

A REVIEW ON STATUS AND DETERMINANTS OF HOUSEHOLD FOOD SECURITY IN ETHIOPIA

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Abstract

This review is primarily centred on the causes, status, determinants, and coping mechanism of food insecurity in Ethiopia. Recent studies in Ethiopia shows that, 13% of the rural population (approximately 9.7 million people) were food insecure, 2.7 million children under 5 age were acutely malnourished in 2016. At the outset of 2017, the government of Ethiopia estimated as 5.6 million people would require emergency food aid. Climate-related shocks (drought, erratic and limited rainfall), land degradation, population growth, stagnant technology (poor farming technologies) and shortage of farmland deteriorated food security. Sixty four (64%) of the reviewed studies pointed out that, the majority of households were food insecure in the country. Factors like land holding, livestock holding, and off-farm activities, education of the household head, household income, and household size, adoption of yield enhancing technologies, access to irrigation, rainfall shock, and soil fertility status significantly determined the food security of the households. Family planning, effecting sustainable agricultural systems and conservation of soil and water resources for better productivity, income diversification activities and practical based youth education should be looked at.

Key Words: *Food insecurity, food security, household, Ethiopia*

Introduction

Access to sufficient food is essential for household welfare as well as for accomplishing other development activities (Endale *et al.*, 2014). In recent time, food security issues become one of the critical concern and top priority area for developing countries. Food Security is one of major elements of development and poverty alleviation and has been the goal of many international and national public organizations. Food security is a

multidimensional concept with a multi-faceted consequence (Abafita and Kim, 2012). Poverty and food insecurity move together. Poverty and food insecurity remain the major challenges to achieve economic development in Ethiopia (Mulugeta, Tiruneh and Aderaw, 2018).

In the year of 2015, 80 million people were facing crisis of food insecurity (FAO, 2017). Globally, 108 million people in 2016 were reported as facing crisis of food insecurity or worse (FAO,

2017; WFP, 2018). In 2017, almost 124 million people across 51 countries and territories faced crisis levels of acute food insecurity or worse (WFP, 2018). In 2017, in fifteen Africa countries almost 32 million food-insecure people requiring urgent action (WFP, 2018).

Ethiopia is the second-most populous country in Africa with 105 million people. In Ethiopia, the estimated number of food insecure was 9.7 million people – around 13% of the rural population in July 2016 (FAO, 2017). Malnutrition rates in spring 2016 were shocking: 2.7 million children under 5 were acutely malnourished and 400,000 were severely malnourished (FAO, 2017). At the beginning of 2017 the government estimated that 5.6 million people would need emergency food assistance from February to June following the failure of the 2016 rainy season (FAO, 2017; WFP, 2018). In the mid-2018, South Sudan, Democratic Republic of Congo and Ethiopia are projected to have between 5 and 7 million people in worse or food in-secured (WFP, 2018).

Objective

The main objective is to review the findings of studies on food security/ insecurity in Ethiopia in order to determine the status, causal factors and its coping strategies of rural households.

Concepts and Definition of Food Security

Food security is a broad concept dealing with food production, distribution and consumption *vis-à-vis* food entitlement for all household members. Food security is set in various ways. Merely, in this review, the following

organizational definitions of food security were simply counted. According to the World Food Summit (1974) food security is:

“Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices.”

In other definition food security is “ensuring that all people at all times have both physical and economic access to the basic food that they need (FAO, 1983). According to World Bank (1986), food security is “access of all people at all times to enough food for an active, healthy life”. Famine and hunger are the result of food insecurity. Food security indicates the availability of food. But, hanger and famine refers to the effects of non-availability of food (Ayalew, 1997).

Factors Driving Food Insecurity

As indicated in the table (1), climate shocks, political instability, land degradation, population pressure are the most prolonged forces of food insecurity in Ethiopia.

Food Security Vs Insecurity Status

According to Hussein (2017), the concentration of food-secure households across regions were 3.08% in Tigray, 40.29 in Amhara, 37.21 in Oromia, and 19.42% in SNNPR. The following table (2) shows that the food security and insecurity status of different urban and rural areas of Ethiopia. In general, eighteen (18) out of 28 studies revealed that the majority of households were food insecure in the country.

Table 1: Drivers of food insecurity

Drivers of food insecurity	Researcher/s or organizations
Conflict and climate-related shocks, chronic poverty, rising food prices and low agricultural productivity in 51 countries (2017).	(WFP, 2018)
Population displacement, political instability and armed clashes and prolonged impact of the El Niño drought in Ethiopia (2015)	(WFP, 2018)
Land degradation, population growth, stagnant technology, and drought in central highlands of Ethiopia.	(Holden and Shiferaw, 2004)
Shortage of water, poverty, shortage of farmland, drought, population pressure and shortage of rainfall.	(Assefa and Singh, 2018)
Population pressure, drought, shortage of farmland, deterioration of food production capacity, plant and animal disease, frost attack, shortage of cash income, poor farming technologies; and pre and post-harvest crop loss.	(Endalew, Muche and Tadesse, 2015)

Table 2: Food security/insecurity status of surveyed households in different parts of Ethiopia

Study area	Food secured household (%)	Food insecure household (% or level)	Researcher/s	Methods Employed
Southern-Ethiopia (Sidamo)	17.7	82.3	(Regassa and Stoecker, 2011)	Household Food Insecurity Access Scale and Household Hunger Scale
Amhara region (laygaint district)	20	80	(Bazezew, 2012)	Modified Regional Food Balance Model (i.e. Calorie Intake)
South wollo (Teleyayen sub-watershed)	20.9	79.1	(Assefa and Singh, 2018)	Household Food Balance Model
Rural Ethiopia	21	79	(Yirgu, 2009)	Calories Intake (i.e. 2200 kcal/day/AE consider as Threshold)
Bule-hora district	23	77	(Mohammed, 2015)	Core Food Security Module and Rasch model
Southern Ethiopia (Wolayta)	25.8	74.2	(Eneyew and Bekele, 2012)	Food poverty line(a threshold level of consumption expenditure)
Southern Ethiopia (Bilate watershed)	27	73	(Tsegaye and Bekele, 2010)	Household Core Food Security Module
Farta Districts	29.3	70.7	(Endale <i>et al.</i> , 2014)	HFIAS
Central Zone of Tigray (i.e. Laelaymychew)	31.2	68.8	(Asmelash, 2014)	Comparing total wealth with minimum subsistence requirement of wealth
Boloso Sore District of Wolaita Zone	34.5	65.5	(Leza and Kuma, 2015)	Food security index(calculating calorie intake “ ≥ 2100 kcal/day/AE is food secured ”
Wolaita Sodo town	35	65	(Abo and Kuma, 2015)	Food security index or Household calorie acquisition
Guraghe-Zone (i.e. Mareko District)	38	62	(Tefera and Tefera, 2014)	Household calorie availability
East Gojjam zones	40.8	59.20	(Motbainor, Worku and Kumie, 2016)	The household food security access scale
East Hararghe zone (Kersa district)	41.5	58.5	(Mulugeta, Tiruneh and Aderaw, 2018)	Food Calorie Available for Consumption (i.e. 2200

Addis Abeba City	41.84	58.16	(Gezimu, 2012)	kcal/day/AE consider as Threshold)
Rural Ethiopia	48.2	51.8	(Abafita and Kim, 2012)	Foster-Greer and-Thorbecke index of food insecurity PCAI(household's food security index obtained using PCA technique)
West Gojjam zones	48.7	51.3	(Motbainor, Worku and Kumie, 2016)	The Household Food Security Access Scale
North Wello zone		High	(Ramakrishna and Demeke, 2002)	Food Balance Sheet and an Aggregate Household Food Security Index
Moyale	50.5	49.5	(Mitiku, Fufa and Tadese, 2012)	Foster-Greer- Thorbecke (FGT) model
Dire Dawa town	57	43	(Feleke and Bogale, 2009)	FGT index
South-west Ethiopia	57.1	42.9	(Muche, Endalew and KOricho, 2014)	Household calorie acquisition (i.e. 2,100 kcal/day/AE consider as cut point)
Jimma zone	58	42	(Mitiku and Legesse, 2014)	FGT model
Eastern Ethiopia	59.9	40.07	(Bogale, 2012)	Household's Food Consumption Expenditure(i.e. 2,100 kcal/day/AE consider as cut point)
Southern Ethiopia	60	40	(Shiferaw, Richard and Christina, 2005)	Using Framework of Consumer Demand and Production theories Following the Modeling of Production and Consumption Behaviors of a Rural Household (i.e. calculate the amount of calories)
Rural Ethiopia	60	40	(Bogale, Hagedorn and Korf, 2005)	FGT poverty index (poverty line as cut-point)
Jigjiga District	63	37	(Hussein and Janekarnkij, 2013)	Calories intake (i.e. 2,100 kcal/day/AE consider as cut point)
Shashemene District	64	36	(Mitiku, Fufa and Tadese, 2013)	FGT model(i.e. 2,100 kcal/day/AE consider as cut point)
West Shewa (i.e. Ambo)	86.5	13.5	(Debela and Abebe, 2017)	Calories intake(i.e. 2,100 kcal/day/AE consider as cut point)

Determinants of Food Security

Understanding the major determinants factors of food security at household level is important to design appropriate interventions in society to guarantee food security for food insecure households in Ethiopia and helps policy makers and planners to formulate new policies that raise food security. To this end, out of 35 reviewed studies, 49% (17 studies)

shows the farmland size and livestock ownership positively affect food security of HH. Similar number of studies (49%) revealed that family size has significant and negative impact on food security. In addition, 34% and 29% of the reviewed articles indicated food security has positive and significant relation to educational level of the household head or member and off-farm income.

Table 3. Determinants of food security in Ethiopia

Factors	Relation to food security	Possible justifications	Researcher/s
Farm land sizes or total land holding	Positive*	Large cultivated land produces more for household (HH) consumption and for sale	(Ramakrishna and Demeke, 2002) (Shiferaw, Richard and Christina, 2005) (Bogale and Shimelis, 2009) (Beyene and Muche, 2010) (Kidane <i>et al.</i> , 2010) (Bogale, 2012) (Asenso-Okyere, Ayalew and Zerfu, 2013) (Mitiku, Fufa and Tadese, 2013) (Asmelash, 2014) (Beyene, 2014) (Getahun and Beyene, 2014) (Mitiku and Legesse, 2014) (Tefera and Tefera, 2014) (Leza and Kuma, 2015) (Mohammed, 2015) (Hailu and Ragassa, 2017) (Mulugeta, Tiruneh and Aderaw, 2018)
Oxen owned by the household or livestock holding	Positive*	Used as safety nets, sell a part of it to purchase inputs and increasing purchasing power of food and direct consumption of milk & meat.	(Yirgu, 2009) (Bogale and Shimelis, 2009) (Beyene and Muche, 2010) (Tsegaye and Bekele, 2010) (Kidane <i>et al.</i> , 2010) (Birhanu, Keil and Zeller, 2011) (Abafita and Kim, 2012) (Mitiku, Fufa and Tadese, 2012) (Mitiku, Fufa and Tadese, 2013) (Asmelash, 2014) (Tefera and Tefera, 2014) (Muche, Endalew and KORicho, 2014) (Mohammed, 2015) (Leza and Kuma, 2015) (Debela and Abebe, 2017) (Mitiku and Legesse, 2014) (Mulugeta, Tiruneh and Aderaw, 2018)
	Significant (+/-ve)	Livestock diversification.	(Megersa <i>et al.</i> , 2014)
Off-farm (non-farm) income or participation in off-farm activities.	Positive*	Used to purchase agricultural inputs and diversified their income sources	(Yirgu, 2009) (Beyene and Muche, 2010) (Abafita and Kim, 2012) (Mitiku, Fufa and Tadese, 2012) (Mitiku, Fufa and Tadese, 2013) (Mitiku and Legesse, 2014) (Tefera and Tefera, 2014) (Mohammed, 2015) (Assefa and Singh, 2018) (Mulugeta, Tiruneh and Aderaw, 2018)
	Negative		(Hussein, 2017) (Hailu and Ragassa, 2017)
Age of the household head	Positive*	Aged HH expected to have stable economy, accumulate wealth, experience.	(Beyene and Muche, 2010) (Gezimu, 2012) (Abafita and Kim, 2012) (Tefera and Tefera, 2014) (Leza and Kuma, 2015) (Debela and Abebe, 2017) (Hailu and Ragassa, 2017) (Assefa and Singh, 2018)
	Negative*	Reluctance to use improved technologies	(Asenso-Okyere, Ayalew and Zerfu, 2013) (Abo and Kuma, 2015) (Assefa and Singh, 2018)
Level of the education of the household head or the family member like spouse	Positive	More familiar with technology and other developments	(Ramakrishna and Demeke, 2002) (Kidane <i>et al.</i> , 2010) (Tsegaye and Bekele, 2010) (Gezimu, 2012) (Abafita and Kim, 2012) (Asenso-Okyere, Ayalew and Zerfu, 2013) (Getahun and Beyene, 2014) (Mitiku and Legesse, 2014) (Muche, Endalew and KORicho, 2014) (Tefera and Tefera, 2014) (Abo and Kuma, 2015) (Mulugeta, Tiruneh and Aderaw, 2018)
	Negative		(Feleke and Bogale, 2009) (Beyene and Muche, 2010)
Per capita consumption expenditure	Positive*		(Abafita and Kim, 2012) (Mitiku, Fufa and Tadese, 2012) (Asmelash, 2014).
Per capita production of household	positive		(Kidane <i>et al.</i> , 2010). Crop yield: (Mitiku and Legesse, 2014)
	Negative		(Shiferaw, Richard and Christina, 2005)
Farm income	Positive		(Tsegaye and Bekele, 2010) (Hussein and Janekarnkij, 2013) (Asenso-Okyere, Ayalew and Zerfu, 2013) (Mitiku, Fufa and Tadese, 2013) (Leza and Kuma, 2015)

	Negative		(Bogale and Shimelis, 2009) (Feleke and Bogale, 2009) (Getahun and Beyene, 2014) (Mulugeta, Tiruneh and Aderaw, 2018).
Household size/ family size	Positive*		(Ramakrishna and Demeke, 2002) (Bogale and Shimelis, 2009) (Feleke and Bogale, 2009) (Bogale, 2012) (Gezimu, 2012) (Mitiku and Legesse, 2014) (Abo and Kuma, 2015) (Debela and Abebe, 2017) (Assefa and Singh, 2018)
	Negative	Less active labor force	(Shiferaw, Richard and Christina, 2005) (Alemu, Hassana and Teferra, 2008) (Beyene and Muche, 2010) (Tsegaye and Bekele, 2010) (Kidane <i>et al.</i> , 2010) (Birhanu, Keil and Zeller, 2011) (Abafita and Kim, 2012) (Mitiku, Fufa and Tadese, 2012) (Mitiku, Fufa and Tadese, 2013) (Asmelash, 2014) (Tefera and Tefera, 2014) (Muche, Endalew and KORicho, 2014) (Abo and Kuma, 2015) (Leza and Kuma, 2015) (Hailu and Ragassa, 2017) (Assefa and Singh, 2018) (Mulugeta, Tiruneh and Aderaw, 2018)
Sex of household head	Positive*		(Tsegaye and Bekele, 2010) (Mohammed, 2015) (Hailu and Ragassa, 2017).
	Negative		(Feleke and Bogale, 2009) (Birhanu, Keil and Zeller, 2011) (Abafita and Kim, 2012)
Marital status	Negative*		(Feleke and Bogale, 2009)
Rain shock / absence of adequate rainfall/ Agro-climatic zone / Agro-ecology	Positive*		Agro-ecology: (Alemu, Hassana and Teferra, 2008) (Hussein and Janekarnkij, 2013)
	Negative		Absence of adequate rainfall: (Tefera and Tefera, 2014)*. Agro-climatic zone: (Assefa and Singh, 2018)
	Significant (+/-ve)		(Birhanu, Keil and Zeller, 2011) (Abafita and Kim, 2012). Agro-climatic zone: (Regassa and Stoecker, 2011) (Motbainor, Worku and Kumie, 2016)
Adoption of yield enhancing technologies	Positive		(Shiferaw, Richard and Christina, 2005) (Bogale, 2012) (Bekele <i>et al.</i> , 2014) (Getahun and Beyene, 2014) (Tefera and Tefera, 2014) (Mohammed, 2015) (Debela and Abebe, 2017)
	Negative	Reduce food expenditure	(Beyene, 2014)
Share cropping	Positive		(Debela and Abebe, 2017)
Land quality	Positive*	Reduce the cost of reclamation and increasing production.	(Shiferaw, Richard and Christina, 2005) (Bogale, 2012) (Mohammed, 2015)
soil and water conservation	Positive*	Removal of input subsidies	(Beyene and Muche, 2010)
	Negative	Reduce farmland size	(Tsegaye and Bekele, 2010)
Fertilizer use/ application	Positive*		(Ramakrishna and Demeke, 2002) (Yirgu, 2009) (Beyene and Muche, 2010) (Kidane <i>et al.</i> , 2010) (Bogale, 2012) (Hussein and Janekarnkij, 2013) (Asmelash, 2014) (Debela and Abebe, 2017).
	Negative*		(Abafita and Kim, 2012) (Muche, Endalew and KORicho, 2014).
Access to extension service and number of contact with development agents	Positive*	Dissemination of technologies that increases production and productivity	(Bogale, 2012) (Hussein and Janekarnkij, 2013) (Tefera and Tefera, 2014)
	Negative		Access to extension service: (Leza and Kuma, 2015)

Access to credit and saving	Positive*	Adds to the financial resource of the household	(Bogale and Shimelis, 2009) (Feleke and Bogale, 2009) (Gezimu, 2012) (Mitiku and Legesse, 2014)
	Negative		(Hussein and Janekarnkij, 2013)
Possessing assets	Positive*		(Abo and Kuma, 2015)
	Negative*		(Gezimu, 2012)
Participation in social organization (i.e equb)	Positive*	Information sharing	(Birhanu, Keil and Zeller, 2011) (Debela and Abebe, 2017).
Access to irrigation scheme	Positive*	Diversify cropping systems	(Bogale and Shimelis, 2009) (Bogale, 2012).
	Negative*		(Getahun and Beyene, 2014).
Accesses to infrastructure and distance from main markets	Negative*		(Shiferaw, Richard and Christina, 2005) (Beyene, 2014)
Incidences of non-domestic violence negatively	Negative*		(Asenso-Okyere, Ayalew and Zerfu, 2013)
Conflict with neighbors	Positive		(Beyene, 2014)

* showing significant influence on food security

Note: negatively related factors to food insecurity were taken as positive implication for food security. The deference is setting of the dependent variable as food security or food insecurity.

Coping and Survival Strategies of Food Insecurity

The coping mechanism used by different households may be different from place to place. The study conducted by Tefera and Tefera (2014) indicated, the coping strategy of food shortage were reducing number and size meal, borrowing cash and grain and receiving food aid, sales of animals, participating in food for work programs, off-farm and non-farm jobs, rent out land and mortgage land.

According to Tolossa (2010) the coping mechanisms of food insufficient are changes to foodstuffs and meals, support from relatives, temporary family dispersal, working in unusual jobs and reliance on safety net. In addition, the survival strategies include diversification of sources of income, living in slum areas, renting out houses, involvement in undesirable activities and migration of household members.

Coping mechanisms included the renting of lands, working as daily labourers, preparing drinks, selling firewood and dung, and child labour (girls) and the survival strategies are diversified their crops, famine relief assistance, reduce consumption of food, selling and eating livestock, savings either in kind or cash, asset selling and participated in food for work program (Ramakrishna and Demeke, 2002).

According to Mohammed (2015), the coping mechanism are like reducing number and size of meal, purchasing of grains, borrowing cash or grains, eat unpalatable vegetables, engage in the off-farm and non-farm jobs, sale of animals and eat less preferable food. Bazezew (2012) adds that, harvesting immature crop, selling of livestock to purchase food and reduced number of meal were the

coping mechanisms of the surveyed household in Amhara region.

Conclusion

Ethiopia is experiencing alarming population increment. Famine, drought, malnutrition and food insecurity are still a problem of the country. The reason for food insecurity are shortage of water, population growth, shortage of farm land, erratic and insufficient rainfall, lack of advanced technology and land degradation. The reviewed studies shows that, 64% of the households are food insecure. The majority of the studies included in the review revealed that land holding, livestock holding, and off-farm activities, education of the household head, household income, and household size, adoption of yield enhancing technologies (improved crop and livestock varieties, agricultural inputs like fertilizers), access to irrigation, rainfall shock, and soil fertility status determine the food sufficiency of the households.

The coping strategies exercised by food insecure household were reducing the number and size of meal, borrowing cash and grain and receiving food aid, asset (i.e. animals) selling, participating in food for work programs, temporary family dispersal, off-farm and non-farm jobs, rent out land and mortgage land.

Recommendations

To ameliorate the life and food security status of the household, the following measure ought to be taking place.

- The regime and non-governmental organization must operate with the farmers in the promotion of investment in infrastructure to support irrigation and water resources development and adoption of water

harvesting technologies to enhance alternative food and cash crop/fruit production. In addition, land and water conservation activities should be beefed up and extended to tackle losses of fertile soil and productivity of land.

- Family planning, adoption of improved seeds and livestock varieties, practical based youth training and family asset building also have a critical part in breaking up the insecurity problem. Since food security/insecurity status is different from area to area, the government must implement research based strategies.

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