

## **DETERMINANTS OF FOOD SECURITY AMONG HOUSEHOLDS ORGANIZED AND NON-ORGANIZED IN SELF-HELP GROUPS IN DEBRE-MARKOS CITY AND GOZAMIN DISTRICT OF NORTHWESTERN ETHIOPIA**

Adane Yenealem<sup>1</sup>, Degefa Tolossa<sup>2</sup>, Esubalew Abate<sup>3</sup>

<sup>1</sup>Addis Ababa University, College of Development Studies, Center for Food Security and Development, Ethiopia)

<sup>2</sup>Addis Ababa University, College of Development Studies, Center for Rural Development, Ethiopia)

<sup>3</sup>Addis Ababa University, College of Development Studies, Center for Rural Development, Ethiopia)

### **ABSTRACT**

The study investigated the food security determinants of households that were organized and non-organized in self-help groups in Debre-Markos City and Gozamin District, Northwest Ethiopia. Survey data were collected from 492 households. We used Household Food Insecurity Access Scale, binary logistic regression and descriptive statistics to analyze the data. It is found that age, marriage, education, membership in health insurance, training on business development and harmful practices, child protection and gender equality, access to loans from self-help groups and availability of small ruminants were statistically significantly associated with the household food security of self-help group members. Similarly, membership in health insurance, availability of electrical appliances, and ownership of ornaments were statistically significantly associated with the household food security of non-organized households. In conclusion, the finding revealed that households organized in self-help groups have a higher number of food security determinants than non-organized households. The finding suggests that the activities of the self-help group approach increased the size of food security determinants. This implies that, by empowering the most marginalized women, the approach paves the avenue for sustainable development opportunities.

**Keywords:** Self-Help Group, Self-Help Group Approach, women, sustainable development, food security, determinants

## INTRODUCTION

### Background to Global Hunger and Food Insecurity

Among the seventeen Sustainable Development Goals for 2030, attaining zero hunger, food security, and advanced nutrition is worth mentioning (UN, 2015). However, food security has remained a global concern even after eight years of the implementation of the plan. While it can be defined as a situation when all people have physical, economic, and social access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences at all times to live active and healthy lives (FAO, 1996), attaining the required level of food security has remained a challenge. IFPRI, Concern Worldwide and Welthungerhilfe (2017) and Welthungerhilfe and Concern Worldwide (2018–2022) reports clearly indicate that child wasting, child stunting, and child mortality in Ethiopia is at alarming levels (Fig, 1).

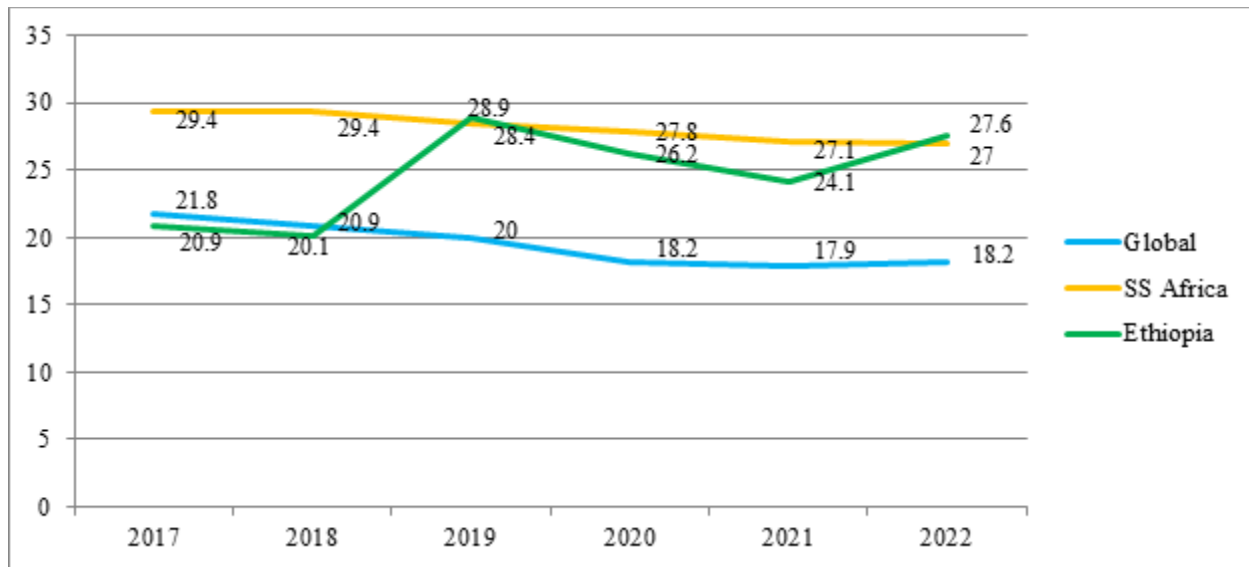


Figure 1: Six Years Trends in GHI

Sources: IFPRI, et al. (2017) and Welthungerhilfe and Concern Worldwide (2018-2022) reports

The same report revealed that in Africa, countries like the Democratic Republic of the Congo, Burundi, Somalia, South Sudan, Libya, Chad, the Central African Republic, and Madagascar were the most hunger-affected countries in the past six reporting years. FAO (2017) reported that the prevalence of food insecurity in Sub-Saharan Africa and Eastern Africa stood at 26 and 28 percent, based on 2016 data. Generally, progress toward the 2030 goal of ending hunger is challenged by multiple factors. According to Welthungerhilfe and Concern Worldwide (2021), Ethiopia is one of the African countries (such as South Sudan, Nigeria, Somalia, and the Central Republic of Africa) that are experiencing the most severe hunger situation in the reporting year. The drivers of the hunger crisis are too many and context-specific. Sources such as FAO, ECA, and AUC (2021) have noted the unaffordability of healthy diets and economic slowdowns and downturns as critical drivers of hunger that amplify the negative impacts of violent conflict, drought, and climate change. Other reports further listed Inequality, climate change, covid-19 pandemic, conflict, war, forced displacement, migration and inappropriate policies, and inadequate resource allocation as the main causes of hunger, extreme poverty, and food insecurity (IFPRI, Welthungerhilfe, and Concern Worldwide, 2017-2022). It is also important to understand that such global, continental, and regional reports can obscure the ground realities, and worst conditions can be expected at household and individual levels. The implication is that countries like Ethiopia and their most vulnerable community groups, such as women and children,

would experience the worst scenarios. Furthermore, the reports are indicative of the fate of the next generations as the hunger indices are constructed from undernourishment, child wasting, child stunting, and child mortality that show the negative impact of the hunger situation on children's physical, mental, cognitive, and emotional development.

### **Sustainable Development and the Concept of Sustainability**

Development can be defined from social, economic and environmental perspectives and conceived as people-centered, participatory and bottom-up endeavor that stimulate the social, economic, cultural and political lives of people (Schafer, Haslam, & Beaudet, 2011). According to UN (1987), all human beings have the right to development and everyone has the right to participate in, contribute to and enjoy economic, social, cultural and political development outcomes. Furthermore, Todaro and Smith (2015) assert that development encompasses social, cultural, political, economic and psychological advancements and denounce the definition of development using economic indicators. On the other hand, Enders and Remig (2015) noted that sustainable development centers on human development, encompasses inter-generational and intra-generational justice, considers global outlooks and pays attention to the conservation of nature. The same source shines on the necessity of talking about sustainable development within human rights<sup>1</sup> lens as mutually reinforcing and conditioning components.

Similar to sustainable development, sustainable livelihood is high in the global agenda (Srinivas, 2021) and is one of the terms being used in development studies. Given the possible variations among writers', Chambers and Conway (1991), Scoones (2009), Valdés-Rodríguez and Pérez-Vázquez (2011) explained sustainable livelihoods as a combined effort and outcome of capabilities, assets and activities required for a means of living that can cope with and recover from stress and shocks that provide sustainable opportunities for future generations across the globe.

While Adato and Meinzen-Dick (2002) have listed human, social, financial, natural and physical livelihood assets, FHI 360 (2014) has included political asset as the sixth component. In a similar fashion, the concept of empowerment centers itself on reducing, at best removing, inequalities of all kinds and Ghanghas (2018) has explained empowerment as a growing economic, social and spiritual capability of individuals and communities. For some scholars (like Mandal, 2013), the concept of empowerment has replaced the term 'development' in the present day discourse. As Mokta (2014), empowerment can be cognitive, psychological, economic, political, and physical.

### **Overview of Household Food Security Determinants**

Household food security determinants are too many, culture-sensitive, and natural, acquired, and change over time and space. According to FHI 360 (2014), household food security determinants can be classified as human, physical, social, financial, natural, and political assets. The same source has noted that each domain is composed of several elements that are suitable for intervention and measurement. Household food security determinants would have a positive or negative influence depending on the geographic, socio-cultural, political, economic, and other contexts of the study population.

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<sup>1</sup> Fundamental human rights issues would include freedom from discrimination, injustice, and threats to personal security. It would also mean the freedom of participation, the realization of individual potential, and decent work without exploitation (UNDP, 2000).

Food security determinants at global and continental/regional levels: FAO (2017) reported that in Africa, Sub-Saharan, and Eastern Africa, food insecurity drivers include conflict, climate change, and variability. In the rural context where agricultural activities are typical sources of household income and the mainstay of household food security, Osarfo, Senadza, and Nketiah-Amponsah (2016) have noted that non-farm economic activities in South-East Asia and Northern Ghana are crucial sources of income and household food security. The study has indicated that diversifying household income through farm and nonfarm economic activities increases employment, household income, and, indirectly, agricultural production and productivity. The findings of Mutiah and Istiqomah (2017) revealed that the educational level of the household head and household income have positive associations with food security while family size has a negative effect on household food security in rural Indonesia while age was found as having no significant role on food security in urban Indonesia. Dagnaygebaw (2019) has also noted that causes of food insecurity in Africa and other third-world nations include natural factors like drought, extreme weather events, pests, livestock diseases and climate change and human-induced such as conflicts, political instability, corruption, rapid population growth, and aid dependence.

Food security determinants in the Ethiopia context: In Ethiopia, several studies have identified several explanatory variables that influence household food security. For example, Mequanent, Birara, and Tesfalem (2014) have identified the educational level of the head of the household, household size, dependency ratio, use of agricultural input, and number of oxen the household owned as important household food security determinants in rural Ethiopia. Furthermore, food insecurity is more prevalent in rural Ethiopia than in urban settings (Mequanent, et al., 2014; Wondim, Kefale, Genenew, & Belete, 2022). Other studies indicated that poor soil fertility, shortage of land, drought, farmland degradation, frost attack, low cash income, poor agricultural technologies, inadequate agricultural extension services, low labor productivity, and poor social and/or infrastructure are household food security barriers (Dagnaygebaw, 2019; Mequanent, et al., 2014; Tewodros & Fikadu, 2014). These same sources indicated that borrowing from village money lenders, failure to use loans for investment alone, selling crops immediately after harvest, livestock renting out, and disintegrated farming system, high food price, unpredictable and untimely safety net support, a lack of training opportunities, and lack of confidence are significantly affecting household food security in some parts of rural Ethiopia. Tewodros and Fikadu (2014) have further identified off-farm income, access to food aid programs, and the number of contacts with agricultural extension workers as important household food security promoters in rural Ethiopia.

In urban Ethiopia, drivers that positively influence household food security include the educational status of the household head, household income from different sources like gifts and remittances, household income, and ownership of a bank account, while variables like age and household size negatively influence household food security (Ejigayhu & Abdi-Khalil, 2013).

In addition to their diversity in type, similar types of household food security determinants do not influence household food security in the same direction or with the same strength. For instance, Mequanent, et al. (2014) argued that, as the age of the household head increases, the probability of the household falling into the food secure category increases, while Dagnaygebaw (2019) has found a negative relationship between age and household food security. The issue would be the

extent to which the characteristics of some of the variables such as age and household size were elaborated in the study process so that confounding and lurking variables are fully addressed during the construction of data collection tools and data analysis stages. For example, one can gain experience with increasing age. In such cases, there would be a positive relationship between the productive age group and household food security while this may not continue as productivity would deteriorate with aging because of losses of energy and motivation. Similarly, dependency ratio and household food security can demonstrate a better correlation than household size and household food security. If the largest proportion of the household members is active and productively engaged in economic activities, then, a positive association is expected between household size and food security, otherwise not.

### **The Self-Help Group Approach in Ethiopia**

In order to address the root causes of hunger, food insecurity, and other forms of vulnerability, development practitioners design and roll out different intervention models. The Self-Help Group Approach (SHGA) is one such model. Furthermore, there are studies that identify the roles of different empowerment approaches, such as SHGA and other savings and credit groups, in household food security.

Savings and credit groups are among the grassroots community-based organizations that provide special attention to saving and credit services for their members. The shared belief of the approach is that lack of savings and inability to access affordable credit services are among the fundamental drivers of human misery. Multiple saving groups can operate in a given country or locality, following their own purposes and principles. The Rotating Saving and Credit Association can be considered one of the oldest and most common types of such groups. Its members can be neighboring women and men (mixed) or family members, members pool a fixed amount of saving within the agreed cycle of time and all members take the sum of money they saved turn-by-turn using the lottery method. Alternatively, bid and decision methods can be applied in the group (Saqib, Ahmad, & Nazir, 2017). This resembles Ethiopia's centuries-old *Iqub* method (ILO, 2009). Saving and Internal Lending Communities is the other form of saving group (15-30 persons) which provides saving and internal lending services (3-6 months) for its self-selected members. One life cycle could be 8-12 months. For this cycle, the field agent is assigned by the promoting organization that can be certified as Private Service Provider afterward. The maximum amount of loan a member can get is equal to the amount of money a member has saved. By the end of the cycle, group members can share-out their savings and profit accrued from interest (CRS, 2010, 2012 & 2019). Saving and Credit Cooperatives are another form of saving group providing saving, credit, and insurance services for its members. Conceived in 1846 in Germany, the society primarily aims at meeting the saving and credit needs of its members. They can also grow into formal banks (Getachew, 2006). In addition to members' savings, they can take loans from formal financial sources for their members. Members are often mixed and unlimited in number. They can be formally recognized as cooperative societies, affiliated with the government (Mekonnen, 2021; Pasara, Makochekeanwa, & Dunga, 2021), or remain independent (Getachew, 2006). *Iqub* is an informal financial institution in Ethiopia where lottery and auction methods are applicable, depending on members' agreement, for a member to get the sum of money she or he saved. In *Iqub*, members share the premium amount of savings and the sum of money they saved when their turn comes.

Started in 1991 in Niger, the Village Saving and Loan Association is an association of 10–25 self-selected mixed members who want to create complementary credit access for the members who may or may not have access to formal financial intermediaries due to various reasons. Saving (which is in the form of the share-purchase system) and interest-bearing credit services are time-bound (9-12 months). By the end of the term, there is a share-out which would lead to group liquidation. Members have the right to loan accession that amounts to a maximum of threefold of their savings. Loan terms range from 12 to 26 weeks. Meetings of the association are regular for the first cycle (9-12 months) and meeting frequency may reduce afterward. Following the end of the first cycle, new members may join, founding members may leave, or the group may disintegrate. Field officers assist members to organize themselves, enhancing awareness, and building self-confidence and their resources (Allen & Staehle, 2007; VSL Associates Ltd, 2022). Village Economic and Social Association, on the other hand, is a group of Productive Safety Net Program beneficiaries in Ethiopia that aim at assisting and empowering the members to develop a saving culture and get access to credit services from their savings. They have facilitators and thrive on graduating members from the productive safety net program. It focuses on financial literacy, women empowerment, nutrition, livelihoods, aspirations, and graduation readiness (Zegeye et al., 2018).

The SHGA takes a slightly different approach to saving groups and an increasingly holistic approach to women's empowerment. The theoretical background of self-help, which is the focus of this study, traces back to the 1920s humanistic psychology. Humanistic psychology believes that individuals have an inherent drive towards self-actualization, the process of comprehending and expressing their own competencies and motivations. It believes that human beings have the ability to make choices, set goals to pursue, are aware that they can create future events, and seek meaning, value, and creativity. A very good facilitator is required as a change engine within this theoretical framework. A very good facilitator is one who is flexible, considers learning a changing experience, and allows others to observe, think, and react the way they do. They can assist people in becoming self-aware and mindful, thereby changing their state of mind from a set of reactions to healthier and more productive self-awareness and thoughtful actions. The theory further ascertains that a person has the capacity to help him or herself if her or his thinking is reoriented positively. For this reorientation, a trained therapist who unconditionally accepts the person in a problematic situation is necessary (Bland & DeRobertis, 2019). Ranjithab (2016) and Sail and Kumbharjuvenkar (2013) wrote that SHG is an important tool for the social, economic, political, and cultural empowerment of marginalized women, thereby emancipating them from cultural and traditional beliefs that disproportionately drag, harm, and disempower them.

Globally, there are scientific shreds of evidence that show the significance of the SHGA for the psychological, social, and economic empowerment of the excluded community members and, thereby, their household food security (Atieno, 2017; Biscaye, True, Clark, Gaas, 2019; Borkman, 1976; Das, 2016; Harris, Anderson, & Gugerty, 2014; Kumar, et al., 2018; Rathinam & Akudugu, 2014; Sundaram, 2012). Specifically, organizing poor women in SHGs has significant implications for gender equality, women's asset acquisition, investment in children's education and health, domestic saving and investment, improved household living conditions, members' primary and reproductive healthcare, agricultural productivity, women's decision-making power, subjective wellbeing, and autonomy (Atieno, 2017; Rawat, 2014; Seibel, 2001; Shirisha, Devi, & Devi, 2017; Swamy & Tulasimala, 2010).

Since the 1980s, Ethiopia has been adapting the concepts and principles of SHGA to initiate and advance the participation and benefits of poor community groups in the name of "*Ras Agez* (a local phrase equivalent to self-help). Nevertheless, it was not able to continue the implementation of the 1980s SHGA initiative, learn from it, and adapt it to its national and local contexts due to unknown reasons (Gebre, 2015). On the other hand, the two decades (1995 and 2015/6) of economic growth registered in Ethiopia were less beneficial for the poorest sections of the rural and urban communities due to the less inclusive and aid-driven nature of the development pathways followed (Planning and Development Commission, 2018). The SHGA was re-introduced into Ethiopia in 2002 as alternative women's empowerment, gender equality, and poverty reduction approach from India through the initiatives of civil society organizations. The features and principles of the SHGA that this research explored include SHGs comprised of 15-20 members whose objectives and basic activities are to socio-economically empower the members through organizing regular meetings, mobilizing regular optional amounts of savings, internal lending, exposure visits, and capacity development pieces of training. Later, SHGs form the next structure called Cluster Level Associations, which are responsible for forming new groups, strengthening their members, initiating community-wide development activities, and facilitating institutional linkage. Gradually, SHGs form their Federation as their representative body.

### **Statement of the Problem and the Study Objective**

Although the number of destitute women organized in SHGA, the amount of saving, internal lending, the number of new jobs created for themselves, family members, and others, and the geographic coverage where SHGA is being implemented in Ethiopia are all growing (CoSAP, 2017; DAG, 2014; Gebre, 2015; ODI, 2016; Tearfund, 2015), the researcher was not able to find scientific research that has explored the determinants of food security among households organized in SHGs and non-organized households in Ethiopia in general and in the study area socio-economic context in particular. On the other hand, the principal researcher is one of the pioneering SHGA experts in Ethiopia with extensive national and international exposure since 2002, as well as an expert who conducted various evaluative studies, developed training materials, and engaged in advisory work in the field. Such exposures helped the researcher observe the contributions of the SHGA to household income and women's empowerment and its challenges in scaling up and institutionalizing the approach in Ethiopia. Hence, these reasons necessitate this study with the objective of investigating the determinants of food security among households organized and non-organized in the SHGs in Ethiopia, with a particular focus on Debre-Markos City and Gozamin district. Accordingly, the research question that the paper attempts to address is: *What are the factors that determine the food security status of households' organized and non-organized in self-help groups?*

### **CONCEPTUAL AND ANALYTICAL FRAMEWORK**

According to Bland and DeRobertis (2019), human beings are conscious, goal-oriented, search for meaning, are able to select responsibly and supersede the sum of their parts. KNH (2014) has elaborated that if poor, vulnerable, and voiceless individuals are organized into homogenous groups, they can gain incredible strengths, become aware of their rights, and claim them. It is believed that organizing the poor, vulnerable, powerless, and voiceless into homogenous groups and assisting them to analyze their individual, sociocultural, physical, natural, economic, and political contexts can help them gain impetus toward food security. These premises are theorized as household food security determinants (Fig. 2).

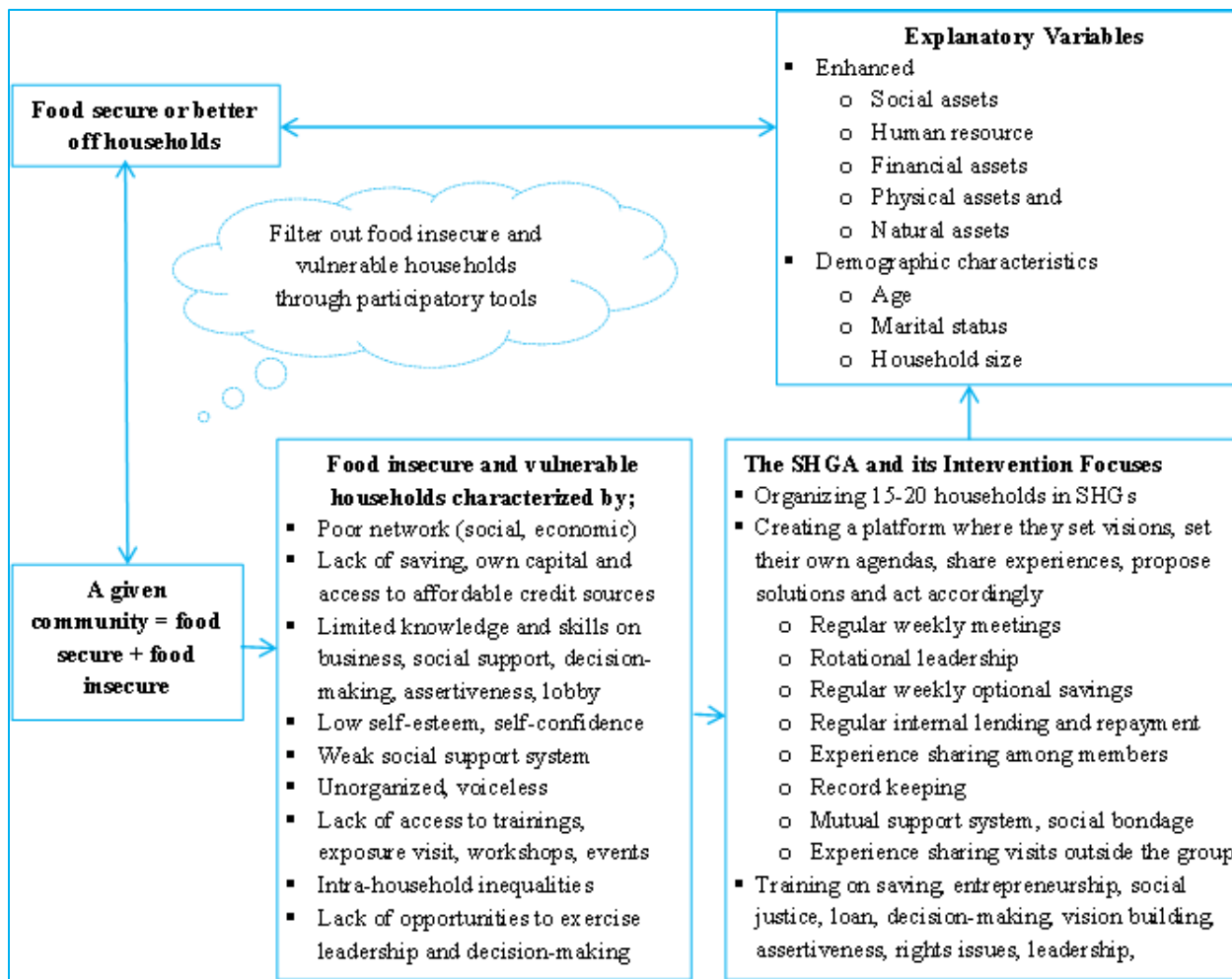


Figure 2: Conceptual and analytical framework for household food security determinants

Based on this conceptual and analytical framework, the food security determinants of households organized in SHGs include the five selected livelihood assets (i.e., human, financial, social, physical, and natural), demographic characteristics (such as age, marital status, and household size), and place of residence. The activities of the SHGA, such as pieces of training, regular meetings, rotational leadership, savings and access to internal lending, participation in the social support system, acquisition of physical and natural assets (enhanced purchasing power), control over resources, and making investment decisions, positively influence these livelihood assets. The assignment of trained facilitators is also at the center of the approach. These supports lead to intermediate outcomes such as SHG members' enhanced awareness about the self, social, economic, and political environments; a strengthened social support system; a developed culture of regular saving and capital formation; better entrepreneurship skills; access to affordable loans (from internal sources); women's meaningful participation and engagement in economic activities; improved household income; and asset ownership and decision-making.



## DESCRIPTION OF THE STUDY AREA

The study was conducted in Debre-Markos City and the rural Gozamin district of Ethiopia, Amhara Regional State. Amhara Regional State has 12 zones and six regio-politan cities. The population of the region is 22,876,999, and East Gojjam is populated by about 2,779,013 (12%) people. The population of Debre-Markos City and rural Gozamin district was estimated at 179,041 and 142,173, respectively (Amhara Regional State Finance and Economic Cooperation Bureau, 2021). The region, Debre-Markos City, and Gozamin district were selected for this study purposefully because 1) the SHGA was started in 2003 so that the study can show the impact of the SHGA on household food security, and 2) the author has been closely supporting the SHGA in these areas so that he can benefit from his work relationship with regional, zonal, and local administrations and other SHGA-promoting non-governmental organizations and financial intermediaries in the data collection process.

Abebaw (2017) wrote that Debre-Markos City is located in the northwestern part of Ethiopia, 300 km from Addis Ababa. The city serves as a seat for the East Gojjam zone, Debre-Markos city municipality, and Gozamin district administrations. It is located at  $10^{\circ}17'00''$  to  $10^{\circ}21'30''$  N latitudes and  $37^{\circ}42'00''$  to  $37^{\circ}45'30''$  E longitudes, with an elevation of 2350–2500 m.a.s.l. Sinan, Awabel, Aneded, Baso Liben, Debre Elias, and Machakel rural districts and the Abay River border the Gozamin district. Gozamin district circumscribes Debre-Markos city. It has 22 rural and 5 semi-urban Kebeles, from which the SHGA was implemented in seven Kebeles. The map of the study areas is presented in Fig. 3.

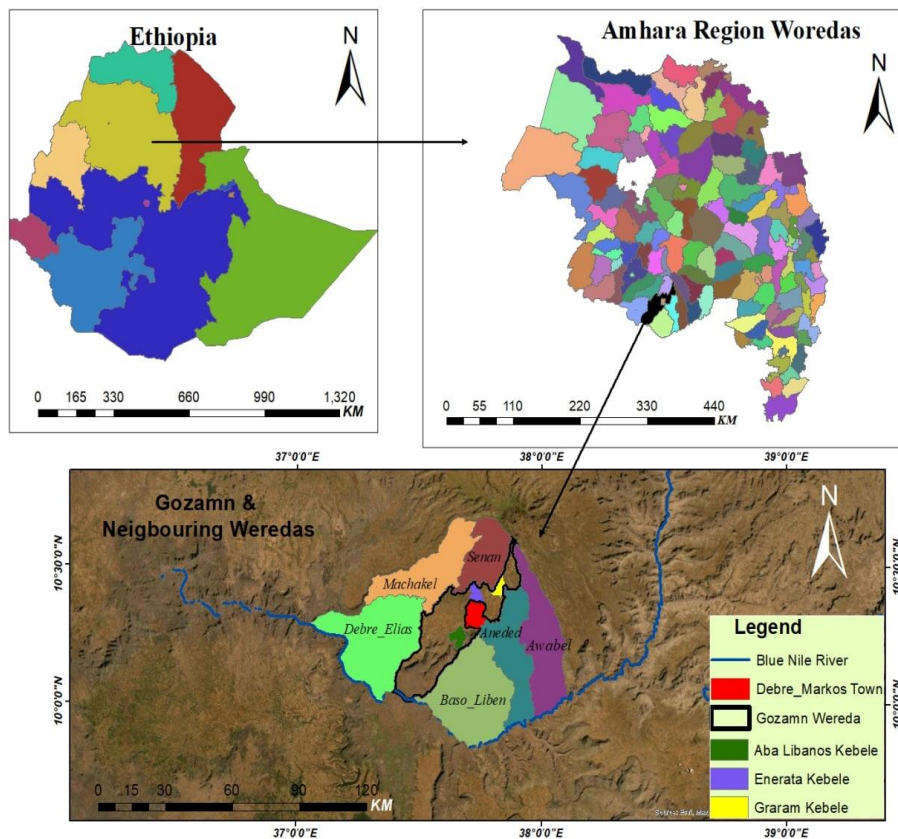


Figure 3: Map of the study areas (source: Ethio-GIS, 2007)

## METHODS AND MATERIALS

### Research Design and Approach

The study adopted a concurrent mixed research design that enabled both quantitative and qualitative datasets to be readily available at the same time for data triangulation.

#### Sample Size Determination and Sampling Techniques

The research relied on Lemeshow, Hosmer, Klar, and Lwanga (1990) two-independent sample determination formula because two independent samples from two independent study populations were considered for the study.

$$n_i = \frac{\{p_1(1-p_1) + p_2(1-p_2)\}(Z/E)^2}{\dots} \quad (1)$$

Where

- $n_i$  is the required sample size
- $p_1$  and  $p_2$  are proportions of successes of the groups
- $Z$  is the desired confidence level (1.96)
- $E$  is the margin of error (7.07%) and  $P_1=P_2=0.5$

Based on equation (1),  $n = ((0.5*(1-0.5) + 0.5*(1-0.5))*(1.96/0.0707)^2) = 0.5*768 = \mathbf{384}$

A contingency sample size was considered for this study based on the WHO (2012) non-response rate formula (estimated at 27%). This consideration led to the formula and sample size obtained in Equation 2.

$$\text{Final sample (N)} = \frac{N_i}{1 - \text{NRR}^1} = \frac{384}{1 - 0.27} = 488 \quad (2)$$

For validity and reliability reasons, the sample sizes were made equal across rural and urban residents and SHG and non-SHG respondents ( $488/2 = 122$ ). A random sampling design was employed to select the three Kebeles from the six Kebeles of Debre-Markos City and the three other Kebeles from the seven SHGA intervention Kebeles of the Gozamin district. The numbers of SHG members in the three randomly selected Kebeles (i.e., Kebele 02, 04, and 07) of Debre-Markos City and Gozamin district (i.e., Aba Libanos, Enerata, and Giraram) were 476 and 515, respectively. On the other hand, CLA and Federation leaders were able to identify 185 non-SHG women in Debre-Markos city and 209 women in the Gozamin district. From these two categories of sampling frames, 247 SHG and 245 non-SHG community members were randomly drawn for the study. Accordingly, 246 urban and 246 rural residents, 247 SHG members, and 245 non-SHG members were the samples for this study. In addition, key informants were identified and selected purposefully in order to get the most relevant and in-depth information about the SHGA, its contributions to household food security, and determinant factors. Focus group discussions were also organized from SHG and non-SHG community representatives.

### Data Sources and Data Collection Methods

Extensive secondary sources in the fields of food security, food security determinants, and the features of SHGA were reviewed. These reviews helped to draw the conceptual and analytical framework, construct pertinent data collection instruments, select robust data analysis techniques, and interpret and analyze statistical findings. Furthermore, socio-demographic, household food security, and food security determinant-related data were collected from 492 respondents (247 SHG members and 245 non-SHG members). Data on household food security, food security determinants, and socio-demographic characteristics of study respondents were collected through a structured household survey questionnaire that was piloted and translated into the local language. Six Focus Group Discussions (FGDs) and 15 Key Informant Interviews (KII) were also conducted.

## Data Analysis

The household food security status of the study households was measured by the Household Food Insecurity Access Scale (HFIAS), which was re-coded as a dichotomous response variable (0=food insecure and 1=food secure). As per Coates, Swindale and Bilinsky (2007), HFIAS measures household food insecurity from the access dimension. The survey tool captured the anxiety of women in terms of their perceptions of the sufficiency of the amount and quality of food they access, prepare, and serve their families. It has nine occurrence and nine frequency-of-occurrence standard questions. The calculations, meanings, and interpretations of HFIAS are adopted from Coates, et al. (2007). Based on the dichotomous response variable, survey data were analyzed using binary logistic regression. According to Gujarati (1995), the binary logistic regression model can be represented as:

$$\text{Li-In}(\pi/(1-\pi))=\beta_0+\beta_i X_i \quad \text{-----} \quad (3)$$

Where  $\pi$  = the probability that  $Y = 0$  (that a given household is not food secured);

$1-\pi$  = the probability that  $Y = 1$  (that given household is food secured);

Li = the natural log of the odds ratio or logit;

$\beta_0$  = the intercept or the value of the log odds ratio,  $\pi/(1-\pi)$  when explanatory variable is zero;

$\beta_i$  = the slope that measures the change in L (logit) for a unit change in explanatory variables ( $X_i$ );

$X_i$ =lists of explanatory variables included in the study.

Before running the binary logistic regression, multicollinearity among the independent variables was checked, and there was no multicollinearity. Following this, omnibus tests of model coefficients, Hosmer and Lemeshow tests, and a contingency table for Hosmer and Lemeshow test were used to check the goodness of fit of the model. All have demonstrated that the model significantly describes the data; significant improvements in the model fit were observed after the predictor variables were added to it as compared to the null model; and the contingency table shows a fairly equal distribution among the expected and observed frequencies. The model explained 77.2% (Nagelkerke  $R^2$ ) and 67% (Nagelkerke  $R^2$ ) of the variance in the dependent variable of SHG and non-SHG respondents, respectively. It has also correctly classified 97.2% and 87.4% of the SHG members and non-SHG respondents, respectively. In this same table, the sensitivity (true positive rate) was 99.5% and 93.5% for SHG and non-SHG respondent categories, respectively. Furthermore, the model was statistically significant at  $\chi^2 (36, N = 247) = 139.13, p < .001$  for the SHG members and  $\chi^2 (36, N = 245) = 104.21, p < .001$  for the non-SHG respondents, suggesting that the model could distinguish between households that were food secure and not food secure.

## RESULTS AND DISCUSSIONS

The predictor variables included in the study were demographic variables such as age, marital status, and place of residence (Ejigayehu & Abdi-Khalil, 2013; Mequanent, et al., 2014; Wondim, et al., 2022) and livelihood assets like social, human, financial, physical, and natural resources (FHI 360, 2014). Descriptive statistics, the chi-square test, and binary logistic regression were used to analyze the data (outputs are presented in Tables 1 and 2, respectively).

### Socio-Demographic Characteristics of the Research Participants

Among the study participants, 43 (8.7%) were youth (i.e., 24-29 years old), and the remaining 449 (91.3%) were adults (30-49 years old), as shown in Table 1.

Table 1: Age, household size and marital status of the study respondents

Proportion	Age				Average family size		Marital status				Literacy rate	
	SHG members		Non-SHG		SHG	Non-SHG	SHG member		Non-SHG		SHG	Non-SHG
	Youth	Adult	Youth	Adult			Married	Others	Married	Others		
Number	11	236	32	213	3.7	3.8	146	101	138	107	161	133
Percent	4.45	95.55	13.06	86.94	-	-	59.12	40.89	56.33	43.67	65.2	54.3

Source: Survey data, Nov-Dec/2021

The average household size of the study respondents was 3.7 people. SHG and non-SHG respondents had similar household size (3.7 and 3.8, respectively). On average, about 57.7% of the respondents were married, whereas 42.3% were divorced (18.1%), widowed (18.5%), separated (3%), and never married (2.6%). A higher proportion of SHG members (59%) were married as compared to non-SHG respondents (56%). As indicated in Table 4, the proportion of married women was greater in rural areas  $((92+77)/246*100 = 68.7\%)$  than in urban areas  $((54+61)/246*100 = 46.7\%)$ . This indicates that a larger proportion of urban residents had double burdens as single mothers than the rural respondents.

Table 2: Marital, educational and health statuses of respondents

Residence	Unit	Marital status				Educational status				Respondents with disability (PWD)	
		Married		Others		Illiterate		Literate			
		SHG	Non-SHG	SHG	Non-SHG	SHG	Non-SHG	SHG	Non-SHG	SHG	Non-SHG
Rural	#	92	77	31	46	52	75	71	48	6	3
	%	74.8	62.6	25.2	37.4	42.3	61.0	57.7	39.0	4.9	2.4
Urban	#	54	61	70	61	34	37	90	85	5	3
	%	43.5	50	56.5	50	27.4	30.3	72.6	69.7	4.0	2.5
Total	#	146	138	101	107	86	112	161	133	11	6
	%	59.1	56.3	40.9	43.7	34.8	45.7	65.2	54.3	4.5	2.4

Source: Own survey, Nov-Dec/2021

The proportion of literate SHG members was 65.2%, and the proportion of non-SHG respondents was 54.3%. On average, however, about 60% (N = 492) of the respondents had some form of education, while 40% were illiterates who were unable to read, write, or compute basic arithmetic. Similarly, about 71% of the urban respondents (n = 246) were literate as compared to 48.4% of the rural respondents (n = 246). In terms of disability, 17 (3.5%) of the respondents had difficulty walking, holding materials, or hearing. A higher proportion of the SHG members (4.5%) had disabilities as compared to the non-SHG respondents (2.4%).

### Findings on Household Food Security Determinants

The binary logistics regression model was applied to examine whether or not the independent variables were associated with the likelihood of household food security (Table 3). Thirty-six independent variables that were supposed to have effects on household food security in the study area were included in the model. Among them, 13 variables (i.e., place of residence, age, marital status, educational status, family health, membership of community health insurance, training on business plan preparation, income-generating activities, business record keeping, harmful traditional practices, gender equality, and access to a loan for consumption, SHG membership, and ownership of small ruminants) were statistically significant determinants of food security for SHG members.

Table 3 Logistics Regression Output for Household Food Security Determinants

Predictor variables	SHGs									Non-SHG								
	B	S.E	Wald	Df	p	OR	95% CI-OR		B	S.E	Wald	df	p	OR	95% CI-OR			
							LL	UL							LL	UL		
Place of residence(1)	-5.94	2.49	5.72	1	0.017	0.003	0.00	0.34	-3.81	1.74	4.81	1	0.028	0.022	0.00	0.67		
How old are you?	0.32	0.16	4.23	1	0.040	1.379	1.02	1.87	-0.15	0.06	5.49	1	0.019	0.860	0.76	0.98		
What is your marital status?(1)	.541	.212	6.526	1	0.011	.719	1.13	2.60	0.36	0.77	0.21	1	0.645	1.429	0.31	6.52		
What is your educational status?	1.34	0.58	5.32	1	0.021	3.826	1.22	11.9	-0.13	0.31	0.19	1	0.663	0.874	0.48	1.60		
HHS_ALL	-0.47	0.39	1.48	1	0.224	0.623	0.29	1.34	0.12	0.26	0.20	1	0.654	1.122	0.68	1.86		
In the past one year (2013 EC), was there any sick person from the family?(1)	-3.38	1.35	6.23	1	0.013	0.034	.002	0.48	0.45	0.91	0.24	1	0.622	1.565	0.26	9.26		
Are you (and your family) a member of community health insurance?(1)	3.25	1.23	6.99	1	0.008	25.86	2.32	288	1.82	0.86	4.54	1	0.033	6.194	1.16	33.17		
Are you a member of Idir, Mahber and other social groups and networks?(1)	3.48	2.90	1.44	1	0.231	32.385	0.11	954	0.48	1.14	0.18	1	0.675	1.616	0.17	15.27		
Are you a member of Iqub, SACCO/RuSACCO and other economic groups and networks?(1)	-0.69	1.28	0.29	1	0.591	0.502	0.04	6.17	-0.27	0.97	0.08	1	0.780	0.763	0.11	5.09		
Are you a member of Kebele women leagues, association and other gender-based groups?(1)	1.18	1.49	0.63	1	0.428	3.262	0.18	60.7	0.94	0.99	0.89	1	0.345	2.565	0.36	18.12		
Do you have regular meetings with group and association members, friends, peers?(1)	-2.99	1.74	2.98	1	0.084	0.050	.002	1.49	0.95	0.82	1.34	1	0.247	2.587	0.52	12.93		
Have you ever led a meeting/workshop?(1)	-1.34	1.20	1.25	1	0.264	0.261	0.03	2.75	0.58	1.26	0.21	1	0.644	1.789	0.15	21.06		
Are you trained on saving and loan management?(1)	-2.58	1.71	2.29	1	0.131	0.076	.003	2.15	-1.9	1.26	2.32	1	0.127	0.147	0.01	1.73		
Are you trained on business plan, IGA?(1)	5.85	2.68	4.76	1	0.029	347.2	1.81	665	2.11	1.47	2.05	1	0.152	8.241	0.46	147.6		
Are you trained on recording businesses?(1)	-7.89	3.18	6.18	1	0.013	0.000	0.00	0.19	-0.9	1.08	0.62	1	0.430	0.426	0.05	3.54		
Are you trained on HTP and GE?(1)	8.76	3.42	6.57	1	0.010	6399	7.86	523	-1.4	1.09	1.64	1	0.200	0.246	0.03	2.09		
Are you trained on vision & goal setting?(1)	-2.05	2.00	1.05	1	0.306	0.128	.003	6.52	1.21	0.86	1.98	1	0.159	3.353	0.62	18.05		
For how many days have you participated in trainings other than your members meeting?	0.001	0.06	0.00	1	0.987	1.001	0.88	1.13	-0.2	0.26	0.71	1	0.400	0.806	0.49	1.33		
Did you borrow money for HH consumption?(1)	-2.88	1.45	3.95	1	0.047	0.056	.003	0.96	-2.2	1.46	2.27	1	0.132	0.111	0.01	1.94		
Did you borrow money to invest on IGAs?(1)	-2.63	2.85	0.85	1	0.355	0.072	.000	19.1	-1.0	1.06	0.95	1	0.329	0.356	0.05	2.84		
Did you borrow from your SHG/Iqub/Idir/SACCO?(1)	3.29	1.45	5.15	1	0.023	26.75	1.56	458	0.46	1.24	0.14	1	0.711	1.584	0.14	18.04		

Predictor variables	SHGs								Non-SHG							
	B	S.E	Wald	Df	p	OR	95% CI-OR		B	S.E	Wald	df	p	OR	95% CI-OR	
							LL	UL							LL	UL
Did you borrow from money lender?(1)	24.05	9732	0.00	1	0.998	27953	.000		1.56	1.39	1.26	1	0.262	4.742	0.31	72.03
Did you borrow from relatives/friends?(1)	-0.23	1.47	0.02	1	0.877	0.797	0.05	14.3	-5.8	1.95	8.96	1	0.003	0.003	0.00	0.13
Did you borrow from microfinance?(1)	0.66	1.22	0.29	1	0.586	1.942	0.18	21.2	-3.2	1.28	6.38	1	0.012	0.040	0.00	0.49
Do you have land?(1)	-1.62	1.96	0.69	1	0.408	0.198	.004	9.19	0.78	1.78	0.19	1	0.662	2.175	0.07	71.28
How many cows and heifers do you have?	-0.32	1.55	0.04	1	0.835	0.723	0.04	15.1	0.09	0.62	0.02	1	0.885	1.094	0.32	3.701
Do you have oxen and male calves?(1)	-0.07	2.09	0.001	1	0.973	0.932	0.02	56.7	-0.2	1.28	0.02	1	0.888	0.834	0.07	10.28
How many equines do you have?	-0.19	1.78	0.012	1	0.912	0.822	0.03	26.7	1.33	1.13	1.39	1	0.238	3.790	0.42	34.64
How many small ruminants like sheep and goat do you and your family has?	0.81	0.41	3.88	1	0.049	2.240	1.00	4.99	0.09	0.32	0.08	1	0.772	1.098	0.59	2.06
How many small animals do you have?	-0.19	0.19	1.004	1	0.316	0.831	0.58	1.19	0.26	0.18	2.13	1	0.145	1.291	0.92	1.82
How many commercial trees like eucalyptuses does your family have?	-0.00	0.001	0.255	1	0.614	0.999	0.99	1.00	0.00	0.00	0.08	1	0.784	1.000	0.99	1.00
Do you have modern/traditional bee-hives?(1)	-0.45	2.20	0.042	1	0.839	0.639	.009	47.7	1.49	1.85	0.65	1	0.421	4.442	0.12	167.3
Do you have appliance like TV, cooker? (1)	0.83	1.28	0.422	1	0.516	2.300	0.19	28.4	3.23	1.09	8.66	1	0.003	25.20	2.94	216.1
Do you have household and agricultural tools and equipment for rent?(1)	0.98	1.44	0.464	1	0.496	2.659	0.16	44.3	-4.6	1.66	7.65	1	0.006	0.010	0.00	0.26
Do you have ear rings, rings, bracelets, necklaces, etc.?(1)	-1.22	1.19	1.04	1	0.308	0.296	0.03	3.08	3.00	1.35	4.99	1	0.026	20.17	1.44	281.6
Do you have mobile phone?(1)	2.41	1.26	3.62	1	0.057	11.09	0.93	132	0.30	0.89	0.12	1	0.732	1.355	0.24	7.73
Constant	-8.08	7.34	1.21	1	0.271	0.000			11.3	4.02	7.86	1	0.005	7842		

a. Variable(s) entered on step 1: Place of residence, How old are you?, What is your marital status?, What is your educational status?, HHS\_ALL, In the past one year (2013 EC), was there any sick person from the family?, Are you (and your family) a member of community health insurance?, Are you a member of Idir, Mahber and other social groups and networks?, Are you a member of Iqub, SACCO/RuSACCO and other economic and business groups and networks?, Are you a member of village or Kebele women associations, leagues, development groups and other gender-based or similar groups and associations?, Do you have regular meetings with group and association members, friends, and/or peers?, Have you ever led a meeting or workshop?, Are you trained on saving culture and loan management?, Are you trained on business plan development, IGA selection and management?, Are you trained on recording business expenses and profits?, Are you trained on harmful practices, child protection and gender equality?, Are you trained on vision building and goal setting?, As far as you remember, for how many days have you participated in short-term trainings other than your membership meeting?, Did you borrow money for HH consumption in the past three years (2011-13 EC)?, Did you borrow money to invest on IGAs in the past three years (2011-2013 EC)?, Did you borrow from your SHG/Iqub/Idir/SACCO?, Did you borrow from village money lender?, Did you borrow from relatives/friends?, Did you borrow from microfinance?, Do you have land?, How many cows and heifers do you have?, Do you have oxen and young male calves for plowing?, How many equines (horses, donkeys, and mules) do you have?, How many small ruminant animals like sheep and goat do you and your family have? We have ----- small animals (like hen, cock, chicken), How many commercial trees like eucalyptus do you and your family have?, Do you have modern/traditional colonies/bee-hives?, Do you have electric appliances like TV, Radio, cookers, Refrigerator?, Do you have household and agricultural tools and equipment for rent?, Do you have ear rings, rings, bracelets, necklaces, etc.? Do you have mobile phone?

Source: Own survey, Nov-Dec/2021

Among those 13 statistically significant household food security determinant factors, age, marital status, educational status, membership in community health insurance, training on business plan preparation, income-generating activities, harmful traditional practices, and gender equality, SHG membership and ownership of small ruminants like sheep and goats were positively associated with the household food security condition of households organized in the SHGs. This means that about 22.2% (8/36) of the variables entered in the model had positive and statistically significant association with food security. For example, the likelihood of the household food security of relatively middle-aged respondents is 1.379 times better than the likelihood of the food security situation of relatively younger and elder respondents ( $\beta = 0.32$ ) at 95% CI-OR 1.02-1.87 ( $p = .046$ ).

In this study, the age range of respondents was 24 to 49 years old. The food security situation of respondents whose ages are between 31 and 36 was 100%, while the food security status of other respondents fluctuated as observed in the chi-square test (Annex 2). This indicates a kind of bell-shaped structure where the food security situation of younger and older respondents is lower than that of middle-aged respondents. Furthermore, the marital status of women organized in the SHGs was found to be a statistically significant determinant of household food security. The OR of 0.719 of marital status tells us that the likelihood of the household food security status of married women was 1.719 times more likely than that of unmarried, divorced, widowed, and/or separated respondents. Similarly, respondents' education status was positively associated with their household food security.

The finding has revealed that educated respondents were 3.826 times more likely to be food secure than illiterate respondents at  $\beta$  1.34, 95% CI-OR 1.22-11.9 ( $p = .021$ ). The prevalence of household food security consistently increases from illiteracy to primary school education (i.e., grades 1-4), shows a slight reduction at junior level education (i.e., grades 5-8), and shoots up at secondary school education levels (i.e., grades 9-12), where 100% of the respondents who attained this grade level were food secure. Hence, there is a general indication that the likelihood of household food security is higher among literate households than the food security situation of respondents with lower levels of education. However, the effect of college and university-level education on household food security was not included in the study because there were no college or university-graduate SHG members who participated in the study. For households that were organized in the SHGs, membership in community health insurance statistically significantly ( $p = .008$ ) determines their household food security at  $\beta = 3.25$  and 95% CI-OR 2.32-288.

It was also found that study participants whose family members were in the community health insurance system was 25.86 times more likely to be food secure than study respondents whose families were not members of the community health insurance system. Furthermore, access to pieces of training on business plan development, business management, and income-generating activities ( $p = .029$ ,  $\beta = 5.85$ , 95% CI-OR 1.81-665) was positively related to the household food security situation of the trained respondents. The study found that the household food security situation of trained respondents was 347.2 times more likely than the food security situation of untrained study participants. Similarly, training on harmful traditional practices, child protection, and gender equality ( $p$

=.010,  $\beta = 8.76$ , 95% CI-OR 7.86–523) was positively related to the household food security situation of the trained respondents. Trained respondents were about 640 times more likely to be food secure than untrained participants. On the other hand, SHG membership and thereby access to business loans from one's group have statistically significantly ( $p = .023$ ) contributed to household food security at  $\beta = 3.29$ , 95% CI-OR 1.56-458. The finding has revealed that respondents who have access to loans from their SHGs are 26.75 times more likely to be food secure than respondents who do not have such credit access. Finally, households that had small ruminants were 2.24 times more likely to be food secure than households without small ruminants at  $\beta = .81$ , 95% CI-OR 1.00-4.99.

However, place of residence, sickness, training on business recording, and access to consumption loans were statistically significantly negatively related to the household food security situation of respondents organized in SHGs. With a  $\beta$  value of -5.94 and OR 0.003 at 95% CI-OR 0.00-0.34, the household food security situation of SHG members ( $p = .017$ ) was inversely related to their urban residence (i.e., living in Debre-Markos City). That means that SHG member households living in urban areas are more likely to be food insecure than households living in rural areas. Alternatively, the study finding can be interpreted as meaning that *the food security status of urban respondents would be 0.003 times less likely as compared to rural respondents*. The chi-square test result has shown that about 95.1% of the rural and 76.6% of the urban respondents organized in the SHGs were food secure. Furthermore, sickness in the family member was negatively associated with household food security ( $\beta = -3.38$ , 95% CI-OR .002-.480) indicating that families with healthy members were 0.034 times more likely to be food secure than families with sick members. This finding can be linked to the effect of community health insurance on household food security status. Hence, there is a positive association between family health, membership in community health insurance, and household food security. On top of this, respondents believe that access to consumption loans was positively associated with household food security ( $p = .047$ ) at  $\beta = -2.88$ , 95% CI-OR .003-.96. They responded that households that had access to consumption loans were 0.056 times less likely to be food secure than households that did not have access to consumption loans. Although the difference seems marginal as the CI-OR does not contain one, the *p-value* is 0.047 and the OR is 0.056; SHG members perceive that consumption is not a good idea for household food security. The chi-square test result has indicated that about 97% of the respondents who did not have access to consumption loans were food secure as compared to 61.5% of the respondents who had access to consumption loans.

With regards to households that were not organized in the SHGs, membership in community health insurance, ownership of electric appliances, and having different ornaments like ear and finger rings were positively associated with their household food security status, whereas the place of residence, age, loans from relatives and friends, loans from microfinance institutions, and rentable agricultural and other materials were negatively related to their household food security status. The finding revealed that about 8.33% (3/36) of the tested variables has positive and statistically significant relationship with household food security of respondents not organized in the SHGs.



Households that were not organized in the SHGs and who are living in urban area (i.e., Debre-Markos City) were 0.022 times less likely to be food secure than rural residents of the same category at  $\beta$  value of -3.81 and 95% CI-OR 0.00-0.67. In other words, non-SHG respondents living in rural areas were 45.45 (1/0.022) times more likely to be food secure than their urban counterparts. Furthermore, when the ages of non-SHG respondents increase, there is a likelihood of decreasing in their household food security situation at  $\beta$  value of -0.15, OR 0.860, and 95% CI-OR 0.76-0.98. Respondents between 24 and 27 years old were 100% food secure, while the food security situation of respondents aged above 27 years old was decreasing, though not consistently.

Furthermore, the household food security status of non-SHG respondents who had access to loans from relatives and friends was 0.003 less likely to be food secure than respondents without loans from relatives and friends at  $\beta$  value of -5.8 and 95% CI-OR 0.00-0.13 (which does not contain one). In addition, non-SHG members who had access to loans from microfinance institutions were 0.040 times less likely to be food secure than households who did not have access to microfinance loans at  $\beta$  -3.2 and 95% CI-OR 0.00-0.49. Finally, non-SHG households that have rentable agricultural and other materials were 0.010 times less likely to be food secure than respondents who have no rentable materials at  $\beta$  -4.6 and 95% CI-OR 0.00-0.26. Here, it is observed that the differences are marginal across all food security determinant variables. To show the marginality of the differences, a chi-square test was run to show the counts and percentages clearly. For example, the chi-square test result shows that households who received loans from friends and relatives were 67.1% food secure as compared to 67.6% of the respondents who did not receive loans from such sources, and only about 56.3% of the respondents who had access to loans from microfinance institutions were food secure as compared to 78.5% of the food secure respondents without loans from microfinance institutions.

Attempts are also made to discuss the findings of this study against previous studies. Previous studies (e.g., Dagnaygebaw, 2019; Ejigayhu & Abdi-Khalil, 2013; Mequanent et al., 2014; Tewodros & Fikadu, 2014) reported that educational status, off-farm income, access to food aid programs, and agricultural extension service were statistically significantly supports household food security, while age was not a statistically significant food security determinant. These same sources have further highlighted that borrowing from village money lenders; consumption loans, a lack of training opportunities, and a lack of self-confidence were the variables that statistically significantly affected food security. Atieno (2017) has also found that SHGA helps people to accumulate household assets, thereby promoting food security. Some of these findings support the findings of the SHG respondents who participated in this study, such as education, access to loans from within the SHG fund, loans for income-generating activities, and training opportunities on selected topics such as entrepreneurship and social aspects of food security like harmful traditional practices, child protection, and gender equality. Similarly, consumption loans were identified as a variable that affects food security negatively in both the reviewed materials and in this study. Nevertheless, food security variables in the previous studies were less congruent with the findings of non-SHG respondents who participated in this study. Perhaps, the reason would be that, as Atieno (2017) has clearly noted, SHGA has brought many food security variables into a basket and tries to address many of the food security bottlenecks, while non-

organized households do not have this privilege. The finding has revealed that the SHGA has not only contributed to the household food security situation, but also to an overarching sustainable development outcomes by empowering the powerless persons, especially women. This is in line with existing sustainable development and human rights' literatures (Adato & Meinzen-Dick, 2002; Scoones, 2009; Srinivas, 2021; Todaro & Smith, 2015). These sources stressed on the contribution of empowering<sup>2</sup> people through various mechanisms to substantially boost sustainable development and ensure human rights issues. Findings from these sources stressed on the importance of reducing, at best removing, inequalities and ensuring inclusiveness as a strategic focus to cultivate sustainable development.

There are also some findings in the reviewed materials that contradict the findings of the current study. For example, we found that urban residence was negatively associated with household food security, while Dagnaygebaw (2019) reported that the prevalence of food insecurity is more severe in rural areas of Ethiopia than in urban places. Finding such contradictory findings among several studies would be common for various reasons. More importantly, the study respondents of this study are households organized and non-organized in the SHGs, while the respondents of many other studies reviewed here are non-organized households, mostly residing in rural areas. Furthermore, the independent variables researchers hypothesized would vary, and so do the findings.

## **CONCLUDING REMARKS**

This paper investigated household food security determinants among households' organized and non-organized in self-help groups in Debre-Markos City and Gozamin district of Ethiopia. Quantitative data were collected from 492 randomly selected respondents (247 self-help group members and 245 non-organized in self-help groups) using a structured household survey. Qualitative data were also collected from purposefully selected key informants and focus group discussants. A relevant body of literature was also reviewed throughout the study. Household Food Insecurity Access Scale, descriptive statistics, chi-square, and binary logistic regression techniques were used to analyze the survey data.

The study finding revealed that the number of household food security determinant variables (eight) of households organized in the SHGs was about 2.7 times more than the number of food security determinants (three) of non-organized households. It also indicated that variables that were statistically significantly associated with food security of organized households were largely accessed through the SHGA. The study finding hints that the education, training and exposure opportunities created by the SHGA have assisted organized households to become well aware about, knowledgeable and skillful in terms of saving, investment, productivity, resource utilization and reduced household level inequality. As a showcase, education, membership in health insurance, training on business skills, gender equality, child protection, harmful practices, and loan accession from self-help groups have significantly supported their food security situation with ORs and  $\beta$ -values greater than one. Similarly, electric appliances and membership in health insurance were statistically significantly associated with the food security of non-organized households with ORs and  $\beta$ -values greater than one. The two study groups have membership in

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<sup>2</sup> Empowerment can have social, cognitive, spiritual, physical, cultural, political, economic and psychological, individual/group capability, assets and activity dimensions while assets would mean human, social, financial, natural, physical and political/governance/decision-making.

health insurance as a common food security determinant, which is an obligation imposed by government so that associating it with trainings and exposures may not appropriate in our context.

The SHGA focuses on the empowerment of women through education, training, and exposure visits supported by practical experiences. Group members attend their literacy programs mainly because they have to record their weekly meeting minutes, financial transactions and write and read correspondence letters. Pieces of training on saving, internal loan management, harmful traditional practices, child protection and gender equality, business development, and management skills are among the topics that are included in the SHGA training manual (KNH, 2014). Such trainings are important financial and non-financial food security components that advance labor productivity, household incomes, participatory household level decision-making, positive attitude on the need for fair, just, and equitable distribution of food items in the household as intra-household inequality is one of the causes of food insecurity (FAO, IFAD, UNICEF, WFP, & WHO, 2019; Gupta & Vegeline, 2016). These findings converge with previous studies (such as Calves, 1976; Huis, Hansen, Otten, & Lensink, 2017) that by empowering and engaging destitute women, a self-help group approach has a clear food security pathway. Therefore, predictors statistically significantly and positively associated with household food security would be the outcomes of the approach where the non-organized respondents did not have at large. Furthermore, the findings of this study strongly support the basic principles of sustainable development. As the self-help group approach entirely focuses on human capital development through expanded access to education, training and exposures combined with economic, social, community-wide, system and environmental level issues, the approach embedded the mechanisms to ensure sustainability of outcomes. Those empowered women and their family, who are daily enjoying their fruits, would not go back to their miserable life. Instead, they prefer to cooperatively fight for their benefits.

In conclusion, the number and magnitude of food security determinants among self-help groups are the outcomes of the approach as many of them are not observed in non-organized households residing in the same vicinities. This suggests that the self-help group approach and its development philosophy have good mechanisms to address individual, socio-economic, and governance-related food security barriers.

Based on the findings, we recommend that development actors focus on human development interventions that can sustainably improve individual, household, and community-wide well-being.

*Data Availability:* We have the structured questionnaire as a data collection tool and the SPSS raw data from which we have extracted the statistics. Such data can be provided if required, but not linked.

*Ethical Approval:* The ethical approval board of the Addis Ababa University, College of Development Studies, and Institutional Review Board (IRB) has approved the study after reviewing the research proposal and its protocols.

*Consent from Study Respondents.* As a social science study, we clearly included the oral consent request in the survey tool and embedded this in the data collection software without which the interviewer could not move on to the next question.

*Consent to Publishing.* As our study respondents cannot read and comprehend English, and as this is not common in academic research, we did not provide the final manuscript for the primary data resources to read and give their consent to publish.

### **Acknowledgements**

We are grateful to all primary data sources in Debre-Markos and Gozamin district for their willingness to participate and for providing all the required data for this research work. God bless you all!

### REFERENCES

- Abebaw Andarge (2017). Monitoring the urban growth of Debre Markos Town (1984-2012), Ethiopia: Using satellite images and GPS, *Journal of Geography and Regional Planning*, 10(4). 69-76. DOI: 10.5897/JGRP2016.0533
- Adato, M. & Meinzen-Dick, R. (2002). *Assessing the impact of agricultural research on poverty using the sustainable livelihood framework*. IFPRI FCND discussion paper No. 128. New York
- Allen, H. & Staehle, M. (2007). *Village Saving and Loan Association: Program Guide-Field Operations Manual*. Version 3.1, November 2007
- Amhara Regional State Finance and Economic Cooperation Bureau (2022). *Population projection based on 2007 Census*. Retrieved on 18 Mar/2023: [https://www.citypopulation.de/en/ethiopia/admin/ET03\\_amhara/](https://www.citypopulation.de/en/ethiopia/admin/ET03_amhara/)
- Atieno, P.O. (2017). Self Help Groups and Household Asset Acquisition and Income among Women Group Members in Kisumu East Sub County, Kenya, *Journal of Education and Practice*. 8(3). 21-27. ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
- Biscaye, P., True, Z., Clark, C., Harris C. K.P., Anderson, L. & Gugerty, M.K. (2014). *Self-Help Groups in Development: A Review of Evidence from South Asia and Sub-Saharan Africa*. Evans school policy analysis and research (EPAR), University of Washington. EPAR Brief No. 283, prepared for the Bill & Melinda Gates Foundation
- Bland, A.M. & DeRobertis, E.M. (2019). Humanistic perspective, V. Zeigler-Hill, T. K. Shackelford (eds.), *Encyclopedia of Personality and Individual Differences*, doi.org/10.1007/978-3-319-28099-8\_1484-2
- Borkman, T. (1976). Experiential Knowledge: A New Concept for the Analysis of Self-Help Groups. *The University of Chicago Press Journal*. 50 (3): 445-456. URL: <https://www.jstor.org/stable/30015384>
- Calves, A. (2009). Empowerment: The History of Key Concept in Contemporary Development Discourse, *Revue Tiers Monde*. 0735(200). 735-749.
- Catholic Relief Service (2010). *Savings & Internal Lending Communities (SILC): Field Agent Guide*. Version 4.1
- Catholic Relief Service (2012). *SILC Innovations: Group Performance in Fee-for-Service Savings Groups*. Research Brief 3.
- Catholic Relief Service (2019). *Savings & Internal Lending Communities (SILC): Field Agent Guide*. Version 5.1, 228 West Lexington Street Baltimore, MD 21201-3443 USA 1.888.277.7575
- Chambers, R. & Conway, Gordon R. (1991). Sustainable rural livelihoods: practical concepts for the 21<sup>st</sup> Century. IDS discussion paper 296. *Institute of Development Studies*. ISBN 0 9037 15 58 9
- Coates, J., Swindale, A. & Bilinsky, P. (2007). *Household Food Insecurity Access Scale (HFIAS) for Measurement of Household Food Access: Indicator Guide* (v. 3), Food and Nutrition Technical Assistant (FANTA).
- Consortium of Self-Help Group Approach Promoters (2017). *Second Strategic Plan and Management Document*, Addis Ababa, Ethiopia.
- Dagnaygebaw Goshme (2019). Food Security in Ethiopia: Review. *International Journal of Research Studies in Agricultural Sciences*, 5 (1): 1-7. DOI: <http://dx.doi.org/10.20431/2454-6224.0501001>

- Das, J. (2016). Role of self-help group in socio-economic change of rural women: A micro level study. *Indian streams research journal*, 6 (1). 1-11. Available online at [www.lbp.world](http://www.lbp.world)
- Development Assistance Group-Ethiopia (2014). *Tracking Trends in Ethiopia's Civil Society Project (TECS): Draft Policy Brief 15. Self Help Groups in Ethiopia: Regularoty Issues and Constraints*. Addis Ababa, Ethiopia.
- Ejigayhu Sisay & Abdi-Khalil Edriss (2013). Determinants of Food Insecurity in Addis Ababa City, Ethiopia. *Journal of Economics and Sustainable Development*. [www.iiste.org](http://www.iiste.org)
- Enders, J.C. & Remig, M. (2015). Theories of sustainable development. *Routledge: Taylor and Francis group* London and New York. ISBN: 978-1-138-79636-2 (hbk) ISBN: 978-1-315-75792-6 (ebk)
- FAO. (1996). World Food Summit, 13-17 November 1996, Report of the World Food Summit, Rome.
- FAO. (2017). Regional Overview of Food Security and Nutrition in Africa 2016. The challenges of building resilience to shocks and stresses. ISBN 978-92-5-109629-1
- FAO, IFAD, UNICEF, WFP, & WHO (2019). The State of Food Security and Nutrition in the World. Safeguarding against economic slowdowns and downturns. License: CC BY-NC-SA 3.0 IGO. Rome.
- FAO, ECA & AUC. (2021). Africa – Regional Overview of Food Security and Nutrition 2021: Statistics and trends. Accra, FAO. <https://doi.org/10.4060/cb7496en>
- FHI 360. (2014). *Livelihood & food security conceptual framework*, Livelihood and Food Security Technical Assistance (LIFT) Project, 1825 Connecticut Avenue NW Washington, DC 20009.
- Gaas, A.O. (2019). Empowering the Poor towards Sustainable Development-A Case Study of Self-Help Group Approach in Somaliland, *Open Journal of Social Science*, 2019, 7, 26-37: DOI: <https://doi.org/10.4236/jss.2019.711003>
- Gebre Yntiso (2015). The Self-Help Groups Approach in Ethiopia: Promising Achievements and Formidable Challenges. *JES Vol XLVIII* (December 2015).
- Getachew Mergia (2006). *Sustainable SACCO Development Training Manual: USAID/Uganda. Rural Savings Promotion & Enhancement of Enterprise Development (Rural SPEED)*
- Ghanghas, A. (2018). Empowerment of women: Concept, policy approach and implication. *International Journal of Law*. 4(1). 36-40. ISSN: 2455-2194. Junjab, India
- Gujarati, D.N. (1995). *Basic Econometrics: 4<sup>th</sup> Edition*, United States Military Academy, New York.
- Gupta, J. & Vegeline, C. (2016). Sustainable development goals and inclusive development, *Springer*.
- Huis, M.A., Hansen, N., Otten, S., & Lensink, R. (2017). A Three-Dimensional Model of Women's Empowerment: Implications in the Field of Microfinance and Future Directions, *Frontiers in Psychology*. 8(1678)
- IFPRI, Concern Worldwide & Welthungerhilfe. (2017). *2017 Global Hunger Index: The Inequalities of Hunger*, Washington DC/Dubblin/Bonn, October 2017
- ILO (2009). *Coop<sup>AFRICA</sup> Working paper No.9. Cooperatives: a path to economic and social empowerment in Ethiopia*. Series on the status of cooperative development in Africa
- KNH. (2014). *The Self-Help Group Approach Manual*, Duisburg, Germany.
- Kumar, N., Scott, S., Menon, P., Kannan, S., Cunningham, K., Tyagi, P., Wable, G., Raghunathan, K. & Quisumbing, A. (2018). Pathways from women's group-based programs to nutrition change in South Asia: A conceptual framework and literature review; *ELSEVIER (14), Global Food Security* 17 (2018) 172-185. DOI: <https://doi.org/10.1016/j.gfs.2017.11.002>
- Lemeshow, St., Hosmer, D.W., Klar, J., & Lwanga, St.K. (1990). Adequacy of sample sizes in health studies, *John Wiley & Sons Ltd*. Chichester-New York. ISBN 0-471-92517-9
- Mequanent Muche, Birara Endalew & Tesfalem Koricho (2014). Determinants of Household Food Security among Southwest Ethiopia Rural Households. *Food Science and Technology* 2(7): 93-100, 2014. *Horizon Research Publishing*. DOI: <http://dx.doi.org/10.13189/fst.2014.020701>

- Mutiah, S., & Istiqomah, I. (2017). Determinants of Household Food Security in Urban Areas. *JEJAK: Jurnal Ekonomi Dan Kebijakan*, 10 (1): 103-120. DOI: <http://dx.doi.org/10.15294/jejak.v10i1.9130>
- Osarfo, D., Senadza, B. & Nketiah-Amponsah, E. (2016). The Impact of Nonfarm Activities on Rural Farm Household Income and Food Security in the Upper East and Upper West Regions of Ghana. *Theoretical Economics Letters*, 6, 388-400. DOI: <http://dx.doi.org/10.4236/tel.2016.63043>
- Overseas Development Institute (2016). *Savings and Self-Help Groups in Ethiopia: A review of programming by five NGOs*, Addis Ababa-Ethiopia.
- Pasara, M.T., Makochekanwa, A., & Dunga, S.H. (2021). The role of Savings and Credit Cooperatives on financial inclusion in Zimbabwe. *Eurasian Journal of Business and Management*, 9 (1): 47-60 DOI: <http://dx.doi.org/10.15604/ejbm.2021.09.01.004>
- Planning and Development Commission. (2018). *Poverty and Economic Growth in Ethiopia (1995/6-2015/6)*. Addis Ababa-Ethiopia.
- Ranjithab (2016). Women Empowerment through Self Help Groups in Shimoga District; *International Journal of Research in Social Sciences*, 6 (11): 220-229.
- Rathinam, U. & Akudugu Mamudu A. (2014). Self-help Groups as a Livelihood Development for Rural Women: Experiences from India and Ghana. *Journal of Economics and Sustainable Development*; 5 (15), ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online).
- Rawat, R. (2014). Women empowerment through SHGs, *IOSR journal of economics and finance*, 5 (6). 01-07. e-ISSN: 2321-5933, p-ISSN: 2321-5925.
- Sail, N. & Kumbharjuvenkar, R. (2013). Empowerment of Women Through SHGs: An Analysis. *International Journal of Science and Research*. ISSN (Online): 2319-7064
- Saqib, M., Ahmad, S., & Nazir, N. (2017). Informal Saving Organizations in Pakistan, *International Journal of Academic Research in Business and Social Sciences*, 7 (8). DOI: <http://dx.doi.org/10.6007/IJARBS/v7-i8/3243>
- Scoones, I. (2009). Livelihood perspectives and rural development. *Journal of peasant studies*. 36(1). 2-27. DOI: 10.1080/03066150902820503. Taylor and Francis Group.
- Schafer, J., Haslam, P.A. & Beaudet, P. (2011). *Meaning, measurement and morality in international development*. School of international development and global studies, University of Ottawa, June 2011
- Seibel, H.D. (2001). *SHG Banking: A financial technology for reaching marginal areas and the very poor*; NABARD's program of promoting local financial intermediaries owned and managed by the rural poor in India.
- Shirisha, J., Devi, K.U. & Devi, S. S. (2017). Income and expenditure pattern of SHG and non-SHG rural households of Telangana. *International Journal of Environment, Ecology, Family and Urban Studies (IJEEFUS)*, 7 (5): 19-22. Paper Id.: IJEEFUSOCT20173
- Srinivas, C. (2021). Sustainability and Livelihoods: *IntechOpen*. 1-17. DOI: <http://dx.doi.org/10.5772/intechopen.96158>
- Sundaram, A. (2012). Impact of Self-help Group in Socio-economic development of India. *IOSR Journal of Humanities and Social Science*, 5 (1): 20-27. ISSN: 2279-0837, ISBN: 2279-0845.
- Swamy, V. & Tulasimala, B.k (2010). Impact of Self Help Groups on the food security and non-food consumption of weaker sections of the society. *MPRA Paper No. 40880*, Hyderabad, India.
- Tearfund (2015). *Impact and Learning Report 2015: Inspiring change*. 100 Church Road. United Kingdom.
- Tewodros Tefera & Fikadu Tefera (2014). Determinants of Households Food Security and Coping Strategies for Food Shortfall in Mareko District, Guraghe Zone Southern Ethiopia. *Journal of Food Security. Science and Education Publishing*. 2 (3): 92-99. DOI: <http://dx.doi.org/10.12691/jfs-2-3-4>
- Todaro, Michael P. & Smith, Stephen C. (2015). *Economic Development*. 12<sup>th</sup> Edition. Pearson education, Inc.

- UN (1987). *Our Common Future*: Report of the World Commission on Environment and Development. Oslo, 1987
- UN General Assembly (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*: Resolution adopted by the General Assembly on 25 September 2015
- Valdés-Rodríguez, Ofelia A. & Pérez-Vázquez, A. (2011). Sustainable livelihoods: An analysis of the methodology. *Tropical and Subtropical agroecosystems*. 14(2011). 91-99.
- VSL associates ltd (2022). *Village Savings and Loan Federations: Field officer's training guideline version 2.7*.
- Welthungerhilfe and Concern Worldwide. (2018). 2018 Global Hunger Index: Forced Migration and Hunger, Dublin/Bonn, October 2018
- Welthungerhilfe and Concern Worldwide. (2019). 2019 Global Hunger Index: The Challenge of Hunger and Climate Change, Dublin/Bonn, October 2019
- Welthungerhilfe and Concern Worldwide. (2020). 2020 Global Hunger Index: One Decade to Zero Hunger: Linking Health and Sustainable Food Systems, Dublin/Bonn, October 2020
- Welthungerhilfe and Concern Worldwide. (2021). 2021 Global Hunger Index: Hunger and Food Systems in Conflict Settings, Dublin/Bonn.
- WHO (2012). *Sampling Methods and Sample Size Calculation for the SMART Methodology*, ENA
- Wondim Awoke, Kefale Eniyew, Genenew Agitew & Belete Meseret (2022) Determinants of food security status of household in Central and North Gondar Zone, Ethiopia. *Cogent Social Sciences*, 8(1). 1-12. DOI: <http://dx.doi.org/10.1080/23311886.2022.2040138>
- Zegeye Bante, Fete Demelash, Elias Ebrahim, Former, E., Meaza Gebreyohannes, Tsion Gizachew & Mekbib Hilegebrile (2018). *Livelihoods for Resilience Activity: VESA Manual*. Feed the Future Ethiopia. USAID funded project-under cooperative Agreement No. AID-663-A-17-00001

#### **ABOUT THE AUTHERS:**

Adane Yenealem	Worku	Ph.D. student	Addis Ababa University
Degefa Tolossa	Degaga	Professor	Addis Ababa University
Esubalew Abate	Alemu	Ph.D.	Addis Ababa University