DIJBAR
www.daagu.org
Volume-2 Issue-1

Analysis of Urban Households' Food Insecurity in Eastern Zone of Tigray Regional State, Ethiopia

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ABSTRACT

The purpose of this study is to assess the incidence, extent and determinants of food insecurity among urban households in the major towns of Eastern zone of Tigray, Ethiopia, namely Adigrat and Wukro. Data for the study is obtained from 397 randomly selected urban households using structured questionnaire. FGT index and binary logit model are used for data analysis. The finding from FGT index shows that 7.4% and 5.4% of households in Adigrat and Wukro are food insecure, respectively. The depth and severity of food insecurity is 2.1% and 0.1% in Adigrat, and 1.5% and 0.5% in Wukro, respectively. The logistic regression model result reveals that variables such as family size, age of the household head, education status of the household head and credit access are significant factors influencing urban households' food insecurity in the major towns of the zone at less than 10 % significance level.

Keywords: FGT index, logit model, urban households, food insecurity, Eastern zone of Tigray.

Citation: Naser Yenus Nuru, Hayelom Yrgaw Gereziher (2020). Analysis of Urban Households' Food Insecurity in Eastern Zone of Tigray Regional State, Ethiopia. Daagu International Journal of Basic & Applied Research-DIJBAR. Volume2, Issue-1, pp (75-88)
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Received: 22/03/2020

Accepted: 30/04/2020

Published: 29/06/2020

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1. INTRODUCTION

With an estimated 795 million of the global population reported to be undernourished, the food insecurity concept is the most widely misunderstood and controversial measurement in the current global discourse of welfare analysis and human development (Allen, 2013; Pinstrup-Andersen, 2009). Food security has been declared a human right as early as the 1948 Universal Declaration of Human rights and is also enshrined in the 1966 International Convention of Socio-economic and Cultural rights (UNOHCR, 2006). Despite the protection of this right in both regional and national constitutions, the challenge of addressing food insecurity continues to be a policy challenge in most developing countries. This is evidenced by the clarion call to eradicate hunger and extreme poverty as part of the 2030 global sustainable development agenda (UN, 2015). On a similar note, given the nascent challenges of rural to urban migration and increased urban influx, food insecurity is no longer considered an exclusive rural phenomenon: it has also migrated to cities (Zezza and Tasciotti, 2010).

Urbanization has been supported by the rapid growth in the World economy and in the proportion of gross World product and of workers in industrial and service enterprises. Globally, agriculture has met the demands from this rapidly growing urban population, including food. But, hundreds of millions of urban residents suffer under-nutrition (Satterthwaite et al., 2010).

The dramatic growth of towns in the developing World has brought with it a new challenge - widespread and increasing urban poverty. However, efforts to address the unique problems of urban poverty lag far behind the growth of the problems themselves. Antipoverty initiatives have traditionally targeted rural areas, which were presumed to have been worse off than urban areas. But, the problems of poor town dwellers have become more pressing including the issues of how the urban poor earn their livelihood and the ways in which this affects key indicators of human welfare, such as food security and nutrition (Maxwell et al., 2000).

Urban populations in Africa are growing rapidly, and inequality is increasing. The major urban food problems of the 1970s and 1980s, food shortage and price shocks, have apparently been largely resolved at least in the short to medium term. Because of this urban food security having long been defined as the issue of feeding the towns has dropped off the political agenda of urban planners and managers; indeed specifically urban food security problems receives relatively little attention from the national food or nutritional policy planners. Urban food security problems in Africa receive little attention partly because it tends not to be linked to seasonal or community wide process and partly because of a long–held belief that urban populations are better off but urban food insecurity is directly linked to urban poverty and inequality and for this reason research on urban food security must focus on the question of access to food (Mitlin, 2012).

Ethiopia's current urban population is about 17 million (16.5% of the country's total population). Compared to other African countries, Ethiopia's level of urbanization is

low. However, the urban population is increasing rapidly with an average growth rate of 4% per year. This population growth rate will probably result in Ethiopia's urban population exceeding 60 million by 2050 (CSA, 2018).

An increasing trend of the share of the poor population in urban areas, high inequalities in income distribution, high population growth rates, high food prices and low job creation all combine to threaten the food security of the urban poor. This presents a new challenge to policy makers of balancing their efforts to address not only rural poverty but also urban poverty. More importantly the issues of urban poverty such as food and nutrition insecurity need attention (Ssewanyana, 2003).

While there is a need for understanding food insecurity in an increasingly urbanizing Ethiopia in general and Tigray in particular, little attention has been paid to urban households. The major towns of Eastern zone of Tigray are not an exception. Further, despite a large number of studies on food insecurity, it is surprising that food insecurity is most often studied as a rural phenomenon. Only few research works such as those by (Gebre, 2012) and (Feleke and Bogale, 2009) are available on urban food insecurity in the country up to now. Hence this research work mainly focuses on the dimensions and determinants of urban households' food insecurity in Adigrat and Wukro.

2. LITERATURE REVIEW

A number of studies have been conducted to measure urban household food insecurity in different context (Craig and Scanlan, 2002; Gani and Prasad, 2007; Vasco, 2006, among others). The study conducted by Feleke and Bogale (2009) using Foster-Greer-Thorbecke (FGT) model shows that 43% of households in Dire Dawa fail to meet the daily recommended caloric requirement, 13% are also far from recommended caloric intake set by the government of Ethiopia on average and 5.9 % under severe food insecurity condition. On the other hand, the study by Muche *et al*. (2014) using the same model demonstrates that 42.9% are living below minimum requirement; 4.4% are far from minimum requirement; and 0.4% are under severe food insecurity situation in Mana woreda of Jimma zone, Southwest Ethiopia.

According to Zerihun and Getachew (2012), the absolute head count index, the normalized calorie deficiency gap index and the square calorie deficiency gap in Mareko woreda, Guraghe zone, Southern Ethiopia are about 60%, 5.8% and 1.8%, respectively. Whereas, a study by Gebre (2012) reveals that the incidence, depth and severity of food insecurity are 58%, 20% and 9.4% in Addis Abeba, respectively. In addition to this, the study conducted by Mitiku and Legesse (2014) report that 42% of the sampled households are not able to meet the daily recommended caloric requirement; 14.67% of food insecure households are far from the recommended daily caloric requirement level and 7.26% of households are the most food insecure groups of households in Jimma zone, Southwestern Ethiopia.

A study conducted in South Africa (Cape Town, Msunduzi and Johannesburg) by Frayne *et.al* (2009) indicates urban food insecurity is experienced at the levels of the household and individual. While aggregate food supplies may be sufficient at the

metropolitan scale, access to that food is highly inequitable in South African cities, with many households chronically hungry.

Another study by Ashimogo and Hella (2000) in Iringa, Tanzania show that household food security is positively influenced by total household asset disposal and income. On the other hand, the study shows that the transition to commercial agriculture has had negative influence on food security. Bergeron (2002), using a situational analysis, reveals although urban agriculture is common in cities, food access for urban household depends more on households' purchasing capacity than on their agricultural production in Madagascar - although the latter remains important. Purchasing capacity is determined by prices and by income levels.

Urban livelihoods and food and nutrition security in Accra, Ghana indicates that household food availability is a function of food prices, household demographics and household tastes and preferences (Maxwell *et al.,* 2000). The result of this study shows that increase in per capita income is associated with higher household calorie availability. Households with relatively high numbers of school aged children and men of prime working age have lower food availability and calorie availability is higher in female-headed households.

The study by Feleke and Bogale (2009) in Dire Dawa, using binary logit model, shows out of nine explanatory variables, seven are found to be statistically significant. These variables include family size, daily income per adult equivalent, educational level, sex, marital status, access to credit and proportion of food expenditure where by 43% of sample households are food insecure.

Though the above reviewed empirical literatures have investigated the incidence, extent and determinants of household food insecurity, frameworks of analysis have been dominantly rural-oriented especially in Ethiopia. Literature reveals that most of the studies are more focused on the poor subsistence rural households despite increased urbanization challenges of the 21st century. Therefore, given this paucity of literature, a study that looks at the incidence, extent and determinants of urban household food insecurity in the two major towns of Eastern zone of Tigray, Ethiopia, namely Adigrat and Wukro is necessary.

3. MATERIALS AND METHODS

3.1. Description of the study area

Tigray region is one of nine regional states of Ethiopia located at latitudes from 12014'50.50" to 14053'48.03'' and longitudes from 36026'48.74" to 390 59'0.09". Tigray region is the homeland of Tigray, Erob and Kunama people. The state of Tigray shares common borders with Eritrea in the North, the State of Afar in the East, the State of Amhara in the South, and the Republic of Sudan in the West. The region is divided into 7 zones, 53 woredas (districts) and 814 tabias (sub-districts). The state's population size was 5,247,005 with an estimated area of 54,593 square kilometers (CSA, 2016/17). Most (73%) of the population live in rural, while 27% are urban dwellers. In terms of religion, 95.5% of the population are Orthodox Christians, 4.1% and 0.4% are Muslims

and Catholics, respectively. Regarding ethnic composition, 94.98% are Tigraway, 2.6% Amhara, 0.7% Erob and 0.05% Kunama. Tigrigna is the working language of the state. About 83% of the population is farmer. Teff, wheat, and barely are the main crops. Other agricultural products include beans, lentils, onions, and potatoes. Irrigation and terrace farming are used on the steep slopes. The region is also known for its export items of cotton, incense, sesame and minerals.

This research is conducted in one of the zones of the region, Eastern zone of Tigray. The zone is bordered on the East by the Afar region, on the South by South Eastern zone, on the West by Central zone and on the North by Eritrea. It covers about 13,268.99 km^2 and is divided into nine districts, including Adigrat and Wukro. The districts do vary in biophysical conditions including agro-ecological zoning, elevation, rainfall pattern and amount, temperature, land use and soil types. Most of the districts are categorized as *Dry Dega* (the highlands of Atsbi-Womberta, Ganta Afeshum, Tsaesie Tsaeda Emba), followed by Dry Weinad*ega* which covers most of the Kilte Awlaelo district. The elevation of the districts ranges from 946 to 3,298masl. Annual rainfall is variable within a range of 420-689mm. Temperature ranges from 12°C to 24°C. Most of the lands are cultivated with some patchy grazing bottomlands and hilly sites. The major soil types in the zone include Lithic Leptosols followed by Haplic Lixisols and Vertic Cambisols, respectively. The total population of the zone is 917,000 (CSA, 2018). Adigrat and Wukro are the two major towns of the zone.

3.2. Data types, sources and methods of data collection

Primary data is collected and utilized so as to achieve objectives of the study. In this regard, qualitative and quantitative data pertaining to food insecurity aspects of urban households in the study area is gathered. The main instrument used for primary data collection is well-structured questionnaire administered by the researcher and trained enumerators. The questions are prepared in English and translated into Tigrigna local language.

3.3.Sampling technique and sample size

A multistage sampling technique is employed to select sample households. Firstly, based on purposive sampling technique, the two major towns of the zone, namely Adigrat and Wukro are selected. Secondly, kebeles are selected using simple random sampling from each of the two major towns of the zone and finally systematic random sampling method are employed to select sample households from selected kebeles. We select 2 kebeles from Wukro and 3 kebeles from Adigrat. The total sample size to each selected kebeles is allocated using proportion to the size of population (PSP). The lists of households are obtained from kebele administration office.

We use Yamane (1967) formula ($n = \frac{N}{1+Ne^2}$) to determine sample size from the total population for our study in which "n" is the sample size needed, N is the population size and "e" is the margin of error. There are 28,896 households in Adigrat and 15,176 households in Wukro town (BoFED, 2018). Hence, the total population

size for the study is 28,896 + 15,176 = 44,072 households. We consider the margin error (e) for the study to be 5%. Therefore, the calculation is

$$n = \frac{44072}{1+44072(0.05^2)} = \text{around 397 samples}$$

Therefore, a total of 397 sample households are selected proportionally from the two major towns. Accordingly, these are 260 households from Adigrat and the remaining 137 households from Wukro.

3.4. Incidence and extent of food insecurity: Foster-Greer-Thorbecke (FGT) model

Household caloric acquisition is employed to measure food insecurity in this study. This method estimates the number of calories available for consumption by adult equivalent household members over a defined period of time. A popular practical method of setting food insecurity line using this method proceeds by computing the consumption level of volume of food items commonly consumed by households; then converting all quantities into kilogram/liter to have a common unit of measurement; and finally converting these quantities into kilo calories (Kcal) using Ethiopian Health and Nutrition Research Institute (EHNRI) (1998) food composition table for use in Ethiopia. Later, the converted data is divided into household Adult Equivalent (AE). Following this, it is converted to Kcal/Day basis and makes it ready to calculate Kcal/Day/AE. Daily per capita calorie consumption is estimated by dividing the estimated daily calorie supply to the household by the household size adjusted for adult equivalence using the equivalent scale weights. The 2200 kilo calorie per adult equivalent per day is used in line with the official practice used by the Ministry of Finance and Economic Cooperation earlier and now by the National Planning Commission. Accordingly, households with per capita energy intake less than the standard per capita requirement of 2,200 kilo calories are considered as food insecure and above this threshold are considered as food secure.

The next step involves estimation of the incidence and extent of food insecurity. One possible food insecurity incidence, depth and severity measurement tool, according to Hoddinott (2001), is the procedure of Foster et al. (1984) which is widely used for poverty measurement studies. Adopting this, the study measures the extent of household food insecurity. The Foster-Greer-Thorbecke (FGT) measure is given as:

$$P_\alpha = \frac{1}{N}\sum_{i=1}^{q}\left[\frac{(Z-Y_i)}{Z}\right]^\alpha \qquad \text{----Equ.1}$$

Where: N is the total sample size;

Y_i is the measure of per adult equivalent food calorie intake of the i^{th} household;

Z represents the minimum requirements per day per adult equivalent (2200 kcal/day/AE).

q is the number of food-insecure households; and

α is "food insecurity aversion" parameter (the weight attached to the severity of the food insecure).

In FGT index, if $Y_i \geq Z$ that the specified household is food secure and if $Y_i < Z$, the specified household is food insecure.

If α=0 then, FGT measure corresponds to the head count index (incidence of food insecurity) in which no concern for the depth of the shortfall is shown. The food insecurity gap, FGT (α = 1), measures how far the food insecurity of households, on average, are below subsistence level of energy. If α=2 then, FGT measures the severity of food insecurity. It takes into account not only the distance separating the food insecure from food insecurity line, but also inequality among the food insecure households.

3.5.Econometric Model Specification

To give answer to the determinants of urban households' food insecurity in Eastern zone of Tigray, logit regression model is used for this study. For the purpose of this study, the dependent variable y is defined to indicate whether a household is food insecure or not. In this case, we can let y=1 denote a household is food insecure and y=0, otherwise. Food security status of a household is identified by comparing total kilocalorie consumed in a household per adult equivalent per day with daily minimum requirement of 2200kcal and those getting less of this amount are food insecure and food secured otherwise.

Following Gujarati (2004), the functional form of cumulative logit model is specified as follows:

$$P(y_i=1) = \frac{e^{\alpha+\beta x_i}}{1+e^{\alpha+\beta x_i}} \quad \text{----Equ.2}$$

where Y_i is ith observation response that has two outcomes (food insecure as 1 and 0 otherwise), X_i's are factors that affect food insecurity, α is a constant term and β's are the coefficient of the variables (vector of parameters to be estimated).

$$1\text{-}P(y_i=1) = \frac{1}{1+e^{\alpha+\beta x_i}} \quad \text{----Equ.3}$$

$$\frac{P(y_i=1)}{1-P(y_i=1)} = e^{\alpha+\beta X_i} \quad \text{-----Equ.4}$$

Hence, $\frac{P(y_i=1)}{1-P(y_i=1)}$ is then the odds ratio of food insecure households.

Finally, by taking the natural log of equation (03) it can be obtained:

$$\ln \frac{P(y_i=1)}{1-P(y_i=1)} = \alpha + \beta X_i \quad \text{----Equ.5}$$

If the disturbance term (U_i) is introduced, the logit regression model becomes

$\alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots + \beta_n X_n + U_i$ ----Equ.6

3.6.Description of Variables and their Expected Signs

Table1. Variables and Expected Signs

Description of Variables	Measurement of Variables	Expected Sign
Household Food insecurity	Food insecure= 1, Food secure = 0.	Dependent Variable
Family size	Continuous	Positive
Sex of household head	1 if household head is male; 0 otherwise.	Not clear
Age of household head	Continuous	Not clear
Education level of household head	1 if household head is literate; 0 otherwise.	Negative
Remittance	1 if household got remittance; 0 otherwise.	Negative
Credit access	1 if household got credit, 0 otherwise.	Negative

Family size: An increase in household size implies more mouth to be fed from the limited resources and especially in males dominant household the situation becomes more than this due to high possibility of accustoming to bad habits. As can be mentioned by Bogale and Shimeles (2009), the household size and status of food insecurity is expected to be related positively.

Sex of household head: There is no generally accepted relationship between sex of household head and level of food security. While some argued that a household headed by a female is more likely to be food insecure compared to male headed households and others disagrees with this argument and found the opposite result.

Age of household head: Some argues older household heads are less productive and they lead their life by remittance and gifts. On the other hand, others claim household heads become more experienced with age and acquire more knowledge and physical assets, and this may affect food security in a positive way.

Education level of household head: We expect literate households to be less food insecure. The possible explanation is that household head education largely contributes to working efficiency, competency, diversify income, adopting technologies and becoming visionary in creating conducive environment to educate dependents with long term target to ensure better living condition. This is due to educated household head plays a significant role in shaping household members (Bogale and Shimeles, 2012).

Remittance: We anticipate an increase in remittance to have a positive effect because the change in income will lead to a constant change in expenditure. Thus, the income received from remittance and gifts increases the total income so that capacity of the households to consume more will increase (Gazuma, 2018).

Access to credit: As in (Gebre, 2012), we expect that those households who are willing to participate in credit scheme and manage to earn higher amount became capable to improve their income position through performing different activities. Credit serves as a means to be involved in income generating activities and to reap derived benefit based on the amount and purpose of credit. It also normalizes consumption at hard time.

3. RESULT ANALYSIS & DISCUSSION

The FGT indices namely head count ratio, depth (short-fall) and severity of food insecurity are used to show how much the magnitude of food insecurity looks like in the study areas. Based on the food insecurity threshold point, 26 sample households (6.6%) are found to be unable to meet their minimum subsistence requirement while 371 households (93.5%) are found to meet their minimum subsistence requirement.

Table 2. Food insecurity measures by FGT indices

Variables	Total Food Insecurity			
	Index		Standard error	
	Adigrat	Wukro	Adigrat	Wukro
Head count ratio	7.4%	5.4%	0.017	0.017
Food insecurity gap	2.1%	1.5%	0.006	0.005
Food insecurity severity	0.1%	0.5%	0.004	0.002

Table 2 show that the headcount ratio, depth and severity of food insecurity are 6.7%, 1.5% and 0.4% in Adigrat and 5.3%, 1.2% and 0.5% in Wukro, respectively. This implies 6.7%, in Adigrat and 5.3% in Wukro of the sampled households cannot meet the energy requirement recommended for subsistence. Each food insecure household in Adigrat needs 1.5% of the daily caloric requirement to bring them up to the recommended daily caloric requirement level besides their per capita income while it is 1.2% in Wukro. The relative deficiency among food insecure households is 0.4% in Adigrat and 0.5% in Wukro.

The estimated value of head count, food insecurity gap (short fall) and severity of food insecurity by socio-economic characteristics of household is also analyzed for both major towns of the zone. Table 2 shows that food insecurity are more severe in the large size household with food insecurity headcount index, short-fall index and severity as 8.1%, 2.6% and 1.7%, respectively. This fact indicates that food insecurity worsen as household size increased. Food insecurity is high for age group of older than 45 years with food insecurity headcount index, short-fall index and severity of 9.3%, 2.6% and 0.7%, respectively. This implies that incidence of food insecurity increased with age of household head in the study area and/or the elder head households live great deprivation than younger head households.

Food insecurity is worse in female headed household with food insecurity headcount index, short-fall index and severity of 7.4%, 2.1% and 1.02%, respectively, than the male counterpart of 5.7%, 1.5% and 0.5%. This implies that males are to some extent more engaged in income generating activities than females in the study area. The food insecurity is concentrated in the group with illiterate having an estimated headcount

ratio, short-fall index and severity of 8.05%, 2.3% and 1.12%, respectively. This analysis implies that illiterate households are more food insecure than literate ones since literate households are diversifying as well as increasing their means of income in order to drag out of food insecurity situation and lead quality life.

High indices of food insecurity are recorded for households with no opportunity of remittance than those who have an opportunity to remittance. The estimated food insecurity headcount ratio, short-fall and severity for households with no opportunity of remittance are 9.3%, 3.6% and 2.3%, respectively. The food insecurity are more severe in the group with no access to credit service having an estimated headcount ratio, short-fall index and severity of 7.6%, 2.8% and 1.2%, respectively. This indicates that households with access to credit are less food insecure than no access ones.

Table 3. Estimated indices of food insecurity for both towns by socio economic characteristics of household.

Variables	Head count index	Short-fall index	Severity index
Family size			
Small (1-4)	0.05	0.01	0.01
Medium (5-7)	0.07	0.01	0.005
Large (>8)	0.08	0.02	0.01
HH head age			
<25	0.06	0.02	0.007
26-45	0.03	0.01	0.008
>46	0.09	0.02	0.007
HH head sex			
Male	0.05	0.01	0.005
Female	0.07	0.02	0.01
HH head education			
Literate	0.04	0.01	0.004
Illiterate	0.08	0.02	0.01
Remittance			
Got remittance	0.05	0.01	0.004
Not got remittance	0.09	0.03	0.02
Access to credit			
Credit access	0.04	0.01	0.004
Without credit access	0.07	0.02	0.01

As to the determinants of food insecurity**,** the result of the logistic regression model estimate shows that out of the 6 variables, 4 variables are found to have a significant influence on the probability of being food insecure. These variables include family size, age of the household head, education of the household head, and access to credit service. That means the odds ratio of family size, age of the house hold head and education of the household head are statistically significant at 5% probability level of significance whereas access to credit service are statistically significant at 10% probability level of significance. The coefficients of 2 explanatory variables, namely sex of the household and remittance are not statistically different from zero at the

conventional levels of significance. The result obtained from the binary logit model is presented in Table 4.

Table 4. Binary logit odds ratio for determinants of food insecurity

Variables	Odds ratio	Standard Error	p-value
Family size	1.476964	0.1312133	0.043**
Sex of household head	1.027046	0.0148334	0.465
Age of household head	1.38539	0.6716414	0.021**
Education level of household head	0.7460824	0.3401497	0.032**
Remittance	1.467157	0.6738253	0.804
Credit access	0.96779	0.4367123	0.062*

* Significant at 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

In light of the above summarized model results, possible explanations for each significant independent variable are also given consecutively as follows:

Family size: This variable is found to be positively related with food insecurity and statistically significant at 5% probability level. This indicates that larger household size tends to be food insecure compared to smaller family size in the study areas. This fully agrees with prior expectation. The odds ratio of family size reveals that the probability of being food insecure will increase by approximately 1.47 with one additional family member in adult equivalent.

Age of household head: This variable affects food insecurity status positively and significantly at 5% probability level in the study areas. The positive relationship implies that older age household heads have better chance to be food insecure than younger ones. This is possible because older household heads are less productive and they lead their life by remittance and gifts. They could not participate in other income generating activities. On the other hand, older households have large number of families and their resources are distributed among their members. The odds ratio of age of household head indicates that the probability of being food insecure will increase by approximately 1.38 when age of the household increases by one year.

***Education level of household head*:** This variable affects food insecurity situation negatively and significantly at 5% probability level. The negative relationship indicates that literate households are less food insecure than illiterate households. The possible explanation is that household head education largely contributes on working efficiency, competency, diversify income, adopting technologies and becoming visionary in creating conducive environment to educate dependents with long term target to ensure better living condition than illiterate ones. This is due to educated household head plays a significant role in shaping household members. Thus, being literate reduces the chance of becoming food insecure in the sample households. The odds ratio of the

variable reveals that for literate households the probability of being food insecure decreased by 0.75.

Credit access: The sign of the coefficient of this variable shows a negative relationship with food insecurity and is significant at 10% probability level. The negative relationship implies that households with access to credit service have less chance to be food insecure than without access ones. This result is fully in conformity with the prior expectation. This is due to the fact that credit gives the household an opportunity to be involved in income generating activities so that derived revenue increases financial capacity and purchasing power of the household to escape from risk of food insecurity. Moreover, it helps to smooth consumption when household face with temporary food problem. The odds ratio of the variable shows that for households with access to credit the probability of food insecure decrease by 0.87.

4. CONCLUSION AND RECOMMENDATION

This study has examined the incidence, extent and essential determinants of food insecurity for urban households in the major towns of Eastern zone of Tigray, namely Adigrat and Wukro. The study shows that 7.4% and 5.4% of households are not able to meet the daily recommended minimum caloric requirement in Adigrat and Wukro, respectively. The percentage of food consumption needed to bring the entire food insecure population to the food poverty line is 2.1% (Adigrat) and 1.5% (Wukro) while the percentage of relative deficiency among food insecure population is 0.1% (Adigrat) and 0.5% (Wukro).

Subsequently, the study has also identified the major factors influencing food insecurity of urban households through empirical investigation. These include: family size, sex of the household head, age of the household head, educational level of the household head, remittance, and access to credit. The study also exhibits that family size and age of the household head have a significant and positive influence on the state of household food insecurity while education of the household head and credit access are negatively and significantly related.

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ACKNOWLEDGMENT

We would like to thank Adigrat University for its generous financial support (internal research grant) to do this research.