SCHOOL OF PUBLIC HEALTH
COLLEGE OF MEDICINE AND HEALTH SCIENCES
UNIVERSITY OF GONDAR

ASSESSMENT OF HOUSEHOLD FOOD INSECURITY AND ASSOCIATED FACTORS IN RURAL COMMUNITIES OF GONDAR CITY ADMINISTRATION

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Acronyms

AIDS	Acquired Immune Deficiency Syndrome
AOR	Adjusted Odds Ratio
CI	Confidence Interval
COR	Crude Odds Ratio
CARD	Council for Agricultural and Rural Development
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agricultural Organization
FFP	Food For Peace
ha	Hectare
HFIAP	Household Food Insecurity Access Prevalence
HFIAS	Household Food Insecurity Access Scale
HH	Household
HIV	Human Immune Deficiency Virus
MDGs	Millennium Development Goals
PSNP	Productive Safety Net Program
OR	Odds Ratio
Q	Question
SE	Standard Error
SNNP	Southern Nation Nationalities and People
SPSS	Statistical Package for Social Science
SRS	Simple Random Sampling
TWG-FSN	Technical Working Group for Food Security and Nutrition
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WFP	World Food Program

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Abstract

Background:-Ethiopia is currently ranked 169 out of 177 countries on the 2007-2008 Human Development Index and is chronically suffers from food insecurity. Food shortages in Ethiopia aggravate the already poor health of children and adults. Millions of households in rural areas of Ethiopia suffer from chronic food insecurity and receive food aid on an annual basis.

Objective:-This study was conducted to determine prevalence of household food insecurity and its associated factors in rural communities of Gondar City Administration, North West Ethiopia.

Methods:-Community based cross-sectional study design was employed. Data were collected through house to house interview using household food insecurity access scale (HFIAS) which is structured and universally applicable household food insecurity 9 item measurement tools. Descriptive statistics and logistic regressions were used to determine prevalence of household food insecurity and its associated factors.

Result: - 60.8% of the rural households were found to be food insecure in the study area. Out of the total eleven variables included in the logistic regression analysis model only 6 variables namely; livestock ownership (AOR= 2.05, 95%CI = 1.039-4.022), use of fertilizer (AOR = 4.23, 95% CI = 1.741-10.275), source of potable water (AOR = 4.00, 95% CI = 2.060-7.764), off-farm income (A0R = 2.90, 95% CI = 1.249-6.712), annual farm income (AOR = 3.98, 95% CI = 2.514-6.303) and total annual income (AOR = 3.93, 95% CI = 2.471-6.258) were found to be statistically significant.

Conclusion and recommendation: - The majority (60.8%) of households in rural communities of Gondar City Administration is food insecure and factors like livestock ownership, use of fertilizers, source of potable water, off-farm income, farm income and total annual income are found to be significantly associated with household food insecurity in the study area. Thus, Government bodies, NGOs and the community at

large should work cooperatively in areas that enable rural households to minimize the problem of food insecurity by overcoming factors associated with it.

1. Introduction

1.1 Statement of the problem

Ethiopia is currently ranked 169 out of 177 countries on the 2007-2008 Human Development Index and is chronically suffers from food insecurity. Food shortages in Ethiopia aggravate the already poor health of children and adults. Millions of households in rural areas of Ethiopia suffer from chronic food insecurity and receive food aid on an annual basis. The chronic and severe food insecurities that have characterized Ethiopia over the last several decades have exacerbated the already serious obstacles facing the country's economic and social development. [1-4]

Gondar City Administration is one of the 4 City Administrations in North Gondar Administrative Zone of Amhara Region. It is located at a latitude and longitude of 12°36′ N 37°28′ E / 12.6° N 37.467° E with an elevation of 2133 meters above sea level. Economically most of the rural communities are farmers and involved production of annual crops in rain fed agriculture. While some are working as daily laborers and small scale merchants and very few work in government institutions.[5]

Food accessibility was limited due to a weak subsistence-agriculture-based economy, depletion of assets, absence of income diversity and a lack of alternative coping mechanisms. Food intake adequacy was rarely achieved due to food shortages, improper diet and poor sanitary conditions. With respect to agriculture in developing countries, the combined effect of population growth, increased per capital income and changes in dietary pattern will bring about continuous increases in demand for food and other agricultural products. [6, 7]

Even though the struggle to achieve food security at the household level in the rural areas of Ethiopia dates back a long period, it has remained as a challenging goal even today. The majority of the billion people affected by hunger live in rural areas which includes rural poor (e.g. small farmers, landless farm laborers) are particularly vulnerable to food insecurity. [8, 9] So that, this research is designed to assess current status of the problem and associated factors and will suggest possible recommendations.

1.2 Literature review

1.2.1 Measuring food insecurity

The discovery that people who frequently did not have enough to eat according to accepted cultural norms created a conceptual crisis. Internationally, the phrase Food Insecurity was already current. Originally, it was used to describe the instability of national or regional food supplies over time until the mid 1970s. It was then expanded to include a lack of secure provisions at the household and individual level. Food security is built on four pillars. These are food availability, food access, food use and stability of food supply over time.[9-11]

Food insecurity exists when people, at some time, do not have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food insecurity is defined by the United States Department of Agriculture (USDA) as difficulty of providing enough food for all household members due to lack of resources at some time during the year. [11, 12]

Four categories of household food security status scale (food secure, mildly food insecure, moderately food insecure and severely food insecure) have been defined which are often useful for policy and research purposes. Each category represents meaningful range of severity on the underlying scale, and used to discuss the percentage of the population in each of these categories.[13]

The concept of food security has been used extensively at the household level as a measure of welfare and attempts have been made to make the concept operationally useful in the design, implementation, and evaluation of programs, projects and policies. Experimental measures of food insecurity, attempt to address the issue of varying household needs and behavior. A set of questions addressed to food insecure households is used to estimate household food insecurity scores. These questions attempt to capture perceptions as well as past experience by the households. [14]

Validation and usefullness of the Household Food Insecurity Access Scale (HFIAS) as a measure of household food insecurity (access) status, has become progressively improved through field validation studies(Cornell in Burkina Faso with Africare, Tufts in Bangladesh with World Vision, and Freedom from Hunger in Burkina Faso, Bolivia, Ghana, and the Philippines). Findings from a study conducted in Addis Ababa indicate that an adapted version of the HFIAS is a valid tool for assessing food insecurity among community health volunteers.[15,16]

1.2.2 Magnitude of food insecurity

One in five people today suffer from hunger and malnutrition, the effects of which on the physical and mental growth of those affected can be irreversible in some cases. Not only is hunger morally unacceptable, but it also acts as a brake on economic and human development in the poorest countries. In 2010, Food and Agricultural Organization (FAO) estimates 925 million hungry people throughout the world. Among the above figure, developing countries account for 98 percent of the world's undernourished people.[9, 17]

There is no question that lack of food security is a real and significant public health issue facing low-, medium-, and high-income countries. While it is difficult to get an accurate picture of its true extent because of variations in the methods of measurement within and among countries, high-income nations do not appear to be affected rarely. For example, reports of food insecurity in high-income countries include the following: 29% amongst low-income households in the United Kingdom, 20% of households with children in New Zealand, in Canada is 9% and 5% in Australia. According to USDA, in 2008 the prevalence of food insecurity in the United States was 14.6% of households (17 million households) and 16.4% among individuals which was the highest recorded since 1995 when nationally representative surveys were initiated.[18-21]

In India the result of urban households' food insecurity survey in 2010 showed that prevalence of any form of food insecurity was present in three-fourths of the households 74.6%.[22] In rural Tanzania 36% of households was food insecure in 2005.[23] Another study in rural Tajikistan states out of three food insecure

households, one is severely food insecure (12%, 22% and 66% of households are severely food insecure, moderately food insecure and food secure respectively). [24]

In 2005 the proportion of undernourished people in rural areas of Ethiopia was estimated to be 45% and a total of 7.5 million chronically food insecure people received Productive Safety Net Program (PSNP) assistance in 2009. Different studies in areas such as rural Amhara, rural Dire Dawa, and Southern Nation Nationalities and People (SNNP) (Bilate watershed that transects Hadiya, Kembata Tembaro, Wolaita and Sidama zones and Alaba district) showed that household food insecurity was found to be a severe problem with 45%, 76% and 73% respectively. [25-29]

The result of a cross sectional study conducted in selected woredas of four Regions: Amhara, Oromia, SNNP and Tigray Regions using HFIAS, showed that the food insecurity level of rural households was calculated to be 6(0.6%) food secured, 42(4.1%) mildly insecure, 404(39.9%) moderately insecure, and 561(55.4%) are severely insecure.[30]

1.2.3 Causes of food Insecurity and factors associated with it

The causes of food insecurity are both temporary and structural. Poverty, insufficient access to health and education services, as well as poor governance, are the main causes of chronic food insecurity. Environmental damage, climate change and the mismanagement of natural resources are further causes of chronic food insecurity (desertification, unstable ecosystems). Chronic undernourishment (food insecurity) in sub-Saharan Africa persists primarily due to low agricultural productivity, limited rural development, government policy disincentives, and the impact of poor health on the agricultural workforce. Additional factor, including rising global commodity prices is likely further exacerbate food insecurity in the region.[9, 31]

A study conducted in rural households living with HIV/AIDS in Southwestern Nigeria shows that gender, education, monthly food intake (Kcal), total monthly income, drug share and food share significantly influence the food security status of the households living with HIV/AIDS. In India a study results on household food

insecurity revealed that the presence of a significantly association with poor general health and bodily pain. While in rural Ghana the poor food insecurity status is due to a number of factors: poor biophysical conditions, skewed distribution of wealth, low social capital and few opportunities for local non-farm activities. [32- 34]

Another study in rural Nigeria showed that about one third of the rural farming households sampled was food insecure and that farm size of the households, gross farm income, total non-farm income and household size are the significant determinants of rural household food security in the study area. Traditionally, in rural Burkina Faso, livestock rearing is one of the most important strategies used by households in agro-pastoral food production systems to improve their incomes as well as their food security. Lack of livestock is one of the key markers of household vulnerability to food insecurity. Food insecurity is more concentrated among smallholder farmers and female headed households. [35, 36]

Lack of access to safe drinking water and hygienic sanitation would increase illness and infection rates and decrease health and nutritional status. People need an adequate supply of nutritious food and clean water daily to provide adequate nutrition and food security. Insufficient access to safe water sources and hygienic toilets in rural villages has strong linkages to the use of food and is a basic obstacle to improved food security and nutrition and the achievement of the Millennium Development Goals (MDGs). [37, 38]

Food intake adequacy was rarely achieved due to food shortages, improper diet and poor sanitary conditions. Studies conducted in southern Ethiopia, Eastern Oromia and Dire Dawa Regions show factors like small farmland size, low per capita aggregate production, absence of fertilizer application, large family size, low level of income, and lack of educational attainment level of household heads are identified as having a positive significant influence on food insecurity. As age of household heads' increase, they can acquire more knowledge and experience and pre -

assume vulnerability and risk conditions of food insecurity and the chance of a household to become more food secure increases. [6, 8, 29, 39, 40]

Another studies conducted in Amhara and Southern Ethiopia regions concluded that natural factors, demographic and socio-economic factors such as large family size, high dependency ratio, low level of agriculture production, low level of livestock wealth, low participation in off-form activities, and so on of farming are among the factors that increase the odds of food insecurity.[26, 28]

Food insecurity has been shown to be associated with poor health both in developing and developed countries and is consequently a public health issue. Food insecurity as a form of deprivation has been shown to affect many dimensions of well-being. Children from food insecure households are more likely to have poor growth attainment, recurrent infections, inadequate energy and nutrient intakes compromised learning ability and psychosocial problems.[41-44]

1.2.4 Conceptual framework for household food insecurity

Conceptually food insecurity is affected by socio-economic, political, institutional, cultural and natural environmental factors at national, sub-national and community, household and individual levels. These factors may determine food insecurity at different angles like food availability, accessibility, stability and/or utility. [45] The following figure shows conceptual framework of food insecurity at the household level.

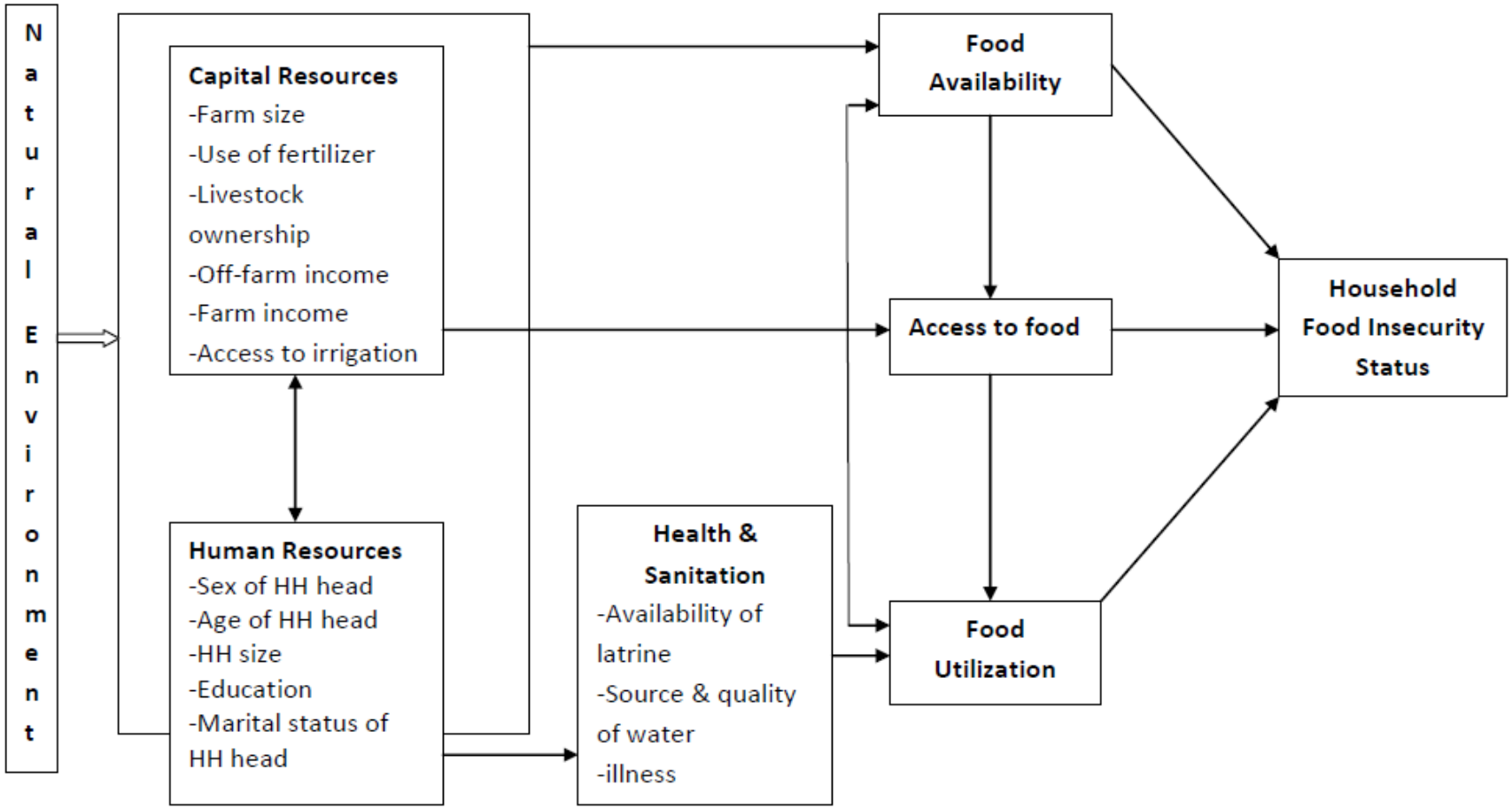

Fig. 1 Conceptual framework for household food insecurity

Adapted from Food Security Information for Action: Food Security Concepts and Frameworks. FAO (2008), with major modification.

1.3 Justification of the study

Reducing food insecurity in the developing world continues to be a major public policy challenge, and one that is complicated by lack of information on the location, severity, and causes of food insecurity. Food security in Ethiopia is dependent on rain fed agriculture. And 45% of the population is food insecure. An average of about 15 million people is chronically food insecure (most common form of food insecurity). Current poor nutritional and health status indicators are dimension of the presence of high food insecurity in Ethiopia. Adequate, nutritious and safe food is basic precondition for active, healthy and decent life.

As my knowledge is concerned on literature review, there is no previous household food insecurity study conducted on these rural households using HFIAS.

Since large and widely dispersed populations depend on rain fed agriculture and the Ethiopian government implements poverty reduction strategy, assessing food insecurity condition and identifying factors is an important input to promote effective and better directed actions aimed at reducing household food insecurity and poverty for policy implications and interventions.

2. Objectives

2.1 General objective

The general objective of this research is to assess the prevalence of household food insecurity and associated factors in rural communities of Gondar City Administration.

2.2 Specific objectives

- To determine the prevalence of household food insecurity in rural communities of Gondar City Administration.
- To identify factors affecting household food insecurity in rural communities of Gondar City Administration.

3. Methods

3.1 Study design

Community based cross-sectional quantitative study design was carried out in rural households of Gondar City Administration from April to September 2011.

3.2 Study area

The study was conducted in rural households of Gondar City Administration which is located in North Gondar Zone, Amhara Regional State, Ethiopia. The selection of the rural Kebeles was based on accessibility and administrative convenience. Gondar is located 748km North West of Addis Ababa and according to the City Administration 2002 E.C base line survey there has been estimated total population of 331,430 of which 42,428 are living in rural kebeles and the rest in urban. Administratively there are 11 rural and 13 urban kebeles in the City Administration. The administration has one government and one private hospitals, 8 health centers and 14 health posts and 33 private clinics rendering health care services for the population.

3.3 Study population

All rural households in randomly selected four kebeles were study population and each household selected randomly from the four kebeles using computer generated table of random number was sampling unit.

Exclusion criteria

Those household that were unable to give information due to illness or hearing difficulty at the time of data collection will be excluded from the study.

3.4 Sample size determination

Sample size was determined using a single population proportion formula $n = \frac{\left(\frac{z\propto}{2}\right)^2 p(1-p)}{d^2}$ on the assumption of 45% overall prevalence (P) of household food insecurity in rural Amhara Region, at 95% confidence level $\left(\frac{z\propto}{2} = 1.96\right)$, and 5% margin of error (d).

Hence, $n = \frac{1.96^2 x.45(1-.45)}{.05^2}$ $\quad n = 381$

Since the total number of households were less than 10,000 by using correction formula, $n_f = \frac{n_o}{1+\frac{n_o}{N}}$ Where n_o= the above sample size & N=total number of Study population

Then $n_f = \frac{381}{1+\frac{381}{2,279}}$

$n_f = 327$

By considering the multistage nature of sampling technique the final sample size was multiplied by 2 and finally by adding a 10% non response rate the required sample size was 720.

3.5 Sampling procedures

A two stage random sampling technique was employed to draw sample households. In the first stage, out of the total eleven kebeles, four kebeles were selected randomly. At second stage, a total of 720 sample household heads were selected after probability proportional allocation of households for each kebele using computer generated table of random number.

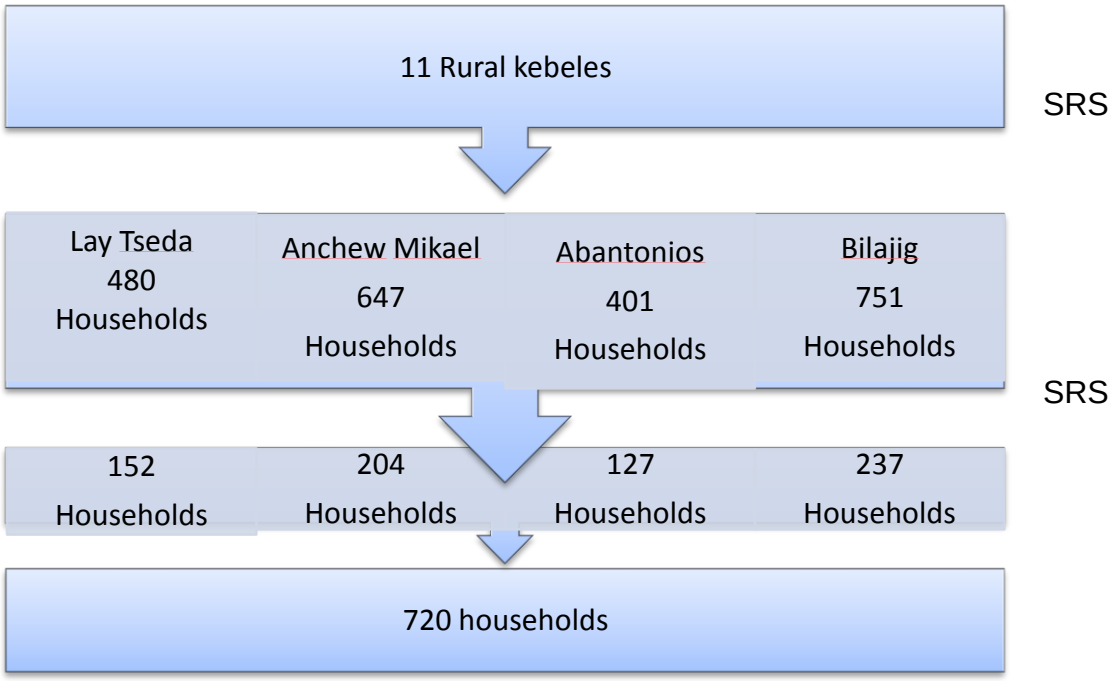

Fig.2 Schematic representation of sampling procedure

3.6 Data collection procedure

Household heads and/or individuals who were responsible for food preparaion were used as source of data on behalf of themselves and members of the family. Structured questionnaire was developed based on universally applicable household food insecurity measurement tool. This tool was originally developed by the United States Food and Nutrition Technical Assistance (FANTA) Project targeting at reducing hunger, malnutrition, and food insecurity in the developing world. The reason why this instrument used is because of the challenges in measuring household food insecurity of the technical difficulty and cost of collecting and analyzing data on traditional food security indicators, such as per capital income and caloric adequacy. The HFIAS holds promise as an easier and more user-friendly approach for measuring the access component of household food security.[46]

The HFIAS consists of two types of related questions. The first question type is called an occurrence question. There are nine occurrence questions that ask whether a specific condition associated with the experience of food insecurity ever occurred during the previous four weeks (30 days). Each severity question was followed by a frequency-of-occurrence question, which asked how often a reported condition occurred during the previous four weeks prior to data collection time. [42]

Data collectors

In this research 8 health extension workers and two public health professionals were participated in data collection and supervision. And the data were collected through door-to-door survey of households starting from June 1 to June 14/2011.

Data quality control

To ensure the data quality standardized Amharic data collection instruments were used and pre-testing was carried out to check the effectiveness of data collection instrument using 5% of the sample population in rural households which were not included in the sample. After pretest the questionnaire was standardized for further actual data collection. Data collection manual was also prepared which showed specific data collection specifications and procedures. One day training was given for the research staff on research protocol and data collection instruments. At the time of data collection, supportive supervision was made and data were reviewed by

field workers and supervisors. Data were checked before data entry by data manager and data entry personnel.

3.7 Variables of the study

3.7.1. Dependent variable:

Household food insecurity

3.7.2. Independent variables:

- Factors associated with human resources
  - Sex of household head
  - Age of household head
  - Household size
  - Education of household head
  - Marital status of household head
  - Ethnicity
  - Religion
  - Occupation
  - Family size
- Factors associated with capital resources
  - Farm size
  - Fertilizer application
  - Livestock ownership
  - Off-farm income
  - Farm income
  - Access to irrigation
  - Annual average total income
- Factors associated with health and sanitation
  - Availability of latrine
  - Source of potable water
  - Health status of members of the family

3.8 Operational definitions

- **Food availability** is the physical presence of food on the market or home.
- **Food access** is the way households can obtain the available food.
- **Food utilization** is the way households use the food. [9]
- **Household**: family members that sleep under the same roof and take meals together at least four days a week.
- **Household food security:** exists when all households did not have anxiety and uncertainty about the household's food supply or worried rarely and no problem of insufficient quality and insufficient food intake and its physical consequences.
- **Mild food insecurity**: worries about not having enough food sometimes or often, and/or is unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely.
- **Moderate food insecurity**: household sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or has started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes.
- **Severe food insecurity**: households has graduated to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely.
- **Household food insecurity**: having anxiety and uncertainty about the household's food supply or worried sometimes or often or households experience problems of insufficient quality of food or insufficient food intake or its physical consequences. [47]
- **Family size**: it refers to the total number of household members who lived and ate with household head for at least six months and more.
- **Farm size**: it refers to the cultivated farmland in hectare (owned, shared and rented) allocated for annual and perennial crops, vegetable and for homestead farming activities.

- **Off-farm income**: it is annual off-farm and/or non-farm income in Birr (Ethiopian national currency, during the survey time) that a household heads or his family members earn from off-farm activities.
- **Livestock owned**: is the total livestock (cattle, equines, sheep, goat, and chicken) owned by a household.
- **Farm income**: is the total annual income earned from crop and livestock sale.

3.9 Data management

Possible responses of variables were coded before actual data collection began. Epi Info Version 3.5.1 for data entry and SPSS version 16 and STATA Computer programs for data analysis were used. Before data analysis thorough data cleaning activities were performed.

3.10 Data processing and analysis

After the collection of all the necessary data, it was coded on pre-arranged sheet by the principal investigator. Data were thoroughly cleaned before entry. The responses from the household food insecurity measure were entered into computer using statistical software Epi Info Version 3.5.1 and analyzed by the use of SPSS version 16 (for descriptive statistics and logistic regressions) and STATA (for determining household food insecurity categories) computer software.

Household food insecurity status was calculated based on Household Food Insecurity Access Scale recommended by USAID. The household's socio-economic characteristics were described using descriptive statistics of frequency and percentage distribution tables. To determine factors significantly associated with household food insecurity, binary logistic regression analyses were employed and their odds ratios, confidence intervals and p-values were also obtained. In the backward stepwise (Likelihood Ratio) approach variables were selected one at a time, and at each step.

4. Ethical considerations

Ethical clearance was obtained from University of Gondar College of Medicine and Health Sciences School of Public Health. Official letter of cooperation was also written to each rural kebeles by Gondar City Administration Health Office. Following having permission from kebele administrations, informed consent was obtained from each household after clear explanation about the purpose of the study. Confidentiality of the information was also assured by the use of ID variables from the questionnaire.

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5. Results

5.1 Socio-economic characteristics of household heads

The socio-demographic characteristics of household heads are summarized in Table 1. A total of 720 households were included in the study with non-response rate of 6(0.83%). The number of male household heads 527(73.8%) was higher than the number of female household heads 187(26.2%). The Mean age of the heads was 46.53 ± 15.1 years. Most household heads (27.3%) were found in the age group of 30-39. On average there were 5.27 persons per household and 315(44.1%) of the households had more than 5 family members. A significant proportion of heads (73.8%) were married and 99.0% were orthodox by religion. As to the primary occupation, Most (87.3%) of house hold heads were farmers and more than half of them (65%) have never attended any form of education

Table 1. Socio-demographic characteristics of household heads in rural community of Gondar City Administration, 2011.

Characteristics		Frequency	Percent
Sex	Male	527	73.8
	Female	187	26.2
Age			
	18-20	3	0.4
	21-24	13	1.8
	25-29	55	7.7
	30-39	195	27.3
	40-49	166	23.2
	50-59	124	17.4
	≥60	158	22.1
Marital status			
	Single	37	5.2
	Married	527	73.8
	Divorced	55	7.7
	Widowed	95	13.3
Religion			
	Orthodox	707	99
	Muslim	5	0.7
	Catholic	2	0.3
Education			
	Illiterate	467	65.4
	Reading and writing	150	21
	Primary	46	6.4
	Secondary	45	6.3
	Above secondary	6	0.8
Occupation			
	Farmer	623	87.3
	Student	7	1.0
	Small scale merchant	7	1.0
	Civil servant	7	1.0
	Daily laborer	58	8.1
	Small scale group work	4	0.6
	Unemployed	8	1.1
Family size			
	1-3	173	24.2
	4-6	336	47.1
	7-9	173	24.2
	10-12	32	4.5

Housing conditions and household assets in the study area

In the study area the majority of the houses, 690 (96.6%), had a roof made of iron sheet, and 24 (3.4%) were made of thatch. The floor material for the majority of households was made of mud and cow dung (99%). More than 89% of the households had reported that they have separate place for domestic animals to spend the night where as in 10.2% of households animals spend the night with members in the same house. Households having livestock were found to be 589(82.5%) in number. Specifically 547 (76.6%) and 263(36.8%) of households reported that having cattle and sheep or goats respectively. 529(74.1%) of households have chickens. From the total households, only 216 (30.3%) of them possessed radio and 10(1.4%) had access to television (Table 2).

Table 2. Housing conditions and household assets in rural communities of Gondar City Administration, 2011.

Characteristics		Prevalence	Percent
Floor			
	Mud/ cow dung	707	99.0
	Wood	5	0.7
	Cement	2	0.3
Roof			
	Thatch	24	3.4
	Corrugated iron sheet	690	96.6
Animals share house			
	Yes	73	10.2
	No	641	89.8
Livestock owned			
	Yes	589	82.5
	No	125	17.5
Foul owned			
	Yes	530	74.2
	No	184	25.8
Radio	Yes	216	30.3
	No	498	69.7
Television	Yes	10	1.4
	No	704	98.6

Farm related characteristics of the study area

Table 3. Farm related characteristics of households in rural communities of Gondar City Administration, 2011.

Characteristics		Prevalence	Percent
Access to farm land			
	Yes	650	91
	No	64	9
	Total	714	100
Farm size (ha)			
	0.10-0.50	141	21.7
	0.51-1.00	288	44.3
	1.01-2.00	191	29.4
	2.01-5.00	30	4.6
	Total	650	100
Access to irrigation			
	Yes	155	21.7
	No	559	78.3
	Total	714	100
Fertilizer used			
	Yes	607	93.4
	No	43	6.6
	Total	650	100
Annual crop production (quintal per HH)			
	0.6-4.0	112	17.2
	4.1-7.5	261	40.2
	7.6-11.0	135	20.8
	11.1-14.5	88	13.5
	>14.5	54	8.3
	Total	650	100
Average monthly off-farm income (Eth. Birr per HH)			
	<423.5	175	72
	≥423.5	68	28
	Total	243	100
Annual Farm income (Eth. Birr per HH)			
	<5,257.7	401	56.2
	≥5,257.7	313	43.8
Total annual income (Eth. Birr per HH)			
	<6,987	442	61.9
	≥6,987	272	38.1

As shown in Table 3 above in the study kebeles 650(91%) of households were reported having farm land to cultivate which is either rented or owned by the household. And mean farm size of households was found to be 1.0 hectare. Out of those households which have farm land only 21% of them have access to irrigation. Almost above 93% of households with farmland used fertilizers. Of these, 573(94.4%) used artificial fertilizer, while 12(2%) applied only natural fertilizer, and the rest 22(3.6%) used both types of fertilizers. Majority (59.7%) of households earned less than mean annual crop production (7 quintals). Among 243 households which had income from off-farm activities such as petty trade, selling fire wood and labor market, on average 72% of households earned less than the mean (423.5 birr) (Ethiopian National Currency, during the survey time it had an official exchange rate of 1 US $ = 16.84 birr). Concerning on farm income, income from crop production and animal sell, the majority of households (56.2%) earned less than the mean (5,257.7 Eth. birr) annually. Additionally, almost 62% of households in the study area earned less than the mean total average annual income (6,987 Eth. birr).

Water and sanitary conditions

The source of drinking water used by 214(30%), 343(48%), 88(12.3%) and 27(3.8%) of the households were pipe water, protected spring, unprotected spring and river respectively. About 163(22.8%) of households require 31-60 minutes to fetch water from the sources and the other 76(10.6%) require greater than one hour. As shown in Table 4, 293(41%) of households in the study area did not have any kind of latrine as a result household members go to bushes or open field for defecation. In the study area only 47.1% of household heads had the experience of washing their hands after defecation of feces but 34% and 18.1% of heads did not have hand washing habits not at all and sometimes, respectively. Most of the time 84.2% of households experience garbage disposal mechanisms in the surrounding for fertilizer use. As indicated in table 4, about 72% of households had reported the experience of having insects like bedbug, flea, lice, mosquitoes, ginger flea and cockroach.

Table 4. Water and sanitary conditions of households in rural communities of Gondar City Administration, 2011.

Characteristics	Prevalence	Percent
Source of drinking water		
Pipe	214	30
Protected spring	343	48
Protected well	32	4.5
Unprotected spring	88	12.3
Unprotected well	10	1.4
River	27	3.8
Water collection material		
Jerry can	707	99
Iron bucket	5	0.7
Pot	2	0.3
Time required to fetch water (minutes)		
1-15	287	40.2
16-30	188	26.3
31-60	163	22.8
>60	76	10.6
Availability of latrine		
Yes	421	59
No	293	41
Type of latrine		
Pit latrine with shelter	341	81
Pit latrine without shelter	80	19
Total	421	100
Hand washing habit after defecation		
Always	336	47.1
Sometimes	135	18.9
Never	243	34
Garbage disposal		
Pit	30	4.2
Purposely prepared place	18	2.5
Open field	65	9.1
In the surrounding for fertilizer	601	84.2
Animal share house		
Yes	73	10.2
No	641	89.8
Presence of vectors		
Yes	516	72.3
No	198	27.7

5.2 Household food insecurity level of the study area

In the study area respondents of the households were interviewed for the experience of events in the previous four weeks that were associated with food insecurity. Accordingly, 45.1% of them have reported to have worried for enough food may not be available in the house during the specified period of time. The frequency of not eating preferred foods, eating limited variety of foods, eating foods that were not preferred and eating a small amount of food was found to be 45.9%, 50.7%, 36.8% and 33.8%, respectively. Almost 85% of households have reported that there was no problem of ever no food and members of the household sleep hungry at night.

Table 5. Food insecurity condition of households in in rural communities of Gondar City Administration, 2011.

Characteristics	Frequency	Percent
HH worried for not having enough food		
No	392	54.9
Yes	322	45.1
HH not eaten preferred food*		
No	386	54.1
Yes	328	45.9
HH ate limited variety of food		
No	352	49.3
Yes	362	50.7
HH forced to eat foods that are not preferred**		
No	451	63.2
Yes	263	36.8
HH have to eat small amount of food		
No	473	66.2
Yes	241	33.8
HH have to eat fewer meals in a day		
No	527	73.8
Yes	187	26.2
HH in which there was ever no food		
No	606	84.9
Yes	108	15.1
HH members sleep hungry at night		
No	609	85.3
Yes	105	14.7
HH members go the whole day without eating anything		
No	678	95
Yes	36	5

N.B: * mean foods that food secure people eat. **E.gs** Meat, Egg, Milk, etc.
** mean foods like Sorghum 'Enjera', Boild grains (Nifro), Roasted grains (Kollo), and the like.

Using HFIAS, the food insecurity level of households was calculated to be 280(39.2%), 120(16.8%), 162(22.7%) and 152(21.3%) food secured, mildly insecure, moderately insecure and severely insecure, respectively.

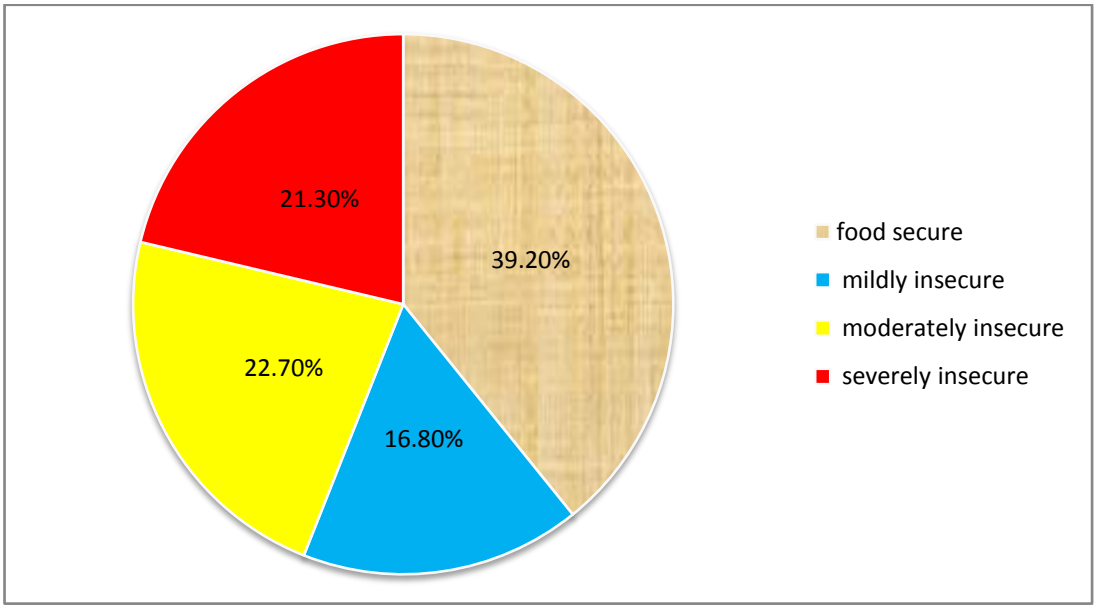

Fig. 3 Food insecurity status in rural communities of Gondar City Administration, 2011

In the study area, the overall prevalence of household food insecurity was found to be 60.8%. 59 % of male headed households were food insecure while in females it was 65.8 %. Relatively the proportion of household food insecurity in the age range of 18-39 was high (67.3%). It was found that 173 of the sample households had 3 or less than 3 members out of which 68.8 % were found to be food insecure. On the other hand, out of the 205 households who had greater than 6 members 56.6% were found to be food insecure.

When we come to the socio-economic predictors, among the household heads those were illiterate, 59.5 % are food insecure while in those household heads those could read and write it is 63.2%. It was also found that 59.2% of married and 80% of divorced household heads were found to be food insecure. Concerning on

occupation, food insecurity was found to be 83% in other than farming occupation and 57.5% in farmers.

An attempt was also made to examine the involvement of households in non-farm activities. It was found that about 242 households were engaged in non-farm activities out of which 67.8% of them were food insecure. On the other hand out of 472 households which do not have income from non-farm activities, 57.2% of them were food insecure. Among households that had farm land, and those who hadn't, 58.2% and 87.5% of them were found to be food insecure, respectively. 71.6% of households having farm land size of 0.10-0.50 ha were food insecure while in those that had greater than 2 ha household food insecurity is found 13.3%.

5.3 Factors associated with household food insecurity status

Bivariate analysis of each predictor variables against the household food insecurity status was performed to identify the significant candidate predictor variables that would qualify for the multivariate analysis. The major factors that were expected to determine household food insecurity status were first analyzed by considering the relationship of each predictor variable with the outcome variable. Twelve of the fifteen explanatory variables considered in this study were found statistically significant with the status of household food insecurity ($p<0.05$). The results of these logistic regression analyses showed that age, marital status, and occupation of household heads, family size, farm size, irrigation, fertilizer, livestock owned, farm income, total monthly income, source of drinking water and availability of latrine were found to be statistically significant in explaining household food insecurity. On the other hand variables like sex, education and off-farm income of household heads were not statistically significant.

Table 6 provides six predictors, out of the nine variables, which were initially included in logistic regression model (multivariate analysis).

Table 6. Logistic regression of household food insecurity with predictor variables in rural communities of Gondar City Administration, 2011.

Predictor Variables	Food insecurity		COR(95% CI)	AOR(95% CI)	P-value
	Yes	No			
Livestock					
Yes* *	325	264			
No	109	16	5.53(3.195,9.585)	**2.05(1.039,4.022)***	0.038
Fertilizer					
Yes**	337	270			
No	97	10	7.77(3.975,15.193)	**4.23(1.741,10.275)***	0.001
Source of water					**<0.001**
Pipe**	126	88			
Protected spring	200	143	0.98(0.691,1.382)	1.27(0.826,1.959)	
Protected well	24	8	2.10(0.900,4.879)	**3.08(1.054,8.989)***	0.040
Unprotected spring	65	23	1.97(1.141,3.414)	**4.00(2.060,7.764)***	<0.001
Unprotected well	3	7	0.30(0.075,1.189)	1.16(0.224,6.004)	
River	16	11	1.02(0.450,2.294)	**3.47(1.323,9.116)***	0.011
Off-farm income					
<423.5	400	246	1.63(0.985,2.684)	**2.90(1.249,6.712)***	0.013
≥423.5**	34	34			
Annual Farm income					
<5,257.7	326	75	8.25(5.858,11.621)	**3.98(2.514,6.303)***	<0.001
≥5,257.7**	108	205			
Total annual Income					
<6,987	348	94	8.01(5.686,11.276)	**3.93(2.471,6.258)***	<0.001
≥6,987**	86	186			

Footnote: * shows statistical significance at p-value<0.05, ** shows reference category.

The adjusted logistic regression final model shows fertilizer used, source of drinking water, off-farm income, annual farm income and total average annual income have

significant association with household food insecurity in the study area. In the above table, households with no livestock possession were 2 times more likely to be food insecure than households owned livestock (AOR= 2.05, 95%CI = 1.039-4.022). With regard to fertilizer, households that did not apply it on their cultivated farm land are found to be almost 4 times more likely to be food insecure than those that apply it (AOR = 4.23, 95% CI = 1.741-10.275). Similarly households that collected drinking water from unprotected springs are 4 times more likely to be food insecure than those that collected from piped water sources (AOR = 4.00, 95% CI = 2.060-7.764).

The logistic regression result (Table 6) revealed that households which had less than the mean average monthly off-farm income of 423.5 Eth. birr are 3 times more likely to be food insecure than households with an average off-farm income of greater than or equal to the mean (A0R = 2.90, 95% CI = 1.249-6.712). Regarding annual farm income, averagely households earned less than 5,257.7 Eth. birr are almost 4 times more likely to be food insecure than those households whose average annual farm income was greater than or equal to 5,257.7 Eth. birr (AOR = 3.98, 95% CI = 2.514-6.303). It is also noticed that households that had total average annual income of less than 6,987 Eth. birr are almost 4 times more likely to be food insecure than those that had greater than or equal to it (AOR = 3.93, 95% CI = 2.471-6.258).

6. Discussion

6.1 Food insecurity status of households

The result of this study revealed that 280(39.2%), 120(16.8%), 162(22.7%) and 152(21.3%) of households were food secured, mildly insecure, moderately insecure and severely insecure respectively. This finding differs from the result of a cross sectional study conducted in selected woredas of four Regions: Amhara, Oromia, SNNP and Tigray Regions using HFIAS, which showed that the food insecurity level of rural households was found to be 6(0.6%) food secured, 42(4.1%) mildly insecure, 404(39.9%) moderately insecure, and 561(55.4%) are severely insecure respectively.[30] This may be due to the difference in agro-ecological area, sampling procedure and socio-economic composition. On the other hand the prevalence of household food insecurity is partially consistent with another finding conducted in rural Tajikistan in which household food insecure status is 12%, 22% and 66% severely food insecure, moderately food insecure and food secure respectively.[24]

The overall prevalence of household food insecurity was found to be 60.8% in the study area. This is higher than the prevalence of household food insecurity reported in rural Tanzania, 36% of households were food insecure in 2005.[23] The possible reasons for this difference may be difference in demographic, socio-economic and cultural characteristics. The result is also greater than another study conducted in rural Amhara in which household food insecurity was 45%.[26] This may be due to the use of distinct household food insecurity measurement tools and the data collected in different geographical area and socio-economic characteristics.

On the other hand this finding is lower than the results of different studies conducted in Ethiopia such as rural Dire Dawa and SNNP (Bilate watershed that transects Hadiya, Kembata Tembaro, Wolaita and Sidama zones and Alaba district) in which household food insecurity was found to be a severe problem with 76% and 73% respectively.[27, 28] This may be due to the difference in distinct agro-climatic zones and socio-economic characteristics.

6.2 Factors associated with household food insecurity

Livestock production plays an indispensable role in the mixed farming operation. Of the different livestock species in this production system, cattle, sheep, goats, and foul are used to generate income in the study area. Households with no livestock possession were 2 times more likely to be food insecure than households owned livestock. Similar studies conducted in Burkina Faso, Amhara and Southern Ethiopia regions revealed livestock as an indicator of wealth, source of income to purchase food and non food items, had a significant and negative impact on the household food insecurity status.[26,28,36]

Result of the multivariate analysis (Table 6) showed that use of fertilizer is one of the factors which were found to have a significant impact on household food insecurity in the study area. Use of fertilizer was found an important factor in enhancing crop production, which in turn minimizes household's food insecurity status. Non-Fertilizer user households in comparison with fertilizer user households were higher in food insecurity status. This finding is in line with studies conducted in Oromiya Zone, Dire Dawa and Southern Ethiopia.[28,39,40]

For unsafe potable water sources the likely probability to become food insecure is high compared with safe water sources. The finding of this research is supported by literatures in Cambodia and Eritrea which stated that insufficient access to safe water sources and hygienic toilets in rural villages has strong linkages to the use of food and is a basic obstacle to improved food security and nutrition and the achievement of the MDGs.[37,38]

Petty trade, selling local beverage ("Tella"), tea, and firewood and working in government sectors, working in small scale organizations and working as daily laborer activities are sources of off-farm income. Since it is linked with food consumption it can be used as an alternative means to improve the level of household food insecurity. In the study area off-farm income provides cash to buy food grains and non-food items required for household members. Thus it was found

that off-farm income is significantly associated with household food insecurity. As monthly off-farm income earned by households increase, food insecurity decrease. This finding is supported by studies conducted in Ghana, Amhara and Southern Ethiopia which concluded that off-farm income increases the odds of food insecurity.[26,28,34] The possible reason for this similarity may be due to off-farm income could be used as an alternative means of income to full fill household food supply in rural areas of Africa.

A strong significant association exists between annual farm income and household food insecurity status in the study area. Households earned low annual farm income were more likely to become food insecure than those households who had higher farm income. Similarly studies in rural Nigeria, Amhara and Southern Ethiopia supports that farm income influences negatively household food insecurity. [26, 32]

In the study area people derive income from multiple sources-both from farm and non-farm sources. The sources of these incomes are off-farm activity, income from crop production, and income from livestock sell. Increased income enables rural households to purchase variable agricultural inputs for subsistence crop production, which increase the productivity. It there by, increases the availability of food for consumption at household level. Furthermore, this increased income can also increase their asset base through saving their income in the form of livestock and other household assets and this lead households to be safe in the case of shortage of food where the farmers able to sale their asset and generate income to purchase food items. So that an increase in total household annual income would result in a decrease in the probability of the household being food insecure. This finding is in line with studies conducted in Southern Nigeria, Southern Ethiopia, Eastern Oromia and Dire Dawa. [28, 32, 39, 40]

Generally, despite disparate measurement strategies, nearly all studies suggest a high prevalence of food insecurity, an important finding as the experience of food insecurity, has been associated with a range of factors, including fertilizer

application, source of drinking water, farm income and total annual average income of households.[29,30,35,36] This idea is also supported by the result of this finding which has similar consensus.

Limitation: Problems have been faced during data collection process. These problems were associated with farmers' attitude of being suspicious, food aid expectation and limited time of data collection period. Since farmers do not keep records their income and the information needed the collected data is very much dependent on his/her ability to remember what they did within a year prior to data collection. Therefore, in order to minimize the problem the interview was conducted in the presence of the most knowledgeable members of the family. Another problem, which was observed, was farmers suspicious to tell the right information especially with regard to their annual production and land size because of fear of taxation. In order to minimize this problem, data collectors were taking some time to explain the purpose of the survey before starting the interview.

7. Conclusion

Based on the data collected from rural communities of Gondar City Administration and the analyses made, the following conclusions are drawn:

- The results of the study revealed that the majority of households in rural communities of Gondar City Administration are food insecure.
- Livestock ownership determines household food insecurity either through income earning or by direct consumption.
- Households that do not use technologies like fertilizers for their cultivated farm lands are tend to be food insecure.
- Lack of diversified income generating mechanisms leads rural households to produce food on small plot of land with poor agricultural technologies. In such circumstances, the current food insecurity at the local level persists and might push influx of people to migrate to the nearby urban areas.
- Farm income is one of the most significant determinants that affect household food insecurity status negatively in the study area.
- Total annual average income is also one of the major factors which affect household food insecurity negatively in rural communities of Gondar City Administration.

In general, with reference to base group of food secure households, it is concluded that lack of livestock ownership, non-use of fertilizers, having unsafe potable water sources, lack of or minimized off-farm income, decreased annual farm income, and reduced total monthly household income are significantly associated with household food insecurity and increase the likelihood of households to be food insecure in the study area.

8. Recommendation

As rural part of Gondar City Administration is facing higher prevalence of food insecurity which is associated with different factors, the following recommendations are forwarded:

- In view of the negative impact of unsafe potable water sources on the food insecurity situation of rural households in the study area, Gondar City Administration Rural Potable Water Sector Office in collaboration with Non Governmental Organizations should design strategies to improve the overall quality and quantity of water supply in the study area.
- The livestock sub-sector should be enhanced through the provision of better husbandry and management system, and better veterinary facilities by the City Administration Agricultural office in collaboration with rural households.
- Modern technologies including fertilizer application shall be used by all rural households in collaboration with Federal Ministry of Agriculture, Regional and Zonal Agricultural Bureaus and Gondar City Administration Agricultural Office in order to maximize crop production and then to minimize food insecurity.
- The City Administration Agricultural Office should support the rural community to Increase the productivity of crops through the provision of farm land, education to farmers, and application of important agricultural inputs and technologies to increase annual farm income.
- It should be noted that the regional government and Gondar City Administration should integrate development of the rural sector, and introduction of various off-farm activities.
- Finally, it is recommended to conduct a study that compares status of food insecurity in rural households with urban households and its associated factors in the City Administration.

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Annexes

Annex I. English Consent form

University of Gondar

College of Medicine and Health Science

School of Public Health

Questionnaire for Prevalence of Household Food Insecurity and Associated Factors

Consent Statement

Hello. My name is _____and I am part of a research team

of University of Gondar.We are collecting information on the prevalence of food insecurity and associated factors among households in the rural community. We would very much appreciate your participation in this effort.We want to ask you whether you or your household members have experined food insecurity conditions with in the past month.Whatever information you provide will be kept strictly confidential. We will record your name on the questionnaire. However, your name will not be identified in any output of this study. Participation in this study is voluntary and you can choose not to answer any individual question or all of the questions. You may also stop the interview completely at any time without any consequences at all. However, we hope that you will participate in this study since the reults will help the government in household food insecurity control effors.You have full right to withdraw from this study at any time without a need to mention the reason why you wanted to withdraw. We value your input to make this study a successful one. If you have questions about the research please contact Mr.Yirdaw Melese, who is principal investigator of this study in the University of Gondar, at +251(0)918789922. At this time , do you want to ask me anything about the purpose or content of this interview?

Thank you,

Remarks: Mark an “X” on the appropriate response.

Request accepted and Consent Given_____

Rejected the request_____

Interviewee Name _____Signature: _____Date _____

Name of witness_____Signature:_____Date_____

Name of field worker_____Signature: _____Date _____

Annex II. English Questionnaire

Please fill-out all the relevant information in the table below for all households surveyed. Information should be obtained from each household (preferably women) 18 years and above.

S.NO	Questions	Response	Skip pattern
Part I. General information			
101	Household ID		
102	Kebele ID		
Part II: Demographic and socioeconomic characteristics of respondents			
201	Sex of household head	1.Male 2.Female	
202	What is the relationship of the head of the household with household members?	1.Father 2.Mother 3.Son/Daughter 4.Aunt/Uncle 5.Grandparent 6.Other relative 7.Non-relative 8.Other (specify) _____	
203	Age of household head in year		
204	Family size		
205	Ethnicity	1.Amhara 2.Oromo 3.Tigre 4.Other	
206	Religion	1.Orthodox 2.Islam 3.Protestant 4.Catholic 5.Others	

207	Education	1.Illiterate 2.Read and write 3.Primary 4.Secondary 5.Post-secondary	
208	Marital status	1.Single 2.Married 3.Divorced 4.Widowed	
209	Occupation	1.Peasant 2.Student 3.Petty trade 4.Civil servant 5.Private business 6.Unemployed 7.Other (specify)_____	
210	Does the household have Farm land?	1.Yes 2.No	
211	What is the household's farm size in "kada" (1 ha=10,000m^2 = 4 "kada" or "Timad")?		
212	Does the household have access to irrigation?	1.Yes 2.No	
213	Does the household use fertilizers?	1.Yes 2.No	
214	If your answer is yes for Q212 what type of fertilizer did your household used?	1.Artificial 2.Compost (Natural) 3.Both	
215	Does the household have income from vegetables and or fruits?	1.Yes 2.No	
216	For what purpose do the household use vegetables?	1. Totally for sell 2.Partially for sell 3. Totally for household consumption	

217	If your answer is 1 or 2 for Q215, what is the average annual income earned from vegetables, fruits and or perennial crops?		
218	What is this year's household average annual crop production?	In "chan" _____ In "Madiga" _____	
219	Do you have the following among the household members? 219.1.bicycle 219.2.motor bicycle 219.3.radio 219.4.television 219.5.car	If the answer is yes how many? 1. Yes 2.No _____ 1. Yes 2.No _____ 1. Yes 2.No _____ 1. Yes 2.No _____ 1. Yes 2.No _____	
220	Does the household own livestock? 220.1.cattle 220.2.equines 220.3.goat/sheep 220.4.poultry	1. Yes 2. No If the answer is yes how many? _____ _____ _____ _____	
221	Do animals live in the same house where the members of the family live?	1.Yes 2.No	
222	Does the household have off-farm income?	1.Yes 2.No	
223	If your answer for Qn. 222 is yes, what is the average monthly income in birr?	_____	

224	What is the total average annual farm income for the Hh?	_____	
225	What is the total average household's monthly income in birr?	_____	
Part III. Water and sanitary conditions			
301	From where do you get water for drinking?	1. Pipe 2. Protected spring 3. Protected well 4. Unprotected spring 5.Unprotected well 6. River 5. Other (specify) _____	
302	What type of collection container the household use?	1. Jerry can 2.Iron bucket 3. Pot 4. Other (specify) _____	
303	How many minutes/hours do you take to fetch water	1. 1-15 minutes 2. 16-30 minutes 3. 31-60 minutes 4. More than 1 hour	
304	Is latrine available?	1.Yes 2.No	
305	If the answer for Qn. 29 is yes, what type of latrine is it?	1.latrine with water 2.pit latrine with shelter 3.pit latrine without shelter 4.latrine with no smell 5.Other (specify)	
306	Do members of the household wash their hand after toilet	1.Yes always 2.Yes sometimes 3.No	

	use?		
307	Where do you dispose garbage?	1.pit 2.purposely prepared place 3.open field 4.in the surrounding for fertilizer	
308	Are there insects in your home?	1.Yes 2.No	
309	If your answer is yes for Qn. 32, ask each of the following.	1.Bed bugs 1.Yes 2.No 2.fleas 1.Yes 2.No 3.ginger fleas 1.Yes 2.No 4.lice 1.Yes 2.No 5.mosquitos 1.Yes 2.No 6.coacroachs 1.Yes 2.No 7.others (specify) _____	
310	Among the household member does anyone get sick in the previous two weeks?	1.Yes 2.No	
311	From what type of floor material the living house made?	1. Mud 2. Wood 3. Cement 4. Other(specify) _____	
312	From what type of roof material the living house made?	1. Thatch 2. Corrugated iron sheet 3. Other(specify)_____	

Part III. Household Food Insecurity Access Scale (HFIAS) Measurement Tool			
401	In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to Q2) 1=Yes	
401a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
402	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No (skip to Q3) 1=Yes	
402a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
403	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to Q4) 1 = Yes	
403a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten	

		times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
404	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to Q5) 1 = Yes	
404a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
405	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q6) 1 = Yes	
405a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
406	In the past four weeks, did you or any other household member have to eat fewer	0 = No (skip to Q7) 1 = Yes	

	meals in a day because there was not enough food?		
406a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
407	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q8) 1 = Yes	
407a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
408	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to Q9) 1 = Yes	
408a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
409	In the past four weeks, did	0 = No (questionnaire is	

	you or any household member go a whole day and night without eating anything because there was not enough food?	finished) 1 = Yes	
409a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	

Thank you

Annex III. Amharic Consent Form

ጎ ን ደ ር ዩ ኒ ቨ ር ሲ ቲ

ህ ክ ም ና ና ጤና ሳ ይ ን ስ ኮ ል ጅ

የ ህ ብ ረ ሰ ተ ብ ጤና ት ም ህ ር ክ ፍ ል

በ ቤ ተ ሰ ብ ደ ረ ጃ የ ሚ ታ ይ የ ም ግ ብ ዋ ስ ት ና አ ለ መ ረ ጋ ገ ጥ ን እ ና ተ ያ ያ ዥ ጉ ዳ ዮ ች ለ ማ ጥ ና ት የ ተ ዘ ጋ ጀ መ ጠ ይ ቅ ፡ ፡

<u>የ ስ ም ም ነ ት ቃ ል</u>

ጤና ይ ስ ጥ ል ኝ ፡ ፡

ስ ሜ_____ነ ው::በ ጎ ን ደ ር ዩ ኒ ቨ ር ሲ ቲ የ ም ር ም ር ስ ራ ባ ል ደ ረ ባ ነ ኝ ፡ ፡ በ ገ ጠ ር ቤ ተ ሰ ብ ደ ረ ጃ ያ ለ ው ን የ ም ግ ብ ዋ ስ ት ና አ ለ መ ረ ጋ ገ ጥ እ ና ተ ያ ያ ዥ ጉ ዳ ዮ ች በ ተ መ ለ ከ ተ መ ረ ጃ በ መ ሰ ብ ሰ ብ ላ ይ እ ን ገ ኛ ለ ን ፡ ፡ በ ም ና ደ ር ገ ው ጥ ና ት ው ስ ጥ የ እ ር ስ ዎ ን ተ ሳ ት ፎ በ እ ጅ ጉ እ ን ሻ ለ ን ፡ ፡ ባ ለ ፈ ው አ ን ድ ወ ር ው ስ ጥ እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ላ ት የ ም ግ ብ ደ ህ ን ነ ት ሁ ኔ ታ አ ለ መ ረ ጋ ገ ጥ አ ጋ ጥ ሞ ዎ ት እ ን ደ ሆ ነ እ ን ጠ ይ ቀ ዎ ታ ለ ን ፡ ፡ የ ሚ ሰ ጡ ት መ ረ ጃ ሁ ሉ ሚ ስ ጢ ር ነ ው ፡ ፡ ስ ም የ ሚ መ ዘ ግ ብ ቢ ሆ ን ም ከ ጥ ና ቱ ው ጤ ት ጋ ር ተ ያ ይ ዞ የ ሚ ገ ለ ፅ በ ት ሁ ኔ ታ በ ፍ ፁ ም አ ይ ኖ ር ም ፡ ፡ የ ሚ ያ ደ ር ጉ ት ተ ሳ ት ፎ በ ፍ ቃ ደ ኝ ነ ት ላ ይ የ ተ መ ሰ ረ ተ ስ ለ ሆ ነ ከ ሚ ቀ ር ብ ል ዎ ጥ ያ ቄ ዎ ች አ ን ዱ ን መ ር ጠ ው ወ ይ ም ሁ ሉ ን ም አ ለ መ መ ለ ስ ይ ች ላ ሉ ፡ ፡ በ ማ ን ኛ ው ም ጊ ዜ ቃ ለ -መ ጠ ይ ቁ ን ሙ ሉ በ ሙ ሉ ቢ ያ ቋ ር ጡ እ ን ኳ የ ሚ ደ ር ስ ብ ዎ ነ ገ ር አ ይ ኖ ር ም ፡ ፡ ነ ግ ር ግ ን የ ዚ ህ ጥ ና ት ው ጤ ት መ ን ግ ስ ት የ ም ግ ብ ዋ ስ ት ና ን ለ ማ ረ ጋ ገ ጥ የ ሚ ያ ደ ር ገ ው ን ጥ ረ ት የ ሚ ያ ግ ዝ ስ ለ ሆ ነ ለ መ ሳ ተ ፍ ፈ ቃ ደ ኛ ይ ሆ ና ሉ ብ ለ ን ተ ስ ፋ እ ና ደ ር ጋ ለ ን ፡ ፡ በ ማ ን ኛ ው ም ጊ ዜ ጥ ና ቱ ን ለ ማ ቋ ረ ጥ ቢ ፈ ል ጉ የ ሚ ያ ቋ ር ጡ በ ት ን ም ክ ን ያ ት ማ ቅ ረ ብ አ ያ ስ ፈ ል ግ ዎ ት ም ፡ ፡ የ ማ ቋ ረ ጥ ሙ ሉ መ ብ ት አ ለ ዎ ት ፡ ፡ ይ ህ ን ጥ ና ት ስ ኬ ታ ማ ለ ማ ድ ረ ግ ለ ሚ ሰ ጡ ን ግ ብ ዓ ት ከ ፍ ተ ኛ ግ ም ት እ ን ሰ ጣ ለ ን ፡ ፡ ይ ህ ን ጥ ና ት በ ተ መ ለ ከ ተ ም ን ም አ ይ ነ ት ጥ ያ ቄ ቢ ኖ ር ዎ ዋ ና ው ን ተ መ ራ ማ ሪ አ ቶ ይ ር ዳ ው መ ለ ሰ ን በ ዚ ህ ሞ ባ ይ ል ስ ል ክ ቁ ጥ ር 091-878-99-22 ይ ጠ ይ ቁ ፡ ፡ እ ን ግ ዲ ህ የ ዚ ህ ን ቃ ለ -ም ል ል ስ ፉ ይ ዳ ወ ይ ም ይ ዘ ት በ ተ መ ለ ከ ተ ጥ ያ ቄ ለ መ ጠ የ ቅ ይ ፈ ል ጋ ሉ ን ? በ ጣ ም አ መ ሰ ግ ና ለ ሁ ፡ ፡

<u>ማ ስ ታ ዎ ሻ ፡</u> - በ ተ ገ ቢ ው መ ል ስ ላ ይ የ 'X' ም ል ክ ት ያ ደ ር ጉ

- ጥ ያ ቄ ው ን ለ መ መ ለ ስ ተ ስ ማ ም ተ ዋ ል _____
- ጥ ያ ቄ ው ን አ ል ተ ቀ በ ሉ ም _____
- የ ተ ጠ ያ ቂ ው ስ ም_____ ፊ ር ማ_____ ቀ ን _____
- የ ም ስ ክ ር ስ ም _____ ፊ ር ማ_____ ቀ ን _____

- የ መስ ክ ሰ ራ ተ ኛ ው ስ ም _____ ፊ ር ማ_____ ቀ ን _____
- ቃ ለ -መ ጠ ይ ቁ የ ተ ደ ረ ገ በ ት ቀ ን ___ የ ተ ጀ መ ረ በ ት ሰ ዓ ት __
  የ ተ ጠ ና ቀ ቀ በ ት ሰ ዓ ት _

የ መ ጠ ይ ቁ ው ጤ ት ፡ - 1. ተ ጠ ና ቋ ል 2. ተ ጠ ያ ቂ ው አ ል ተ ገ ኘ ም 3. ተ ጠ ያ ቂ ው ፈ ቃ ደ ኛ አ ይ ደ ለ ም 4. አ ል ተ ሟ ላ ም

ያ ረ ጋ ገ ጠ ው ተ ቆ ጣ ጣ ሪ ስ ም _____ፊ ር ማ_____ ቀ ን _____

Annex IV. Amharic Questionnaire

ቃ ለ -መ ጠ ይ ቅ

እ ባ ክ ዎ ስ ለ ሚ ቃ ኘ ው ቤ ተ ሰ ብ አ ስ ፈ ላ ጊ ው ን መ ረ ጃ በ ሚ ከ ተ ለ ው ሰ ን ጠ ረ ዥ ው ስ ጥ ይ ሙ ሉ ፡ ፡ መ ረ ጃ ው ከ እ ያ ን ዳ ን ዱ እ ድ ሜ ው 18 አ መ ት ና ከ ዚ ያ በ ላ ይ ከ ሆ ነ ጎ ል ማ ሳ መ ወ ሰ ድ አ ለ በ ት ፡ ፡

ተ .ቁ	ጥ ያ ቄ	መ ለ ስ	መ ሸ ጋ ገ ሪ ያ
ክ ፍ ል 1:-አ ጠ ቃ ላ ይ መ ረ ጃ			
101	የ ቤ ተ ሰ ብ መ ለ ያ ቁ ጥ ር		
102	የ ቀ በ ሌ መ ለ ያ ቁ ጥ ር		
ክ ፍ ል 2: ስ ነ -ህ ዝ ባ ዊ ኢ ኮ ኖ ሚ ያ ዊ ና ማ ህ በ ራ ዊ ሁ ኔ ታ ዎ ች			
201	የ ቤ ቱ አ ባ ዎ ራ (እ ማ ዎ ራ) ፆ ታ	1.ወ ን ድ 2.ሴ ት	
202	የ ቤ ተ ሰ ቡ ኃ ላ ፊ ከ ቤ ተ ሰ ቡ አ ባ ላ ት ጋ ር ያ ለ ው ዝ ም ድ ና	1.አ ባ ወ ራ 2.ባ ለ ቤ ት (እ ማ ወ ራ) 3.እ ህ ት (ወ ን ድ ም) 4.አ ክ ስ ት (አ ጎ ት) 5.አ ያ ት 6.ቤ ተ ዘ መ ድ 7.ዝ ም ድ ና የ ሌ ለ ው 8.ሌ ላ ካ ለ ይ ገ ለ ጽ _____	
203	የ ቤ ቱ አ ባ ዎ ራ (እ ማ ዎ ራ) እ ድ ሜ		
204	የ ቤ ተ ሰ ብ አ ባ ላ ት		

	ብዛት		
205	ብሔር	1.አማራ 2.አሮሞ 3.ትግሬ 4.ሌላ	
206	ሀይማኖት	1.አርቶዶክስ 2.እስላም 3.ፕሮቴስታንት 4.ካቶሊክ 5.ሌላ ካለ ይገለጽ _____	
207	የትምህርት ሁኔታ	1.ያልተማር 2.ማንበብና መፃፍ የሚችል 3.1ኛ ደረጃ 4.2ኛ ደረጃ 5.ከ 2ኛ ደረጃ በላይ	
208	የጋብቻ ሁኔታ	1.ያላገባ /ች 2.ያገባ /ች 3.የተፋታ/ች 4.የሞተበት /ባት	
209	የሥራ ሁኔታ	1.አርሶአደር 2.ተማሪ 3.አነስተኛ ነጋዴ 4.የመንግስት ሰራተኛ 5.የግል ስራ 6.የማህበር ስራ 7.ሥራ አጥ 8.ሌላ ከሆነ ይገለፅ _____	
210	ለእርሻ የሚሆን መሬት አላችሁ?	1.አዎን 2.የለም	
211	የእርሻ ማሳዎ ስፋት በቃዳ (ጥማድ) ምን ያህል ነው? (1ሄ =10,000ሜ ካሬ =4 ቃዳ ወይም ጥማድ)		
212	ቤተሰብዎ የመስኖ ስራ ተጠቃሚ ነው?	1.አዎን 2.አይደለም	

213	ቤተሰብዎ በማሳዎ ላይ ማዳበሪያ ይጠቀማል?	1.አዎን 2.አይደለም	
214	ለጥ.212 መልስዎ አዎ ከሆነ የሚጠቀሙት የማዳበሪያ አይነት የትኛው ነው?	1.ሰውሰራሽ 2.የተፈጥሮ (ኮምፖስት) 3.ሁለቱንም	
215	ቤተሰብዎ ከቋሚ የጓሮ አትክልት ወይም ፍራፍሬና ቅጠላቅጠል የገቢ ምንጭ አለው?	1. አዎ 2. የለውም	
216	ቤተሰብዎ የጓሮ አትክልቶችን ለምን አገልግሎት ነው የሚያውለው?	1.ሙሉ በሙሉ ለገቢያ 2.በከፊል ለገቢያ 3.ሙሉ በሙሉ ለቤተሰብ ፍጆታ	
217	በተራ ቁ.215 መልስዎ 1 ወይም 2 ከሆነ ባማካኝ አመታዊ ገቢዎ በብር ሲሰላ ምን ያህል ነው?		
218	አመታዊ አማካኝ የሰብል ምርት ገቢዎ በጫን (ማድጋ) ሲሰላ ምን ያህል ነው?	_____ጫን _____ማድጋ	
219	ከቤተሰብዎ አባላት መካከል የሚከተሉት ያለው አለ?	መልስዎ አለ ከሆነ ብዛት	
	219.1.ብስክሌት	1.አለ 2.የለም	_____
	219.2.ሞተር ሳይክል	1.አለ 2.የለም	_____
	219.3.ሬዲዮ	1.አለ 2.የለም	_____
	219.4.ቴሌቪዥን	1.አለ 2.የለም	_____
	219.5. መኪና		

220	ከ ቤ ተ ሰ ብ ዎ አ ባ ላ ት መ ካ ከ ል የ ሚ ከ ተ ሉ ት እ ን ስ ሳ ት ያ ለ ው አ ለ ? 220.1. የ ቀ ን ድ ከ ብ ቶ ች 220.2. የ ጋ ማ ከ ብ ቶ ች 220.3. በ ግ /ፍ የ ል 220.4. ዶ ሮ	መ ል ስ ዎ አ ለ ከ ሆ ነ ብ ዛ ት 1.አ ለ 2.የ ለ ም _____ 1.አ ለ 2.የ ለ ም _____ 1.አ ለ 2.የ ለ ም _____ 1.አ ለ 2.የ ለ ም _____	
221	በ መ ኖ ሪ ያ ቤ ታ ች ሁ ው ስ ጥ እ ን ስ ሳ ት /ከ ብ ቶ ች ያ ድ ራ ሉ ?	1.አ ዎ ን 2.የ ለ ም	
222	ቤ ተ ሰ ብ ዎ ከ እ ር ሻ ስ ራ ሌ ላ የ ገ ቢ ም ን ጭ አ ለ ው?	1.አ ዎ 2.የ ለ ም	
223	ለ ጥ ያ ቄ ቁ .222 መ ለ ስ ዎ አ ዎ ከ ሆ ነ አ ማ ካ ኝ ወ ር ሀ ዊ ገ ቢ ዎ በ ብ ር ሲ ሰ ላ ስ ን ት ነ ው?	_____	
224	ከ ግ ብ ር ና ስ ራ የ ሚ ያ ገ ኙ ት አ መ ታ ዊ ገ ቢ ዎ በ ብ ር ሲ ሰ ላ ስ ን ት ነ ው?	_____	
225	ጠ ቅ ላ ላ የ ቤ ተ ሰ ብ ዎ አ ማ ካ ኝ ወ ር ሀ ዊ ገ ቢ በ ብ ር ሲ ሰ ላ ም ን ያ ህ ል ነ ው?	_____	
ክ ፍ ል ሦ ስ ት ፡ - ው ሁ ና የ አ ካ ባ ቢ ን ጽ ህ ና ን በ ተ መ ለ ከ ተ			
301	ቤ ተ ሰ ብ ዎ የ መ ጠ ጥ ው ሀ የ ሚ ያ ገ ኘ ው ከ የ ት ነ ው?	1. ከ ቧ ን ቧ 2. ከ ተ ጠ በ ቀ ም ን ጭ 3. ከ ተ ጠ በ ቀ ጉ ድ ጓ ድ 4. ካ ል ተ ጠ በ ቀ ም ን ጭ	

		5. ካ ል ተ ጠ በ ቀ ጉ ድ ጓ ድ 6. ከ ወ ን ዝ 7.ሌ ላ ይ ገ ለ ጽ _____	
302	ው ሁ የ ም ት ቀ ዱ በ ም ን ድ ን ነ ው?	1. በ ጀ ሪ ካ ን 2.በ ባ ል ዲ 3. በ እ ን ስ ራ 4. ሌ ላ (ይ ገ ለ ጽ)	
303	ው ሃ ለ መ ቅ ዳ ት ደ ር ሶ መ ል ስ ም ን ያ ህ ል ደ ቂ ቃ (ሰ ዓ ት) ይ ፈ ጅ ባ ቹ ሀ ል ?	1.ከ 1-15 ደ ቂ ቃ 2.ከ 16-30 ደ ቂ ቃ 3.ከ 31-60 ደ ቂ ቃ 4.ከ 1 ሰ ዓ ት በ ላ ይ	
304	መ ፀ ዳ ጃ ቤ ት አ ላ ች ሁ ?	1. አ ዎ ን 2. የ ለ ም	
305	ለ ጥ .304 መ ል ሱ አ ዎ ከ ሆ ነ ም ን ዓ ይ ነ ት ነ ው?	1. በ ው ሃ የ ሚ ሰ ራ 2. ጉ ድ ጓ ድ መ ጠ ለ ያ ያ ለ ው 3. ጉ ድ ጓ ድ መ ጠ ለ ያ የ ለ ለ ው 4.ሽ ታ አ ል ባ 5. ሌ ላ ይ ገ ለ ጽ _____	
306	የ ቤ ተ ሰ ቡ አ ባ ላ ት ከ መ ጸ ዳ ጃ ቤ ት መ ል ስ እ ጃ ቸ ው ን ይ ታ ጠ ባ ሉ ?	1.አ ዎ ሁ ል ጊ ዜ 2.አ ዎ አ ን ዳ ን ዴ 3.አ ይ ታ ጠ ቡ ም	
307	የ ቤ ት ቆ ሻ ሻ የ ም ት ጥ ሉ የ ት ነ ው?	1. በ ጉ ድ ጓ ድ ው ስ ጥ 2.ለ ዚ ህ ተ ብ ሎ በ ተ ዘ ጋ ጀ ቦ ታ 3.በ የ ሜ ዳ ው 4. ለ ማ ዳ በ ሪ ያ በ ጓ ሮ 5. ሌ ላ ይ ገ ለ ጽ _____	
308	በ መ ኖ ሪ ያ ቤ ታ ች ሁ ው ስ ጥ ተ ባ ዮ ች አ ሉ ?	1. አ ዎ ን 2. የ ለ ም	
309	ለ ጥ .32 መ ል ሱ አ ዎ ን ከ ሆ ነ እ ያ ን ዳ ን ዱ ተ ባ ይ ይ ጠ የ ቃ ል	1. ት ኳ ን 1.አ ዎ 2.የ ለ ም 2. ቁ ን ጫ 1.አ ዎ 2.የ ለ ም 3. ሙ ጀ ሌ 1.አ ዎ 2.የ ለ ም 4. ቅ ማ ል 1.አ ዎ	

		2.የ ለ ም 5. ቢ ም ቢ 1.አ ዎ 2.የ ለ ም 6. በ ረ ሮ 1.አ ዎ 2.የ ለ ም 7. ሌ ላ ካ ለ ይ ገ ለ ጽ	
310	ከ ቤ ተ ሰ ቡ አ ባ ላ ት መ ካ ከ ል ባ ለ ፉ ት ሁ ለ ት ሳ ም ን ታ ት ው ስ ጥ የ ታ መ መ ሰ ው ነ በ ር ?	1.አ ዎ 2.የ ለ ም	
311	የ መ ኖ ሪ ያ ቤ ቱ ወ ለ ል የ ተ ሰ ራ ከ ም ን ድ ን ነ ው?	1.ከ ጭ ቃ 2.ከ እ ን ጨ ት 3.ከ ስ ሚ ን ቶ 4.ሌ ላ ካ ለ ይ ገ ለ ጽ _____	
312	የ መ ኖ ሪ ያ ቤ ቱ ጣ ሪ ያ የ ተ ሰ ራ ው ከ ም ን ድ ን ነ ው?	1.ከ እ ሳ ር 2. ከ ቆ ረ ቆ ሮ 3. ሌ ላ ካ ለ ይ ገ ለ ጽ _____	
ክ ፍ ል ሦ ስ ት ፡ የ ቤ ተ ሰ ብ ም ግ ብ ዋ ስ ት ና አ ለ መ ረ ጋ ገ ጥ መ መ ዘ ኛ መ ጠ ይ ቅ			
401	ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት ቤ ተ ሰ ብ ዎ በ ቂ ም ግ ብ አ ይ ኖ ረ ው ም ብ ለ ው ሰ ግ ተ ው ነ በ ር ?	0 = አ ል ሰ ጋ ሁ ም (ወ ደ ጥ ያ ቄ ቁ .2 ይ ለ ፉ) 1=አ ዎ	
401a	ለ ም ን ያ ህ ል ጊ ዜ ነ በ ር የ ሆ ነ ው?	1 = አ ል ፎ አ ል ፎ (አ ን ዴ ወ ይ ም ሁ ለ ቴ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ) 2 = አ ን ዳ ን ዴ (ከ ሦ ስ ተ እ ስ ከ አ ስ ር ጊ ዜ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ) 3 = ብ ዙ ጊ ዜ (ከ አ ስ ር ጊ ዜ በ ላ ይ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ)	
402	ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ገ ቢ ም ን ጭ አ ለ መ ኖ ር ም ክ ን ያ ት የ ፈ ለ ጉ ት ን ም ግ ብ መ መ ገ ብ አ ል ቻ ሉ ም ነ በ ር ?	0 = አ ል ነ በ ረ ም (ወ ደ ጥ ያ ቄ ቁ . 3 ይ ለ ፉ) 1=አ ዎ	
402a	ለ ም ን ያ ህ ል ጊ ዜ ነ በ ር	1 = አ ል ፎ አ ል ፎ (አ ን ዴ	

	የ ሆ ነ ው?	ወ ይ ም ሁ ለ ቴ ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት ው ስ ጥ) 2 = አ ን ዳ ን ዴ (ከ ሦ ስ ተ እ ስ ከ አ ስ ር ጊ ዜ ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት ው ስ ጥ) 3 = ብ ዙ ጊ ዜ (ከ አ ስ ር ጊ ዜ በ ላ ይ ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት ው ስ ጥ)	
403	ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ገ ቢ ም ን ጭ አ ለ መ ኖ ር ም ክ ን ያ ት የ ተ ወ ሰ ኑ የ ም ግ ብ ዓ ይ ነ ቶ ች ን ብ ቻ እ ን ድ ት መ ገ ቡ ሆ ኗ ል ?	0 = አ ል ሆ ነ ም ((ወ ደ ጥ ያ ቄ ቁ . 4 ይ ለ ፉ) 1 = አ ዎ	
403a	ለ ም ን ያ ህ ል ጊ ዜ ነ በ ር የ ሆ ነ ው?	1 = አ ል ፎ አ ል ፎ (አ ን ዴ ወ ይ ም ሁ ለ ቴ ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት ው ስ ጥ) 2 = አ ን ዳ ን ዴ (ከ ሦ ስ ተ እ ስ ከ አ ስ ር ጊ ዜ ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት ው ስ ጥ) 3 = ብ ዙ ጊ ዜ (ከ አ ስ ር ጊ ዜ በ ላ ይ ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት ው ስ ጥ)	
404	ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ል ሌ ላ የ ም ግ ብ አ ይ ነ ቶ ች ን ለ ማ ግ ኘ ት በ ገ ቢ ም ን ጭ አ ለ መ ኖ ር ም ክ ን ያ ት መ መ ገ ብ ያ ል ፈ ለ ጉ ት ን ም ግ ብ እ ን ድ ት መ ገ ቡ ሆ ኗ ል ?	0 = አ ል ሆ ነ ም ((ወ ደ ጥ ያ ቄ ቁ . 5 ይ ለ ፉ) 1 = አ ዎ	
404a	ለ ም ን ያ ህ ል ጊ ዜ ነ በ ር የ ሆ ነ ው?	1 = አ ል ፎ አ ል ፎ (አ ን ዴ ወ ይ ም ሁ ለ ቴ ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት ው ስ ጥ) 2 = አ ን ዳ ን ዴ (ከ ሦ ስ ተ እ ስ ከ አ ስ ር ጊ ዜ ባ ለ ፉ ት አ ራ ት ሳ ምን ታ ት ው ስ ጥ)	

		3 = ብዙ ጊዜ (ከ አስር ጊዜ በላይ ባለፉት አራት ሳምንታት ውስጥ)	
405	ባለፉት አራት ሳምንታት እርስዎ ወይም የቤተሰብዎ አባል በቂ ምግብ ባለመኖሩ ምክንያት ያስፈልጋል ብለው ካሰቡት በታች ምግብ እንድትመገቡ ሆኗል?	0 = አልሆነም ((ወደ ጥያቄ ቁ. 6 ይለፉ) 1 = አዎ	
405a	ለምንያህል ጊዜ ነበር የሆነው?	1 = አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት አራት ሳምንታት ውስጥ) 2 = አንዳንዴ (ከ ሦስተ እስከ አስር ጊዜ ባለፉት አራት ሳምንታት ውስጥ) 3 = ብዙ ጊዜ (ከ አስር ጊዜ በላይ ባለፉት አራት ሳምንታት ውስጥ)	
406	ባለፉት አራት ሳምንታት እርስዎ ወይም ሌላ የቤተሰብዎ አባል በቂ ምግብ ባለመኖሩ ምክንያት አነስተኛ መግብ በቀን እንድትመገቡ ሆኗል?	0 = አልሆነም ((ወደ ጥያቄ ቁ. 7 ይለፉ) 1 = አዎ	
406a	ለምንያህል ጊዜ ነበር የሆነው?	1 = አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት አራት ሳምንታት ውስጥ) 2 = አንዳንዴ (ከ ሦስተ እስከ አስር ጊዜ ባለፉት አራት ሳምንታት ውስጥ) 3 = ብዙ ጊዜ (ከ አስር ጊዜ በላይ ባለፉት አራት ሳምንታት ውስጥ)	
407	ባለፉት አራት ሳምንታት ውስጥ ምግብ ለማግኘት የገቢ ምንጭ ባለመኖሩ ምክንያት በቤትዎ	0 = አልሆነም ((ወደ ጥያቄ ቁ. 8 ይለፉ) 1 = አዎ	

	የ ት ኛ ውም ዓ ይ ነ ት የ ሚበ ላ ምግ ብ አ ል ነ በ ረ ም ነ በ ር ?		
407a	ለ ምን ያ ህ ል ጊ ዜ ነ በ ር የ ሆ ነ ው?	1 = አ ል ፎ አ ል ፎ (አ ን ዴ ወ ይ ም ሁ ለ ቴ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ) 2 = አ ን ዳ ን ዴ (ከ ሦ ስ ተ እ ስ ከ አ ስ ር ጊ ዜ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ) 3 = ብ ዙ ጊ ዜ (ከ አ ስ ር ጊ ዜ በ ላ ይ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ)	
408	ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት ው ስ ጥ እ ር ስ ዎ ወ ይ ም ሌ ላ የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ቂ ምግ ብ ባ ለ መ ኖ ሩ ም ክ ን ያ ት በ ም ሽ ት እ ን ደ ራ በ ው ተ ኝ ቷ ል ?	0 = አ ራ በ ነ ም (((ወ ደ ጥ ያ ቄ ቁ . 9 ይ ለ ፉ) 1 = አ ዎ	
408a	ለ ምን ያ ህ ል ጊ ዜ ነ በ ር የ ሆ ነ ው?	1 = አ ል ፎ አ ል ፎ (አ ን ዴ ወ ይ ም ሁ ለ ቴ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ) 2 = አ ን ዳ ን ዴ (ከ ሦ ስ ተ እ ስ ከ አ ስ ር ጊ ዜ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ) 3 = ብ ዙ ጊ ዜ (ከ አ ስ ር ጊ ዜ በ ላ ይ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ)	
409	ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት ው ስ ጥ እ ር ስ ዎ ወ ይ ም ሌ ላ የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ቂ ምግ ብ ባ ለ መ ኖ ሩ ም ክ ን ያ ት ያ ለ ምግ ብ ቀ ን ና ሌ ሊ ት ው ሎ አ ድ ሯ ል ?	0 = ው ሎ አ ላ ደ ረ ም (መ ጠ ይ ቁ ተ ጠ ና ቋ ል) 1 = አ ዎ	
409a	ለ ምን ያ ህ ል ጊ ዜ ነ በ ር የ ሆ ነ ው?	1 = አ ል ፎ አ ል ፎ (አ ን ዴ ወ ይ ም ሁ ለ ቴ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ) 2 = አ ን ዳ ን ዴ (ከ ሦ ስ ተ እ ስ ከ አ ስ ር ጊ ዜ ባ ለ ፉ ት አ ራ ት ሳ ም ነ ታ ት ው ስ ጥ)	

		3 = ብዙ ጊዜ (ከ አስር ጊዜ በላይ ባለፉት አራት ሳምንታት ውስጥ)	

አመሰግናለሁ

Annex V. HFIAP measurement tool

The HFIAP indicator categorizes households into four levels of household food insecurity: food secure, and mild, moderately and severely food insecure. Households are categorized as increasingly food insecure as they respond affirmatively to more severe conditions and/or experience those conditions more frequently. Each household category was labeled as: 1 = Food Secure, 2=Mildly Food Insecure, 3=Moderately Food Insecure, 4=Severely Food Insecure. And each category was calculated based on the following assumptions.

- **HFIA category = 1** if [(Q401=0 or Q401a=1) and Q402=0 and Q403=0 and Q404=0 and Q405=0 and Q406=0 and Q407=0 and Q408=0 and Q409=0]
- **HFIA category = 2** if [(Q401a=2 or Q401a=3 or Q402a=1 or Q402a=2 or Q402a=3 or Q403a=1 or Q404a=1) and Q405=0 and Q406=0 and Q407=0 and Q408=0 and Q409=0]

- **HFIA category = 3** if [(Q403a=2 or Q403a=3 or Q404a=2 or Q404a=3 or Q405a=1 or Q405a=2 or Q406a=1 or Q406a=2) and Q407=0 and Q408=0 and Q409=0]
- **HFIA category** = **4** if [Q405a=3 or Q406a=3 or Q407a=1 or Q407a=2 or Q407a=3 or Q408a=1 or Q408a=2 or Q408a=3 or Q409a=1 or Q409a=2 or Q409a=3]. To determine the overall prevalence of household food insecurity the four categories were farther categorized into two. These dichotomous outcomes are HFIA category 1 = food secure category and the rest three combined to give food insecure household category. [47]

Annex VI. Food insecurity status by some socio-economic characteristics in rural communities of Gondar City Administration, 2011.

Socio-demographic characteristics

characteristics	Food insecure Frequency (%)	Food secure Frequency (%)	Total Frequency (%)
Relation of the head with members of the Hh			
Head	308()58.8	216(41.2)	524(73.4)
Spouse	121(65.8)	63(34.2)	184(25.8)
Sister/Brother	4(80)	1(20)	5(0.7)
Relative	1(100)	0	1(0.1)
Ethnicity			
Amhara	433(60.8)	279(39.2)	712(99.7)
Oromo	1(50)	1(50)	2(0.3)
Religion			
Orthodox	429(60.7)	278(39.3)	707(99)
Muslim	3(60)	2(40)	5(0.7)
Catholic	2(100)	0	2(0.3)
Occupation			
Farmer	358(57.5)	265(42.5)	623(87.3)
Petty trade	7(100)	0	7(1)
Civil servant	3(42.9)	4(51.1)	7(1)
Daily laborer	53(91.4)	5(8.6)	58(8.1)
Student	3(42.9)	4(57.1)	7(1)
Unemployed	3(75)	1(25)	4(0.6)
Fruits &vegetables			
Yes	90(39.3)	139(60.7)	229(32.)
No	344(70.9)	141(29.1)	485(67.9)
Uses of fruits & vegetables			
Only for sell	3(30)	7(70)	10(1.4)
Partially for sell	69(47.6)	76(52.4)	145(20.3)
Only for consumption	52(41.6)	73(58.4)	125(17.5)

Household assets

		Food insecure Frequency (%)	Food secure Frequency (%)	Total Frequency (%)
Bicycle				
	Yes	3(60)	2(40)	5(0.7)
	No	431(60.8)	278(39.2)	709(99.3)
Bajaj				
	Yes	3(100)	0	3(0.4)
	No	431(60.6)	280(39.4)	711(99.6)
Radio				
	Yes	110(50.9)	106(49.1)	216(30.3)
	No	324(65.1)	174(34.9)	498(69.7)
Television				
	Yes	8(80)	2(20)	10(1.4)
	No	426(60.5)	278(39.5)	704(98.6)
Car				
	Yes	0	1(100)	1(0.1)
	No	434(60.9)	279(39.1)	713(99.9)

Presence of vectors in the household

Vector	Food insecure Frequency (%)	Food secure Frequency (%)	Total Frequency (%)
Bedbug			
Yes	166(57.2)	124(42.8)	290(40.6)
No	268(63.2)	156(36.8)	424(59.4)
Fleas			
Yes	254(64)	143(36)	397(55.6)
No	180(56.8)	137(43.2)	317(44.4)
Ginger fleas			
Yes	9(75)	3(25)	12(1.7)
No	425(60.5)	277(39.5)	702(98.3)
Lice			
Yes	15(57.7)	11(42.3)	26(3.6)
No	419(60.9)	269(39.1)	688(96.4)
Mosquitoes			
Yes	202(73.7)	72(26.3)	274(38.4)
No	232(52.7)	208(47.3)	440(61.6)
Cockroach			
Yes	9(52.9)	8(47.1)	17(2.4)
No	425(61)	272(39)	697(97.6)

Annex VII. Operational Manual for Data Collectors(English)

UNIVERSITY OF GONDAR

COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF PUBLIC HEATLTH

Operational Manual for Data Collection on Prevalence of Food Insecurity and Associated Factors

April 11, 2011

Gondar

INFORMANT INTERVIEW GUIDE

The Key Informant Interview Guide describes the type of discussion that is required in order to develop words/phrases, examples, and definitions that are adapted to the local context so that questions are understandable to survey respondents. The instruction following each question and set of probes below specifies whether the modification should be done as a phrase, definition, or example.

For each household respondent always begin by introducing yourself as stated in the consent form.

Q1: Did you worry that your **household** would not have enough food?

- By “household” we mean those of you that sleep under the same roof and take meals together at least four days a week.

Q2: Were you or any household member not able to eat the **kinds of foods you preferred** because of a **lack of resources**?

- By “kinds of foods you preferred” we mean foods that food secure people eat that food insecure people cannot afford to eat. E.g. Teff Enjera, meat, egg, milk, yoghurt, etc
- Whenever we say “lack of resources”, we mean not having the means to get food, either through growing it, purchasing it, or trading for it.

Q3: Did you or any household member have to eat **a limited variety of foods** due to a lack of resources?

- When we say “**a limited variety of foods**”, we want to mean an undesired monotonous diet for an extended period of days. E.g. Enjera and shiro only.

Q4: Did you or any household member have to eat some foods **that you really did not want to eat** because of a lack of resources to obtain other types of food?

- “A food you really did not want to eat” might include Sorghum’s Enjera, boiled grains (Nifro), roasted grains (kollo), etc.

Q5: Did you or any other household member have to eat a smaller **meal** than you felt you needed because there was not enough food?

- By “meal” we mean the major eating occasions (not including snacks). Or can be asked as:-
- Did you or any household member eat less in either the morning or evening meal than you felt you needed because there was not enough food?

Q6: Did you or any household member have to eat **fewer meals in a day** because there was not enough food?

- This question asks about eating “fewer meals in a day” than the social norm. can be asked as:
- Did you or any household member have to eat fewer than two/three meals in a day because there was not enough food?

Q7: Was there ever **no food to eat** of any kind in your household because of lack of resources to get food?

- By “no food to eat” we mean that the food was not available in the household and could not be accessed by the household’s usual means (e.g. through purchase, from the garden or field, from storage, etc.).

Q8: Did you or any household member go to sleep at night hungry because there was not enough food?

- This question may not require any adaptation.

Q9: Did you or any household member go a whole day and night without eating anything because there was not enough food?

- ƒThis question may not require any adaptation.

Annex VIII. Operational Manual (Amharic)

ጎ ን ደ ር ዩ ኒ ቨ ር ሲ ቲ

ህ ክ ም ና ና ጤ ና ሳ ይ ን ስ ኮ ል ጅ

የ ህ ብ ረ ሰ ተ ብ ጤ ና ት ም ህ ር ክ ፍ ል

በ ቤ ተ ሰ ብ ደ ረ ጃ የ ሚ ታ ይ የ ም ግ ብ ዋ ስ ት ና አ ለ መ ረ ጋ ገ ጥ ን እ ና ተ ያ ያ ዥ ጉ ዳ ዮ ች ላ ይ ለ ሚ ደ ረ ግ መ ጠ ይ ቅ የ መ ረ ጃ አ ሰ ባ ሰ ብ መ መ ሪ ያ

ሚ ያ ዚ ያ 2003 ዓ .ም

ጎ ን ደ ር

የ መረ ጃ ሰ ጪዎ ች ቃለ -መጠይ ቅ መምሪ ያ

የ ቁ ል ፍ መረ ጃ ሰ ጪ ቃለ -መጠይ ቅ መምሪ ያ ከ መረ ጃ ሰ ጪው ጋ ር የ ሚደ ረ ግ የ ውይ ይ ት ዓ ይ ነ ት ን በ መግ ለ ጽ በ ማህ በ ረ ሰ ቡ የ ተ ለ መዱ ቃ ላ ት ን /ሀ ረ ጋ ት ን ፣ ም ሳ ሌ ዎ ች ን እ ና የ ቃ ላ ት ፍ ች ዎ ች ን ለ መረ ጃ ሰ ጪው ግ ል ጽ እ ን ዲ ሆ ን የ ሚያ ደ ረ ግ መ ም ሪ ያ ነ ው ። ከ ዚ ህ በ ታ ች ከ እ ያ ን ዳ ን ዱ ጥ ያ ቄ በ መ ቀ ጠ ል ያ ሉ ት ት እ ዛ ዛ ት እ ና መ መ ሪ ያ ዎ ች በ ፍ ች ወ ይ ም በ ም ሳ ሌ ዎ ች መ ብ ራ ራ ት አ ለ ባ ቸ ው ።

ለ እ ያ ን ዳ ነ ዱ መረ ጃ ሰ ጪ እ ማ ወ ራ /አ ባ ወ ራ ጠ ያ ቂ ው ሁ ል ጊ ዜ ም የ ራ ሱ ን ማ ን ነ ት ከ ስ ም ም ነ ት ፎ ር ሙ ላ ይ በ ተ ገ ለ ጸ ው አ ግ ባ ብ በ ማ ስ ተ ዋ ወ ቅ መ ጀ መ ር አ ለ በ ት ።

ጥ.1. ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት ቤ ተ ሰ ብ ዎ በ ቂ ም ግ ብ አ ይ ኖ ረ ው ም ብ ለ ው ሰ ግ ተ ው ን በ ር ?

- ”ቤ ተ ሰ ብ” ስ ን ል በ አ ን ድ ጣ ሪ ያ ው ስ ጥ የ ሚያ ድ ሩ ና በ ሳ ም ን ት ው ስ ጥ ለ 4 ቀ ና ት ም ግ ብ አ ብ ረ ው የ ሚመ ገ ቡ ት ን ማ ለ ታ ች ን ነ ው ።

ጥ .2. ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ገ ቢ ም ን ጭ አ ለ መ ኖ ር ም ክ ን ያ ት የ ፈ ለ ጉ ት ን ም ግ ብ መ መ ገ ብ አ ል ቻ ሉ ም ነ በ ር ?

- ”የ ፈ ለ ጉ ት የ ም ግ ብ ዓ ይ ነ ት” ስ ን ል የ ም ግ ብ ደ ህ ን ነ ት ስ ጋ ት የ ሌ ለ ባ ቸ ው ሰ ዎ ች (ሀ ብ ታ ሞ ች) የ ሚመ ገ ቡ ት ና የ ም ግ ብ ዋ ስ ት ና አ ለ መ ረ ጋ ገ ጥ ያ ለ ባ ቸ ው ሰ ዎ ች የ ማ ይ መ ገ ቡ ት ። ም ሳ ሌ ፡ -ጤ ፍ እ ን ጀ ራ ፣ ስ ጋ ፣ አ ን ቁ ላ ል ፣ ወ ተ ት ፣ ቅ ቤ ና የ መ ሳ ሰ ሉ ት ።
- ”የ ገ ቢ ም ን ጭ እ ጥ ረ ት” ስ ን ል ም ግ ብ ለ ማ ግ ኘ ት ሰ ብ ል ለ ማ ም ረ ት ፣ ለ መ ሸ ጥ ና ለ መ ግ ዛ ት ገ ን ዘ ብ ወ ይ ም ም ቹ ሁ ኔ ታ አ ለ መ ኖ ር ።

ጥ .3. ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ገ ቢ ም ን ጭ አ ለ መ ኖ ር ም ክ ን ያ ት የ ተ ወ ሰ ኑ የ ም ግ ብ ዓ ይ ነ ቶ ች ን ብ ቻ እ ን ድ ት መ ገ ቡ ሆ ኗ ል ?

- ”የ ተ ወ ሰ ኑ የ ም ግ ብ ዓ ይ ነ ቶ ች ብ ቻ” ስ ን ል አ ላ ስ ፈ ላ ጊ ና አ ን ድ ዓ ይ ነ ት ም ግ ብ ለ ረ ዥ ም ቀ ና ት መ መ ገ ብ ማ ለ ታ ች ን ነ ው ።

ለ ም ሳ ሌ ፡ -እ ን ጀ ራ በ ሽ ሮ ብ ቻ

ጥ .4. ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ል ሌ ላ የ ም ግ ብ አ ይ ነ ቶ ች ን ለ ማ ግ ኘ ት በ ገ ቢ ም ን ጭ አ ለ መ ኖ ር ም ክ ን ያ ት መ መ ገ ብ ያ ል ፈ ለ ጉ ት ን ም ግ ብ እ ን ድ ት መ ገ ቡ ሆ ኗ ል ?

- ''መ መ ገ ብ ያ ል ፈ ለ ጉ ት ን '' ስ ን ል የ ሚ ከ ተ ሉ ት ን ሊ ያ ካ ት ት ይ ች ላ ል ፡ ፡ ለ ም ሳ ሌ ፡ -የ ማ ሽ ላ እ ን ጀ ራ ፣ ን ፍ ሮ ፣ ቆ ሎ ና የ መ ሳ ሰ ሉ ት ፡ ፡

ጥ .5. ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ቂ ም ግ ብ ባ ለ መ ኖ ሩ ም ክ ን ያ ት ያ ስ ፈ ል ጋ ል ብ ለ ው ካ ሰ ቡ ት በ ታ ች ም ግ ብ እ ን ድ ት መ ገ ቡ ሆ ኗ ል ?

- ''አ ነ ስ ተ ኛ ም ግ ብ'' ስ ን ል በ ቁ ር ስ / በ ም ሳ /በ ራ ት ሰ ዓ ት የ ተ መ ገ ቡ ት የ ም ግ ብ መ ጠ ን ማ ለ ታ ች ን ነ ው ።
- ወ ይ ም እ ን ዲ ህ ተ ብ ሎ ሊ ጠ የ ቅ ይ ች ላ ል ፡ -እ ር ስ ዎ ወ ይ ም የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ማ ለ ዳ ወ ይ ም ማ ታ ላ ይ ያ ስ ፈ ል ጋ ል ብ ለ ው ካ ሰ ቡ ት የ ም ግ ብ መ ጠ ን በ ታ ች ተ መ ግ በ ዋ ል ?

ጥ .6. ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት እ ር ስ ዎ ወ ይ ም ሌ ላ የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ቂ ም ግ ብ ባ ለ መ ኖ ሩ ም ክ ን ያ ት አ ነ ስ ተ ኛ መ ግ ብ በ ቀ ን እ ን ድ ት መ ገ ቡ ሆ ኗ ል ?

- ይ ህ ጥ ያ ቄ የ ሚ ጠ ይ ቀ ው ከ ማ ህ በ ረ ሰ ቡ የ አ መ ጋ ገ ብ ጊ ዜ ያ ት ባ ነ ሰ ስ ለ መ መ ገ ባ ቸ ው ሲ ሆ ን እ ን ዲ ህ ተ ብ ሎ ሊ ጠ የ ቅ ይ ች ላ ል ፡ ፡ እ ር ስ ዎ ወ ይ ም ሌ ላ የ ቤ ተ ሰ ብ ዎ አ ባ ል በ ቂ ም ግ ብ ባ ለ መ ኖ ሩ ም ክ ን ያ ት በ ቀ ን አ ን ድ ወ ይ ም ሁ ለ ት ጊ ዜ በ ታ ች ተ መ ግ በ ው ያ ው ቃ ሉ ?

ጥ .7. ባ ለ ፉ ት አ ራ ት ሳ ም ን ታ ት ው ስ ጥ ም ግ ብ ለ ማ ግ ኘ ት የ ገ ቢ ም ን ጭ ባ ለ መ ኖ ሩ ም ክ ን ያ ት በ ቤ ት ዎ የ ት ኛ ው ም ዓ ይ ነ ት የ ሚ በ ላ ም ግ ብ አ ል ነ በ ረ ም ነ በ ር ?

- ”የ ትኛውም ዓይነት የሚበላ ምግብ” ስንል በቤትዎ ውስጥ ምግብ ማግኘት በሚችሉበት መንገድ ማለትም በግዥ፣ ከጓሮ/ከማሳ፣ ከጎታ ከመሳሰሉት ምግብ አለመኖር ማለታችን ነው።

ጥ.8. ባለፉት አራት ሳምንታት ውስጥ እርስዎ ወይም ሌላ የቤተሰብዎ አባል በቂ ምግብ ባለመኖሩ ምክንያት በምሽት እንደራበው ተኝቷል?

ጥ.9. ባለፉት አራት ሳምንታት ውስጥ እርስዎ ወይም ሌላ የቤተሰብዎ አባል በቂ ምግብ ባለመኖሩ ምክንያት ያለምግብ ቀንና ሌሊት ውሎ አድሯል?

Annex IX. Assurance of Investigator

The undersigned agrees to accept responsibility for the scientific, ethical and technical conduct of the research project and for provision of required progress reports as pre terms and conditions of the research and publications office of the University of Gondar.

Name of the student:_____

Date:_____ Signature: _____

Approval of the advisor (s)

Advisors

	Name	Signature	Date
1.	_____	_____	_____
2.	_____	_____	_____

Annex X. Declaration

I, the undersigned, senior MPH student declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master of Public Health.

Name: Yirdaw Melese

Signature: _____

Place of submission: School of Public Health, College of medicine and Health Sciences, University of Gondar.

Date of Submission: _____

This thesis work has been submitted for examination with my/our approval as university advisor(s).

Advisors

	Name	**Signature**
1.	_____	_____
2.	_____	_____