

Research Article

Household Food Insecurity Status and Associated Factors in Sekela Woreda, North West Ethiopia, 2015

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Abstract

Introduction: Household food insecurity is lack of access to a diet of sufficient quality and quantity necessary for productive and healthy life. Food insecurity is a public health concern in worldwide. More than 842 million people are estimated to lack sufficient dietary energy availability and the vast majority of the world's hungry people live in developing countries, where 13.5 percent of the population is under nourished.

Objectives: To assess household food insecurity status and associated factors in Sekela Woreda in West Gojjam zone, Northwest Ethiopia, 2015.

Methods: Community based cross sectional study was conducted. The study used multi stage sampling scheme. Systematic random sampling technique was used to select six kebeles from 27 kebeles. The total sample size was 770 households. Data collectors and Supervisor were trained for two days and were collected by face-to-face interviews using household food insecurity access scale tool after verbal informed consent. Data were entered by Epi data version 3.1. Descriptive statistics and logistic regression were done to identify predictors on house hold food insecurity status using SPSS version 20.0 software package variables with p value less than 0.05 used to declare an association during multivariate analysis using 95% confidence intervals.

Results: The level of household food insecurity was 73.11%. Factors associated with HHFI were female HH headed (AOR=7.53: 95% CI [2.65 -21.38]), large family size (AOR=11.5: 95% CI [4.79-26.34]), had no access to employment (AOR=3.56:95% CI [1.27- 9.95]), didn't have access to credit (AOR=9.35: 95% CI,3.51- 24.91), households who were earning monthly income <500 EBR/month AOR=14.79 :95% [4.52- 48.4]) and those who were Earning 501-1000EBR AOR=10.91: 95% [2.69- 45.8]) more likely food insecure.

Conclusion and Recommendation: There were many households with food insecure, (563/770). Hence, households headed by females, large family sizes, low family income, lack of employment access and credit access were found to be important factors which affect household food insecurity. Therefore, the government should work with risk groups emphasize like large group households to reduce their number and strengthening family planning service. Easily availability of credit access in at individual and group level for rural community and strengthen women interest.

List of Abbreviations

EDHS	: Ethiopian Demography Health Survey	GNP	: Gross National Product
FANTA	: Food and Nutrition Technical Assistance	HABP	: Household Asset Building Program
FAO	: Food Agriculture Organization	HEWs	: Health Extension Workers
		HFIAS	: Household Food Insecurity Access Scale

HFI	:	Household Food Insecurity
HHs	:	House Holds
PSNP	:	Productive Safety Net Program
SSA	:	Sub-Saharan Africa
WFP	:	World Food Program
WHO	:	World Health Organization

Introduction

Background

Household food insecurity is lack of access to a diet of sufficient quality and quantity necessary for productive and healthy life. Food insecurity is a condition in which people experienced limited or uncertain physical and economic access to safe, sufficient and nutritious food [1,2].

Food is basic principle for human being's life. Adequate quantity and quality food is essential for all people to continue development. In adequate food in long terms will lead to hunger and starvation that can cause death [3]. According to Ethiopian context, house hold food secure defined as when its livelihood activities allow to meet its food requirements and other basic needs, either through its own reductions i.e. crop cultivation and/or livestock rearing, through having opportunities to run own non-farm ventures or to work with somebody else, or getting access to food through transfers [4].

Ethiopia is low income countries and dependent on an agrarian economy. In this country, persistently high rates of child under nutrition are major public health concerns. Child under nutrition remains alarmingly high in poor countries [5]. Food insecurity among young children is often unnoticeable, although young children who experience food insecurity may experience negative health and developmental outcomes, their growth is often affected [6].

Food insecurity affects health and well-being throughout the life cycle and has been associated with child dietary intake and weight status. Associations and correlations between food insecurity and adverse physical or mental health effects, including underweight, obesity, poor growth, micronutrient inadequacy, anxiety and depression have been evidenced among adults or children in developed and developing settings [7]. Food insecurity is the most serious consequence of malnutrition. Adult malnutrition results in lower productivity on farms and in the labor market and impacts on economy [8].

Statement of the Problem

World food program also indicates that nearly 200 million children under five in the developing world are stunted or

chronically under-nourished and about 130 million are underweight. Meanwhile, 3.5 million children under five die every year, largely as a result of under-nutrition, attributed to lack of access to the food produced [9]. Generally, rural households have less access to most essential services. About a third of rural household's farm less than 0.5 hectares which, under rain fed agriculture at current yield levels, cannot produce enough food to meet their requirements. When there are surpluses, smallholder farmers are often constrained by lack of access to markets. In all farming systems, livestock are the single most important household asset and there is a strong correlation between lack of livestock ownership and poverty, particularly among woman-headed households [10]. Malnutrition is the most serious consequence of food insecurity. Adult malnutrition results in lower productivity on farms and in the labor market [8].

Ethiopia is one of the poorest countries in Sub-Saharan countries with over 40 percent of its population is believed to be living below poverty line. The country's economy is typically an agricultural economy and about 85 percent of the total population in Ethiopia lives in rural areas. Agriculture accounts for about half of the overall gross domestic product and for about 90 percent of the country's export earnings and supplies about 70 percent of the country's raw material to the secondary activities [11].

Food insecurity and malnutrition in adolescents and pregnant women, compounded by gender discrimination, leads to an intergenerational cycle of nutrition problems which manifest as stillbirths, miscarriages, low birth weight, growth failure, increased risk of maternal and neonatal mortality, impaired cognitive development, sub-optimal productivity in adults and reduced economic growth for the nation. For girls in particular, the chances of escaping this nutrition-poverty trap diminish as the child grows older. The 2011 Ethiopian demography health survey estimated the national prevalence of stunting among children at 44.4 percent, the prevalence of underweight at 28.7 percent and wasting at 9.7 percent which undoubtedly affects their cognitive development. The survey also revealed that the level of chronic malnutrition among women in Ethiopia is relatively high; with 27 percent of women either thin or undernourished [12].

Literature Review

Over View Food Insecurity

Globally, 842 million people were unable to meet their dietary energy requirements. Thus, around one in eight people in the world are likely to have suffered from chronic hunger, not having enough food for an active and healthy life. The vast majority of hungry people 827 million of them live in developing regions, where the prevalence of undernourishment is now estimated at 14.3 percent. Africa remains the region with the highest prevalence of undernourishment, with around one in four people estimated to be undernourished. Levels and trends in undernourishment differ

within the continent. While sub-Saharan Africa has the highest prevalence of undernourishment is 24.8 percent [13].

Magnitude of Food Insecurity

Study conducted in Malaysia, over half of household's experience food insecurity in each of its major domains (i.e., uncertainty, compromised food quality, compromised food quantity) and as an overall status. During the preceding month in Malaysia, 51.4% worried that their families would not have enough to eat. In relation to food quality, 55.7% of respondents reported making compromises: 45.7% were unable to eat the foods they prefer, while an equivalent number were forced to eat a limited variety of foods. Unwanted foods were consumed by 25.7% due to resource constraints. Insufficient food intake was experienced by 51.4% of households with scarcity manifesting itself. Extreme deprivation was also present: 11.4% of households reported having no food in the home and no means of acquiring food on at least one day during the previous month, 11.4% went to sleep early to avoid hunger, and 4.3% had been unable to eat for an entire day. In total, only 35.7% of households were food secure, and among the food insecure majority, 28.6% experienced severe insecurity [14].

In similar studied in Korea, percentage of households with food security was 88.7%. The remaining 11.3% showed food insecurity (9.3% for food insecurity without hunger and 2.0% for food insecurity with hunger). The prevalence of food-insecure households in households with children was 13.2%, which was higher compared with 10.3% in households without children. Of elderly participants living in a household with children, 21.6% were in a food-insecure condition. Food-insecure households had a higher proportion of a single householder (28.5%), lone parent (14.9%) and grandparent-headed families (6%) compared with food secure households. Furthermore, more than half of the food-insecure households reported the lowest household income and were not homeowners [15].

Approximately one-quarter of households in Bangladesh and Vietnam and nearly half of households in Ethiopia were moderately to severely food-insecure. There were also differences between the countries in relation to mean household size, maternal educational attainment, maternal height, and prevalence of diarrhea and acute respiratory illness. HFI was significantly associated with stunting and underweight in all 3 countries [16].

Based on study conducted San Francisco general hospital, 16.1% households were classified as food secure. Thirty percent households were experiencing the least severe level of food insecurity and were classified as household insecure. These households ran out of food, were uncertain about their ability to obtain sufficient food, and were beginning to compromise the quality of the family diet. Another 19.3% households had adults who were experiencing food insecurity while 35% households had hungry children. The unadjusted prevalence of self-reported

diabetes was 6.7% among adults in food-secure households compared with 10.6% among those in food-insecure households [1].

According to Indian food insecurity study, adequate food intake in terms of quantity and quality is a key to healthy life. India has the world's largest population living in slums, and these have largely been underserved areas. Nearly half 53.3% of the mean monthly household income was spent on food. It was found that 77.2% of the households were food-insecure. It might be due to the large family-size where the amount spent on food would have been insufficient to meet the food requirements of all the family members [17].

Food insecurity in Ethiopia is case of both rural and urban problems. Study conducted in Addis Ababa, household food insecurity was particularly high among low income households and those headed by uneducated, daily wagers and government employed household heads. 75% of households were food insecure and 23% were in a state of hunger. Household heads who were uneducated, daily laborers and government employees were more likely to have higher food insecurity. Sex and age of household head and family size did not show significant associations with household food security status. Households headed by individuals who were unemployed and had less educational attainment been also more likely to be food insecure. Uneducated heads are less likely to be employed, especially in the context of the present global economic crisis [18].

Food insecurity has significant negative consequence on the diets of adolescents in the southwest Ethiopia that puts them at risk of developing multiple nutrient deficiencies. As food insecurity is a frequent problem and adolescents constitute a large segment of the population in Ethiopia [19].

In Butajira hospital food insecurity studied show that mild, regarding to nutritional status of more than 1/4th (25.5%) of participants were undernourished, of which 2.7%, 6.5%, 16.5% were mildly, moderately and severely undernourished respectively. The overall prevalence of food insecurity was 78.1%. The association due to lower socio-economic status, lower food access and diversity, higher infectious disease and narrower availability of infrastructure services in rural dwellers than in urban dweller as these are commonly observed in developing countries [20].

According to federal ministry of agriculture and rural development report, domestic food production has still failed to meet national requirements as a result of which the number of food insecure people has been booming. For the last three and half decades (1974-2011), for instance, the livelihoods of some 4.72 million people had been affected per annum mainly due to drought-induced food shortage calamities. As a result, Ethiopia has become increasingly dependent on international food aid with the average food scarcity of over 637, 000 metric tons per year on average [21].

Though average per capita food availability was 125.41kg during 1992-2001, still it remained far below the recommended average per capita daily requirement set by the Ethiopian government (2,100 kcal, which is equivalent to about 225kg) of grain per annum. This implies that the per capita food supply simply stagnated far below the minimum required level for over four decades. The large gap that remained between food demand and food supply was filled by food imports and food aid, the later contributing the largest share [22].

Food insecurity is seasonal or cyclical evident when there is a recurring pattern of inadequate access to food such as prior to the harvest period (the 'hungry season') when household and national food supplies are scarce or the prices higher than during the initial post-harvest period [23]. A direct link has been established between inadequate food quality and quantity and poor mental and physical health, psychosocial, behavioral, learning, family stress and academic outcomes [24].

Factors Associated Food Insecurity

Household size, educational status, maternal age, as well as the presence of social support, as being important factors of food insecurity [25]. Food insecurity is strongly related to household income level, although not all households living in poverty are food insecure [26]. Other food insecurity factors are ownership of livestock, farmland size, family labor, farm implements, employment opportunities, market access, levels of technology application, and levels of education, health, weather conditions, crop diseases, rainfall, oxen and family [27]. Household size is another factor expected to have influence on food security status. Thus, a negative correlation between household size and food security is expected as food requirements increase in relation to the number of persons in a household [28].

Livestock provides not only food for the producers, but also a range of other products which could be sold or consumed by the livestock owner to provide nutrition, income, traction and fuel. The major products of livestock include draught power, meat, milk, eggs, manure which is used as fertilizer or fuel, feathers, fiber, hides, and horns. In addition to these products livestock serve as an asset and may provide a reserve that can be converted to cash in times of need. Households who own livestock have good food security status as well as sustainable farming. Particularly in Ethiopia, where crop failure is frequenting due to poor rainfall, the level of a household's resources a critical factor in combating such disasters [29].

Fertilizer use is used by most studies as a proxy for technology. Subsistence farming is production for direct consumption. This contributes towards attaining household food security [30]. Education is an additional factor which is thought to influence the food security status of households. Educational attainment by the household head could lead to awareness of the possible advantages of modernizing agriculture by means of technological inputs; enable them to read instructions on fertilizer packs and diversification of household incomes which, in turn, would enhance households. Food production can be increased extensively through expansion of areas under cultivation. Therefore, under subsistence agriculture, holding size is expected to play a significant role in influencing farm household's food security [31].

Age of the household head impacts on more stable the economy of the farm household because older people have also relatively richer experiences of the social and physical environments as well as greater experience of farming activities. Moreover, older household heads are expected to have better access to land than younger heads, because younger men either have to wait for a land distribution or have to share land with their families [32].

Sex of household head has a strong positive and has statistically significant relationship with status of food insecurity level at household level. In developing countries males were often favored in the allocation of resources within the household for cultural reasons. This magnifies from domestic and field work burden, low asset possession and low risk acceptance particularly in technology adoption, therefore, prevalence of food insecurity was severe in female headed households [33].

Access to rural credit has significant relationship with food insecurity at household level. Households who have access to credits from governmental or non-governmental have better food availability than who do not have credit access. Availability of credit is crucial for farmers to increasing agricultural products through introducing agricultural technologies and diversifying livelihood strategies. As mentioned earlier there is critical shortage of farming land and as a result of this, the woreda is working towards expansion of micro and small enterprises to strength purchasing power [34].

Conceptual Framework

Household Food Insecurity in Sekela Woreda, Northwest Ethiopia Figure 1.

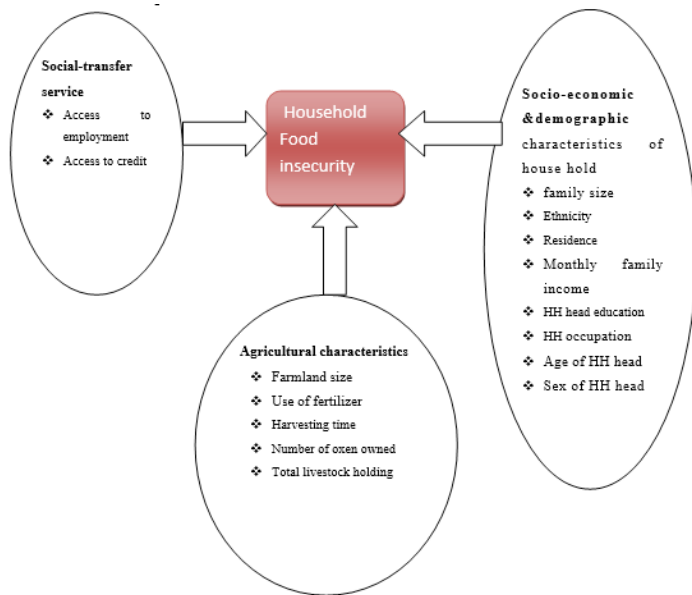


Figure 1: Conceptual Frame Work Showing Factors Associated with Household Food Insecurity in Sekela Woreda, Northwest Ethiopia, 2015 [35].

Justification of the Study

Extensive degradation and high soil acidity severely undermine agricultural production in Sekela woreda. Crop production is particularly low for people who are constrained by poor availability of cultivable land. The majority of households earn most of their income from agricultural wage labor. Most of households were earned from labor migration, whilst a smaller contribution comes from casual labor, mostly construction, in local towns.

Food insecurity requirement for a country has greater effect on rural people (52%) and urban people (36%) and inadequacy of food in long terms will lead to starvation that can cause chronic illness and death. Chronic and transitory food insecurity effect on Amhara region stunting (52%), wasting (12%) and underweight (29%) relatively increased. There was no previous similar research conducted in the study area.

Significance of the Study

A study of household food insecurity shows the livelihood with food security status of the people and helps concerned bodies to undergo intervention related to the problems with food security. That is, the result of the study will bring the successful food in security development programs Productive Safety Net Program (PSNP) and Household Asset Building Program (HABP). The study will help policy makers to have better evidence and to take intervention measures in Sekela district. The findings of this study will serve as baseline information for policy makers, planners, administrators and nongovernmental organization designing and

implementing appropriate intervention programs. It will also enable development practitioners and policy makers to have better knowledge as to where and how to intervene in rural areas to bring food security or minimize the s of food insecurity.

Objectives

General Objective

To assess household food insecurity status and its associated factor in Sekela woreda in West Gojjam zone, Northwest Ethiopia, 2015.

Specific Objectives

- To determine level of household food insecurity in Sekela woreda.
- To identify associated factors for household food insecurity in Sekela woreda.

Methods

Study Design

A community based cross-sectional study was conducted .

Study Area and Period

The study was conducted in Sekela Woreda in West Gojjam Zone, Northwest Ethiopia. Sekela Woreda is one of the 18 woredas found in west Gojjam Zone. The Woreda has a total of 27 kebeles with one kebele being the woreda town. Sekela was located 466km far from Addis Ababa. Part of West Gojjam Zone, it was bordered on the southwest with Bure, on the west with Agew Awi Zone, on the north with Mecha, on the north east with Yilmana Densa, on the east by Kuarit, and on the southeast with Jabi Tehnan [36].

According to 2012 national census, there were a total population of 146,089 (male=71,733 female=74,356) and a total number of household 24,718(male=20,845, female=3873) in the woreda. The area was found 2000-3525meter above sea level and categorized under climatic condition of 70% Dega and 30 % Weynadega with annual rainfall of 1700mm. The topography of the area was 10% plate land, 65% mountainous and 25% valley. Average temperature was 18degree centigrade. The study conducted from July 20 to August 30,2015 [37].

Populations

Source Population

All households in Sekela Woreda, Northwest Ethiopia

Study population

Households systematically selected from six kebeles in Sekela woreda

Eligibility Criteria

Inclusion criteria

Household head who had resided in the area for six months and above before the study began.

Exclusion criteria

During data collection severely ill.

Sample Size Determination

Sample size determination

Sample size was calculated using open Epi version 3.1 assuming hypothesized frequency of outcome variable in the population (p):35%, a 95%, a CI and margin of error of 0.05. Assumptions considered: $P = 35\% = 0.35$, a baseline national food security survey in 2009/10 by the Ethiopian Health and Nutrition Research institute [38].

$$n = (Z_{\alpha/2})^2 P (1-P) / d^2 = 350$$

Where:

n = the required minimum sample size

P = A baseline national food security survey in 2009 (35%)

$Z_{\alpha/2} = 1.96$

d = 5% (0.05)

$n = (1.96)^2 (0.35 * 0.65) / (0.05)^2 = 350$

Marginal error (d) of 5%, confidence level of 95% and $Z_{\alpha/2}$ was the value of the standard normal distribution corresponding to a significant level of alpha (α) of 0.05, which is 1.96. This yields a sample size of 350. Since eligible households were not directly selected, the calculated sample size should be adjusted for design effect (D). The design effect was generally assumed to be 2. As a result, the required sample size obtained by $n \times D$ which was about 700 households. Adding 10% for non-response rate, the total sample size was 770 households.

Sampling Procedure

Sekela Woreda was selected among 18 Woreda of West Gojjam zone. Sekela woreda had 27 kebeles; among these six kebeles were selected by systematic random sampling technique. List of all households which were eligible in each selected Kebele obtained from woreda administrative office and health extension workers that produced a sampling frame of all households. 700 households were listed in a particular order, then every 8th household unit was selected, start at a random point between 1 and 700, Here k was 4 chosen in random start point. $N=6189$ and $n=700$ so that sampling fraction was $6,189/700 = 8.8$. 1st household

selected randomly was 4, 2nd household was 12, 3rd household was 20, 28, 36, ... finally 768 household reached. The study used multistage sampling scheme. The sample size for each study site allocated on the basis of probability proportional to size Figure 2.

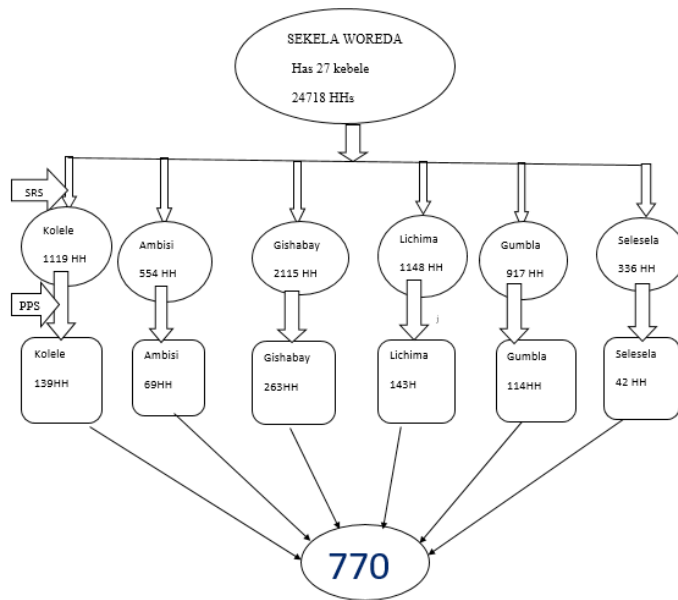


Figure 2: Schematic presentation of sampling procedure about household food insecurity and associated factors in Sekela woreda, North West Ethiopia, 2015.

Data Collection Technique

Data which was collected through face-to-face interviews used Household Food Insecurity Access Scale (HFIAS) tool. Verbal informed consent was considered. The instrument comprised four parts.

Part 1: Socio-demographics and economic characteristics such as head of household, family size, household educational status, occupational status.

Part 2: Social-transfer service characteristics like access to employment and Access to credit.

Part 3: Agricultural characteristics like farmland size, use of fertilizer, Season of harvesting time.

Part 4: Household Food Insecurity Access Scale (HFIAS) measurement tool which consist 9 items.

The HFIAS occurrence questions relate to three different domains of food insecurity:

- i. Anxiety and uncertainty about the household food supply,
- ii. Insufficient quality (includes variety and preferences of the type of food) and

iii. Insufficient food intake and its physical consequences.

Each of the questions asked with a recall period of four weeks (30 days). The respondent was first asked an occurrence question that is, whether the condition in the question happened at all in the past four weeks (yes or no). If the respondent answers “yes” to an occurrence question, a frequency of occurrence question asked to determine whether the condition happened rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks.

Study Variables

Dependent Variable

- Household food insecurity status.

Independent Variable

- a. Socio-economic and demographic characteristics of house hold:** Family size, ethnicity, residence, yearly family income, household head education, household head occupation, age of household head and sex of household head.
- b. Agricultural characteristics:** Farmland size, number of oxen owned, use of fertilizer and season of harvesting time.
- c. Social transfer service:** Access to employment and access to credit.

Operational Definitions

- **Household food secure household:** Experiences none of the food insecurity (access) conditions or just experiences worry, but rarely.
- **Household food insecurity:** If the family experiences any of the conditions (uncertainty, insufficient quality and quantity of food) within the recall period. (If the answer to any of the questions was “rarely,” “sometimes,” or “often”. The only exception was among households in which the respondent’s answer to question 1 was “rarely” but the response to all the other questions was “never”).
- **A mildly food insecure household:** 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. But it does not cut back on quantity nor experience any of three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating).
- **A moderately food insecure 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. But it does not experience any of the three most severe conditions.

- **A severely food insecure household:** 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. In other words, any household that experiences one of these three conditions even once in the last four weeks.
- **Access credit:** Increased supply of money into the banking system making it easily available for public lending with lower interest rate.
- **Access to employment:** Aims to engage with local residents to gain and retain employment by providing training, employability support, childcare and access to opportunities

Data Quality Control

An adapted structured questionnaire was prepared in English and translated into Amharic, with great emphasis given to local vocabularies. A completed questionnaire was checked for its completeness and consistency at every step of data management. A pre-test was done on 5% of the samples, in Abiyotetchora kebele, which had similar back ground to the study kebeles. Data collectors and Supervisor were trained for two days before and after pre-test. Feedback from the supervisor and data collectors were incorporated to enrich the questionnaire and make more applicable to the local situations. The principal investigator and supervisors checked each questionnaire daily. Feedback from the supervisors and data collectors were used as an input to incorporate and enrich the questionnaire and made more applicable.

Data Processing and Analysis

Data was entered by Epi Data version 3.1. Entry, coding, editing, cleaning and analysis were done using SPSS version 20.0. Frequencies and percentages of variables produced and odds ratios calculated on some selected variables. The results were presented in the form of tables, figures and text using frequencies and summary statistics such as percentage to describe the study population in relation to relevant variables. The data was analyzed using multivariate logistic regression to determine the relationship between household food insecurity and determinant factors for household food insecurity. Crude and adjusted odds ratios were used for any association between the dependent and predictor variables while significance was determined using 95% confidence intervals. Independent variables found to be significant with p value less than 0.2 at the bivariate level were included in a multivariate logistic regression model to control for potential confounding variables.

Ethical Considerations

Ethical clearance was confirmed and verified by Debre Markos University Health Science College Ethical Review Committee; further permission letter was secured from formal sector institutions in Sekela woreda administration office. Privacy and confidentiality was maintained. All selected participants were requested and communicated about the study in order to obtain their verbal consent before administering questionnaires. Participants were informed that they would have full right to discontinue or refuse to participate in the study. They were informed that all data obtained from them would be kept confidential. They were still informed that the data gathered from them would not use for any objective other than the one mentioned in the study. Each respondent was informed about the objective of the study that contributed necessary information for policy makers and other concerned bodies. Respondents who were food insecure linked with local and partner's way to improved food insecurity status.

Dissemination of Results

The findings of the study were submitted to Debre Markos University, College of Health Science Department of Public health. Then findings of the study will be presented at Debre Markos University. After, Copies of the study findings provides to relevant stakeholders like Sekela Woreda, West Gojjam Zonal and Amhara Regional Health, Food Security Coordination Office and Agriculture Bureau. The result will be present at scientific conferences and to publish at a national and international journal.

Result

Socio Demographic Characteristics

The total respondents for this study were 770 and the response rate was 100%. Almost all, 766(99.5%), of resident respondents of the study area were Orthodox Christian in religion and 751(97.5%) of them were Amhara, whereas few, 17 (2.2%), of them were Agew in ethnicity. The mean \pm SD age of respondents was 39 ± 12.6 SD. The mean age of household heads were 39.07 years. More than two third, 553(71.8%), of households were male headed whereas, 217(28.2%) households were female headed. Respondents, 298(38.7%), were able to read & write however only 25(3.2%) of study subjects were found to be educated BSc/ BA and above. Nearly 531(69%) of the respondents were married, whereas only 8(1%) of them are separately living apart from their partner. More than half 405(52.6%) of house hold heads were not employed. Around forty-nine percent of house headed subjects have small family size (1-4) and 51.4% of them were found to be with larger family size (five and above HHs). Most, 474(61.6%), of the respondents didn't have credit access in their woreda. Nearly 3 folds, 506(65.7%), of them have to travel more than 5 kms from their home to the market place. Agriculture was the main

source of income for 471(61.2%) them; whereas few, 53(6.9%), of them were daily laborers to secure their daily income. Around, 334(43.4%), of respondents earn less than 500 EBR per month, whereas, 110(14.3 %), of them were earning 1,501.00 EBR and more than that (Table 1).

Variable (n=770)		Frequency	Percent
Age	18-24	87	11.3
	25-44	437	56.8
	45-64	212	27.5
	65-100	34	4.4
Sex of the household head	Male	553	71.8
	Female	217	28.2
Religion	Orthodox	766	99.5
	Muslim	3	0.4
	Protestant	1	0.1
Ethnicity	Amhara	751	97.5
	Agew	17	2.2
	Other	2	0.3
Residence	Urban	249	32.3
	Rural	521	67.7
Education level	Can't read and write	204	26.5
	Able to read and write	298	38.7
	Primary school (1-8)	66	8.6
	Grade 9 -12	55	7.1
	Certificate/Diploma	122	15.8
	Degree and above	25	3.2
Marital status	Single	162	21
	Married	531	69
	Divorced	43	5.6
	Widowed	26	3.4
	Separately live	8	1
Family size	Small(1-4)	374	48.6
	Large (\geq 5)	396	51.4

Access to employment	Access to employment	365	47.4
	Without access to employment	405	52.6
Access to credit	Access to credit	296	38.4
	Without credit access	474	61.6
Market distance from home	less than five km	264	34.3
	Five km and greater than five km	506	65.7
Source of income	Agriculture	471	61.2
	Trade	123	16
	Governmental worker	113	14.7
	Daily laborer	53	6.9
	Other	10	1.3
Monthly income	<500 birr	334	43.4
	501-1000 birr	181	23.5
	1001-1500 birr	145	18.8
	≥1501 birr	110	14.3

Table 1: Socio-demographic characteristics and other assets of households in Sekela district, Northwest Ethiopia, 2015.

Factors related with household food insecurity status

The prevalence of food insecurity in the study area was 73.11% (563/770). From these, 39.6% (223/563) were had severe food insecurity. Among total respondents, majority of them 464(60%) were worried about not having enough food. Fifty-nine percent of households were found to be unable to eat preferred food and 63 % of them claimed for kinds of food. More than half, 417(54%), of households did have little meal and did have fewer meals in a day. More than 2 /3rd. (559) of respondent didn't agree with the question that there was no food of any kind in household. The majority, 614(79.7%), of respondents were passing the nights being starved. More than three quarter, 667(86.6%), of them were starved for the whole day & night whereas only, 103(13.4%), went to a whole day night without food (Table 2) Figure 3.

Variables (n=770)		Frequency	Percentage
Worry about not having enough food	Yes	464	60.3
	No	306	39.7
Unable to eat preferred food	Yes	456	59.2
	No	314	40.8

Eat just a few kinds of food	Yes	487	63.2
	No	283	36.8
Eat food really do not want	Yes	496	64.4
	No	274	35.6
Eat smaller amounts in meal	Yes	417	54.2
	No	353	45.8
Eat fewer meals in a day	Yes	413	46.4
	No	357	53.6
No food of any kind in household	Yes	211	27.4
	No	559	72.6
Go to sleep hungry	Yes	156	20.3
	No	614	79.7
Go a whole day & night without food	Yes	103	13.4
	No	667	86.6

Table 2: Household food insecurity Status in Sekela district, Northwest Ethiopia, 2015.

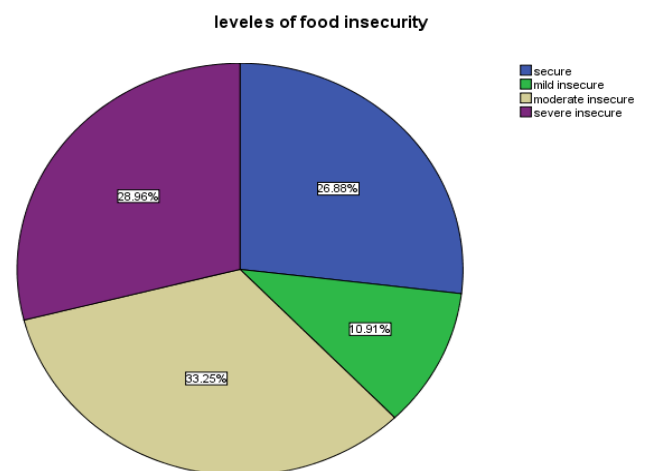


Figure 3: level of food insecurity status in Sekela Woreda, North West Ethiopia, 2015.

Associated Factor with Household Food Insecurity Status

Hosmer-Lem show goodness of fit test (p=0.699) was done to assess fitness of the model. Different variables had been tested with logistic regression for their association with the dependent variable. Accordingly, female household heads were found to be about (AOR=7.53: (95% CI 2.65 -21.38)) times more food in secured. Concerning house hold who had large family size (five and more HHs) were (AOR=11.5: 95% CI [4.79-26.34]) times more likely to be food in secured. Respondents who had no access

to employment were about (AOR=3.56: 95% CI [1.27- 9.95]) times likely to be food in secured. Similarly, respondents who didn't have access to credit were (AOR=9.35: [95% CI, 3.51- 24.91]) times likely to be food in secured compared with their counter parts. Respondents who were earning < 500 EBR/month were (AOR=14.79:95%: [95%CI, 4.52- 48.4]) times more likely to be food in secured than those who were earning more than 1500ETB (Table 3).

characteristics(n=770)		Food security status		Crude OR (95% C.I)	Adjusted OR (95% C.I)
		Insecure	Secure		
Sex of house hold head	Male	362	191	1	1
	Female	201	16	6.63(3.87,11.36)	7.53(2.65,21.38)
Family size	Small(1-4)	201	173	1	1
	large (≥5)	362	34	9.09(5.94,13.92)	11.23(4.79,26.34)
Employment access	Has access	189	176	1	1
	Has not access	374	31	11.24(7.38,17.10)	3.56(1.27,9.95)
Access to credit	Has access	134	162	1	1
	Has not access	429	45	11.53(7.86,16.9)	9.35(3.51,24.91)
Average monthly income	<501 birr	303	31	20.10(11.67,34.59)	14.79(4.52,48.4)
	501-1000birr	162	19	17.53(9.43,32.58)	10.91(2.69,45.85)
	1001-1500birr	62	83	1.54(0.92,2.57)	0.43(0.11,1.69)
	>1500 birr	36	74	1	1

*=*p*-value < 0.05 Backward stepwise logistic regression method.

Table 3: Logistic regression analysis household food insecurity and associated factor of Sekela district, Northwest Ethiopia, 2015.

Discussion

The prevalence of food insecurity in the study area was high, 563(73.11%); the degree of the prevalence being different: mild food insecurity accounts 10.9%, moderate food insecurity accounts 33.2% and sever food insecurity account 29%. The HFIAS scale measurement revealed that 73.11% of households which was nearly similar to study conducted Addis Ababa 74.9% [20] relatively low prevalence of food insecurity to Butajira hospital study conducted 78.1% [18].

The results were considerably higher than the national food insecurity (35%) reported by the Ethiopian Health and Nutrition Research Institute since 2009 [38]. Moderately to severely food-insecurity in Sekela Woreda was 62% and nearly half percent of households in Ethiopia [16]. The possible justifications might be due difference in seasonality, geographical topography, land degradation and method of study. In most parts of Ethiopia, September is a transition from the rainy to the harvest season and deterioration of food storage is common in this month. Similarly, this difference might be attributable to geographical and rainfall variations. Nutrition baseline survey was conducted at winter season unlike this study conducted August to September.

When gender lines were analysed, women were with lack of access to productive resources, education and health services. Women were overburdened in fulfilling their responsibility to household food security. Female household head had a strong positive relationship with status of food insecurity at household level. Women were disadvantaged through traditional norms and cultural practices. Tasks such as collecting fuel wood; fetching water, cooking, washing, cleaning, and childcare were practiced by women headed households. Females were burdened with domestic activities and low risk acceptance particularly in technology adoption. Therefore, prevalence of food insecurity was severe in female headed households. This study has a similar finding with study [33] who implied, female headed households were severely affected by food insecurity than male headed households.

Households with large family size were insufficient to meet the food requirements of all the family members. Large family size tends to exert more pressure on food consumption than the labor it contributes to production the relation between household size and food security was expected as food requirements increase in relation to the number of persons in a household. Family size influences on food insecurity status [15,28]. Nevertheless, a study conducted at Korea showed that food insecure households had

a higher proportion of a single householder [17]. Might not be sharing works, fulfilment resources and support modern technology mechanism at single house hold level. The possible justifications might be due to household headed by uneducated, higher needs consumptions of food and misuse resources to collect food.

Access to rural credit had significant relationship with food insecurity at household level. Households who had access to credits from both governmental and non-governmental institutions have better food availability than who did not. Availability of credit is crucial for farmers for increasing agricultural products through introducing agricultural technologies and diversifying livelihood strategies. This finding was supported by the findings of similar study [33]. Therefore, the woreda was working towards expansion of micro and small-scale enterprises [34]. Possible justification might be household headed by level of awareness, fear of credit and loans and unstable environment.

Households that had access to better income opportunities were less likely to become food secure than those households who had no or little access. Household's food insecurity was particularly high among low income households and little access to better income. More than half of the food-insecure households reported the lowest household income. Study conducted in Addis Ababa, household food insecurity was particularly high among low income households [15,18]. The possible justifications might be due to household's high income can access and use necessary food for family.

Households headed by individuals who were unemployed more likely to be food insecure. Uneducated heads were less likely to be employed, especially in the context of the present global economic crisis [18]. On this finding unemployed households more exposed to food insecurity. Possible justification might be household headed by uneducated, fear of technology adoption, in equality gender lines, lack of credit and saving access.

Limitations of the Study

First, the design was cross-sectional; therefore, unable to investigate causal links between food insecurity and associated factors. Second, the HFIAS questions can be influenced by social desirability bias though attempt was made to minimize it by clarifying the purpose of the study.

Conclusion

A third fourth proportion of households were food insecure 563(73.11%); the degree of the food insecurity prevalence being different: mild food insecurity accounts 10.9%, moderate food insecurity accounts 33.2% and sever food insecurity account 29%. Household food insecurity was a serious problem in Sekela Woreda. Associated factors for household food insecurity were multidimensional and interrelated features. Households headed by females, households with large family sizes, households with low

family income, lack of employment access and credit access were significant associated with household food insecurity.

Recommendation

Depending on the conclusions drawn, the following recommendations have been forwarded.

To FMOH, Policy Makers: The government should work with risk groups emphasize like large group households to reduce their number and strengthening family planning service.

To Ministry of small scale enterprise, Amhara region small scale enterprise, West Gojjam Zone small scale enterprise and Sekela Woreda small scale enterprise: Widely function of innovation and extension services for employee seeker.

To Amhara Regional Health Bureau, West Gojjam Zone health department and Sekela woreda health office: Strengthening family planning service.

To commercial bank of Ethiopia, Amhara Credit and Saving Institution and other local cooperatives: Easily availability of credit access in at individual and group level for rural community, strengthen women interest and expansion of Social transfer's service like micro and small enterprises. Sekela woreda needs rural based credit and saving services are provided by the Amhara Credit and Saving Institution and local cooperatives.

To Researchers: Further qualitative researches should be done to examine the reasons for high prevalence of food insecurity in Sekela Woreda.

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