrition	88	8.9
8	TB all types	3	0.5	Diabetes mellitus	69	6.8
9	Urinary tract infections	3	0.5	Malaria all types	50	5.1
10	Skin infections and scabies	3	0.5	Septicaemia	48	3.5

1.2.2. TRENDS OF THE LEADING CAUSES OF MORBIDITY AND MORTALITY

No significant changes were observed in the ranks of the leading causes of morbidity and mortality in the last five years. It is however interesting to note that malaria that was previously 1st or 2nd cause of outpatient morbidity was 7th and 8th in 2002. Furthermore, malaria was not one of the ten causes of mortality in the age group five years and above unlike in the previous five years when it was ranked from the first to the sixth cause of death.

Of special interest is the fact that hypertension, diabetes mellitus and liver diseases are among the leading ten diseases. Also note must be taken of the

fact that gastritis and duodenal ulcer (probably related to psycho-social and postwar traumatic stress syndrome problems) has been the 4th leading cause of outpatient morbidity in those aged five years and above since 2000 while it was ranked 6th in the year 1998.

Within the backdrop of this situation, and in order to implement a National Program of Non-communicable disease risk factor surveillance, prevention and control in Eritrea, a Non-Communicable Diseases (NCDs) unit has recently been established in the newly created Disease Prevention and Control (DPC) division of the Ministry of Health. Its main mandate is get the programme running as soon as possible.

The purpose of this survey is to produce baseline data that will reveal the actual picture of NCD risk factors in Eritrea, shape the planning of the intervention programme and be used to evaluate process and output indicators during the implementation of the national NCD programme.

1.3   ERITREA COUNTRY PROFILE:

1.3.1. GENERAL INFORMATION

Eritrea is situated in the Horn of Africa and has an area of 122,000 square kilometres. To the east the country is bordered by the Red Sea. Djibouti borders the country to the southeast, Ethiopia in the south, and the Sudan in the north and west. Administratively the country is divided into six Zobas or regions.

Eritrea is a land of contrasts with land rising from below sea level to 3,000 meters above sea level. There are three major physiographic zones: the Western Lowlands, the Central and Northern Highlands, and the Eastern Lowlands.

Rainfall in Eritrea ranges from less than 200 mm per annum in the eastern lowlands to about 1,000 mm per annum in a small pocket of the Escarpment; the annual rainfall in the highlands ranges from 450 mm – 6000 mm. The southern part of the western lowlands receives 600 – 800 mm of rain per annum, but

rainfall decreases substantially as one move northward. The extremely low rainfall in the eastern lowlands causes aridity and a hostile environment for agriculture, grazing and industry. There are two major periods of precipitation in Eritrea. One, from June to September, covers both the western lowlands and highlands. The second comes between October and March and covers the eastern lowlands.

1.3.2. HISTORY

Because of Eritrea's strategic position on the Red Sea, it has fallen victim to many invaders and colonizers. More recently the country was engaged in three decades of struggle for self-determination from Ethiopia, which culminated in formal independence in 1993.

1.3.3. ECONOMY

Agriculture and pastoralism are the main sources of livelihood for about 80% of Eritrea's population. The agricultural sector depends mainly on rain, with less than 10% of the arable land currently irrigated. Consequently, productivity is low and the agricultural sector, including livestock and fisheries, accounts for only one-fifth of the

Gross domestic product (GDP). Eritrea is one of the poorest countries in the world with a GDP per capita of about US$ 200, well below the average of US$ 270 for less developed countries (UNDP, 2001).

1.3.4. POPULATION

No population census has ever been carried out in Eritrea. As a result, there are no reliable estimates of the population currently residing in Eritrea or the population of Eritreans living abroad, many of whom are potential returnees.

However, based on a population count, the Ministry of Local Government estimated the total population of Eritrea to be about 3.2 million in 2001.

1.3.5. HEALTH SERVICES AND PROGRAMMES

The introduction of modern health services into Eritrea is relatively recent. Italians established the first hospital in Asmara at the end of the nineteenth century. In the period prior to federation with Ethiopia, Eritrea had a relatively advanced health care system at least by the standards of the time. However, three decades of the war for independence, almost all existing health facilities were destroyed, medical supplies were disrupted and health professionals abandoned their posts.

Since independence, the Ministry of Health (MoH) has made significant progress in ensuring access to health care services through restoration of health facilities damaged during the war, the provision of adequate supplies of drugs and equipment, the expansion of available health services to communities where they are lacking, through construction of new facilities and the training of qualified health personnel.

2.0   OBJECTIVE

2.1   GOAL

The overall goal is to set up a national surveillance system for the major non-communicable diseases (NCD) and their risk factors by using a combination of the WHO STEPwise approach and routine data collection in order to provide information for planning a national NCD prevention and control programme.

2.2   SPECIFIC OBJECTIVES:

1. To conduct a baseline survey of the main risk factors for the major NCDs in the urban and rural areas of the 6 Zoba of the country
2. To develop capacity of MOH staff at different levels for NCDs risk factor surveillance
3. To set up a national programme for early detection, prevention and control of NCDs and their risk factors
4. To set up a Community-based surveillance system for NCDs and their risk factors.
5. To develop appropriate IEC materials for early detection, prevention and control of NCDs and their risk factors

2.3   EXPECTED OUTCOMES

1. A baseline survey of the main risk factors for the major NCDs is carried out in the urban and rural areas of the 6 Zoba of the country and its results used to influence government policy.

2. MOH personnel at different levels are able to carry out NCD risk factor surveillance activities within the communities of Eritrea

3. An operational national NCD programme is set up with major arms of prevention (health promotion and health protection) and control (production of management guidelines and capacity building)
4. A Community-based surveillance programme for NCDs is setup (surveillance guidelines produced and training assured)
5. Appropriate IEC materials for early detection, prevention and control of NCDs developed based on the evidence obtained from the baseline survey.

3.0   METHODOLOGY

3.1.   INTRODUCTION

The study was carried out amongst all the nine ethnic groups in Eritrea. It was a cross sectional baseline survey of the principal risk factors of the major NCDs in Eritrea that ran from the August to November 2004. The WHO STEPwise approach for surveillance of NCD risk factors was used.

The STEPwise approach provides a framework for surveillance of NCD risk factors, NCD-specific morbidity and mortality. The STEPs approach is based on the concept that surveillance systems require standardized data collection to ensure comparability over time and across locations. It is also sufficiently flexible to be appropriately adaptable in a variety of country situations and settings.

A 'risk factors' (in this context) refer to any attribute, characteristic, or exposure of an individual, which increases the likelihood of developing a non-communicable disease. Within a community, measurements of these risk factors are used to describe the distribution of future disease in a population. Because many factors associated with disease cannot be modified, emphasis in any surveillance system should be given to those risk factors that are amenable to intervention (modifiable). It has been shown that surveillance of just eight selected risk factors, which reflect a large part of future NCD burden, can provide a measure of the success of interventions.

The eight risk factors include the following:
1. Tobacco use,
2. Alcohol consumption,
3. Physical inactivity,
4. Nutrition
5. Obesity
6. Raised blood pressure.

7. Blood glucose
8. Blood lipids

STEPS is a sequential process starting with gathering information on key risk factors by the use of questionnaires (Step 1), then moving to simple physical measurements (Step 2), and only then recommending the collection of blood samples for biochemical assessment (Step 3).

In this study, Steps 1 and 2 were used. Information was thus collected on Tobacco use, Alcohol consumption, physical inactivity, nutrition, obesity and raised blood pressure.

3.2. STUDY DESIGN AND SAMPLE SIZE

A sample size of 2304 subjects (N) in the 6 zones was calculated using the formula:

N= Z^2pq divided by E^2

Where Z is the Z score

P is the proportion of the factor under investigation

q=1- p

E is the maximum error allowed.

A two stage stratified cluster sampling procedure with Primary sampling unit (PSU) = clusster selected from all six zones was used. The PSU (cluster) was selected with Probability Proportional to Size of the village (PPS) in terms of households. A cluster could correspond to a village or cut across villages. In some instances, a village could contain more than one cluster.

One hundred and twenty three clusters were selected from the 6 zones and 20 individuals (subjects) aged 15-64 years old were targeted from each cluster for interview. A total of 20 x 123 (2 460) were thus targeted. (NB. WHO recommends a minimum of 400 subjects per age group i.e. 200 male and 200 female, thus, 2000 for the five 10-year age groups).

Systematic sampling of households was done using the given sampling interval for that village (see annex). The first household was selected by spinning a bottle at the middle of every village and all eligible subjects per household (15-64 years) were enlisted and one randomly selected per age group.   Each time a subject was selected for interview and physical examination, that individual was crossed out from the age group checklist till the total sample size was attained.

Table 3.1 Cluster Allocation per Zoba

Zoba	No. of Clusters
Anseba	20
Debub	31
Gash-Barka	24
Maekel	24
NRS	18
SRS	6
Total	123

At the second stage, **20 individuals** between the ages 15-64 from each cluster were interviewed. Due to logistic impracticability of obtaining a list of households in each cluster, systematic random sample could not be applied. The households were thus selected using simple random technique.

The individuals to be interviewed were clustered into Age groups of 10 years. This means that, in each age group, 2 males and 2 females were selected.

The list of all persons 15 to 64 years was obtained from the head of the household or his representative. The persons were allocated numbers and one person randomly selected.

In the absence of an eligible candidate in the household, it was dropped and the next household selected and a new sapling interval started thereafter.

3.3 DATA COLLECTION PROCEDURE:

3.3.1. TRAINING:

The data collectors were given a 2-day training that included interview techniques, introduction to NCDs and detailed introduction to the data collection instruments and physical measurement instruments.

There were practical sessions to practice with the questionnaire and the physical measurement equipment. The training took place between the 4th and 5th of September 2004 and data collection followed suit between the 6th and the 13th of September 2004.

Field guidelines were likewise developed and given to each team.

3.3.2 THE QUESTIONNAIRE

The questionnaire was developed from the Steps standard questionnaire and adapted for Eritrea. The questionnaire was pre-tested at the Orotta School of medicine and modified according to pre-testing findings. It was also translated into the local Tigrinya language.

Some of the terms standardized include:

Standard drink: 1 standard drink equals to 1 bottle of beer (285 ml) or 1 measure of spirits (30ml) or 1 glass of wine (120 ml) or 1 measure of aperitif (60 ml) or 2 measures of Sewa. For those who take a mixture of different types of drinks, collate all and then calculate the number of standard drinks.

Serving of fruit: 1 serving of fruit = 1 medium size of apple, banana, orange or ½ cup of chopped, cooked or canned fruit or ½ cup of fruit juice.

***Serving of Vegetable**: 1 serving of vegetable = 1 cup of raw vegetables (spinach, salad), ½ cup of cooked or chopped vegetables (tomato, carrot, pumpkin, corn, Chinese cabbage, fresh beans) or ½ cup of vegetable juice.*

***Moderate physical activity**: Involve moderate physical effort, makes you breath somewhat harder than normal. Examples are cleaning, farming, painting, gardening, swimming, and climbing stairs.*

***Vigorous physical activity**: Involve hard physical effort, makes you breath much harder than normal. Examples are carrying heavy load, heavy construction, digging, and shoveling, sawing wood, running, strenuous sports.*

3.3.3. PHYSICAL MEASUREMENTS:

The physical measurements taken were Blood pressure, Height, Weight and Waist circumference.

3.3.3.1 HEIGHT MEASUREMENT:

The SECA body meter (206 seca Vogel and Halke GmbH and Co. Sonke Vogel Geschalfsfuhrer) was use for this measurement. The techniques for measurement of height are as follows:

1. The instrument is assembled on a vertical solid surface.
2. The respondent is asked to remove shoes, socks, slippers and headgear.
3. The respondent is asked to stand on the board, facing the interviewer, putting their feet together, heals against the back of the board, knees straight.
4. The respondent is asked to look straight ahead and not to look up.
5. The interviewer moves the measuring stick down and place on top of the head.
6. The height is read in Cm to exact point and recorded.

3.3.3.2   Weight Measurement:

A TANITA digital scale (2003 Tanita Corperation of America, Inco. Arlington Heights IL 60005) was used for weight measurement. The procedure for weight measurement was as follows:

1. The scale is put on a firm flat surface. Not on carpet or a sloping surface.
2. The instrument reading is set.
3. The respondent is asked to remove footwear and socks, step on the scale with the feet on each of the footpads, facing forward, arms on the side and standing still until the reading is taken.
4. The weight is read in Kg and recorded in the questionnaire.

3.3.3.3   Waist Circumference Measurement:

The tension measuring tape graduated to 1 mm was used for this measurement. A private area is chosen for this measurement. The measurement is taken without clothing using following technique:

1. The inferior margin of the last rib and the superior border of the iliac crest in the mid axillary plane are located and marked with a pen.
2. The mid point between the 2 is found with a tape measure and the point marked.
3. The tension tape is applied over the marked point making sure that the tape is horizontal across the back.
4. The respondent is asked to stand with their feet together, with arms placed at the sides with palms of the hand facing inwards and to breathe out.
5. The measurement to the nearest 0.1 cm is taken at the point of breathing out. The measurement is taken only once and recorded.

3.3.3.4   Blood pressure measurement:

The measurements were taken using the OMRON digital sphygmomanometer (OMRON M7 *Duo* 773 omron Healthcare Europe B.V. Kruisweg 577, 2132 NA Hoofddorp).

Before taking the measurement:
1. The respondent was advised to sit quietly and rest for 5 minutes with the legs uncrossed.
2. The right arm was used and free of clothing.
3. The right arm was placed on the table with the palm facing upwards.
4. The appropriate cuff size was selected.
5. The artery position mark (ART) was aligned with the brachial artery.
6. The cuff was wrapped snuggly and fastened securely. The lower edge kept 1.2 – 2.5 cm above the inner side of the elbow joint.
7. The cuff was kept at the same level as the heart during measurement.

Taking measurement:
1. Push START button.
2. The displayed reading of the systolic and diastolic blood pressure are taken and recorded.
3. The second reading is taken after the first.
4. If the difference between the 1st and 2nd readings is 10 mmHg or more, then there is need for 3rd reading.
5. The readings are recorded in the questionnaire.

3.4   DATA **MANAGEMENT** AND ANALYSIS

Questionnaires collected from the field were reviewed by team leaders assigned to each team before submitting them to the headquarters for data entry.

Double entry of the questionnaires was performed using EPI-INFO 2000 software and EpiData soft ware developed by Menzes center for validation.

After the data entry, the data cleaning was conducted.

New variables were defined by adopting the standard Steps variables (STEPS Data Management Manual, Draft version v1.5, October 2003).

Data analysis was conducted using EPI_INFO 2002 and SPSS softwares.

3.5 QUALITY ASSURANCE

To ensure quality of data collection, the interviewers and the supervisors were carefully selected.

The supervisors were senior staff from the WHO, Orotta School of medicine and the ministry of health. The interviewers were lead by public health students from Asmara University who had previous research experience and included final year nursing students as well as medical students from Orotta School of medicine.

The questionnaire was translated into the local Tigrinya language and pre-tested.

Intensive training was given to the data collectors, which included practical sessions and questionnaire and equipment testing.

A guideline was prepared and given to the teams for easy reference. Also in order to minimize error, digital equipment was used for measuring weight and blood pressure.

In order to minimize data entry errors, double data entry was carried out and checks were instituted into the data bases.

3.6 ETHICAL CLEARANCE AND CONFIDENTIALITY

The survey was cleared by the Ministry of health and had the full support of the Orotta School of medicine.

A letter from the ministry of health signed by the Director general detailing the survey objectives and seeking co-operation and support from all stakeholders was carried by each survey team.

In the field, clearance was always obtained from the zonal and village administration.

Verbal informed consent was obtained from all respondent before administering the questionnaire or taking measurements.

3.7 MAJOR PROBLEMS ENCOUNTERED DURING THE SURVEY

The major constraints encountered during the survey included:

1. Absence of selected candidates from the houses because of farming season making the interviewers go back many times before getting response.

2. The data was so heavy for analysis to be run in Epi Info. We had to export it to SPSS for better analysis

4.0   RESULTS

4.1   RESPONSE RATE:

At the onset of the interview, 2460 respondents were targeted in 123 clusters of 20 individuals per cluster. Eventually, 2352 individuals responded in 113 clusters responded giving a response rate of 95.6%. The response rate per Zoba as presented in Table 4.1, ranges from 71 to 100%, with only Zoba Northern red sea presenting a response rate of below 90%. This is because, the supervisor of one of the teams sent to that Zoba dropped 5 clusters in response to a mistake in population estimation.

Table 4.1   Response Rate by Zoba:

Zoba	Target		Response	
	No. of Clusters	No. of Subjects	No. of Respondents	Percentage
Anseba	20	400	400	100
Debub	31	620	620	100
Gash-Barka	24	480	98.8	98.8
Maekel	24	480	480	100
NRS	18	360	257	71
SRS	6	120	120	100
Total	**123**	**2460**	**2352**	**95.6**

4.2   MISSING VARIABLES:

The missing variables are mostly found in the section on alcohol use where quantities of alcohol taken and the period of use were missing in most of the questionnaires. However, certain clusters as shown in table 4.2, missed

important variables like sex, age and physical measurement. In fact, one interviewer in Northern red sea consistently took only 1 BP reading.

Table 4.2   Missing Important Variables:

Missing Variable	No. of Clusters	List of clusters
Age	1	D26
Sex	6	G03, G02, G06 (3), D24
Both 2nd and 3rd BP	29	G11, M11, M13, N09 (7), N10 (8), N11 (9), N12, D05.
Height	29	A05, A13, D01 (2), D06 (3), D14 (2), D15, D17(2), D19, D20, D27, D28, M13 (2), M15 (2), M17, N01, N03, N06, N09, N11
Weight	11	D06, D14, D20, D27, G11, G17, M01, M15 (2), M17, M19.
Waist Circumference	40	D02, D06, D07, D15, D17(2), D25, D28, D30, G04, G10, G12 (2) G13, G17, G19, G20, G21 (2) G22 , G24 (4), G25, M05, M11, M17 (2), M18 N03, N05, N07, N08, N13 (2),

4.3   SOCIO-DEMOGRAPHIC CHARACTERISTICS:

4.3.1 AGE AND SEX DISTRIBUTION:

The subjects were all within the age range of 15 to 64. The age group and sex distribution are presented in table 4.4. Only 2 subjects were excluded from the age-sex analysis based on age alone, one with age unknown the other with age missing. The rest were excluded based on missing sex.

As can be seen from Table 4.4, the subjects were uniformly distributed among the groups and sex for all Zobas.

Fig 1

Distribution of respondents by Zoba

	Ansaba	Debub	Gash Barka	Maekel	NRS	SRS
Respondents	400	620	475	480	256	120
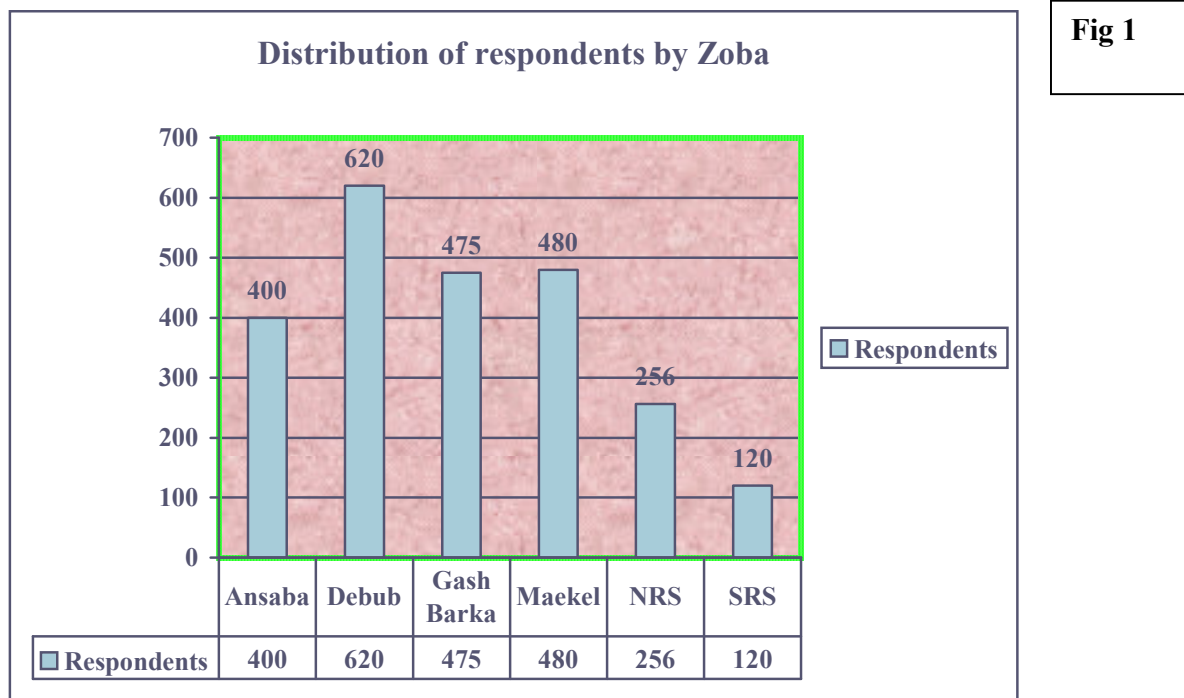
4.3.2 DISTRIBUTION OF RESPONDENTS BY SOURCE OF INCOME:

Majority of respondents mentioned either formal employment or Farm Product as the source of income for the family with 37.7% and 32.4% respectively (P value < 0.05%). The distribution of the respondents by source of income and by Zoba is presented in Table 4.3. Formal employment as source of income highest in Zoba Maekel (66.9 %). In Zoba Debub, half of respondents rely on Farm produce as source of household income. Farm produce is also the main source of income in Zoba Anseba and Gash-Barka. More people live on Aid in Northern red sea and Southern red sea than other Zoba (12.8 and 7.5% respectively).

Table 4.3   Distribution of Source of Income by Zoba:

Zoba		Source of Income (%)								
		Aid	Business	Daily Labor	Farm Product	Formal Employ.	National Service	Other	Remittance	total
Anseba	N = 400	2.0	3.5	4.3	41.0	32.8	2.5	10.0	4.0	100
Debub	N =620	2.9	4.4	3.1	50.6	28.5	2.9	5.2	2.4	100
Gash Barka	N =475	3.6	8.8	7.6	34.9	25.5	6.1	12.2	1.3	100
Maekel	N = 480	3.1	0.8	0.2	8.5	66.9	2.5	8.6	9.4	100
NRS	N = 257	12.8	7.8	6.6	26.8	31.1	1.2	11.2	2.3	100
SRS	N = 120	7.5	10.8	9.2	5.8	46.7	0.8	17.5	1.7	100
TOTAL	N= 2352	4.3	5.1	4.3	32.8	37.7	3.1	9.4	3.8	100

Table 4.4: Distribution of Respondents by Age group and Sex in %.

Zoba	Distribution of Respondents by Age Group and Sex																							
	15 – 24 yrs				25 – 34 yrs				35 – 44 yrs				45 – 54 yrs				55 – 64 yrs				Total			
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		**Male**		**Female**	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Anseba	42	10.6	40	10.1	37	9.3	41	10.3	40	10.1	42	10.6	41	10.3	42	10.6	41	9.8	34	8.5	199	60	190	50
Debub	64	10,4	61	9.9	58	9.4	66	10.7	65	10.5	57	9.2	57	9.2	65	10.5	57	10.7	59	9.5	310	50.2	308	49.8
G. Barka	52	11.1	51	10.9	45	9.6	54	11.5	52	11.1	43	9.1	42	8.9	45	9.6	42	8.7	45	9.6	232	49.4	238	50.6
Maekel	53	11.0	50	10.4	47	9.8	47	9.8	48	10.0	49	10.2	48	10.0	47	9.8	48	9.4	46	9.6	241	50.2	239	49.8
NRS	25	9.8	28	10.9	21	8.2	30	11.7	26	10.2	26	10.2	22	8.6	30	11.7	22	9.4	24	9.4	118	46.1	138	53.9
SRS	10	8.3	14	11.7	13	10.8	12	10.0	13	10.8	12	10.0	13	10.8	10	10.0	13	9.2	12	10.0	60	50	60	50
Total	246	10.5	244	10.4	244	9.4	250	10.7	221	10.4	229	9.8	223	9.5	239	10.2	223	9.6	220	9.4	1160	59.5	1182	50.5

Table 4.5: Distribution of Respondents by Age group and Zoba in %.

Zoba	Distribution of Respondents by Age group											
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Anseba	82	20.6	78	19.6	82	20.6	83	20.9	73	18.3	398	1010
Debub	125	20.2	124	20.0	123	19.9	122	19.7	125	20.2	619	1010
G. Barka	103	21.7	99	20.8	96	20.2	89	18.7	88	18.5	475	1010
Maekel	103	21.5	94	19.6	97	20.2	95	19.8	91	19.0	480	1010
NRS	53	20.7	51	19.9	52	20.3	52	20.3	48	18.8	256	1010
SRS	24	20.0	25	20.8	25	20.8	23	19.2	23	19.2	120	1010
Total	490	20.9	471	20.1	475	20.2	464	19.8	448	19.1	2348	1010

4.3.3 Religious Persuasion:

The religious belief of the respondents by Zoba is presented in Table 4.6 The highest group was Orthodox Christians with 55.7 %, Followed by Muslims 36.4%. The Catholic and Protestant Christians constitute 6.6 and 1% respectively. This proportion varies from Zoba to Zoba. This result is statistically significant (P value < 0.05 at 95% confidence interval).

Table 4.6:   Distribution of respondents by religion and Zoba

Zoba	n	Religion (%)				
		Orthodox	Catholic	Protestant	Islam	Other
Anseba	400	30.5	18.0	0.3	51.3	0.0
Debub	620	76.0	5.8	1.0	17.3	0.0
Gash Barka	469	46.9	5.8	2.1	44.8	0.4
Maekel	478	84.5	3.3	1.3	10.5	0.4
NRS	256	16.4	0.8	0.4	82.4	0.0
SRS	120	38.3	1.7	0.8	59.6	0.1
TOTAL	2342	55.7	6.6	1.1	36.4	0.1

4.3.4 Ethnic Distribution:

Most of the respondents were of Tigrinya ethnicity constituting 63.0% with P-value of < 0.05 at 95% CI. This was followed by Tigre and Saho Ethnic groups with 16.4 and 6% respectively. Afar were 3.8%, while others were 10.9% (Table 4.7). The others are found mostly in Gash-Barka and Anseba and they were the Bilen, Hedarib, Kunama, Nara and Rashaida.

Table 4.7 Distribution of Respondents by Ethnic Group and Zoba:

Zoba	n	Ethnic Groups (%)				
		Afar	Saho	Tigre	Tigrinya	Others
Anseba	400	0.8	0.8	32.5	30.0	27.0
Debub	620	0.3	13.7	1.8	83.9	0.3
Gash Barka	475	0.2	6.1	16.0	51.4	26.3
Maekel	480	0.8	0.6	1.7	96.7	1.0
NRS	256	8.6	6.3	61.7	19.1	0.2
SRS	120	47.5	3.3	1.7	39.2	4.3
TOTAL	2351	3.8	6.0	16.4	63.0	8.3

4.3.5 Eduational Level:

As presented in table 4.8, majority of the respondents either did not attend any formal education (34.6%) or attended Primary grades (30.3%), P-value < 0.05 at 95% CI. Only 4.4% attended higher grades > 12. The proportion varies from Zoba to Zoba, with highest educational levels found in Makael.

Table 4.8   Distribution of Respondents by Educational level and Zoba:

Zoba	n	Educational Grades (%)				
		No School	Primary (1-6)	Middle (7-8)	Secondary (9-12)	Higher (>12)
Anseba	274	32.5	36.8	11.5	15.8	3.5
Debub	408	34.8	33.1	12.3	15.5	4.4
Gash Barka	275	42.3	29.3	10.5	15.4	2.5
Maekel	392	18.5	24.2	16.0	32.5	8.8
NRS	127	50.6	29.6	10.1	8.6	1.2
SRS	73	39.2	24.2	9.2	23.3	4.2
TOTAL	1548	34.6	30.3	12.2	18.6	4.4

4.3.6 Employment Status:

The employment status by Zoba is presented in Table 4.9, P-value < 0.05 at 95 CI. The commonest form of employment is Farming with 16%. The women are house wives in 33% of the case. Students, Civil servants and National service constitute 13.2, 6.6 and 6.2% respectively. The proportion varies from Zoba to Zoba.

Table 4.9   Distribution of Respondents by Employment Type:

Zoba	n	Employment Type (%)										Total
		Farmer	Local Merchant	Daily Labourer	Civil Servant	National Service	Military	Student	House Wife	Un Employed	Other	
Anseba	377	18.0	5.6	4.5	8.0	4.0	2.8	14.6	38.0	3.4	1.9	100
Debub	604	25.0	5.1	3.5	3.6	7.1	4.6	13.4	28.0	7.1	2.5	100
Gash Barka	455	20.0	8.8	9.0	3.7	4.8	5.1	11.2	29.0	5.1	3.3	100
Maekel	448	3.8	7.4	5.8	11.0	8.9	2.0	16.1	33.0	7.1	5.6	100
NRS	242	9.9	5.0	4.5	6.3	3.7	3.7	9.5	47.0	5.4	5.4	100
SRS	107	0.0	4.7	11.2	14.0	9.3	3.7	12.1	28.0	8.4	8.4	100
TOTAL	2233	16.0	6.4	5.7	6.6	6.2	3.8	13.2	33.0	6.0	3.8	100

4.3.7 Per Capita Income

The total per capita house hold income per annum is presented in Table 4.10. Most of respondents (93.0 %), reported household income of less than 6000 Nakfa ($ 444) per annum. The per capita income is higher in Zoba Maekel compared to others.

Table 4.10   Distribution of Respondents by Per Capita Income and Zoba:

Zoba	n	Per Capita Income (Nakfa)			
		< 6000	6000 - 12000	12001 - 18000	>18,000
Anseba	320	93.0	5.6	0.7	0.7
Debub	237	95.8	2.1	0.8	1.3
Gash Barka	256	93.8	3.5	2.0	0.8
Maekel	247	88.7	6.9	2.4	2.0
NRS	110	97.3	2.7	0.0	0.0
SRS	56	87.5	0.0	0.0	12.5
TOTAL	1208	93.0	4.2	1.2	1.6

4.4   NCD RISK FACTORS (STEP 1)

4.4.1 Smoking:

The prevalence of smoking by Zoba is presented in Table 4.11. The result is significant at 95% CI. Overall 8% of the sampled population smokes. The daily smokers constituted 7% of the sampled population, while 1% was non-daily smokers. The prevalence of daily smoking was highest in Zoba Gash-Barka with 10.2%, followed by Zoba Maekel with 7.7%. The lowest prevalence was in Zoba Debub with 5.2%.

The ex-daily smokers constituted 3.6%. This percentage in Zoba Anseba, Northern red sea and Southern red sea with more than 6 % prevalence of ex-smokers.

Table 4.11   Prevalence of Smoking by Zoba (%)

| Zoba | n | Smoking Category | | | |
		Currently Daily	Current Non-Daily	Ex-Daily	Never
Anseba	387	6.2	1.6	6.2	86.0
Debub	611	5.2	1.1	2.0	91.7
Gash Barka	426	11.0	0.7	3.1	85.2
Maekel	469	7.9	0.0	1.5	90.6
NRS	248	5.6	1.6	7.3	85.5
SRS	120	6.7	0.0	6.7	86.7
TOTAL	2261	7.2	0.9	3.6	88.3

The distribution of prevalence of smoking by Age group and sex as shown in Table 4.12 reveal that the prevalence of smoking was significantly higher among males than females. In fact, none of the females reported being an ex-smoker and the prevalence of current daily smokers among females was less than 1% for all age groups.

The modal age group for current daily smoking prevalence among males was 35 -44 years with prevalence of up to 21.6%.

Prevalence of current daily tobacco smoking by sex and age group

Fig 2						
	15-24	**25-34**	**35-44**	**45-54**	**55-64**	
Male	**6.2**	**16.6**	**21.6**	**15.6**	**9.7**	
Female	**0.9**	**0.4**	**0.5**	**0**	**0.9**	
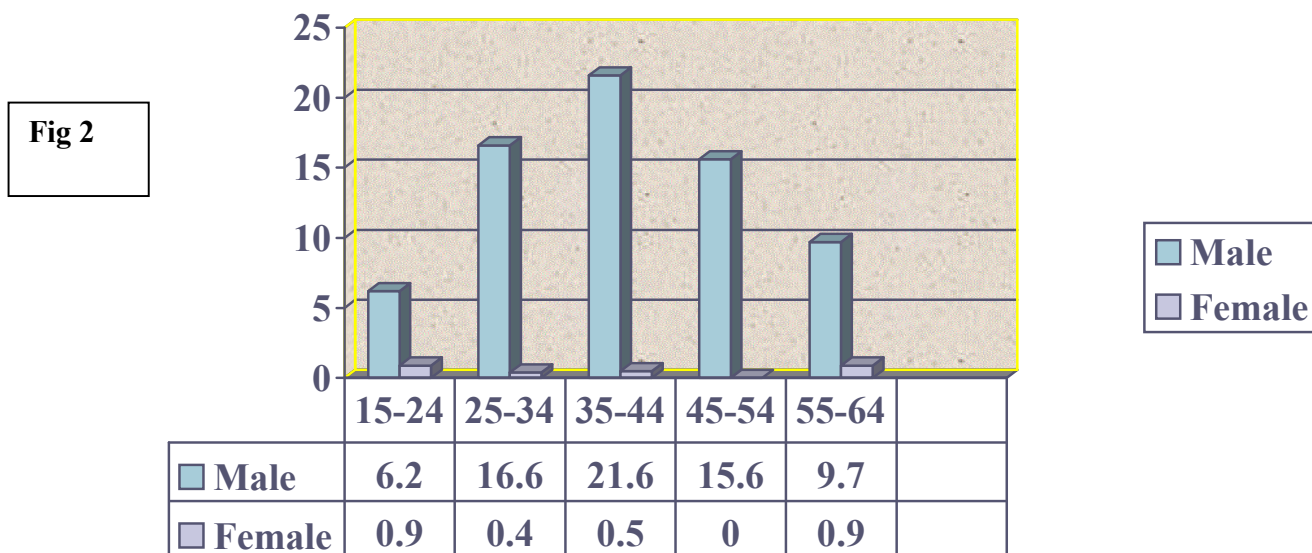
Table 4.12   Prevalence of Smoking by Age Group and Sex

Smoking Category	Age Group and Sex										Total
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
N	241	234	217	239	232	219	212	231	216	23	2252
Current Daily	6.2	0.9	16.6	0.4	21.6	0.5	15.6	0.0	9.7	0.9	7.1
Current Non-Daily	1.7	0.0	1.4	0.0	2.2	0.0	2.8	0.0	0.9	0.0	0.9
Ex- Daily	2.1	0.0	7.8	0.0	9.1	0.0	9.9	0.0	8.3	0.0	3.6
Non- Smokers	90.0	99.1	74.2	99.6	67.2	99.5	71.7	100.0	81.0	99.1	88.3

The age of smoking onset did not give a statistically significant result (P-Value 0.093) – Table 4.13. The prevalence shows that, more than half of the respondents started smoking as teenagers. This proportion is more in southern

red sea and Zoba Maekel where the prevalence of smoking onset before teenage is 4.8%.

Prevalence of Daily Smoking by Zoba

Fig 3.
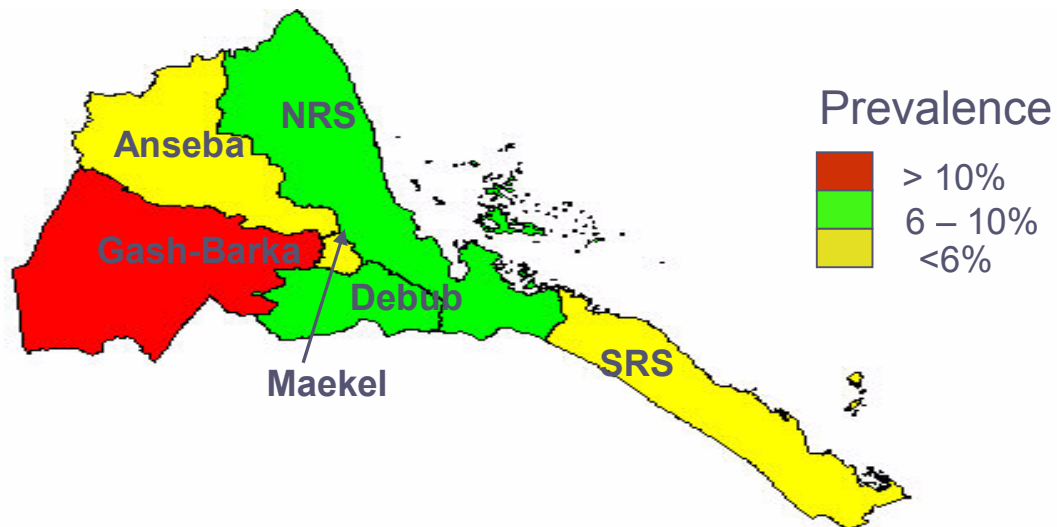
Table 4.13   Percentage distribution of Age of Smoking Onset by Zoba

Zoba	N	Age at Onset of Smoking (Years)			
		< 13	13 - 19	20 - 30	> 30
Anseba	32	6.2	40.6	43.8	9.4
Debub	39	0	48.7	46.2	5.1
Gash Barka	37	5.9	39.2	52.9	2.0
Maekel	51	2.7	59.5	35.1	2.7
NRS	19	5.1	63.2	21.1	10.5
SRS	8	25.0	62.5	12.5	0
TOTAL	186	4.8	48.9	41.4	4.8

Table 4.14 shows the prevalence of current smoking duration by Zoba. Most of the respondents had been smoking for 11 – 20 years (33.3%). Smoking duration less than 11 years was 26.9%, 21 – 30 years 23.1% and above 30 years was

16.1%. The length of smoking duration was highest in Zoba Anseba and Northern red sea.

Table 4.14   Prevalence of Current Smoking Duration by Zoba:

Zoba	N	Duration of Smoking (Years)			
		1 - 10	11 - 20	21 - 30	> 30
Anseba	32	15.6	40.6	31.3	12.5
Debub	39	35.9	28.2	23.1	12.8
Gash Barka	51	25.5	33.3	25.5	15.7
Maekel	37	18.9	37.8	24.3	18.9
NRS	19	47.4	42.1	5.3	5.3
SRS	8	25.0	0	12.5	62.5
TOTAL	186	26.9	33.9	23.1	16.1

The most frequently smoked tobacco products were the manufactured cigarettes smoked by 87.6 % of the current daily smokers (Table 4.15).

The quantities of manufactured cigarettes smoked are presented in Table 4.16. One third of respondents reported smoking less than 5 cigarettes per day, similar proportion smoke 6 – 10 and 19% smoke 11 – 20 per day.

Table 4.15   Type of Cigarette Consumed by Smoking Category

Type of Tobacco	Smoking Category		
	Currently Daily	Current Non-Daily	Ex-Daily
N	161	20	82
Manufactured Cigarettes	87.6	50.0	1.3
Hand-Rolled Cigarettes	1.2	15.0	0.0
Pipe	1.2	0.0	0.0
Other	3.0	0.0	0.0
Not Specified	7.0	35.0	98.7
TOTAL	100	100	100

Table 4.16   Quantities of Manufactured Cigarettes Smoked by Category

Quantity of Cigarettes/Day	Smoking Category		
	Currently Daily	Current Non-Daly	Ex-Daily
n	161	20	82
1 – 5	33.3	25.0	1.3
6 – 10	32.7	20.0	0.0
11 – 20	19.7	5.0	0.0
> 20	1.8	0.0	0.0
Missing	12.5	50.0	98.7

4.4.2. PREVALENCE OF SMOKELESS TOBACCO USE:

The prevalence of smokeless tobacco use was less than that of smoked tobacco. As can be seen from table 4.17, the National prevalence of current use of smokeless tobacco was 2.9%. The prevalence ranges from 0.4% in Zoba Maekel to 6.6% in Northern red sea. The prevalence is low in the High Lands and seem to be reducing in most Zobas when the current daily users are compared to ex-daily users.

Most users are males of the older age groups of 45 years and above (Table 4.18). Most users use either chewing tobacco – 53.8% or snuff by mouth 35.0% (Table 5.4.2.3). The quantities of chewing Tobacco and snuff by mouth used are presented in Tables 4.19 and 4.20 respectively

Table 4.17   Prevalence of Smokeless Tobacco use by Zoba

Zoba	n	Smokeless Tobacco Category			
		Current Daily	Current Non-Daily	Ex-Daily	Never
Anseba	386	4.4	0.0	11.1	84.5
Debub	611	1.3	0.5	2.9	95.3
Gash Barka	392	4.1	0.8	8.4	86.7
Maekel	473	0.4	0.0	1.5	98.1
NRS	244	6.6	0.4	4.9	88.1
SRS	112	5.4	0.0	5.4	89.3
TOTAL	2218	2.9	0.3	5.4	91.4

Table 4.18 Prevalence of Smokeless Tobacco use by Age Group and Sex

Smoking Category	Age Group and Sex										Total
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
N	240	237	216	240	237	219	216	228	223	210	2266
Current Daily Use of smokeless	3.4	0.0	6.1	0.0	4.7	0.5	8.9	0.0	5.7	0.5	2.9
Current Non-Daily use of Smokeless	0.9	0.0	0.5	0.0	1.3	0.0	0.5	0.0	0.0	0.0	0.3
Ex- Daily Use of smokeless	5.1	0.4	7.1	0.4	13.6	0.0	15.0	0.0	12.3	0.0	5.4
Non-Users	90.6	99.6	86.3	99.6	80.4	99.5	75.6	100.0	82.1	99.5	91.3

Table 4.19   Type of Smokeless Tobacco Use by Category

Type of Tobacco	Smoking Category		
	Current Daily	Current Non-Daily	Ex-Daily
N	65	7	119
Snuff by Mouth	35.0	28.7	23.5
Snuff by Nose	4.6	14.2	3.4
Chewing Tobacco	53.8	57.1	35.3
Other	0.0	0.0	3.4
Un-known	6.6	0.0	34.4

Table 4.20a   Quantities of Snuff by Mouth Used

Quantity Snuff by Mouth	Smoking Category		
	Currently Daily	Current Non-Daily	Ex-Daily
N	65	7	119
1 – 5	18.5	14.3	4.2
6 – 10	4.6	14.3	12.6
11 – 20	13.8	0.0	6.7
> 20	1.5	0.0	0.0
Un-known	61.6	71.4	76.5

Table 4.20b   Quantities of Manufactured Cigarettes Smoked by Category

Quantity of Chewing Tobacco/Day	Smoking Category		
	Currently Daily	Current Non-Daily	Ex-Daily
1 – 5	30.8	42.8	12.6
6 – 10	10.8	14.3	10.1
11 – 20	9.2	0.0	6.7
> 20	3.1	0.0	5.9
Un-known	46.1	42.9	64.7

4.4.3 Alcohol

In this survey "Drink Ever" is defined as a person who has ever consumed alcohol, while "Drinker" is defined as a person who consumed alcohol in the last 12 months. The prevalence of "drinker" and "drink ever" are presented in Table 4.21. The "drink ever" prevalence was 42.9% and that of "Drinker" was 39.6%. The drinker prevalence was lowest in Southern red sea, 8.4% and highest in Debub, 62.5%.

The prevalence of Drinker was higher among males than females and it rises with age group until age group 55 – 64 when the prevalence drops slightly (Table 4.22).

Prevalence of alcohol drinking by Zoba

Fig 4

	Anseba	Debub	Gash B	Maekel	NRS	SRS	Total
Prevalence	21.6	62.5	27.6	54.3	14.3	8.4	39.6
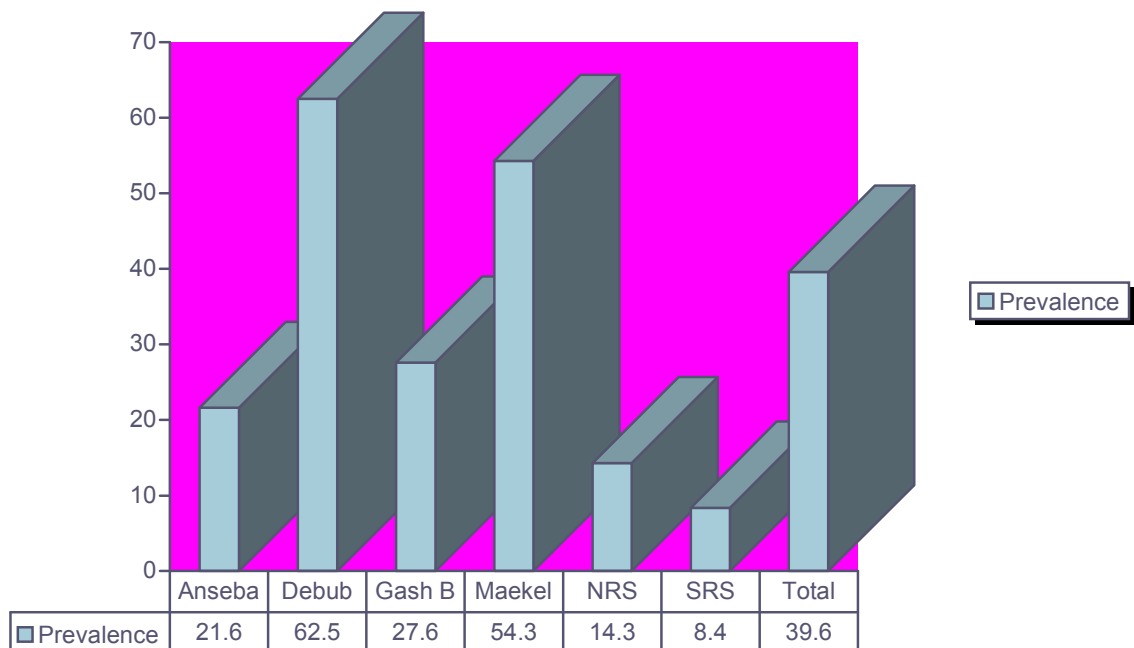
Prevalence of alcohol drinking by sex and age group

Fig 5

	15-24	25-34	35-44	45-54	55-64
Male	34.2	43.5	44.7	51.6	48
Female	24.4	38.4	37.4	38.4	38.1
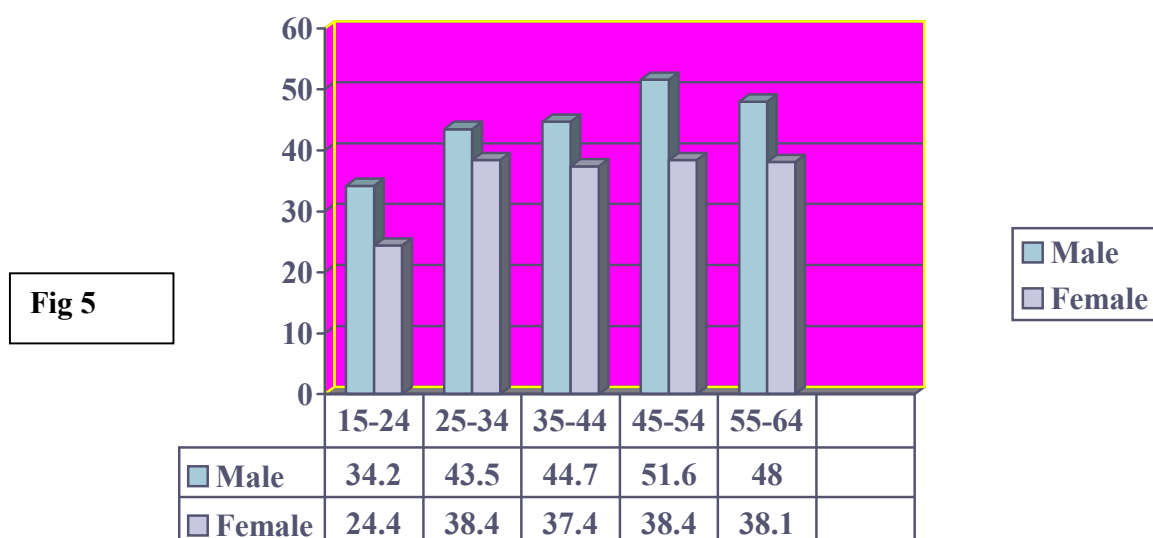
Table 4.21   Prevalence of Drinking by Zoba

Zoba	n	Drinking Category		
		Drink Ever	Drinker	Non-Drinker
Anseba	348	28.9	21.6	78.4
Debub	570	65.1	62.5	37.5
Gash Barka	433	30.8	27.6	72.4
Maekel	403	61.6	54.3	45.7
NRS	140	14.5	14.3	85.7
SRS	119	9.2	8.4	91.6
TOTAL	2033	42.9	39.6	60.4

Table 4.22 **Prevalence Drinker by Age Group and Sex**

Drinking Category	Age Group and Sex										
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
N	219	213	191	219	206	198	188	198	198	194	2024
Drinker	34.2	24.4	43.5	38.4	44.7	37.4	51.6	38.4	48.0	38.1	39.6
Non Drinker	65.8	75.6	56.5	61.6	55.3	62.6	48.4	61.6	52.2	61.9	60.4

Analysis of Drinker by other socio-cultural characteristics shows that the prevalence rises with educational level up to Secondary grades (Table 4.23). The prevalence was also affected by Ethnic groups of the respondents lowest amongst the Afar – 10.5% and Highest among the Tigrinya – 51 % (Table 4.24). Among religious groups, Muslims had the lowest prevalence of 19%, while the Orthodox Christians had highest prevalence of 52.7% (Table 4.25). Analysis by employment shows that, the highest prevalence of 48.8% is among those on National service (Table 4.26).

Table 4.23   Prevalence of Drinker by Educational level:

Education	n	Drinking Category	
		Drinker	Non Drinker
No School	697	36.4	63.6
Primary Grades (1 – 6)	631	37.9	62.1
Middle Grades (7 – 8)	247	44.5	55.5
Secondary Grades (9 – 12)	386	44.8	55.2
Higher Grades (> 12)	90	40.0	60.0
TOTAL	2033	39.6	60.4

prevalence of alcohol drinking by religion

Fig 6

	Orthodox	Catholics	Protestants	Islam	Others	
☐Alcohol	52.7	37.8	45	19	25	
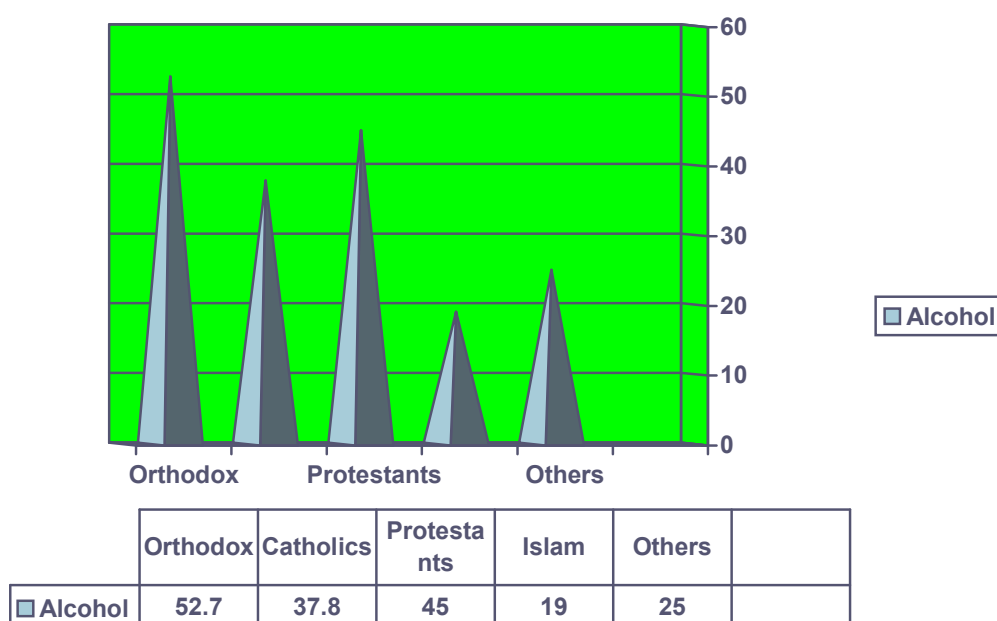
Table 4.24   Prevalence of Drinker by Ethnic Group:

Ethnic Group	N	Drinking Category	
		Drinker	Non Drinker
Afar	68	10.3	89.7
Saho	119	28.6	71.4
Tigre	326	16.6	83.4
Tigrinya	1288	51.4	48.6
Other	231	20.3	79.7
TOTAL	2032	39.6	60.4

Table 4.25   Prevalence of Drinker by Religion:

Religion	n	Drinker	
		Drinker	Non Drinker
Orthodox	1144	52.7	47.3
Catholic	127	37.8	62.2
Protestant	20	45.0	55.0
Islam	730	19.0	81.0
Other	4	25.0	75.0
TOTAL	2025	39.6	60.4

Table 4.26   Prevalence of Drinker by Employment:

Employment	N	Drinking Category	
		Drinker	Non Drinker
Farmer	308	44.2	55.8
Local Merchant	123	37.4	62.6
Daily Labour	113	33.6	66.4
Civil Servant	122	36.9	63.1
National Service	123	48.8	57.2
Military	79	30.4	69.6
Student	257	42.0	58.0
House Wife	625	39.4	60.6
Un Employed	115	38.3	61.7
Other	64	46.9	53.1
TOTAL	1929	39.6	60.4

The quantity of standard drinks consumed per drinking day in the last 12 months by Zoba is presented in Table 4.27. The quantities are paradoxically higher in Zobas with low drinker prevalence.

High daily alcohol consumption is defined as daily alcohol of greater than 4 drinks and is presented in Table 4.28. The prevalence was highest in Anseba with 14%, followed by Gash-Barka with 8.9%.

Table 4.27 Percentage distribution of respondents by number of standard drinks consumed per day in Last 12 Months per Zoba

Zoba	N	Number of Standard Drinks:				
		1	2 – 3	4 - 5	6 - 7	8 >=
Anseba	115	36.5	30.4	16.5	5.2	11.3
Debub	384	45.3	36.2	10.4	3.1	4.9
Gash Barka	149	38.3	29.5	14.8	4.0	13.4
Maekel	280	47.1	29.6	12.1	2.1	8.9
NRS	43	32.6	30.2	18.6	2.3	16.3
SRS	9	0.0	55.6	0.0	22.2	22.2
TOTAL	980	42.8	32.6	12.6	3.4	8.0

Table 4.28   Prevalence of High Daily Alcohol Consumption By Zoba:

Zoba	n	Number of Drinks		
		=<4	> 4	P
Anseba	348	85.7	14.3	
Debub	570	93.3	6.7	
Gash-Barka	453	91.1	8.9	
Maekel	403	100.0	0.0	0.020
NRS	140	100.0	0.0	
SRS	119	100.0	0.0	
TOTAL	2033	96.0	4.0	

4.4.4 Diet

Low fruit consumption is defined as consumption of less than 2 servings of fruit per day. The prevalence of low fruit consumption by Zoba as seen in Table 4.29 shows that, the prevalence was quite high, 84.7%. It was highest in Debub and lowest in Gash Barka. There is no significant difference between males and females and between age groups (Table 4.30). The prevalence of low fruit consumption was slightly higher among those who did not go to school but no difference between grades of education for those who went to school (Table 4.31). The prevalence was highest among those who report their employment as Farming and lowest among civil servants (Table 4.32)

Table 4.29   Prevalence of Fruit Low by Zoba

Zoba	n	Fruit Serving/Day		
		< 2	2 >=	P
Anseba	400	88.8	11.3	
Debub	620	91.1	8.9	
Gash Barka	475	76.6	23.4	
Maekel	480	81.9	18.1	0.000
NRS	257	86.4	13.6	
SRS	120	78.3	21.7	
TOTAL	2352	84.7	15.3	

Table 4.30 Prevalence of Low Fruit by Age Group and Sex

Fruit Serving /Day	Age Group and Sex										Total
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
n	246	244	221	250	244	229	223	239	226	220	2340
< 2	85.4	83.6	86.0	86.8	83.6	85.2	82.1	86.2	84.1	84.5	84.7
2 +	14.6	16.4	14.0	13.2	16.4	14.8	17.9	13.2	15.9	15.5	15.3

Table 4.31   Prevalence of Low Fruit Consumption by Educational level

Education	n	Fruit Serving/Day		
		< 2	2>=	p
No School	813	86.3	13.7	
Primary Grades (1 – 6)	721	85.1	14.9	
Middle Grades (7 – 8)	286	82.9	17.1	0.395
Secondary Grades (9 – 12)	438	82.6	17.4	
Higher Grades (> 12)	103	83.5	16.5	
TOTAL	2352	84.7	15.3	

Table 4.32   Prevalence of Low Fruit Consumption by Employment:

Employment	n	Fruit Serving/Day		
		< 2	2 >=	p
Farmer	350	90.0	10.0	0.081
Local Merchant	142	82.4	17.6	
Daily Labour	128	82.8	17.2	

Civil Servant	147	79.6	20.4	
National Service	139	87.1	12.9	
Military	84	83.3	16.7	
Student	295	87.1	12.9	
House Wife	731	85.4	14.6	
Un Employed	133	82.0	18.0	
Other	84	81.0	19.0	
TOTAL	2233	84.7	15.3	

Low Vegetable consumption is defined as consumption of less than 2 servings of vegetable per day. The prevalence of low vegetable consumption by Zoba can be seen in Table 4.33 The prevalence was lower than low fruit; 50.6%. It was highest in Southern red Sea (71.1%) and lowest in Gash Barka (44.2%). There was no significant difference between males and females and between age groups (Table 4.34). The prevalence of low vegetable consumption decreases with increasing educational level (Table 4.35). The prevalence was highest among those who report their employment as Farming and lowest among local merchants (Table 4.36).

Table 4.33   Prevalence of Low Vegetable Consumption by Zoba

Zoba	n	Vegetable Serving/Day		
		< 2	2 +	p
Anseba	400	55.0	45.0	
Debub	620	48.9	57.1	
Gash Barka	475	44.2	55.8	
Maekel	480	46.0	54.0	0.000
NRS	257	58.4	41.6	
SRS	120	71.1	28.3	
TOTAL	2352	50.6	49.4	

Table 4.34 Prevalence of Low Vegetable Consumption by Age Group and Sex

Vegetable Serving/Day	Age Group and Sex										
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
N	246	244	221	250	244	229	223	239	226	220	2342
< 2	43.3	50.0	48.9	49.6	51.6	51.5	52.5	51.0	54.0	52.7	50.6
2 +	55.7	50.0	51.1	50.4	48.4	48.5	47.5	49.0	46.0	47.3	49.4

Table 4.35   Prevalence of Low Vegetable Consumption by Educational level:

Education	n	Vegetable Serving/Day		
		< 2	2>=	p
No School	813	54.2	45.8	
Primary Grades (1 – 6)	712	50.8	49.2	
Middle Grades (7 – 8)	286	47.2	52.8	0.016
Secondary Grades (9 – 12)	438	48.4	51.6	
Higher Grades (> 12)	103	38.8	61.2	
TOTAL	2352	50.6	49.4	

Table 4.36   Prevalence of Low Vegetable Consumption by Employment:

Employment	n	Vegetable Serving/Day		
		< 2	2>=	p
Farmer	350	58.0	42.0	
Local Merchant	142	43.0	57.0	
Daily Labour	128	49.2	50.8	
Civil Servant	147	48.3	51.7	
National Service	139	46.8	53.2	
Military	84	46.4	53.6	0.066
Student	295	49.2	50.8	
House Wife	731	51.8	48.2	
Un Employed	133	45.1	54.9	
Other	84	56.0	44.0	
TOTAL	2233	50.6	49.4	

4.4.5 Physical Activity

Inactivity is defined as work mostly sitting; transport not walking or using a bicycle; rest and leisure involving mostly sitting. The prevalence of inactivity by Zoba is presented in Table 4.37. The National prevalence of inactivity was 10.1%. It was highest in Northern Red sea with 21% and lowest in Debub with 7.0%. The prevalence was Zero in Southern Red Sea.

Table 4.37   Prevalence of Inactivity by Zoba

Zoba	n	Physical Activity		
		Active	Inactive	P
Anseba	399	91.0	9.0	
Debub	617	93.0	7.0	
Gash Barka	469	88.7	11.3	
Maekel	479	89.6	10.4	0.000
NRS	254	78.3	21.7	
SRS	120	100.0	0.0	
TOTAL	2338	89.9	10.1	

Age and Sex distribution of Inactivity shows that there was no difference between the males and females or between age groups (Table 4.38). The prevalence by educational level as seen in Table 4.39 reveals that for those who went to school, the prevalence of inactivity increases with increasing education. For the types of employment, inactivity was highest among local merchants (14.2%) and lowest among the National service – 5.2% (Table 4.40). The rural dwellers have a slightly higher level of inactivity than urban dwellers which however was statistically not significant, p-value = 0.093 (Table 4.41)

Table 4.38 Prevalence of Inactivity by Age Group and Sex

| Physical Activity | Age Group and Sex | | | | | | | | | | Total |
| | 15 – 24 yrs | | 25 – 34 yrs | | 35 – 44 yrs | | 45 – 54 yrs | | 55 – 64 yrs | | |
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
N	242	244	221	249	240	228	222	228	236	242	2328
Active	88.0	92.2	90.5	87.6	90.4	91.7	91.1	88.7	88.5	89.4	89.9
Inactive	12.0	7.8	9.5	12.4	9.6	8.3	8.1	11.3	11.5	10.6	10.1

Table 4.39 Prevalence of Inactivity by Education: (P 0.066)

| Education | N | Physical Activity | | |
		Active	Inactive	P
No School	808	89.7	10.3	
Primary Grades (1 – 6)	709	91.1	8.9	
Middle Grades (7 – 8)	283	89.8	10.2	0.666
Secondary Grades (9 – 12)	436	88.5	11.5	
Higher Grades (> 12)	102	88.2	11.8	
TOTAL	2338	89.9	10.1	

Table 4.40 Prevalence of Inactivity by Employment staus : (P 0.068)

Employment	n	Physical Activity		
		Active	Inactive	p
Farmer	348	91.1	8.9	
Local Merchant	141	85.8	14.2	
Daily Labour	126	91.3	8.7	
Civil Servant	147	89.8	10.2	
National Service	138	94.9	5.1	
Military	83	87.4	3.6	0.068
Student	293	88.3	12.6	
House Wife	727	92.5	11.7	
Un Employed	133	90.5	7.5	
Other	84	89.9	9.5	
TOTAL	2220	89.9	10.1	

Table 4.41 Prevalence of Inactivity by Setting (P-Value 0.093)

Setting	n	Physical Activity	
		Active	Inactive
Urban	595	90.5	9.5
Rural	1743	88.1	11.9
TOTAL	2338	89.9	10.1

The percentage distribution of the respondents with regards to the level of physical activity during work shows that 60.6% were inactive at work, 18.8 did moderate work related physical activity, while 20% did vigorous activity. The level of work related inactivity was highest in Zoba Maekel (74%) and lowest in Southern Red sea (39%) – Table 4.42.

For transport related inactivity (Table 4.43), the national prevalence was 15% with highest prevalence 38.8% in the NRS Zoba. Thus, 75% of the total respondents either cycle or trek to work.

The Leisure related inactivity prevalence was 91.5%. This was highest in Northern red sea (96%) and lowest in Debub (86%) – Table 4.44

Table 4.42   Percentage distribution of the respondents by Level of physical activity at Work and by Zoba (P – 0.000)

Zoba	n	Level of Work Activity (%)		
		Inactive	Moderate	Vigorous
Anseba	384	67.7	12.5	19.8
Debub	603	47.3	24.2	28.5
Gash Barka	463	70.1	10.4	19.5
Maekel	474	74.7	9.7	15.6
NRS	237	46.0	35.9	18.1
SRS	111	39.6	48.6	11.7
TOTAL	2271	60.6	18.8	20.6

Table 4.43   Percentage distribution of respondents by Transport Related Physical Activity and by Zoba (P 0.000)

Zoba	n	Transport Activity (%)	
		Inactive	Active
Anseba	399	11.8	88.2
Debub	616	9.7	90.3
Gash Barka	467	17.1	82.9
Maekel	477	13.0	87.0
NRS	255	38.8	62.0
SRS	120	4.2	95.8
TOTAL	2334	15.0	85.0

Table 4.44   Percentage distribution of respondents by Level of physical activity at Leisure time by Zoba (P 0.000)

Zoba	n	Level of Leisure Activity (%)		
		Inactive	Moderate	Vigorous
Anseba	337	91.4	4.5	4.2
Debub	562	86.5	6.4	7.1
Gash Barka	395	91.9	2.5	5.6
Maekel	458	95.6	2.0	2.4
NRS	241	96.7	0.8	2.5
SRS	101	87.1	10.9	2.0
TOTAL	2094	91.5	4.0	4.5

4.5 NCD RISK FACTORS (STEP 2 PHYSICAL MEASUREMENTS)

The mean, median and standard deviations of the physical measurements are presented in Table 4.45.

The mean height was 162.29 cm with a standard deviation of 11.37.

The mean weight was 54 with a standard deviation of 11.31.

The mean BMI was 21.01 with SD of 4.9.

The mean SBP was 119.15 mmHg with SD of 18.4 and

The mean DBP was 77.12 with SD of 13.7.

Table 4.45   Statistical measures for physical measurements:

Statistics Measures	Physical Measurements					
	Height (Cm)	Weight (Kg)	BMI (Kg/M2)	Waist Circumf. (Cm)	SBP (MMHg)	DBP (MMHg)
N	2223	2341	2323	2251	2348	2348
Mean	162.29	55.23	21.01	76.21	119.15	77.12
Standard Deviation	11.37	11.31	4.90	11.41	18.48	13.72
Variance	129.2	128.02	24.00	130.29	341.6	188.12

4.5.1 PREVALENCE OF OBESITY (HIGH BODY MASS INDEX)

Obesity (High Body mass index) is defined as body mass index of 30 kg/m² and above. The prevalence of High Body mass index as shown in Table 4.46 was 3.3%.

If we add those who are overweight (those who are at risk of becoming obese), the prevalence gets up to 13.7 %, which is not small at all. This prevalence was

highest in Southern Red sea and Zoba Maekel and lowest in Zoba Anseba and Gash-Barka (table 4.46a).

The high body mass index prevalence was higher in Females than in Male and was likewise higher in middle age groups and the elderly (Table 4.47)

Table 4.46a Percentage Distribution of respondents by BMI category and age group and sex (P 0.000)

Body Mass Index	Age Group and Sex (%)										Total
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
N	133	102	81	85	66	64	56	68	72	70	2292
<19	54.7	42.9	37.9	34.4	27.8	28.4	25.9	22.8	32.9	32.3	34.8
19 - 24.9	41.2	47.9	51.9	54.3	54.4	48.9	63.0	54.2	54.3	45.6	51.5
25 –29.9	3.7	8.0	7.9	8.5	13.9	16.0	8.3	14.0	10.5	13.8	10.4
30>=	0.4	1.3	2.3	2.8	3.8	6.7	2.8	3.0	2.3	8.3	3.3

Table 4.46b Prevalence of Obesity (High Body Mass Index) by Zoba (P 0.024)

Zoba	n	Body Mass Index (%)	
		Normal	High
Anseba	400	98.0	2.0
Debub	616	96.8	3.2
Gash Barka	473	98.1	1.9
Maekel	475	94.7	5.3
NRS	257	96.7	3.2
SRS	120	94.4	5.8
TOTAL	2341	96.7	3.3

Prevalence of Obesity by sex and age group

	15-24	25-34	35-44	45-54	55-64
☐ Male	0.4	2.3	3.8	2.8	2.3
☐ Female	1.3	2.8	6.6	3	8.3

Fig 7
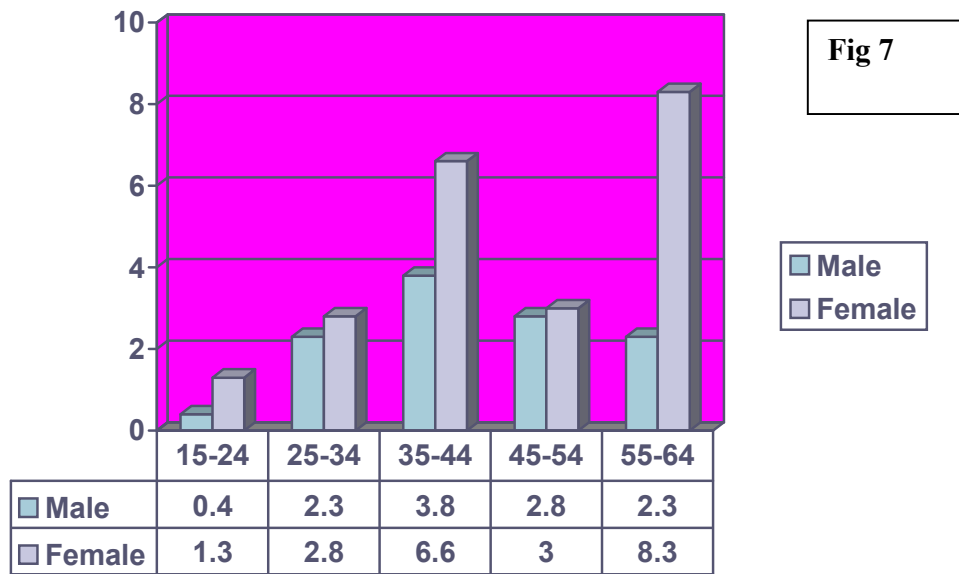
Table 4.47   Prevalence of Obesity (High Body Mass Index) by Age Group and Sex (0.016)

Body Mass Index	Age Group and Sex (%)										Total
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
n	246	243	218	250	242	229	222	239	224	218	2331
Normal	99.6	98.7	97.7	97.2	96.2	93.4	97.2	97.0	97.7	91.7	96.7
High	0.4	1.3	2.3	2.8	3.8	6.6	2.8	3.0	2.3	8.3	3.3

4.5.2   WAIST CIRCUMFERENCE:

Table 4.48 shows that most of the respondents had a waist circumference that lies between 61 and 80 cm (63.3%). Thirty one percent had a waist circumference above 80 cm. High waist circumference was highest in Zoba Maekel and Southern red sea. This is similar to the prevalence of High BMI. But unlike High BMI, the males tend to have higher values of Waist circumference than female (Table 4.49)

About 25-30% of women have a WC > 80 cm (Normal value for female) and just about 2% of the men have a WC >100 cm (normal value = 94 cm for men

Table 4.48   Percentage distribution of respondents by Waist Circumference and by Zoba (P 0.000)

Zoba	n	Waist Circumference (%)			
		> 60 (cm)	61 – 80 (cm)	81 – 100 (cm)	> 100 (cm)
Anseba		3.9	66.9	27.9	1.3
Debub		2.7	70.1	24.6	2.5
Gash Barka		5.6	64.9	28.7	0.9
Maekel		6.0	49.6	40.9	3.4
NRS		7.9	63.9	26.1	2.1
SRS		6.9	64.7	24.1	4.3
TOTAL		4.9	63.3	29.5	2.2

Table 4.49   Waist Circumference by Age Group and Sex (P 0.000)

Waist Circumf. (cm)	Age Group and Sex										
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
n	246	243	218	250	242	229	222	239	224	218	2331
> 60	4.5	14.0	3.8	8.2	2.1	4.6	2.8	3.4	1.4	5.1	5.0
61 - 80	84.7	72.4	68.2	72.1	58.3	61.6	49.8	62.1	50.5	50.9	63.2
81 - 100	10.3	13.1	27.0	17.8	37.6	31.9	43.8	31.9	42.7	40.7	29.5
> 100	0.4	0.5	0.9	1.8	2.1	1.9	3.7	2.6	5.5	3.3	2.2

4.5.3 PREVALENCE OF HIGH BLOOD PRESSURE

High Blood pressure is defined as Systolic Blood pressure of 140 mmHg and above and or Diastolic Blood pressure of 90 mmHg and above. The prevalence of high blood pressure using this definition was 15.9% - Table 4.50 The prevalence was highest in Zoba Maekel with 19.2% and lowest in Southern red sea with 8.3%.

The prevalence of high blood pressure with the cut off point of systolic blood pressure at 160 mmHg and above or diastolic of 95 mmHg and above is 6.6%. Zoba Maekel still retained the highest prevalence at this cut off point – Table 4.51

Table 4.50   Percentage distribution of respondents by level of Blood Pressure and by Zoba (high BP cut off = SBP >=140 mmHg and or DBP >= 90 mmHg). (P 0.004)

Zoba	n	Blood Pressure (%)	
		Normal	High
Anseba	400	88.3	11.8
Debub	620	81.8	18.2
Gash Barka	475	85.5	14.5
Maekel	480	80.8	19.2
NRS	256	83.3	16.7
SRS	120	91.7	8.3
TOTAL	2352	84.1	15.9

Prevalence of hypertension by Zoba

Fig 8
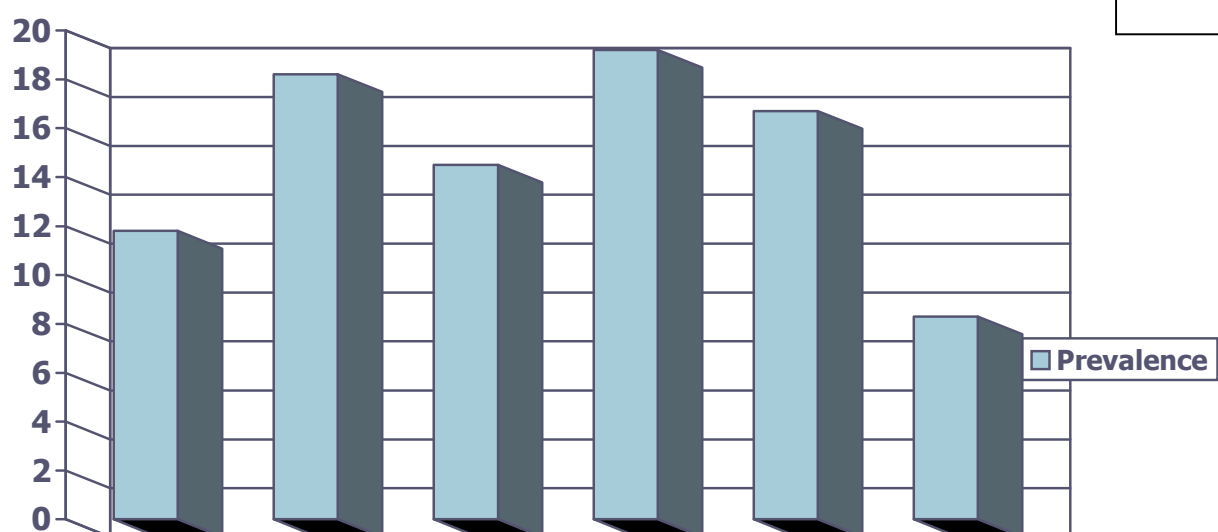
	Anseba	Debub	Gash Barka	Maekel	NRS	SRS
☐ Prevalence	11.8	18.2	14.5	19.2	16.7	8.3

Table 4.51 Percentage distribution of respondents by level of Blood Pressure and by Zoba (high BP cut off = SBP >=160 mmHg and or DBP >= 90 mmHg).

Zoba	n	Blood Pressure	
		Normal	High
Anseba	400	96.8	3.3
Debub	619	91.8	8.2
Gash Barka	475	95.6	4.4
Maekel	478	91.0	9.0
NRS	256	91.8	8.2
SRS	120	95.0	5.0
TOTAL	2348	93.4	6.6

The prevalence of High blood pressure is higher among males up to age group 35 – 44 years, there after it is reversed and became more prevalent among the females. The prevalence rises with age (Table 4.52). The prevalence of High blood pressure drops with educational level from those who did not attend school up secondary grades. The prevalence then rises at Higher grades after secondary grades – (Table 4.53). The prevalence among different employment categories (Table 4.54) reveals that it is highest among the local merchants and un-employed (>24%) and lowest among the Students (7.1%). Table 4.55 presents the distribution of the prevalence of high blood pressure by source of income. Those respondents whose major source of household income is Aid, Business or Remittance have higher prevalence (> 20%). Those who reported source of household income as Daily Labour, Farm products or National service have lower prevalence (< 14%). The prevalence is also higher among those with Per capita income earning > 18,000 Nakfa per annum Table 4.56. The difference between Urban and Rural settings in terms of prevalence of high blood pressure was not statistically significant (Table 5.57).

Table 4.52   Prevalence of High Blood Pressure by Age Group and Sex (P 0.000)

Blood Pressure	Age Group and Sex (%)										Total
	15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
n	246	244	221	250	244	229	223	239	226	220	2342
Normal	92.3	97.1	91.0	94.8	85.2	90.0	81.6	78.0	65.5	62.7	84.1
High	7.7	2.9	9.0	5.2	14.8	10.0	18.4	21.0	34.5	37.3	15.9

Prevalence of hypertesion by sex and age group

Fig 9

	15-24	25-34	35-44	45-54	55-64
Male	7.7	9	14	18.4	34.5
Female	2.9	5.2	10	21	37.3

Table 4.53   Prevalence of High Blood Pressure by Education: (P 0.000)

Education	n	Blood Pressure	
		Normal	High
No School	813	79.3	20.7
Primary Grades (1 – 6)	712	85.8	14.2
Middle Grades (7 – 8)	286	86.7	13.3
Secondary Grades (9 – 12)	483	88.8	11.2
Higher Grades (> 12)	103	82.5	17.5
TOTAL	2352	84.1	15.9

Table 4.54   Prevalence of High Blood Pressure by Employment status: (P 0.000)

Employment	n	Blood Pressure (%)	
		Normal	High
Farmer	350	84.9	15.1
Local Merchant	142	75.4	24.6
Daily Labour	128	88.3	11.7
Civil Servant	147	83.7	16.3
National Service	139	87.1	12.9
Military	84	85.7	14.3
Student	295	92.9	7.1
House Wife	731	84.4	15.6
Un Employed	133	72.5	24.8
Other	84	76.2	23.8
TOTAL	2233	84.9	15.1

Table 4.55   Prevalence of High Blood Pressure by source of Income: (P 0.021)

Source of Income	n	Blood Pressure (%)	
		Normal	High
Aid	100	76.0	24.0
Business	120	77.5	22.5
Daily Labour	101	86.1	13.9
Farm Product	761	86.2	13.8
Formal Employment	886	85.1	14.9
National Service	73	86.3	13.7
Remittance	90	76.7	23.3
Other	221	81.4	18.6
TOTAL	2352	84.1	15.9

Table 4.56   Prevalence of High Blood Pressure by Per capita income (P 0.000)

Per capita Group (Nakfa)	n	Blood Pressure (%)	
		Normal	High
< 6,000 ($)	1123	85.5	15.0
6,000 – 12,000 ($)	51	86.3	13.7
12,001 – 18,000 ($)	15	46.7	53.3
> 18,000 ($)	19	94.7	5.3
TOTAL	1208	84.1	15.9

Table 4.57   Prevalence of High Blood Pressure by Setting (P 0.26)

Setting	n	Blood Pressure (%)	
		Normal	High
Urban	601	83.6	16.4
Rural	1751	85.5	14.5
TOTAL	2352	84.1	15.9

4.5.4 Blood Pressure Check:

As can be seen from Table 4.58, more than half of the respondents with high blood pressure had not had their blood pressure checked for more than a year and 33% for more than 5 years.

Of those with high blood pressure, 82.9% were not aware of this situation prior to the survey (Table 4.59) and only 11.9% reported receiving treatment (Table 4.60). Among the respondents with high blood pressure, 0.8% had consulted traditional healer for treatment – P value of 0.68 (Table 5.61) and only 1.7% are on herbal treatment (Table 4.62). Family history of high blood pressure among those with high blood pressure as shown in Table 4.63 is not significantly

different from those with normal blood pressure at 17.9% and 16.4% respectively. It is the same scenario with family history of diabetes (Table 4.65). However, there is a significant difference between the 2 groups in the diagnosis of diabetes. Those with high blood pressure have higher prevalence of diabetes diagnosis (5.4%) than those with normal blood pressure (1.7%) – Table 4.64.

Table 4.58   percentage distribution of respondents by Frequency of blood pressure check and by high or normal BP (P = 0.007)

Blood Pressure	n	Frequency of Blood Pressure Measurement			
		Never	Within 12 Months	1 – 5 Years	> 5 Years
Normal	1947	1.8	38.0	18.2	42.0
High	369	1.7	47.1	18.0	33.2
TOTAL	2316	1.8	39.4	18.2	40.6

Table 4.59   Percentage distribution of respondents by previous awareness of hypertensives status (P 0.000)

Hypertension Diagnosis (%)	Blood Pressure		
	Normal	High	TOTAL
	1947	369	2316
Aware	2.9	17.1	5.2
Not aware	97.1	82.9	94.8

Table 4.60 Percentage distribution of respondents with High blood pressure by modern treatment status (P 0.000)

Hypertension modern Treatment status	Blood Pressure		
	Normal	High	TOTAL
n	1915	360	2275
On Treatment	2.1	11.9	3.6
Not on Treatment	97.9	88.1	96.4

Table 4.61 Percentage distribution of respondents by traditional healers consultation and Blood pressure control

(P value 0.68):

Traditional Healer Consultation	Blood Pressure			
	Normal	High	TOTAL	P-value
n	1845	354	2199	
On Consultation	0.7	0.8	0.7	0.68
Not on Consultation	99.3	99.2	99.3	

Table 4.62   Percentage distribution of respondents by Herbal Treatment and by Blood Pressure control: (P value 0.012)

Herbal Treatment	Blood Pressure		
	Normal	High	TOTAL
n	1848	358	2206
On Treatment	0.5	1.7	0.7
Not on Treatment	99.5	98.3	99.3

Table 4.63   Percentage distribution of respondents by Family History of High Blood Pressure and by Blood Pressure Type:

(P- Value 0.46)

Family History of High Blood Pressure	Blood Pressure			
	Normal	High	TOTAL	p-value
n	1955	368	2323	
Positive	16.4	17.9	16.6	0.46
Negative	83.6	82.1	83.4	

Table 4.64 Percentage distribution of respondents by previously diagnosed diabetic status and blood pressure type (P value 0.000)

Blood Pressure	n	Previous Diabetes Diagnosis (%)	
		Diagnosed	Not Diagnosed
Normal	1937	1.7	98.3
High	371	5.4	94.6
TOTAL	2308	2.3	97.7

Prevalence of diabetes as previously diagnosed by a medical personel by hypertensive status

Fig 10

	non hypertensives	Hypertensives	general pop	
Diabetes	1.7	5.4	2.3	

Legend:
- general pop
- Hypertensives
- non hypertensives

general pop: 2.3
Hypertensives: 5.4
non hypertensives: 1.7
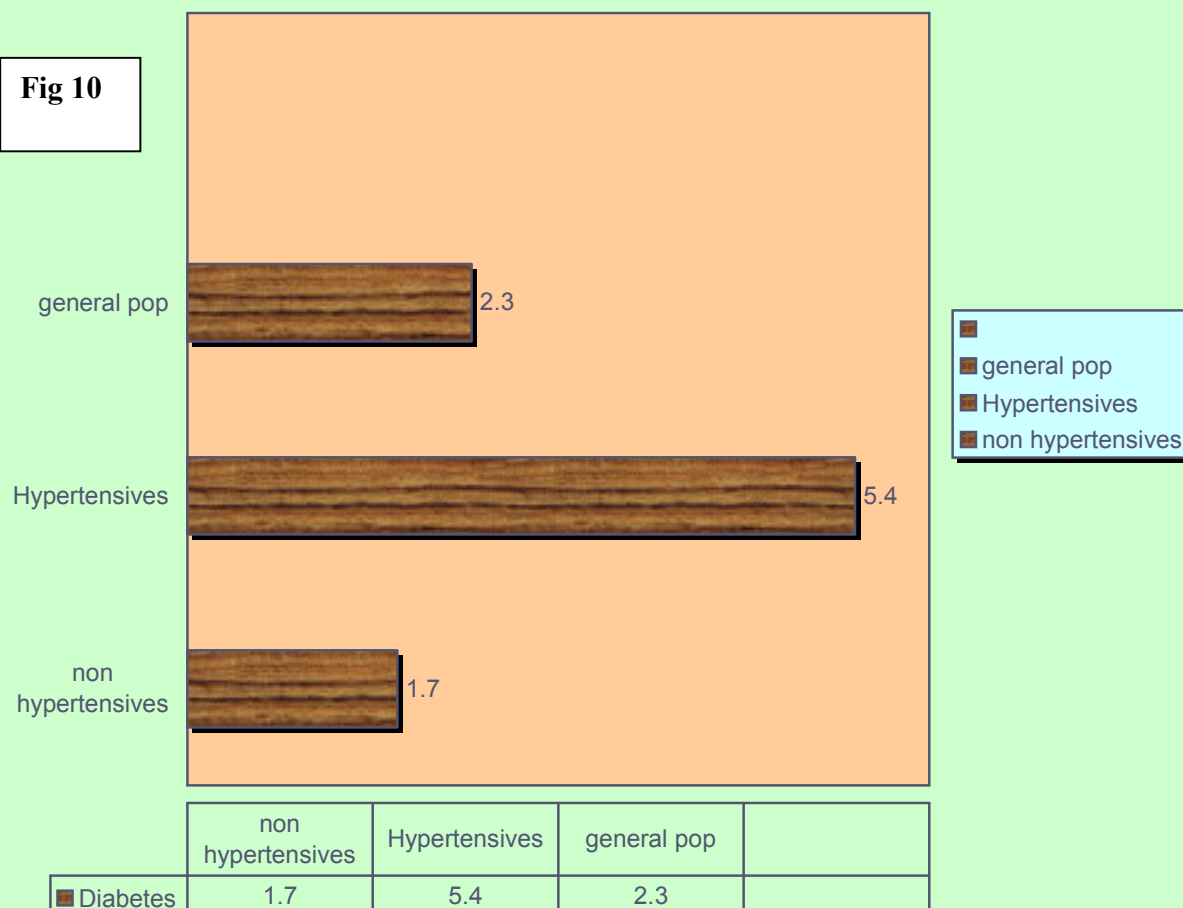
Table 4.65   Percentage distribution of respondents by Family History Diabetes and by Blood Pressure Type (P- Value 0.77)

Family History Diabetes	Blood Pressure			
	Normal	High	TOTAL	P-value
N	1923	363	2286	
Positive	10.2	10.7	10.3	0.77
Negative	89.8	89.3	89.7	

Table 4.66 Respondents on anti hypertensive drugs: percentage distribution by Blood Pressure Type: P vale 0.000)

Hypertensive Drugs	Blood Pressure		
	Normal	High	TOTAL
N	1650	315	1965
On Drugs	0.6	4.8	1.3
Not on Drugs	99.4	95.2	98.7

4.5.5 High Blood Pressure and Risk Factors:

High blood pressure is significantly higher among those with waist circumference reading higher than 80 cm – Table 4.67. It is also higher in those with high body mass index – Table 4.68. The high blood pressure is also higher among drinker than non-drinker – Table 4.69. High blood pressure is not significantly related to daily smoking or daily use of smokeless tobacco. However it is significantly related to the duration of smoking (Tables 4.70 – 4.72). The prevalence is also higher among the sedentary than active especially among those who are physically inactive at work (Tables 4.73 and 4.74).

Table 4.67   Percentage distribution of respondents by Blood Pressure Type and by Waist Circumference

Waist Circumference (Cm)	Blood Pressure			
	Normal	High	TOTAL	p-value
N	1878	366	2244	
> 60	5.3	3.3	4.9	
61 – 80	66.7	46.2	63.3	0.000
81 – 100	26.2	45.9	29.5	
> 100	1.8	4.6	2.2	

Table 4.68a Percentage distribution of respondents by Blood Pressure Type by Obesity

Body Mass Index	Blood Pressure			
	Not obese	Obese	TOTAL	p-value
N	1969	372	2341	0.025
Normal	96.0	93.0	95.5	
High	4.0	7.0	4.5	

Table 4.68b Percentage distribution of respondents by Blood Pressure Type by Body Mass Index

Body Mass Index	Blood Pressure			
	Normal	High	TOTAL	p-value
N	1937	365	2302	
<19	88.8	11.3	100	
19 - 24.9	84.2	15.8	100	P= 0.000
25 –29.9	71.5	28.5	100	
30>=	73.7	26.3	100	

It should be noted that the prevalence of hypertension was more than 50 % in those who were either overweight or obese (table 4.68b).

Table 4.69 Percentage distribution of respondents by alcohol consumption and Blood Pressure Type

Drinking Category	n	Blood Pressure		
		Normal	High	p-value
Non-Drinker	805	85.7	14.3	0.050
Drinker	1225	82.5	17.5	
Total	2030	84.4	15.6	

Table 4.70   Percentage distribution of respondents by smoking category and Blood pressure (P-Value 0.778)

Smoking Category	n	Blood Pressure		
		Normal	High	P-values
Currently Daily	162	81.5	18.5	0.778
Current Non-Daily	20	85.0	15.0	
Ex-Daily	82	85.4	14.6	
Never Smoked	1997	84.5	15.5	
Total	2216	84.3	15.7	

Table 4.71 percentage distribution of respondents by Smoking Duration and by Blood pressure

Smoking Duration (Years)	n	Blood Pressure (%)		p-value
		Normal	High	
1 - 10	50	88.0	12.0	
11 - 20	63	90.5	9.5	
21 - 30	43	74.4	25.6	
> 30	30	66.7	33.3	
Total	186	82.3	17.7	

Table 4.72   Percentage distribution of respondents by smokeless tobacco category and by Blood pressure (P-Value 0.644)

Smoking Category	n	Blood Pressure		
		Normal	High	P value
Currently Daily	65	83.1	16.9	
Current Non-Daily	7	100.0	0.0	0.644
Ex-Daily	119	82.4	17.6	
Never Used	2027	82.4	15.6	
Total	2218	84.1	15.9	

Table 4.73   Percentage distribution of respondents by physical activity and Blood Pressure (P Value 0.051):

Physical Activity	n	Blood Pressure		
		Normal	High	p-value
Active	2098	84.6	15.4	
Inactive	236	79.7	20.3	0.051
Total	2334	84.1	15.9	

Table 4.74   Percentage distribution of respondents by physical activity ant work and Blood Pressure

Physical Activity at Work	n	Blood Pressure (%)		
		Normal	High	P -values
Inactive	1374	82.0	18.0	
Moderate	426	87.8	12.0	0.001
Vigorous	467	87.6	12.4	
Total	2267	84.2	15.8	

5.0 DISCUSSIONS

Hospital and outpatient mortality data due to non-communicable diseases in the country has shown a steady rise in incident trends over the years. This mortality rate for hypertensives related diseases move from 5% in the year 2003 to 7% in the year 2004. This global rising epidemic of non-communicable diseases that has also hit Eritrea is a call for surveillance, prevention and control. This baseline survey which is an entry point to a national intervention programme has brought out quite interesting revelations that corroborate the hospital observations vis à vis NCDs.

The survey was carried out within scientific norms as prescribed by the WHO STEPwise approach. The sample size was adequate and representative of sex and age group. WHO recommends at least 200 subjects per sex per 10-year age group. This survey had five age groups from 15 to 64 years and would have been expected to have a sample size of at least 2000 subjects (1000 men and 1000 women). With a total of 2352 subjects examined (1176 per sex), this figure is well above the cut off of the recommended sample size.

Regarding the response rate, WHO recommends a minimum rate of 75% for NCDs. This survey had a very comfortable response rate of 95.6%.

With more than 60% of the population not having had any formal education or attained only the primary grade and coupled with the fact that most of them were peasant farmers by profession, this certainly had an impact on their health seeking behaviors and awareness on NCDs. This can be observed in the fact that up to 80% of those who were diagnosed for High Blood Pressure were done so for the first time. In addition, more than 40% of the population had not had their BP checked for the past 5 years.

Regarding the risk factors, and considering tobacco smoking, it will be realized that the fact that men are 15 times more than women as current daily smokers is actually culturally linked as is the case in most African countries. It has to be noted that in most western countries, the sex difference is not significant. This implies that a national non-tobacco campaign will succeed better if the men are

targeted. In the same line, given that the prevalence is highest in the Gash Barka Zoba, a more focused intervention in this zone as a pilot sentinel site would definitely yield more fruits.

Alcohol consumption has been known to be a social ill in most communities in the world with prevalence rates getting close to 100 % in the adult population in some settings. The 40% prevalence rate is quite high given the fact that alcohol consumption is a major risk factor for most cardiovascular diseases. Even though the prevalence of alcohol consumption is highest among the orthodox Christians, which explains why its prevalence is also highest in the Debub and Maekel Zoba, it must be noted that it is increasingly becoming prevalent in those of Islamic religion who are normally supposed to be alcohol free as seen in the SRS Zoba.

Fruit and vegetable consumption is generally not in the habit of the population even though they are mainly farmers by profession. The prevalence values of 85% and 51% respectively are extremely high. As indicated earlier, educational level and level of income go with increase rates of vegetable and fruit consumption. This means that there is probably a problem of awareness.

The fact that 90% of the general population is physically active is impacted on the low prevalence of obesity (3.3%) and small mean weight value (55.23kg). However, obesity and overweight put together gives a prevalence rate of 13.7%. If nothing is done to check the 10% overweight prevalence, those of this class will gradually cross over to, and swell up the class of those who are obese in the years ahead.

 Even if the general obesity prevalence is low, the abdominal obesity is 25% to 30% in women where the waist circumference is >80cm. It has to be noted that in terms of health hazards, abdominal obesity is more dangerous than uniformly distributed fat.

A 15 % prevalence rate of high blood pressure in the adult population is significantly high. The steady rise in BP with age on the one hand and the sex cross over at 45 to 50 years of age on the other is quite characteristic. What is also outstandingly characteristic is the fact that it is more prevalent in those who

are either overweight or obese (> 55%) and the economically more empowered (probably due to overweight) or the unemployed (stress).

Just 11% of the hypertensives patients are on treatment, which means that close to 90% are not treated. It is absolutely necessary to set up a system that will take care of them.

A prevalence of 2.2 % of known cases of diabetes in the population is quite a big figure. If about 80 % go undiagnosed, as is the case with hypertension, then the prevalence should be well over 11%, which is quite alarming. This can already be portrayed in the hypertensives where the prevalence is 5.4% (as diagnosed in the health facilities).

6.0   CONCLUSIONS

CONCLUSION

•This study has provides robust new knowledge on NCDs and their risk factors in Eritrea

• The prevalences have reached critical points

• Most of the cases go undiagnosed and management by health professional is poor

• These conditions will add an additional burden to an already overwhelmed health system

• Something must be done now.!!

7.0 RECOMMENDATIONS

1. That a national NCD programme should set up as soon as possible, an intervention package consisting of surveillance, prevention and control strategies to contain this rising epidemic.

   a. Surveillance:

      i. Disseminate baseline survey results

      ii. Set up a routine health facility based morbidity and mortality data collection and analysis system

      iii. Set up a community based risk factor surveillance system

      iv. Integrate NCDs in the already well functioning IDRS system

   b. Prevention:

      i. Draw up a national media plan for NCDs

      ii. Produce awareness packages (posters, stickers, fliers , health talks etc.) that cut across socio –cultural groups

      iii. Draw up and enact Health protection policies on tobacco and alcohol

   c. Control:

      i. Produce NCD management guideline and algorithms for the different major NCDs.

      ii. Build capacity of health providers at all levels on the use of the guidelines

      iii. Provide basic equipment to the different health facilities depending on the technical level

      iv. Set up a national essential drug procurement system for NCDs

      v. Set up a good referral and counter referral system for complicated cases of NCDs.

2. That step 3 of STEPS be carried out to determine the real situation of diabetes and dyslipidemias in the community for better management.

ANNEXES:

STEPS NCD RISK FACTORS QUESTIONNAIRE
}·}epq s§LHEDË ILLq ›MF‰q KIqq

INTRODUCTION
Ktogñ
Enumerator
Hello, my name is _____ and I am working with the Ministry of Health. We are conducting a survey related to---- the interview will last approximately _____ minutes and all information will be kept confidential and used only for the purposes already mentioned.
K›³kï

‰K§ …D‰ êM! …{ ------------------†kAF; [VIo**7** Lð{ð]qU ¹—| ©öL †¢; }·}epq s§LHEDË ILLq ›MF‰q KÃö|—oñ /ªB\]/ {Š§©ö …D÷|; †oñ dD K·§e mk´Mq -----------©chñi …kïDê §']©ö §‰**7** 'é};‰êDê †qBmkÈ HkWp {sï …chªïKé ›o·c[—EL ‹é—F †}os§Œ§{ê mkM]·ïX „ï£ ›—cmk;

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IDENTIFICATION INFORMATION   Respondent ID

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INTERVIEW LANGUAGE: ___|___]

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10 Other (Specfy) _____

 ŠF† (¹ch])

DEMOGRAPHIC INFORMATION (Section C)
]{ B>lgñ HkW̄p

NO cëÃöU	QUESTIONS AND FILTERS Irpq} KmkUAððprM}	CODING CATEGORIES KDD¤ ²é°Dpq/M©ölq		SKIP]²Y
C1 [1	**Sex** **Åp**	Female …}]p§ Male ol–p§	1 2	
C2 [2	**What is you date of birth?** **–Dq q'éFªï?**	_____ / /_____ / /_____ DD MM YY –Dq 'XGï –Kq		If don't know, go to C3 s§qÊF° †}o Œ}Š |mk [3 ‰ï©ö;†}o KDï]Š¨ }[3]²Y
C3 [3	**How old are you?** ‹}©§ †£ –öLôŠ0?	Age in years –©öK mk–Kq Don't know …§ÊF°} †¢;	[___|___] 99	
C4 [4	**Have you ever attended school?** **qMBXoñ o\oñÏŠ¬ qÊF¹?**	No …§ÍF Yes †'	0 1	If no go to C6 …§ÍF †}oŒ§{ê KF]Š9 |mk [6 cÃöFö;

C5 [5	**What is the highest level of school you attended?**	Primary (grades 1-6) Kl†p(1-6 ‹ÏDï)	1	

	…mk qMBXoñ: †oñ ›D–D ‹ÏDï ›kÄIŠ¨ ‹}©§ „ï£? **Primary, middle, secondary, or higher?** **Kl†p:Lt‰E§:ŠF…§ '§ E—Dg§ ©S®**	Middle (grades 7-8) L†‰E§ (7-8 ‹ÏDï)	2	
		Secondary (grades 9-12) ŠF…§ ©S® (9-12 ‹ÏDï)	3	
		Higher (grades > 12) E—Dg§ ©S® (F—Dï 12 ‹ÏDï)	4	
C6 **[6**	**What is your religion?** **A§L~qŠ †}p§ „ï£?**	Orthodox ‡Xr^‹]	1	
		Catholic ŠrDï‹	2	
		Protestant ‰{ð`	3	
		Muslim M]FM|	4	
		Traditional beliefs lBEgñ †M{q	5	
		Others _____ ŠF† (specify) ¹ch]	95	
C7 **[7**	**To which ethnic group do you belong?** **Šk¢|§ mkAôX „ïŠ0?**	Afar –ÍX	1	
		Bilen kïD}	2	
		Hedarib IªXmk	3	
		Kunama ‰ê|L	4	
		Nara |V	5	
		Rashaida V`§ª	6	
		Saho \C	7	
		Tigre q´S	8	
		Tigrinya q´X	9	
		Athers ŠF† _____ (Specify) ¹ch]	95	

C8	**Which of the following best describes your main work status over the last 12 months?** **…¢|§ Šmksi‡M „ï£ {oñ …mk ›HDÊ 12 …gI ›{kS c}ªï]VIŠ ¢•X£ ›²FÅ;**	Farmer HS]p§	1	
		Local merchant _d¸§	2	
		Daily laborer K-Fpgñ [VIo	3	
		Civil servant [VIo9 K´]oñ	4	
		National Service A²Vgñ …²F´D÷q	5	
		Military ‛oA©X	6	

		Student	7	
		oKAV§		
		Housewife	8	
		k–Foñ HᵃX		
		Fisherman/Herdsman	9	
		²ÍÏ –\ / ¶\		
		Self-employed	10	
		…mk │§ ²š† X†[é ›[XI		
		Retired	11	
		mk¹Yp ›│kX		
		Unemployed	12	
		]VI …Fn		
		Other	95	
		ŠF† ¹ch]		
C9a [9…	**How many people 18 years and above, including yourself, live in your household?** …mk ²š‰ êM }–Š Hgñ]Š F—Dï 18 –Kq ›—©öLô‰ êM ‹}©§ [lq …D‰ êM?	Number of people mk›Gï [lq	[__|__]	
C9b [9k	**How many people less than 18 years old including yourself, live in your household?** …**mk ²š‰ êM: }–Š Igñ]Š qIoñ 18 –Kq ›—©öLô‰ êM ‹}©§ [lq …D‰ êM?**	Number of people mk›Gï [lq	[__|__]	
C10 [10	What are the principal source of income for the household? c}ᵃï M}¼ †rq]©öV kòq‰êM †}p§ „ï£?	Formal employment]T—]VI	[____]	
		Farm product Šmk IX`	[____]	
		Remittance from abroad Šmk 'Ä„ï ›oE†‰ ²}smk	[____]	
		Other (Specify) ŠF† (…{ÃöX)	[____]	

C10a [10...	If source of income is or includes farm produce, what is the average harvest in a typical year in quintalis? **M}¼ †rq‰êM IX` '§ }IX` s·dhFF †}o Œ§{ê:mk²M³M …mk −Kq ‹}©§ ‰ê}pF o†q'?**	**Number** mk ›Gï	[___|___|___|___|___]
C10b [10k	**Taking the past year, can you tell me what the average earnings of the household have been? (In Nakfa)** |§ ›HFÊ −Kq †rq]©öVŠ0 mk²M³M ‹}©§ |iÍ ‰M›{kS¬ M{²XŠ{ð?	Per week ...mk]Ké} Or per month '§ ...mk 'XGï Or per year '§ ...mk −Kq Don't know (0) ...§ÊF°} Refused (1) Ïdh©9 ...§Œ}‰ê}	[___|___|___|___|___] [___|___|___|___|___] [___|___|___|___|___] [___] [___]

TOBACCO USE (Section S) ...·dhiL qMlŒ0 (‹ÏDi O)				
S1a _1„	Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes? **...mksï †g} †sï 'éÃö„ïq qMIŒ ›Œb {ê ‰M a³V: ‰êXÐ '§ ÑñÒ oq‹‹ ªïŠb ?**	No ...§ÍF Yes †'	0 1	If no, go to 4a ...§ÍF †}o„ïFŠ: |mk 4… IDÏ
S1b _1k	**If yes, how often do you currently smoke tobacco products?** †' †}oŒ§{ê	Daily K−Fpgñ Weekly [Ké|gñ	[___] [___]	Tick one ...mk H© MF‹q ´kX

	KF]Š7 : …mksï †g} †sï ‹}©§ \— a³V oq‹‹7 …DŠ7 ?	Infrequently \Ioň	[__]	
S2a _2„	**How old were you when you first started smoking?** K-KX¥ a³V MqŠ‹ ›-KXŠDê/‹Dê ‘ªï /¶F ‹}©§ –Kq {óXŠ/{óX‰ï?	Age (year) _____ —©öK (mk–Kq) Don't remember …§ ›‹Y} †¢	[__|__] 99	
S2b _2k	**Do you remember how long ago it was?** ‹}©§ ‹}©§ –Kq M}lT q›‹Y/U¨ ¬?	Years –Kpq Or Months …gXI Or Weeks [Ké|q	[__|__] [__|__] [__|__]	
S3 _3	**On average, how many of the following do you smoke each day?** ŠmkœM ›]—ké mk²M³M …mk {Ï[ï ‘‰Ï K–Foñ ‹}©§ oq‹‹7 ? **(Record for each type)** (}{mk[ï ‘‰Ï –§{q K›´mk) **Do you think you should stop smoking?** MqŠ‹7 a³V ··'é ‰omkD÷ ‰M ›´l…Š qÊF¹ ¬?	Manufactured cigarettes ›o[}• a³V Hand-rolled cigarettes mk„ï©ö ›o·eDD a³V Pipes full of tobacco qMlŒ9 ›KF„ ÑñÒ Others ŠF† _____ (Specify) (¹ch[) No …§íF Yes †‹	[__|__] [__|__] [__|__] [__|__] 0 1	

S4a _4…	**In the past, did you ever smoke any**	No …§íF	0	If no, go to S5a

S4b _4k	**tobacco products?** …mk ›HDÊ †g} a³V …q‰ï‹7 Š/¬ qÊF¹?	Yes †`	1	…ŠÍF †}oŒŠ{ê KF]Š9: |mk O5… IDÏ
	If yes, how often did you smoke tobacco products in the past? KF]Š0 †` †}oŒŠ{ê: …mk ›HDÊ †g} ‹}©Š ´sò a³V oq‹‹ {óXŠ?	Daily K—Fpgñ	[__|__]	
		Weekly [Ké|gñ	[__|__]	
S4c _4[		Infrequently \Ioñ	[__|__]	
		Manufactured cigarettes ›o[}• a³V	[__|__]	
		Hand-rolled cigarettes mk„ï©ö ›o·iDD a³V	[__|__]	
	On average, how many of the following did you smoke each day? ŠmkœM ›]—ké mk²M³M ‹}©Š …mk K—Foñ ‹}©Š oq‹‹ {óXŠ?	Pipes full of tobacco qMlŒ9 ›KF„ ÑñÒ	[__|__[	
		Others _____ ŠF†	[__|__[	
		(Specify) (¹ch])		
S4d _4©		Years }—Kpq	[__|__]	
		Or Months `Š }…gXI	[__|__]	
		Or Weeks `Š }[Ké|q	[__|__]	
S4e _4„ï		Years —Kpq	[__|__]	
		Or Months `Š …gXI	[__|__]	
	For how long did you smoke in the past? }‹}©Š ›…‹F ´sò a³V …q‰ï‹0Š?	Or Weeks [Ké|q	[__|__]	
	For how long have you stopped smoking now? a³V MqŠ‹0 Šmk oücüXÃö ‹}©Š ²óXŠ …DŠ0?			
S5a _5„	**Do you currently use any smokeless tobacco such as chewing tobacco?** …mksï †g †sï s§q‰‹0 LDq ›]Êï	No …ŠÍF	0	If no go to S7 …ŠÍF †}o„iFŠ |mk O7 IDÏ;
		Yes †`	1	

	qMlŒ0 q¹cM¬ …Dš0?			
S5b __5k	**If yes, how often do you use smokeless tobacco products in the past?** KF]š0 †` †}oŒ§{ê {sï s§q‰<0 qMlŒ <}©ö§ ´sò q¹cKDê {óXš?	Daily K-Fpgñ Weekly [Ké|gñ Infrequently \Ioñ	[__] [__] [__]	
S6 __6	**On average, how many times a day do you use?** …mk K-Foñ mk²M³M <}©§ ´sò q¹cM?	Snuff, by mouth mk…Ï ›aoq Snuff, by nose mk…Ï}½ ›aoqö Chewing tobacco ›]ÊÏ Other ‹F† _____ Specify (¹ch])	[__|__] [__|__] [__|__] [__|__]	
S7 __7 S7a __7„ S7b __7k S7c __7]	**In the past, did you ever use smokeless tobacco?** …mk ›HDÊ †g} s§o‹<0 qMlŒ o·chñMš¬ qÊF¹? **If yes, how often did you use smokeless tobacco products in the past?** †` †}o„ïFš: }‹}©§ ´sò ›…‹F q¹cKDê {óXš? **On average, how many times a day did you use?** …mk K-Foñ mk²M³M <}©§ ´sò q¹cM {óXš? **(Record for each type)** (}{mk[ï '‰Ï −§{q K›´mk)	No …§ÍF Yes †` Daily K-Fpgñ Weekly [Ké|gñ Infrequently \Ioñ Snuff, by mouth mk…Ï ›aoq Snuff, By nose mk…Ï}½ ›aoq Chewing tobacco ›]ÊÏ Other šF† _____ Specify (¹ch]) Years }-Kpq Or Months '§ }…gXI Or Weeks '§ }[Ké|q	0 1 [__] [__] [__] [__|__] [__|__] [__|__] __|__] [__|__] [__|__] [__|__]	

S7d _7©	**For how long did you use smokeless tobacco in the past?** …mk ›HDÊ †g} }‹7 }©§ ´sò ›…‹F s§o‹‹7 qMlŒ o·chñMŠ? **For how long have you stopped using smokeless tobacco now?** M¹dM s§o‹‹0 qMlŒ Šmk †ocXÃö ‹}©§ ²óXŠ …DŠ0?	Years −Kpq Or Months `§ …gXI Of Weeks `§ [Ké|q	[__|__] [__|__] [__|__]	
S8 _8	**Do you think smoking is harmful to your health?** MqŠ‹0 a³V }¹−|Š µª„ï MŠ0ú{ê qÊF¹ ¬?	No …§ÍF Yes †`	0 1	
S9 _9	**Do you think smoking near other people can be harmful to their health?** …mk ¹dh [lq Œ}Š a³V MqŠ‹0 }¹−~‡M µª„ï ‹%0`é} %M ›‹0†F H[ïmkŠ ¬ qÊF¹?	No …§ÍF Yes †`	0 1	

ALCOHOL CONSUPTION (Section A) AF‰ï …FŒCF (‹ÏDï „)				
A1a „1…	**Do you drink alcohol (beer, wine, spirit, sewa etc…)?** …FŒEgñ K]o %M kiV:{kïq: −§{q …Scñ ... `so q[oñ ¬?	No …§ÍF Yes †`	0 1	If no go to D1 …§ÍF †}o„ïFŠ: |mk ©1 IDÏ
A1b „1k	**If yes, how long ago (years, months, weeks, days) did you last consumed alcohol?** †` †}oŒ0§{ê KFŠ0:	Years −Kpq Or Months `§ …gXI	[__|__] [__|__]	

	‹}©§(‑Kpq:…gXI:[Ké|q:K‑Fpq) §²mkX †p |§ K‘ª†p †g} …FŒEgñ K]o ›[oŠ0E?	Or Weeks ‘§ \M}pq Or days ‘§ K‑Fpq	[_|_] [_|_] Enter number cëÃöU …†oë	
A2 „2	**In the past 12 months, how frequently have you had at least one drink?** …mk ›HDÊ 12 …gXI: …mk ‹}©§ †g} mk‘éGêªê H}oñ …FŒEgñ K]o [oñŠ ñ?	5 or more days a week 5 ‘§ Šmk„ê }E—Dï K‑Fpq …mk [Ké} 1‑4 days per week 1‑4 K‑Fpq …mk [Ké} 1‑3 days a month 1‑3 K‑Fpq …mk [Ké} Less than once a month qIoñ H© †g} …mk ‘XGï	1 2 3 4	
A3 „3	**When you drink alcohol, on average, how many drinks do you have during one day?** …FŒCF ‹q[oñ †}‰DŠ mk²M³M …mk K‑Foñ ‹}©§ ›…‹F q[oñ?	Enter number cëÃöU ME† Don't know …§›‹Y} †¢	[_|_] 99	
A4 „4	**During each of the past 7 days, how many standard drinks of any alcoholic drink did you have each day?** …mks} ›HDÍ 7 K‑Fpq: …mk {mk[ï‘‰Ï K‑Foñ Šmk ›Œ0{ …FŒEgñ K]o ‹}©§ [oñŠ?	Monday [{ê§ Tuesday [Dê Wednesday Ské— Thursday HKé] Friday —Xkï Saturday eªM Sunday [}kq	[_|_] [_|_] [_|_] [_|_] [_|_] [_|_] [_|_]	
A5 „5	**In the past 12 months, what was the largest number of drinks**	Largest number ›E—D cëÃöU	[_|_]	

A6a „6…	you had on a single occasion, counting all types of standard drinks together? ‰êD÷M †rM ›[oŠ ¨M –§{q …FŒEgñ K]o mkMÃömkÄmk: …mks} ›HDÍ 12 …gXI …k H© †g} †oñ ›k›G ›[oŠ0¨ –§{q K]o †}p§ {óT? **<u>For men only</u>: in the past 12 months, how many days did you have 5 or more drinks in a single day?** <u>}©cñ ol—q¨ ¹V§:</u> …mks} ›HDÍ 12 …gXI: …mk H}oñ K-Foñ 5 '§ Šmk„ê }E—Dï …FŒEgñ K]o ›[oŠ0D} ‹}©§ K-Foñ {óS}?	Number of days mk ›Gï K-Fpq	[_|_|_]	
A6b „6k	**For women only: in the past 12 months, how many days did you have 4 or more drinks in a single day?** <u>}©cñ …}]q¨ ¹V§:</u> …mks} ›HDÍ 12 …gXI: …mk H}oñ K-Foñ 4 '§ Šmk„ê }E—Dï …FŒEgñ K]o ›[o‹0D} ‹}©§ K-Foñ {óS}?	Number of days mk ›Gï K-Fpq	[_|_|_]	
DIET (Section D) K´kï (‹ÏDi ©)				
D1 ©1	**How often do you eat fruits**	Daily K-Fpgñ	[___]	If

	throughout the year? …**mk MDê† –Kq ‹}©§ \– ›‰0'é} ÏTp kDï–Š?**	Weekly [Ké|…gñ Infrequently \Ioñ	[__] [__] Tick one …mkH}oñ MF‹q´kX	infrequently go to D2 \Ioñ †}o Œ§{ê |mk ©2 IDÏ
D1a ©1…	**In a typical week, on how many days do you eat fruit?** …**mk [Ké] ‹}©§ K–Foñ ÏTp mk›Œ0{ KF‹– `[ï©öŠ?**	Number of days mk ›Gï K–Fpq	[__|__]	For those who eat only {rM [Ké|gñ ›kF•ê ¹V§
D1b ©1k **D2** ©2	**How many servings of fruit do you eat on one of those days?** …**mk H}oñ Šmko} ›kE–ŠD} K–Fpq ‹}©§ ‹}©§ ›‰0'é} ÏTp q'}©ö?** **How often do you eat vegetables?** ‹**}©§ \– ›‰0'é} …IMFoñ qM²mk?**	Number of servings mk ›Gï MeVmk daily K–Fpgñ Weekly [Ké|gñ Infrequently \Ioñ	[__|__] [__] [__] [__] Tick one …mkH}q MF‹q´kX	If infrequently go to D3 \Ioñ †}oŒ§{ê |mk ©3 IDÏ
D2a ©2k	**In a typical week, on how many days do you eat vegetables?** …**mk [Ké] ‹}©§ K–Foñ …IMFoñ kDï–Š?**	Number of days mk ›Gï K–Fpq	[__|__]	For those who eat weekly {rM [Ké|gñ ›kF•ê
D2b ©2k	**How many servings of vegetables do you eat on one of those days?** …**mk H}oñ Šmks} K–Fpq ‹}©§ ´sò …IMFoñ ochUmkFŠ qkF–?**	Number of servings mk ›Gï MiVmk	[__|__]	
D3 ©3	**What type of oil or fat is most often used for**	Vegetable oil |§ HMDï s§oñ Lard	1 2	

meal preparation in your household? …mk ²š }M©öE'é K´ki †q¹cMDê s§oñ '§ ·]Lð †}p§ ‒§{q „i£?	NXr©E Butter ·]Lð Margarine LX³U} None used gEH© …§}¹cM} Other ŠF† _____ Specify ¹cØ] Combination_____ (Specify) ¹ch[Don't know …§ÊF°} †¢	3 4 5 95 96 99	

PHYSICAL ACTIVITY (Section P)
…ŠEgñ M}e]dh]   (‹ÏDï Ñ)

PHYSICAL ACTIVITY RELATED TO WORK (Paid, unpaid, at home, outside home).
mk]VI M‹0}¥q ›´kX …ŠEgñ M}e]i](›‹ ÊF:s§‹ÊF:…mk ²š: 'Ä„i Šmk ²š)

P1 Ñ1	**Does your work involve mostly sitting or standing, with walking for less than 10 minutes at a time?**]VIŠ ›k›I ´sò mkŒÏ '§ mk··'é '§ †'é} Šmk 10 ©chñi mks§ k›I M}e]dh] ªiŠ oIFÐ?	No …ŠÍF Yes …'	0 1	If yes go to P6 †' †}o„iFŠ |mk Ñ6]²X
P2 Ñ2	**Does your work involve vigorous activity like heavy lifting, digging or construction work for at least 10minutes at a time?**]VIŠ …mk H© †g} mk'Gêªê } 10 ©cñi ›…‹F ‰M ‹mk©q MF‒F: M‰ ê‒q '§ |§ B}Ä]VI ›…K[D …BE‰ i]VI sDÈ ©ö£?	No …ŠÍF Yes †'	O 1	If no go to P4 …ŠÍF †}o„iFŠ |mk Ñ4]²X
P3a	**In a typical week, on how**	Days a week	[__|__]	

97

Ñ3...	**many days do you do vigorous activities as part of your work?** …mk [Ké} ‰M ‹ÍF]VIŠ ‹}©§ M–Foñ …BE‰ ï]VI q–¤?	K-Fpq …mk [Ké}		
P3b **Ñ3k**	**On a typical day on which you do vigorous activity, how much time do you spend doing such work?** …BE‰ ï]VI …mk †q[XHDê K–Foñ …mkoñ]VI ‹}©§ ²ïsò oIFÏ?	In hours and minutes mk[-pq} ©dh§i} Or in minutes only '§ mk©dh§i ¹V§	[__|__][__|__] 1 [__|__]	
P4 **Ñ4**	**Does your work involve moderate-intensity activity, like brisk walking for at least 10 minutes at a time?**]VIŠ …mk H© †g} mk'Gêªê } 10 ©chñi ›‰7 'é} L†‰E§ AF‰oï sFÈ M}e]dh] ‰M eF·êÏ |§ †´U ²é—œ sDÈ ©ö£?	No …§ÍF Yes †'	O 1	If no go to p6 …§ÍF †}o„ïFŠ: }mk Ñ6]²X
P5a **Ñ5**...	**In a typical week, on how many days do you do moderate activities as part of your work?** ‰M ‹ÍF]VIŠ …mk [Ké} }‹}©§ K–Foñ ›…‹F K·{| }¹Êq oŠ§©ö?	In hours and minutes mk[-pq} ©dh§i} Or in minutes only '§ mk©dh§i ¹V§	[__|__][__|__] 1 [__|__]	
P6 **Ñ6**	**How long is your typical workday?** …mk K–Foë †q[XJ }'éHq ´sò ‹}©§ „ï£?	Number of ours mk ›Gï ©[-pq	[__|__]	

PHYSICAL ACTIVITY RELATED TO TRANSPORT (Movement to and from places work, market, shopping, worship etc). }²é—œ ›MF‰q …ŠEgñ M}e]dh]   (M}e]I] Šmk |mk np]VI: —ª³: _Kp: kòo ‹X]q¥}/K]²ï©ö)

P7	**Do you walk or use a**	No	0	If no go to P9

Ñ7	**bicycle for at least 10 minutes continuously to get to and from places?** Šmk np |mk np ‹q}c\ch] †}‰DŠ mk'éGêªê } 10 ©chñi ›‰0'é} mkchÄDï mk†´XŠ0 '§ mkmka‹Dp ¬ q}c]ch]?	…ŠÍF Yes †'	1	…ŠÍF †}o„ïFŠ |mk Ñ9 IDï
P8a Ó8…	**In a typical week, on how many days do you walk or bicycle for at least 10 minutes to get to get to and from places?** …mk [Ké} }‹}©§ K–Foñ ›…‹F „ïŠ7 } 10 ©chñi ›‰7 'é} mk†´XŠ7 '§ mkmka´Dp Šmk np |mk np †q}c\ch]	Days a week K–Fpq …mk [Ké}	[_|_]	
P8b Ñ8k	**How much time would you spend walking or bicycling for travel on a typical day?** …mk K–Foñ ‹}©§ ›…‹F ´sò mk†´XŠ7 '§ mkmka´Dp qš'X?	In hours and minutes mk[–pq} ©dh§I} Or in minutes only '§ mk©dh§i ¹V§	[_|_][_|_] 1 [_|_]	
	PHYSICAL ACTIVITY RELATED TO LEISURE (Leisure, recreation, sports) }sêSq ›MF‰q …Šegñ M}e]dh] (Ê}·›¥ sêSq]ÔXq)			
P9 Ñ9	**Does your leisure time involve mostly sitting, reclining, or standing, with no physical activity lasting more than 10 minutes at a time?** |§ —Sïoñ ´sòŠ0 …mk H© †g} }F–Dï 10 ©chñi ›…‹F …ŠEgñ M}e]dh] s§mkDê Kmk›Iq„ê ´sò Œï: ··'é '§ ·}dE–E— ©ö£ ›HFï?	No …ŠÍF Yes †'	0 1	If yes go to P14 †' †}o„ïFŠ |mk Ñ14]²X

P10 **Ñ10**	**In your leisure time, do you do any vigorous activities like running or sports for at least 10 minutes at a time?** …**mk ´sò −XÏqŠ0 } 10 ©chñi ›…‹F …BE‰ ï M}e]dh] ‰M ²é¥:]ÔXq q²mkX¬?**	No …ŞÍF Yes †`	0 1	If no go to P12 …ŞÍF †}o„ïFŠ |mk Ñ12]²X
P11a **Ñ11…**	**If yes, in a typical week, on how many days do you do vigorous activities as part of your leisure time?** **†` †}o„ïFŠ: ‰M …ŠF |Ş −XÏqŠ0: …mk [Ké} }‹}©Ş K−Foñ ›…‹F …BE‰ ï M}e]dh q²mkX?**	Days a week K−Fpq …mk]Ké}	[__|__]	
P11b **Ó11k**	**How much time do you spend doing this on a typical day?** **{sï }‹7 q²mkX …mk K−Foñ ‹}©Ş ›…‹F ´sò o¹Ï†?**	In hours and minutes mk[−pq} ©dhŞi} Or in minutes only `Ş mk©dhŞi ¹VŞ	[− __|__]__|__] 1 [__|__]	
P12 **Ó12**	**In your leisure time, do you do any, moderate-intensity activities like brisk walking, cycling or swimming for at least 10 minutes at a time?** …**mk ´sò −SÏqŠ0: K·{0 Ä−cñ sDÈM ‰M eF·êÏ ²é−œ †´U:M›gX mka‹Dp `Ş MI}l] ›…K[Dê M}e]dh\q mk'Gê³ê }10 ©chñi ›‰0`é} oŠŞ©ö ¬?**	No …ŞÍF Yes †`		If no go to p14 …ŞÍF †}o„ïFŠ |mk Ñ14 IDÏ
P13a **Ñ13…**	**If yes, in a typical week, on how many days do you do moderate-intensity activities as part of you leisure time?** **†` †}o©ö…„ïFŠ: ‰M …ŠF —SÏqŠ7 `[ï©öŠ: …mk [Ké} }‹}©Ş K−Foñ ›…‹F K·{7 Ä−cñ sDÈ**	Days a week K−Fpq …mk [Ké}	[__|__]	

	M}e]dh] q²mkX?			
P13b **Ñ13k**	**How much time do you spend doing this on a typical day?** **{sï }‹0qïÃöM …mk K–Foñ ‹}©§ ›…‹F ´sò o¹Ï†?**	In hours and minutes mk[-pq} ©dh§i} Or in minutes only '§ mk©dh§i ¹V§	[_|_|_|_|_] 1 [_|_]	
P14 **Ñ14**	**Over the past 7 days, how much time did you spend sitting or reclining on a typical day?** …mks} ›HDÍ 7 K–Fpq: …mk K–Foñ ‹}©§ ›…‹F ´sò ŒÏ '§ ·}dE—E—†|kFŠ …IDïÏŠ¨?	In hours and minutes mk[-pq} ©dh§i} Or in minutes only '§ mk©dh§i ¹V§	[_|_|_|_|_] 1 [_|_]	

HISTORY OF HIGH BLOOD PRESURE **pU‹0 BE' mk›Gï/Ãe·ï/ ©M**				
H1 **D1**	**When was your blood pressure last measured by a health professional?** **mk[mk N¥ I‹M| }K»S` ²ïsò Ãe·ï ©MŠ ›o-c{Dê K–] {óT?**	Within the past 12 months …mks} ›HD©Í 12 …gXI 1-5 years ago e©öLð 1-5 –Kq Not within past 5 years …mkzs} ›HDÍ 5 –Kpq …§o-c}‰ê}	1 2 3	
H2 **D2**	**During the past 12 months have you been told by a doctor or other health worker that you have elevated blood pressure or hypertension?** **…mks} ›HDÍ 12 …gXI H‰ïM '§ |§ ¹—|]mk N¥F•êF Ãe·ï ©M ‰M sDŠ HkïYKéŠ0¬?**	No …§ÍF Yes †'	0 1	
H3 **D3**	**Are you currently receiving any <u>drugs or non-drug</u> treatments for high blood pressure prescribed by a doctor or health worker?** …mksï †g}sï H‰ïM '§ [VIo ¹—| ›…ssFŠ |§ F•êF Ãe·ï ©M K©öA{ðq '§ K©öA{ðq s§Œ{ Ï'\ qS‹mk¬ …DŠ7 ?	No …§Í…F Yes †'	0 1	If no go to H4 …§ÍF †}o„iFŠ |mk D4]²X

If yes are you receiving the following †` †}o „ïFŠ {œM ›]—ké qS‹0nM¬ …DŠ0?				
H3a **D3…**	**Drugs (medication) that you have taken in the last 2 weeks?** …mk ›HDÊ 2 [Ké} ›`[©öŠ¨M K©öA{ðpq	No …§íF Yes †`	0 1	
H3b **D3k**	**Special prescribed diet** ›o…ss ÏDê§ K´ki `§ …K³´l	No …§íF Yes †`	0 1	
H3c **D3[**	**Advice or treatment to lose weight** ‹mk©q }M²éªF ›ogBk M‹0U `§ Ï`\	No …§íF Yes †`	0 1	
H3d **D3©**	**Advice or treatment to stop smoking** }McëÃöÄX MqŠ‹0 a³V ›ogBk M‹0U `§ Ï`\	No …§íF Yes †`	0 1	
H3e **D3„ï**	**Advice to start or do more exercise** M}e]dh] }‹0q°MX `§ ›¥ª }‹0q}c\ch] ›ogBk M‹0U	No …§íF Yes †`	0 1	
H4 **D4**	**During the past 12 months have you seen a traditional healer for elevated blood pressure or hypertension?** …mk ›HDÊ 12 `XGï F•êF Ãe·ï ©M }MÏg] |mk lBEgñ H‰ïM¬ ‰§©öŠ?	No …§íF Yes †`	0 1	
H5 **D5**	**Are you currently taking any herbal or traditional remedy for your high blood pressure?** …mksï †g} †sï }F•êF Ãe·ï ©MŠ ›Ï'é] fÃöDï `§ lBEgñ K©öA{ðq q`]©ö ¬ …DŠ	No …§íF Yes †`	0 1	
H6 **D6**	**Does any member of your family (parents, uncles, grandparents, children) have history of cardio-vascular disease (hypertension, stroke, myocardial infarction etc.?** Šmk …lEq]©öVŠ	No …§íF Yes †`	0 1	

	(kòo[mk: H'n '§ …Œ: …lHµ '§ †~Hµ: fF•ê) pU‹7 ILM Fmk} ©M [éX} (F•êF Ãe·ï ©M: 'e–ð: ILM Fkï 'so) …DÈM¬?			

HITORY OF DIABETES
pU‹0 BE' ILM aŒX¥

H7 D7	**Have you had your blood sugar measured in the last 12 months?** …mk ›HDÊ 12 …gXI K·} aŒX …mk ©MŠ sD÷ o– cñ{ê¬?	NO …ŚÍF YES †'	0 1	
H8 D8	**Have you ever been told by a doctor or other health worker that you have diabetes?** H‰ïM '§ [VIo ¹—| ILM aŒX ‰M sDŠ {²ïXŠ¬?	No …ŚÍF Yes †'	0 1	
H9 D9	**Are you currently receiving any drugs or non-drug treatmentsfor diabetes prescribed by a doctor or other health worker?** …mksï †g} †sï mkH‰ïM '§ [VIo ¹—| ›o…ssFŠ K©öA{ðq '§ K©öA{ðq s§Œ{ Ï'\ qS‹mk¬ …DŠ7 ?	No …ŚÍF Yes †'	0 1	If no go to H10 …ŚÍF †}oñ„iFŠ |mk D10 IDï

If yes, are you receiving the following †' †}o „iFŠ: {œM ›]—ké qS‹mk¬ …DŠ				
H9a D9…	**insulin** „ì}[éDï}	No …ŚÍF Yes †'	0 1	
H9b Dm9k	**Oral drug (medication that you have taken in the last 2 weeks?)**	No …ŚÍF Yes †'	0 1	

	mk…©ö ›'é[©ö (…mk ›HFÊ 2 [Ké} ›'[©öŠ¨ K©öA{ðq)			
H9c D9[	**Special prescribed diet** ›o…ss ÏDê§ K´ kï '§ …K³´l	No …§ÍF Yes †'	0 1	
H9d D9©	**Advice or treatment to lose weight** ‹mk©q }M²éªF ›ogBk Ï'\ '§ M‹0U	No …§ÍF Yes †'	0 1	
H9e D9„ï	**Advice or treatment to stop smoking** a³V Mq‹‹0··'é }MlF ›ogBk Ï'\ '§ M‹0U	No …§ÍF Yes †'	0 1	
H9f D9Ê	**Advice to start or do more exercise** M}e]dh] }‹0q°MX '§ ›¥ª }‹0q}c\ch] ›ogBk M‹0U	No …§ÍF Yes †'	0 1	
H10 D10	**During the past 12 months have you seen a traditional healer for diabetes?** …mk ›HDÊ 12 …gXI ILM aŒX¥ }MÏg] |mk lBEgñ H‰iM ‰ò©öŠ¬?	No …§ÍF Yes †'	0 1	
H11 D11	**Are you currently taking any herbal or traditional remedy for your diabetes** …mksï †g}sï ILM aŒX¥ }MÏg] fÃöDï '§ lBEgñ Ï'\ q']©ö¬ …DŠ0?	No …§ÍF Yes †'	0 1	
H12 D12	**Does any member of your family (parents, uncles, grandparents, children) have history of diabetes?** Šmk …lEq]©öVŠ (kòo[mk: H'n '§ …Œ: …lHµ '§ †~Hµ: fF•ê) pU‹0 ILM aŒX¥ sDÈ …D÷¬?	No …§ÍF Yes †'	0 1	
STEP 2: PHYSICAL MEASUREMENTS 2§]²éMoñ: −ch} [mk{q				
M1 K1	**Device IDs for height and weight** KDD¤ cëKq} ‹mk©q} M'éª©ö	Height cëKq Weight ‹mk©q	[__|__] [__|__|]	

M2 **K2**	**Height of individual** **`éFdgñ cëKq**	In Centimeters `mk[}oñKoX`	[__|__|__]	
M3 **K3**	**Weight of individual** **`éFdgñ ‹mk©q**	In Kilograms `mk‰ïD÷´VM`	[__|__|__]	

M4
K4
	(For women) Are you pregnant
	(}©cñ…}]q¨) ¹}]oñ ªï% ï?
		No
		`…§ÍF`
		Yes
		`†``
			0
			
			1	

M5 **K5**	**Device ID for waist** **KDD¤ L—·êe M'éª©ö**		[__|__]	
M6 **K6**	**Waist circumference** **sêX¥ M—·êe**	In Centimeters `mk[}oñKoX`	[__|__|__]	
M7 **K7**	**Device ID for blood pressure** **KDD£ mk›Gï ©M ´kX**		[__|__]	

M8 **K8**	**Reading 1** **}lmk 1**	Systolic BP (mmHg) **[ï]rDï‹ kïÑñ (LðLô KX‰êU)** Diastolic BP (mmHg) `ªï¥]rDï‹ kïoñ(LðLô KX‰êU)`	[__|__] [__|__]	

M9
K9
	Reading 2
	}lmk 2
		Systolic BP (mmHg)
		`[ï]rDï‹ kïÑñ (LðLô KX‰êU)`
		Diastolic BP (mmHg)
		`ªï¥]rDï‹ kïÑñ (LðLô KX‰êU)`
			[__|__]
			
			[__|__]	

M10 **K10**	**Reading 3** **}lmk 3**	Systolic BP (mmHg) **[ï]rDï‹ kïÑñ (LðLô KX‰êU)** Diastolic BP (mmHg) `ªï¥]rDï‹ kïÑñ (LðLô KX‰êU)`	[__|__] [__|__]	

M11
K11
	During the past two weeks, have you been treated for high blood pressure with drugs (medication) prescribed by a doctor or other health worker?
	…mks} ›HDÍ 2 [Ké} }F•êF Ãe·ï ©MŠ mkH‰ïM '§ [VIo ¹—| ›…ssFŠ K©öA{ðq oÊgñ]Š¬ {óXŠ?
		No
		`…§ÍF`
		Yes
		`†``
			0
			
			1	

DM1 ©K1	Glucostix reading M}lmk K•c{ð aŒX			

MINISTRY OF HEALTH ERITREA
NCDs RISK FACTORS SURVEY 2004 – TRAINING OF INTERVIEW TEAMS

AGENDA

DAY 1: Saturday 4th September, 2004.

TIME	TOPIC	FACILITATOR
8.30 – 8.50 am	Survey Objectives and Expectations	Dr. Goitom Mebrahtu
8.50 – 9.10 am	STEPS	Dr. Yohannes Ghebrat
9.10 – 9.40 am	Interview approach, techniques and sampling	Dr. A. Usman
9.40 – 10.10 am	Tea Break	All
10.10 – 10.30 am	General overview of the questionnaire	Prof. Peter Nyarang'o
10.30 – 10.50 am	Tobacco Use	Mr. Asgedom
10.50 - 11.10 am	Alcohol Consumption	Prof. Jacob Mufunda
10.10 – 11.30 am	Diet	Dr. Musie E-Mikail
11.30 – 11.50 am	Physical activity	Dr. A. Usman
11.50– 12.10 pm	Hypertension and diabetes	Dr. Goitom Hagos
12.10 – 12.40 pm	Introduction to physical measurements	Prof. Mufunda/ Dr. Goitom Hagos
12.40 – 2.00 pm	Lunch Break	All
2.00 – 4.00 pm	Practice on questionnaire and physical measurements	All.

DAY 2: Sunday 5th September, 2004.

TIME	TOPIC	FACILITATOR
8.30 – 9.00 am	Recap of day 1	Dr. A. Usman
9.00 – 9.30 am	Feedback on practicals	Prof. Jacob Mufunda

9.30 – 10.00 am	Tea break	All
10.00 – 11.30 am	Practicals continued	Prof. Peter Nyarang'o
11.30 – 12.00 am	Wrap up and postings	Dr. Goitom Mebrahtu

NCDs RISK FACTORS SURVEY
TEAM COMPOSITION:

TEAM 01
ZOBA MAEKEL
1. DR. GOITOM HAGOS
2. ABRAHAM K. ISAK
3. TADESSE TEWOLDE
4. ORKABAHANS KAHSAY
5. JABIR M.I. SALEH
6. KIBROM ASMELASH
7. EDEN HAILE MOSAZGI

TEAM 02
ZOBA MAEKEL
1. DR. GOITOM MEBRAHTU
2. DR. TESFAZION
3. ESMAIL O. ALI
4. AMANUEL D. G/MARRIAM
5. MICAL ABRAHA TUCCU
6. MERON TECLA BERHA
7. EYOB F. G/BERHAN
TEAM 03
ZOBA DEBUB
1. MR. ASGEDOM
2. YORDANOS M. TEDLA
3. SAMUEL H. DRAR
4. ASMEROM T. SENGAL
5. MOHAMMED O. ABDELLAH
6. BISIRAT T. KELETA
7. AMANUEL H. ZERU
8. AINOM O TEDLA

TEAM 04
ZOBA DEBUB
1. DR. MUSIE E-MIKAIL

2. NEGUSSI R. G/MEDHIN
3. HANS H. MENGHISTAB
4. DANIEL T. G/SELASSIE
5. ABRAHAM H.K/MARIAM
6. KIFLOM Y. GEBREAB
7. TIGISTI H. G/MESKEL

TEAM 05
ZOBA NORTHERN RED SEA
1. PROF. J. MUFUNDA
2. TECKLE WERDE
3. AMANUEL A. HAILE
4. YODIT Z. T/MARIAM
5. TESFAHIWET G/MARIAM
6. BAHABELOM M GHEBRAI

TEAM O6
ZOBA NORTHERN RED SEA
1. MR. MUKTAR IBRAHIM
2. HAILAB MESFIN
3. ALEMTSEHAY NEGASSI
4. TSEGHA GOITOM
5. WARDA HASSEN
6. AMAN HADGU

TEAM 07
ZOBA ANSEBA
1. MR. AMANUEL YOHANNES
2. ELIAS TEAGAS
3. ASKALE G/KRISTOS
4. MERKEB TEWOLDE
5. RITA T/BERHAN
6. BINIAM GHIRMAY

TEAM 08
ZOBA ANSEBA
1. DR. YOHANNES GHEBRAT
2. SELAMAWIT ANDEBERHAN
3. ESEYAS S TSEHAYE
4. AMNUEL B MESFIN
5. NASSER ADEM SALE
6. MUSIE Y WOLDU

TEAM 09

ZOBA GASH-BARKA
1. DR. ESTIFANOS PAULOS
2. ZEKARIAS ANDEMARIAM
3. ASMERET BYENE
4. MARTA DESBELE
5. DANIEL OGBAGABR
6. MULUGHETA G/KRISTOS

TEAM 10
ZOBA GASH-BARKA
1. PROF. PETER NYARANG'O
2. MULLA TESFAMIKAIL
3. LAINE OKBAZGI
4. FIYORI T/MARIAM
5. LUWAM T/GABIR
6. WEINI TEKLU
7. FESEHA HADISH

TEAM 11
ZOBA SOUTHERN RED SEA
1. DR. A. USMAN
2. TEWOLDE KIDANE
3. HANNAN M. OSMAN
4. HIRITY KIFLAY
5. FISHALE MELONEN
6. TESFALEM TEKLAI

Annex 1:   Teams location and sampling

Team No: 01
Location: Maekel
Composition: 1 supervisor, 5 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
M01	Serejeqa	Tsehaf Lam	317	5	63										
	Serejeqa	Kuazien	1361	10	136	2	2	2	2	2	2	2	2	2	2
	Serejeqa	Shmangus La'alay	349	5	70										

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH	Sample interval										
M02	Debubawi Mibrak	Adis Alem	6943	20	173	2	2	2	2	2	2	2	2	2	2
M03	Debubawi Mibrak	Adis Alem		20	173	2	2	2	2	2	2	2	2	2	2
M04	Debubawi Mibrak	Setanta Oto	6091	20	152	2	2	2	2	2	2	2	2	2	2
M05	Debubawi Mibrak	Setanta Oto		20	152	2	2	2	2	2	2	2	2	2	2
M06	Debubawi Mibrak	Godaif Qehwata	6802	20	170	2	2	2	2	2	2	2	2	2	2
M07	Debubawi Mibrak	Godaif Qehwata		20	170	2	2	2	2	2	2	2	2	2	2
M08	Seminawi Mibrak	Arba,ate Asmara	5342	20	178	2	2	2	2	2	2	2	2	2	2
M09	Seminawi Mibrak	Arba,ate Asmara		10	178	2	2	2	2	2	2	2	2	2	2
	Seminawi Merab	Adi Nfas	1402	10	140										
M10	Debubawi Merab	Travelo	4045	20	202	2	2	2	2	2	2	2	2	2	2
M11	Debubawi Merab	Expo	4645	20	185	2	2	2	2	2	2	2	2	2	2
M12	Debubawi Merab	Expo		5	185	2	2	2	2	2	2	2	2	2	2
	Berik	Tsaeda Kristin	833	5	166										
	Gala Nefhi	Adi Hawsha	461	5	92										
	Gala Nefhi	Zgb	338	5	67										

Team No: 02
Location: Maekel
Composition: 1 supervisor, 5 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
M13	Seminawi Mibrak	Geza Kenisha	3554	20	177	2	2	2	2	2	2	2	2	2	2

M14	Seminawi Mibrak	Edaga Arbi	6828	20	170	2	2	2	2	2	2	2	2	2	2
M15	Seminawi Mibrak	Edaga Arbi		20	170	2	2	2	2	2	2	2	2	2	2
M16	Seminawi Mibrak	Maekel Sefar	6221	20	155	2	2	2	2	2	2	2	2	2	2
M17	Seminawi Mibrak	Maekel Sefar		20	155	2	2	2	2	2	2	2	2	2	2
M18	Seminawi Mibrak	Ma/Se/Ketema	5709	20	190	2	2	2	2	2	2	2	2	2	2
M19	Seminawi Mibrak	Ma/Se/Ketema		10	190	2	2	2	2	2	2	2	2	2	2
	Seminawi Merab	Akria	4985	10	166										
M20	Seminawi Merab	Akria		20	166	2	2	2	2	2	2	2	2	2	2
M21	Seminawi Merab	Idaga Hamus	6295	20	157	2	2	2	2	2	2	2	2	2	2
M22	Seminawi Merab	Idaga Hamus		20	157	2	2	2	2	2	2	2	2	2	2
M23	Seminawi Merab	Mai Temenay	5781	20	144	2	2	2	2	2	2	2	2	2	2
M24	Seminawi Merab	Mai Temenay		20	144	2	2	2	2	2	2	2	2	2	2

Team No: 03
Location: Debub
Composition: 1 supervisor, 7 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
D01	Tsorona	Tsorona	866	20	22	2	2	2	2	2	2	2	2	2	2
D02	Tsorona	Tsorona		20	22	2	2	2	2	2	2	2	2	2	2
D03	Tsorona	Deqi Liefay	353	20	17	2	2	2	2	2	2	2	2	2	2
D04	Dekemhare	Godeyti	467	20	23	2	2	2	2	2	2	2	2	2	2

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	M	F	M	F	M	F	M	F	M	F
D05	Adi Keih	Egilla	735	20	18	2	2	2	2	2	2	2	2	2	2
D06	Adi Keih	Egilla		20	18	2	2	2	2	2	2	2	2	2	2
D07	Adi Keih	Adi Keih 01	1908	20	24	2	2	2	2	2	2	2	2	2	2
D08	Adi Keih	Adi Keih 01		20	24	2	2	2	2	2	2	2	2	2	2
D09	Adi Keih	Adi Keih 01		20	24	2	2	2	2	2	2	2	2	2	2
D10	Adi Keih	Adi Keih 01		20	24	2	2	2	2	2	2	2	2	2	2
D11	Senafe	Senafe 01	823	20	20	2	2	2	2	2	2	2	2	2	2
D12	Senafe	Senafe 01		20	20	2	2	2	2	2	2	2	2	2	2
D13	Senafe	Giasih	283	20	17	2	2	2	2	2	2	2	2	2	2
D14	Mai Aini	Mai Aini (Adi Seguagi)	303	20	15	2	2	2	2	2	2	2	2	2	2
D15	Segeneiti	Awanet	294	20	15	2	2	2	2	2	2	2	2	2	2
D16	Segeneiti	Heibo	564	20	14	2	2	2	2	2	2	2	2	2	2
D17	Segeneiti	Heibo		20	14	2	2	2	2	2	2	2	2	2	2

Team No: 04
Location: Debub
Composition: 1 supervisor, 6 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
D18	Mendefera	Zoba Mbraq	2010	20	20	2	2	2	2	2	2	2	2	2	2
D19	Mendefera	Zoba Mbraq		20	20	2	2	2	2	2	2	2	2	2	2
D20	Mendefera	Zoba Mbraq		20	20	2	2	2	2	2	2	2	2	2	2
D21	Mendefera	Zoba Mbraq		20	20	2	2	2	2	2	2	2	2	2	2
D22	Mendefera	Zoba Mbraq		20	20	2	2	2	2	2	2	2	2	2	2

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	M	F	M	F	M	F	M	F	M	F
D23	Mendefera	Kudo Felasi	862	20	21	2	2	2	2	2	2	2	2	2	2
D24	Mendefera	Kudo Felasi		20	21	2	2	2	2	2	2	2	2	2	2
D25	Mendefera	Adi Th'edi	177	10	17	2	2	2	2	2	2	2	2	2	2
	Areza	Adi Gureto	244	10	24										
D26	Areza	Adi Nefas	316	20	16	2	2	2	2	2	2	2	2	2	2
D27	Adi Kuala	Adi Habr	332	20	17	2	2	2	2	2	2	2	2	2	2
D28	Adi Kuala	Enda Gergis	659	20	22	2	2	2	2	2	2	2	2	2	2
D29	Adi Kuala	Enda Gergis		10	22	2	2	2	2	2	2	2	2	2	2
	Dbarwa	Adi Gered	279	10	28										
D30	Dbarwa	Takita	435	20	22	2	2	2	2	2	2	2	2	2	2
D31	Emni Haili	Durko	376	20	19	2	2	2	2	2	2	2	2	2	2

Team No: 05
Location: Northern red sea
Composition: 1 supervisor, 5 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
N01	Ketema Masawa	Twalet	280	5	56	2	2	2	2	2	2	2	2	2	2
	Ketema Masawa	Adis Alem	817	15	54										
N02	Ghindae	Zoba 02	2382	20	68	2	2	2	2	2	2	2	2	2	2
N03	Ghindae	Zoba 02		15	68	2	2	2	2	2	2	2	2	2	2
	Ghindae	La ai'ten	254	5	50										
N04	Ghindae	Maihabar	563	10	56	2	2	2	2	2	2	2	2	2	2
	Foro	Afta	325	5	65										
	Foro	Hadeli	318	5	63										
N05	Foro	Foro	438	10	43	2	2	2	2	2	2	2	2	2	2
	Foro	Zulla	498	10	49										

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	M	F	M	F	M	F	M	F	M	F
N06	Sheb	Ghed ged	919	20	45	2	2	2	2	2	2	2	2	2	2
N07	Sheb	Wed Eilo	550	10	55	2	2	2	2	2	2	2	2	2	2
	Sheb	Woqiro	709	10	70										
N08	Gel'alo	Engel	720	10	72	2	2	2	2	2	2	2	2	2	2
	Gel'alo	Gel'alo	136	5	27										
	Gel'alo	Bordile	391	5	78										

Team No: 06
Location: Northern red sea
Composition: 1 supervisor, 5 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
N09	Afabet	M'erab Afabet	2685	20	67	2	2	2	2	2	2	2	2	2	2
N10	Afabet	M'erab Afabet		20	65	2	2	2	2	2	2	2	2	2	2
N11	Afabet	M'braq Afabet	9100	20	65	2	2	2	2	2	2	2	2	2	2
N12	Afabet	M'braq Afabet		20	65	2	2	2	2	2	2	2	2	2	2
N13	Afabet	M'braq Afabet		20	65	2	2	2	2	2	2	2	2	2	2
N14	Afabet	M'braq Afabet		20	65	2	2	2	2	2	2	2	2	2	2
N15	Afabet	M'braq Afabet		20	65	2	2	2	2	2	2	2	2	2	2
N16	Afabet	M'braq Afabet		20	65	2	2	2	2	2	2	2	2	2	2
N17	Afabet	M'braq Afabet		20	65	2	2	2	2	2	2	2	2	2	2
N18	Nakfa	Hdai	480	10	48	2	2	2	2	2	2	2	2	2	2
	Nakfa	Apollo (Zoba 03)	329	5	65										
	Nakfa	Kub kub (Zoba 04)	340	5	68										

Team No: 07
Location: Anseba
Composition: 1 supervisor, 5 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
A01	Adi Tekliazen	Zoba 02	1508	20	37	2	2	2	2	2	2	2	2	2	2
A02	Adi Tekliazen	Zoba 02		20	37	2	2	2	2	2	2	2	2	2	2
A03	Adi Tekliazen	Dekemhare	1302	20	65	2	2	2	2	2	2	2	2	2	2
A04	Geleb	Mihlab	480	10	48	2	2	2	2	2	2	2	2	2	2
	Geleb	Geleb	381	10	38										
A05	Arotay	Arietay	686	15	45	2	2	2	2	2	2	2	2	2	2
	Arotay	Filfle	213	5	42										
A06	Elabered	Debresina	552	15	36	2	2	2	2	2	2	2	2	2	2
	Elabered	Sheib Robto	156	5	31										
A07	Elabered	Eden	793	20	39	2	2	2	2	2	2	2	2	2	2
A08	Elabered	Halib Mentel	751	20	37	2	2	2	2	2	2	2	2	2	2
A09	Hal Hal	Melebso	377	10	37	2	2	2	2	2	2	2	2	2	2
	Hal Hal	Hal Hal	412	10	41										
A10	Hamelmalo	Jengeren	392	10	39										
	Hamelmalo	Hamelmalo	132	5	26	2	2	2	2	2	2	2	2	2	2
	Hamelmalo	Fredarb	210	5	42										

Team No: 08
Location: Anseba
Composition: 1 supervisor, 5 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample Interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
A11	Ketema Keren	Kebabi 02	2130	20	35	2	2	2	2	2	2	2	2	2	2
A12	Ketema Keren	Kebabi 02		20	35	2	2	2	2	2	2	2	2	2	2
A13	Ketema Keren	Kebabi 02		20	35	2	2	2	2	2	2	2	2	2	2
A14	Ketema Keren	Kebabi 03	2641	20	33	2	2	2	2	2	2	2	2	2	2
A15	Ketema Keren	Kebabi 03		20	33	2	2	2	2	2	2	2	2	2	2
A16	Ketema Keren	Kebabi 03		20	33	2	2	2	2	2	2	2	2	2	2
A17	Ketema Keren	Kebabi 03		20	33	2	2	2	2	2	2	2	2	2	2
A18	Hagaz	Zoba 02	1586	20	39	2	2	2	2	2	2	2	2	2	2
A19	Hagaz	Zoba 02		20	39	2	2	2	2	2	2	2	2	2	2
A20	Hagaz	Gilas	192	5	38	2	2	2	2	2	2	2	2	2	2
	Hagaz	Ashala	107	5	21										
	Hagaz	Adi Fekay	259	5	51										
	Hagaz	Frdgi	140	5	28										

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Team No: 09
Location: Gash-Barka
Composition: 1 supervisor, 5 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
G01	Logo Anseba	Habela	564	10	56	2	2	2	2	2	2	2	2	2	2
	Meqerka	Mensura	495	10	49										
G02	Haikota	Haikota	812	15	54	2	2	2	2	2	2	2	2	2	2
	Gonei	Dase	243	5	48										
G03	Shambiqo	Shambiqo	2032	20	67	2	2	2	2	2	2	2	2	2	2
G04	Shambiqo	Shambiqo		10	67	2	2	2	2	2	2	2	2	2	2
	Mogolo	Mogolo	460	10	46										
G05	Akurdet	Nathnet	1043	20	52	2	2	2	2	2	2	2	2	2	2
G06	Akurdet	Qedamay Kebabi	1696	20	84	2	2	2	2	2	2	2	2	2	2
G07	Barentu	Zoba Byara	1437	20	71	2	2	2	2	2	2	2	2	2	2
G08	Lae'lay Gash	Tokombia	1898	20	94	2	2	2	2	2	2	2	2	2	2

Team No: 10
Location: Gash-Barka
Composition: 1 supervisor, 6 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
G09	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G10	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G11	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G12	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G13	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G14	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G15	Tesseney	Zoba Sh'eb	**17781**	20	68	2	2	2	2	2	2	2	2	2	2
G16	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G17	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G18	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G19	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G20	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G21	Tesseney	Zoba Sh'eb		20	68	2	2	2	2	2	2	2	2	2	2
G22	Golij	Ghergef	1057	20	52	2	2	2	2	2	2	2	2	2	2

						2	2	2	2	2	2	2	2	2	2
G23	Golij	Tebeldia	1498	20	74	2	2	2	2	2	2	2	2	2	2
G24	Dge	Tekreriet	1113	15	55	2	2	2	2	2	2	2	2	2	2
	Forto	Sherief Homib	187	5	37										

Team No: 11
Location: Southern red sea
Composition: 1 supervisor, 5 interviewers:

Cluster Number	SUB ZOBA	VILLAGE	No. Of HH	Sample Size (HH)	Sample interval	No of persons to be interviewed by age and sex per cluster									
						15 – 24 yrs		25 – 34 yrs		35 – 44 yrs		45 – 54 yrs		55 – 64 yrs	
						M	F	M	F	M	F	M	F	M	F
	Araeta	Tio	482	10	48										
S01	Araeta	Ayumenu	349	5	69	2	2	2	2	2	2	2	2	2	2
	Araeta	Egirolli	317	5	63										
	D/D/KB	Abo	114	5	22										
S02	D/D/KB	Beilul	215	5	43	2	2	2	2	2	2	2	2	2	2
	M/D/KB	Edi	254	5	50										
	Ketema Asseb	Harsile	203	5	40										
S03	Ketema Asseb	Shkaito	1736	20	86	2	2	2	2	2	2	2	2	2	2
S04	Ketema Asseb	Asabuy	2523	20	84	2	2	2	2	2	2	2	2	2	2
S05	Ketema Asseb	Asabuy		10	84	2	2	2	2	2	2	2	2	2	2
	Ketema Asseb	Blien Koma	2412	10	80										

| S06 | Ketema Asseb | Blien Koma | | 20 | 80 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

Annex 2:   Team composition and Data Coding

ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Inter. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
MAEKEL	MA			Abraham K. Isak	11	Serejeqa	01	Tsehaf Lam	01	5	M01
				Tadesse T/B Tewolde	12			Kuazien	02	10	M01
				Orkbahans Kahsay	13			Shmangus La'alay	03	5	M01
				Jabir M.I. Saleh	14	Deb. Mibrak	02	Adis Alem	01	40	M02/M03
				Eden Haile Mosazgi	15			Setanta Oto	02	40	M04/M05
				Kibrom Asmelash	16			Godaif Qehwata	03	40	M06/M07
		01	Dr. Goitom Hagos			Sem. Merab	03	Adi Nfas	01	10	M09
						Deb. Merab	04	Travelo	01	20	M10
								Expo	02	25	M11/M12
						Berik	05	Tsaeda Kristin	03	5	M12
						Gala Nefhi	06	Adi Hawsha	01	5	M12
								Zgb	02	5	M12
						Sem. Mibrak	07	Arba,ate Asmara	01	30	M08/M09
		02	Dr. Goitom Mebrahtu	Esmail Umer Ali	21	Sem. Mibrak	07	Geza Kenisha	02	20	M13
				Amanuel D. G/Msrism	22			Edaga Arbi	03	40	M14/M15
				Mical Abraha Tuccu	23			Maekel Sefar	04	40	M16/M17
				Meron Tecla Barha	24			Ma/Se/Ketema	05	30	M18/M19

ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Interv. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
				Eyob F. G/Berhan	25	Sem. Merab	08	Akria	01	30	M19/M20
								Idaga Hamus	02	40	M21/M22
								Mai Temenay	03	40	M23/M24

ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Interv. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
DEBUB	DB	03	Mr. Asgedom	Yordanos M. Tedla	31	Tsorona	01	Tsorona	01	40	D01/D02
				Samuel H. Drar	32			Deqi Liefay	02	20	D03
				Asmerom T. Sengal	33	Dekemhare	02	Godeiti	01	20	D04
				Mohammed O. Abdel	34	Adi Keih	03	Egilla	01	40	D05/D06
				Bisirat T. Keleta	35			Adi Keih 01	02	80	D07 – D10
				Amanuel H. Zeru	36	Senafe	04	Senafe 01	01	40	D11/D12
				Ainom O. Tedla	37			Giasih	02	20	D13
						Mai Aini	05	Mai Aini (Adi Seguagi)	01	20	D14
						Segeneiti	06	Awanet	01	20	D15
								Heibo	02	40	D16/D17
		04	Dr. Musie E-Mikail	Negussi R. G/Medhin	41	Mandefera	07	Zoba Mbraq	01	100	D18 – D22
				Hans H. Mengistab	42			Kudo Felasi	02	40	D23/D24
				Daniel T. G/Selasie	43			Adi Th'edi	03	10	D25
				Abraha H. K/Mariam	44	Areza	08	Adi Gureto	01	10	
				Kiflom Y. Gebreab	45			Adi Nefas	02	20	D26
				Tigisti H. G/Meskel	46	Adi Kuala	09	Adi Habr	01	20	D27
								Enda Gergis	02	30	D28/D29

ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Interv. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
						Dbarwa	10	Adi Gered	01	10	D29
								Takita	02	20	D30
						Emni Haili	11	Durko	01	20	D31

ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Interv. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
NORTHERN RED SEA	NR	05	Prof. Jacob Mufunda	Teckle Werde	51	Ketema Masawa	01	Twalet	01	5	N01
				Amanuel A. Haile	52			Adis Alem	02	15	N01
				Yodit Z. T/Mariam	53	Ghindae	02	Zoba 02	01	35	N02/N03
				Tesfhahiwet G/M	54			La ai'ten	02	5	N03
				Barhabelom M. G	55			Maihabar	03	10	
						Foro	03	Afta	01	5	N04
								Hadeli	02	5	
								Foro	03	10	
								Zulla	04	10	N05
						Sheb	04	Ghed ged	01	20	N06
								Wed Eilo	02	10	
								Woqiro	03	10	N07
						Gel'alo	05	Engel	01	10	
								Gel'alo	02	5	N08
								Bordile	03	5	
		06	Mr. Muktar Ibrahim	Hailab Mesfin	61	Afabet	06	M'erab Afabet	01	40	N09/N10
				Aman Hadgu	62			M'braq Afabet	02	140	N11 – N17
				Alemtsehay Negasi	63	Nakfa	07	Hdai	01	10	N08

| | | | | Semhar Beraki | 64 | | | Apolo (Zoba 03) | 02 | 5 | |
| | | | | Warda Hassen | 65 | | | Kub Kub Zoba 04 | 03 | 5 | |

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ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Interv. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
ANSEBA	**AN**			Elias Teagas	71	Adi Tekliazen	01	Zoba 02	01	40	A01 – A02
				Biniam Ghirmay	72			Dekemhare	02	20	A03
				Askale G/Kristos	73	Geleb	02	Mihlab	01	10	A04
				Melkeb Tewelde	74			Geleb	02	10	A04
				Rita T/brhan	75	Arotay	03	Arietay	01	15	A05
								Filfle	02	5	A05
		07	**Mr. Amanuel Yohannes**			Elabered	04	Debresina	01	15	A06
								Sheib Robto	02	5	A06
								Eden	03	20	A07
								Halib Mentel	04	20	A08
						Hal Hal	05	Melebso	01	10	A09
								Hal Hal	02	10	A09
						Hamelmalo	06	Jengeren	01	10	A10
								Hamelmalo	02	5	A10
								Fredarb	03	5	A10
		08	**Dr. Yohannes Ghebrat**	Selemawit Andebrhan	81	Ketema Keren	07	Kebabi 02	01	60	A11 – A13
				Eseyus S Tsehaye	82			Kebabi 03	02	80	A14 – A17

				Amanuel B. Mesfun	83			Zoba 02	01	40	A18 – A19
				Nasir Adem Sale	84			Gilas	02	5	A20
				Musie Woldu	85	Hagaz	08	Ashala	03	5	A20
								Adi Fekay	04	5	A20
								Frdgi	05	5	A20

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ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Interv. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
GASH BARKA	**GB**			Zecharias Andemariam	91	Logo Anseba	01	Habela	01	10	G01
				Daniel Ogbagabr	92	Meqerka	02	Mensura	01	10	G01
				Mulugheta G/Kristos	93	Haikota	03	Haikota	01	15	G02
				Asmerat Beyene	94	Gonei	04	Dase	01	5	G02
		09	**Dr. Estifanos Paulos**	Marta Desbele	95	Shambiqo	05	Shambiqo	01	30	G03/G04
						Mogolo	06	Mogolo	01	10	G04
						Akurdet	07	Nathnet	01	20	G05
								Qedamay Kebabi	02	20	G06
						Barentu	08	Zoba Byara	01	20	G07
						Lae'lay Gash	09	Tokombia	01	20	G08
		10	**Prof. Peter Nyarang'o**	Mulla Tesfamikail	01	Tesseney	10	Zoba Sh'eb	01	260	G09 - G21
				Laine Okbazgi	02	Golij	11	Ghergef	01	20	G22
				Feseha Hadish	03			Tebeldia	02	20	G23
				Fiyori T/Mariam	04	Dge	12	Tekreriet	01	15	G24
				Luwam T/gabir	05	Forto	13	Sherief	01	5	G24

ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Interv. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
				Weini Teklu	06			Homib			

ZOBA	Zoba Code	Team No	Supervisor	Interviewers	Interv. Code	Sub Zoba	Sub Zoba Code	Village	Village Code	Sample Size	Clusters
SOUTHERN RED SEA	**SR**	**11**	**Dr. A. Usman**	Tewolde Kidane	E1	Araeta	01	Tio	01	10	S01
				Fishale Melonen	E2			Ayumenu	02	5	S01
				Tesfalem Teklai	E3			Egirolli	03	5	S01
				Hanan M. Osman	E4	D/D/KB	02	Abo	01	5	S02
				Hirity Kiflay	E5			Beilul	02	5	S02
								Edi	03	5	S02
						Ketema Asseb	03	Harsile	01	5	S02
								Shkaito	02	20	S03
								Asabuy	03	30	S04/S05
								Blien Koma	04	30	S05/S06

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MINISTRY OF HEALTH ERITREA
NCDs RISK FACTORS SURVEY 2004 – TRAINING OF INTERVIEW TEAMS

AGENDA

DAY 1: Saturday 4th September, 2004.

TIME	TOPIC	FACILITATOR
8.30 – 8.50 am	Survey Objectives and Expectations	Dr. Goitom Mebrahtu
8.50 – 9.10 am	STEPS	Dr. Yohannes Ghebrat
9.10 – 9.40 am	Interview approach, techniques and sampling	Dr. A. Usman
9.40 – 10.10 am	Tea Break	All
10.10 – 10.30 am	General overview of the questionnaire	Prof. Peter Nyarang'o
10.30 – 10.50 am	Tobacco Use	Mr. Asgedom
10.50 - 11.10 am	Alcohol Consumption	Prof. Jacob Mufunda
10.10 – 11.30 am	Diet	Dr. Musie E-Mikail
11.30 – 11.50 am	Physical activity	Dr. A. Usman
11.50 – 12.10 pm	Hypertension and diabetes	Dr. Goitom Hagos
12.10 – 12.40 pm	Introduction to physical measurements	Prof. Mufunda/ Dr. Goitom Hagos
12.40 – 2.00 pm	Lunch Break	All
2.00 – 4.00 pm	Practice on questionnaire and physical measurements	All.

DAY 2: Sunday 5th September, 2004.

TIME	TOPIC	FACILITATOR
8.30 – 9.00 am	Recap of day 1	Dr. A. Usman
9.00 – 9.30 am	Feedback on practicals	Prof. Jacob Mufunda
9.30 – 10.00 am	Tea break	All
10.00 – 11.30 am	Practicals continued	Prof. Peter Nyarang'o

11.30 – 12.00 am	Wrap up and postings	Dr. Goitom Mebrahtu

DEVICE IDs FOR PHYSICAL MEASUREMENTS:

S/N	TEAM NUMBER	DEVISE IDs			
		HEIGHT	WEIGHT	WAIST CICUMFERENCE	BLOOD PRESSURE
1	01	H01, H02	W01, WH02	C01, C02	P01, H02
2	02	H03, H04	W03, W04	C03, C04	P03, H04
3	03	H05, H06, H07	W05, W06, H07	C05, C06, C07	P05, P06, P07
4	04	H08, H09, H10	W08, W09, W10	C08, C09, C10	P08, P09, P10
5	05	H11, H12	W11, W12	C11, C12	P11, P12
6	06	H13, H14	W13, W14	C13, C14	P13, P14
7	07	H15, H16	W15, W16	C15, C16	P15, P16
8	08	H17, H18	W17, W18	C17, C18	P17, P18
9	09	H19, H20	W19, W20	C19, C20	P19, P20
10	10	H21, H22	W21, W22	C21, C22	P21, P22
11	11	H23, H24	W23, W24	C23, C24	P23, P24