COLLEGE OF DEVELOPMENT STUDIES

CENTER FOR FOOD SECURITY STUDIES

HOUSEHOLD FOOD SECURITY STATUS AND COPING STRATEGIES OF SOLID WASTE COLLECTORS IN NEFAS SILK LAFTO, *WOREDA* 9, ADDIS ABABA

BY

YIRAGU BETREWORK

OCTOBER, 2024

ADDIS ABABA, ETHIOPIA

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THESIS SUPERVISOR

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A THESIS SUBMITTED TO CENTER FOR FOOD SECURITY STUDIES, COLLEGE OF DEVELOPMENT STUDIES ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN FOOD SECURITY AND DEVELOPMENT

OCTOBER, 2024

ADDIS ABABA, ETHIOPIA

DECLARATION

I,the undessigned, declare that this thesis entitled "**household food security status and coping mechanizm of solid waste collector in Nifas Silk Lafto *Woreda* 9** ''is my original work and has not been present for MA/MSc degree in any other University and that all the sources and materials used for the thesis have been properly acknowledge.

Declared By: Yiragu Betrework _____ _____

Signature Date

Place: Addis Ababa University College of Development Studies, Center for Food Security Studies. This is to certify that the above declaration made by the candidate is correct to the best of my knowledge as an advisor.

Meskerem Abi (PhD) _____ _____

(Advisor) Signature Date

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This is to certify that the thesis prepared by Yiragu Betrework Tadesse entitled with household food security status and coping strategies of solid waste collectors in Nefas Silk Lafto, *Woreda* 9, Addis Ababa and submitted in partial fulfillment of the requirements for the degree of master of science in food security and development complies with the regulations of Addis Ababa University and meet the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

External Examiner:	Signature	Date
Internal Examiner:	Signature	Date
Advisor:	Signature	Date
Name of Chairman:	Signature	Date

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ACRONYMS AND ABBREVIATION

CSI	Coping Strategic Index
EU	European Union
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FSS	Food Security Status
HFIAS	Household Food Insecurity Access Scale
HHs	Households
KII	Key Informant Interview
MSW	Municipal Solid Waste
SLA	Sustainable Livelihood Approach
SPSS	Statistical Package For Social Sciences
SWM	Solid Waste Management
WFP	World Food Program
WIEGO	Women in Informal Employment: Globalizing and Organizing

ABSTRACT

The aim of this study was to assess waste collectors food security status and the way of copying during the time of food scarcity in Nefas Silk Lafto Woreda 9, Addis Ababa, Ethiopia. 58 Waste Collectors were selected using census sampling techniques, where information is gathered from every member of a defined population. And quantitative data were collecting using a questionnaire survey and analyzed using (SPSS Version 25) the measure of central tendency (mean) and the measure of dispersion (standard deviation) and also used multiple linear regression model. Qualitative data were collected through key informant interview, focus group discussion (FGD) and secondary data sources, and thematic content analysis was applied. The majority of (44.8%) Waste pickers was food insecure, due to insufficient income and lack of strict rules and regulation, as well as lack of social awareness in the subcity, in particular Nefas Silk Lafto Woreda 9. The finding of this study revealed that there are internal and external challenges: The most important challenge is the presence of alcohol and drug use members coworker performance, lack of team coordination, were internal impact .It makes the team unhealthy or less productive, on the other hand lack of working space, lack of safety equipment and institutional factors, social inclusiveness of waste collectors and scarcity of food in the woreda were external impacts. The waste collectors have a challenge of income for their livelihood, lack of Adaptation of capital-intensive, lack of awareness of communities and there is lack of governmental attention to solid waste management and waste collectors. The level of Education of Waste Collectors was low because they were from a street and poor Community. Due to that, they were not effective in the adoption of technologies. Food insecurity of waste collectors, factors related to financial constraints (income), low cost of waste per kilogram, weak enforcement of rules and regulations, socio-economic factors and awareness of the communities that affect them. Based on the finding it was recommended that; the City Cleansing Office (Agency) should provide safety equipment and vehicles, the government should be Increase price of waste per kilogram, the woreda Administration should be Address Addicted Members with Targeted Training, the government should be Support, and empowering small business through legal support is essential.

Keywords: Economic incentives, food security, waste management

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

The expansion of globalization around the world favors the unexpected growth of urbanization. The intense growth of urbanization on the other side brought modernization, economic growth, and strong interrelation among the world community. On the other hand, it possesses many challenges, which are difficult to manage locally and globally. A number of problems surround cities in most developing countries. Of such challenging problems are environmental pollution, soil erosion and lack of waste disposal management, poverty, unemployment, urban slums, environmental degradation, social evils, poor sanitation, inadequate transport and communication facilities, inadequate provision of social services in urban areas and food insecurity (Hagos, 2007).

Millions of people worldwide make a living collecting, sorting, recycling, and selling materials that someone else thrown away were referred to by many different terms in different regions. These include scavengers, recyclers, rag pickers, binners and waste pickers. At the First World Conference of Waste Pickers, held in Colombia in 2008, a provisional consensus was reached to use the generic term „waste picker“ in English (but, in specific contexts, to use the term preferred by the local waste picking community). It is essential to empower waste pickers because their job has significant potential for social, environmental, and health protection. The waste pickers, picking the benefits of workers by providing a source of employment, are very poor and received little education. It profits the environment, due to more material is recycled and increasing the ability of landfills and reducing water and air pollution from improper disposal of waste. Waste picking also benefits the community (Marta, 2013).In developing country particularly in Africa, the rapid expansion of urbanization causes enormous pressure on the environment in that cities import natural resources, which are transform into goods and services, and at the last part are go back to the environment as a form of emission and waste. This leads to, national, regional and local waste management, health, environmental and food security problems, such as resource depletion, deterioration of air, water and soil quality, noise irritation, lack of green breathing space, waste production, and many others (Medina, 2004) In most African cities, the situation of solid waste management is insignificant and inadequate that could associate with different

factors. The management of solid waste in Africa is often weak due to lack of appropriate planning, inadequate governance attention, poor technology/labor intensiveness, weak enforcement of existing legislation and the lack of economic incentives to promote environmentally sound development. In Ethiopia, collection of wastes often involves in person contract between producer and pickers. The intensity of service is near to low and generators frequently have to carry their wastes long distances and place it in containers. As a result, many collection activities in developing countries carried out by informal sectors. Good decision-making about the managing of the waste they create is one of the most important contributions that humanity can make to reduce its impact on the natural world (UNEP, 2015/6).

Addis Ababa and other rapidly expanding regions of the nation have been producing more solid waste over time, a trend that is mostly attributable to the country's high rate of population expansion (Bmelak, 2008). Based on the current MSW management procedures in Addis Ababa, the estimated daily solid waste generation rate is 0.45 kg per capita, the average estimated density is 330 kg/m 3, and the total amount of solid waste generated in the city is about 6019 m3 (Eshetu, 2021). In metropolitan regions, waste collection frequently entails a face-to-face agreement between pickers and producers. The terms waste pickers, waste collectors, waste workers and recyclers refer to people who make a living by selling recyclables found in trash. They are found in the city streets, in the dumps and even on the municipal trucks that collect and transport waste to disposal locations (Wilson, Velis and Cheeseman 2006) (Scheinberg, SPies, et al. 2011). According to Yitayeh et al. (2022), solid trash collectors are a vulnerable population that delivers necessary services, but faces significant occupational and financial dangers. This research focuses on challenges and the food security status of waste collectors, a vulnerable group within the waste management system of Nefas Silk Lafto Woreda 9.

1.2. Statement of the Problem

Waste management in most cities in developing economies and countries with economies in transition involves overburdened waste collection services and inadequately managed or even uncontrolled dumpsites, where waste catches fire and burns. The failure to provide adequate collection services poses a serious threat to human health and the physical environment. Solid waste management practices can probably be improved significantly, if the inhabitants of low-income communities start assuming the responsibility of handling their garbage and setting up a

system appropriate to their economic situation (Genati, 2021). Waste-pickers work in the informal sector. In the informal economy, the working poor are often unable to work their way out of poverty. Earnings are low while costs and risks are high due to several Constraints: lack of productive resources and economic opportunities; lack of economic rights (as workers and producers); Lack of social protection; lack of organization and lack of political representation (WIEGO 2012c). In the informal sector of waste, activities are labor intensive and characterized by Low Technology (CWG; GIZ 2011). Workers often lack the education and skills to adopt more sophisticated technology, or they lack access to credit to buy equipment.

The study by WEIGO (2017) demonstrates, many solid-waste-collectors' cooperatives struggle to establish economies large enough to control their premises, pay their debts, or diminish the instability and insecurity of their members. Solid waste pickers are more vulnerable to health issues because to rising rates of undernourishment and food instability, especially in Ethiopia (FAO et al., 2020). Most importantly: Children of waste pickers often experience nutritional deficiencies due to the dangerous nature of their employment and the lack of inexpensive access to nutrient-dense foods (Belay et al., 2006; Maletic et al., 2015). Primary waste collectors' cooperatives need to join or establish cooperatives that can assist primary-level cooperatives in enhancing operations, gaining access to resources and skill development, and strengthening their bargaining position in order to overcome these obstacles.

Furthermore, the rate at which trash is generated keeps rising in developing countries, and the capacity of the current waste collection and disposal management system cannot keep up. In the Nefas Silk Lafto Sub City Woreda 9, Addis Ababa, Associations providing home-solid-waste-collection-services are predominantly run by Individuals from poor communities and Street-dwellers with very low living standards. Waste collectors face various Health-Hazards during their work due to a lack of proper protective equipment. Their Low incomes often makes difficult for them to afford basic necessities like food. While some waste-collection-enterprises in other districts operate at a higher level, the enterprise in Woreda 9 has seen little improvement in the living standards of its workers, despite their long years of service. Their households continue to struggle, leading to dissatisfaction among residents regarding the quality of waste collection services in the area. Consequently, the daily amount of solid waste collected from the community remains low in kilograms, resulting in reduced earnings per kilogram. This highlights

the direct correlation between the quantity of waste collected and the income generated, ultimately impacting the ability of waste collectors' families to secure an adequate food supply. This study aims to examine the challenges faced by solid waste collectors in Nefas Silk Lafto Sub-City Woreda 9 Administration, specifically focusing on their food security status. The research will identify opportunities for enhancing their food security, improving livelihoods, and promoting overall health through effective policy and strategic interventions.

1.3. Objectives of the Study

1.3.1. General Objective

The general objective of this study is to examine the household food security status and coping strategies of solid waste collectors in Nefas Silk Lafto, *Woreda* 9, Addis Ababa.

1.3.2. Specific Objective

1. Assess the food security status of solid waste collectors.
2. Determine factors affecting the food security situation of waste-collectors
3. Identify coping strategies adopted by the solid waste collectors during the food shortage.
4. Analyze the current challenges faced by waste collectors in their Performance.

1.4. Research Question

- How does the income of solid waste collectors affect their food security?
- How are various factors influencing their food security situation of solid waste collectors?
- What are the coping strategies adopted by the solid waste collectors during periods of food shortage?
- What obstacles do waste collectors encounter in carrying out their duties?

1.5. Significance of the Study

Various researchers can conduct with regard to solid waste disposal management and food security status along with waste collection. However, there is only small number of researches on

understanding of waste pickers work through reducing food insecurity along with empirical evidences in Ethiopia. The output of the study also benefit to other researchers that, the study adapt and enhance methodologies suitable to investigate the nexus between the issues and waste management contribution to food security with regard to waste pickers, also Policy makers, local administrators, households, communities, even waste pickers can be benefiting from the output of the study to do the action research and to reduce their problems. Generally, this study aims to contribute to the existing academic knowledge by exploring the waste management impacts on food security and it provides empirical and scientific evidences for the readers.

1.6. Scope of the Study

The research primarily focused on the topic of household food security and coping strategy, with a particular focus on Woreda 9 Administration in Addis Ababa city's Nefas Silk Lafto. A mixed research methodology was used for this study. It made sense to employ this strategy to maximize research reliability and conduct an in-depth and comprehensive examination of the research issue. Primary and secondary data sources were both used in the data collection strategies. The researcher gives attention on the assessment of solid waste disposal management that household heads becoming an employment from unemployment as a livelihood of waste pickers to food security. The research was study from 2023 up to 2024.

1.7. Limitation of the Study

The study focused only on examining the household food security status and coping strategies of solid waste collectors. It specifically considered Nefas Silk Lafto Woreda 9. However, the study had limitations, on methodology of sampling method total population (census) was part of the study which is 58 solid waste collectors participated but the small number of total population in the study area was affected the reliability of the data. There was also limitation during collecting from available reference material and difficult to express the qualitative descriptive data in to quantitative differential descriptive and most researchers had a challenge to employ methodology to analyze and describe waste management of waste pickers ' on food security. This research one of the preliminary works.

1.8. Organization of the Study

There are five chapters in this paper. The first chapters cover the study's background, problem statement, objective, general and specific objectives, research question, significance, scope, definition of oppression, and organizational structure. The second chapter includes a literature review. The research methodology, study description, research design, data source, main and secondary sources, data collecting, sampling size and methodologies, data analysis method, and ethical consideration are all covered in the third chapter. Result and discussion in the Fourth Chapter Finally, Chapter 5 includes Conclusion and Recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1. Theoretical and Conceptual Literature Review

The theoretical foundations supporting this study on food security and vulnerability are presented in this section, with a focus on solid waste collectors. The topic of food security is intricate and multidimensional, encompassing not just the availability of food but also its accessibility, consumption, and stability. Comprehending these characteristics is crucial in tackling the obstacles encountered by marginalized groups, such solid waste collectors, who frequently encounter increased food insecurity because of their socioeconomic condition. The chosen theories the Food Entitlement Decline (FED) Model, the Political Economy Explanation Model, the Food Availability Decline (FAD) Model were choose because they are applicable to situations of food scarcity and famine in both historical and modern times, especially as they concern marginalized groups like solid waste collectors.

2.1.1. Food Availability Decline (FAD) Model

In 1978, Malthus developed the scenario of declining food availability. According to Malthus's theory, food supplies decline as population increases. Food supply decreases as population grows and food demand rises, as seen by an increase in the number of consumers. There is less food available for consumption because of the strain that growing families place on households. For rural farmers whose livelihoods depend on subsistence farming, the amount of food in the stock diminishes before to the main harvest season. Kibrom and Qaim (2017) state that during the lean season which is characterized by a shortage of food the market serves as the household's main source of food (Mills et al, 2019). Because microeconomic issues influence food supply, not every household can afford to buy adequate food. The availability of food is influenced by labor, land ownership, and the ability to purchase and apply fertilizer. These factors all affect agricultural productivity. Even though it is primary, the focus is on general food availability. The FAD model can offer a theoretical foundation for understanding the food security situation of waste collectors in a variety of ways. Firstly, waste collectors usually operate in highly competitive urban contexts with large population densities. The situation may worsen the food scarcity because there are fewer economical alternatives available and food costs are rising due to growing demand in some areas. Second, even when food is sold in markets, a significant

portion of waste collectors come from economically deprived backgrounds and struggle to get enough food. The FAD model shows how a single factor can intensify a national food crisis, Verburg et al, (2013).

2.1.2. Food Entitlement Decline (FED) Mode

In 1981, Amartya Sen developed the FED model. Sen thinks that the availability of food on a national or worldwide level does not guarantee food security in a household. People who are food insecure do not lack food; rather, they face obstacles in getting food. It is determined by household control over the economy (Sen, 1981). The price of food, a household's ability to produce or purchase the food necessary to maintain consumption, and the amount of money they make all have an impact on how simple it is for someone to get food. Families can participate in a range of income-generating endeavors to raise their purchasing power and make money. (Anderson et al, 2015). During the summer, food costs rise because of the decrease in stock crops. Poor farmers are unable to buy and feed their children because of their limited cash resources and escalating food expenses. For solid waste collectors, who frequently face unstable financial circumstances, the FED model holds particular significance. Due to their low financial means, a large number of waste collectors rely mostly on their income, the volatility of food costs, and their capacity to engage in revenue-generating activities in order to obtain food. For example, waste collectors might not have steady work, which makes it challenging to regularly buy enough food, particularly when prices rise during times of agricultural scarcity, as described by Anderson et al. (2015). Solid waste collectors also face other difficulties, such as unregulated working conditions, a lack of social safety nets, and the tendency to work in metropolitan areas where low-paying occupations are very competitive. These elements worsen food insecurity and severely restrict their financial rights. The FED model emphasizes that garbage collectors may still find it difficult to meet their household's food demands even in situations where food is readily available in urban markets because of their low pay, growing living expenses, and restricted access to financial resources. In order to solve the issues with food security that solid waste collectors face, it is imperative that they comprehend the dynamics of entitlements and food availability. The FED model would be used to guide interventions that would improve access to social services, increase income-generating opportunities, and put policies in place to lessen the effects of growing.

2.1.3. Political Economy Explanation Model

Supporters of the model that highlights the role of government policies in famine contend that rigid government decisions that restrict some population segments' access to food supplies have contributed to the occurrence of numerous famines globally. According to this viewpoint, governments can cause famine in a number of ways, such as by implementing unsuitable policies, as demonstrated by the famines in the Sahel, or by failing to act when a crisis arises, as was the case with the famines in China from 1958 to 1961, Bangladesh in 1974, and Ethiopia in 1974 and 1984. Governments can also indirectly cause hunger by their own products, such as civil conflict, as demonstrated in 1980 in Mozambique, Ethiopia in 1985 and 1990 in Somalia (Smith, 2005). Moreover, there have been cases of intentional government activities or malicious intent resulting in starvation, including the Soviet starvation of 1933 and the Dutch Famine of 1944 (Devereux, 2000). These instances highlight the substantial influence that political actions can have on making populations more susceptible to hunger and food poverty. Other challenges faced by solid trash collectors include unregulated working conditions, a dearth of social safety nets, and a propensity to work in urban locations where competition for low-paying jobs is fierce. These factors significantly restrict their financial rights and exacerbate food insecurity. The FED model highlights that garbage collectors' low wages, rising living costs, and limited access to financial resources may make it difficult for them to provide for their household's food needs even in conditions where food is widely available in urban markets. Understanding the dynamics of entitlements and food availability is crucial for solid waste collectors to address the challenges related to food security (Mills et al, 2019). The FED model would direct initiatives to enhance social service accessibility, expand chances for earning income, and implement measures to mitigate the consequences of rising

2.1.4. Conceptual Literature Review

2.1.4.1. The Concept of Food Security and Insecurity

Food security is a broad concept that can be interpreted and defined in many different ways. In some respects, it refers to the availability of food on a national and worldwide level; in other senses, it deals with individual wellbeing and appropriate nutrition (FAO, 2003). At the 1943 Food and Agricultural Organization meeting, when there was a general perception that food was

plentiful, the phrase "food security" initially arose. Its Definitions have changed numerous times since then. The definition established at the time, "a secure, adequate and suitable supply of food for everyone," was eventually adopted on a global scale. Donor countries such as the United States and Canada set up bilateral agencies in 1950, which led to the export of their agricultural surplus to countries facing food shortages. The concept of "food for development" emerged around 1960 because of the general realization that providing food assistance may actually hasten a nation's transition to self-sufficiency. The concept was dubbed the World Food Program (WFP) upon its inception in 1963. Food was plentiful for a while, but in the mid-1970s, prices and supplies began to vary. This led to a global food crisis and popularized the term "food security." In order to provide a consistent supply of the staple foods required for worldwide consumption and to combat volatility in food production and pricing, it was considered at the FAO World Food Conference in Rome in 1974 (UN, 1975). Using food excess and increasing food production were the main strategies used at the time to guarantee food availability and preserve price stability. Ever since the 1974 Rome Conference, In response to the increasing incidence of famine, hunger, and malnutrition in most parts of the world, the concept of food security has experienced multiple revisions, definitions, extensions, and diversifications (Maxwell, 1996). The availability of enough food on a global, national, or regional scale was heavily stressed in the early definitions. Thus, the basic idea was that there ought to be sufficient food available to satisfy demand on the world market (Maxwell and Smith, 1992).

However, ensuring food security globally does not ensure food security at the household or individual level. The greatest example was the hunger crisis of 2009, when a billion people went without food even though there was enough food available for everyone on the planet, according to the WFP annual report (WFP, 2010). During the Green Revolution in 1980, the concept of food security is reframed as the problem of access, and this is when it began to garner more attention. Sen argues that rather than just increasing food supplies, enhancing access to food should be a component of food security. It is not a lack of food that causes people to be food insecure; rather, it is the inability to obtain easily accessible food (Sen, 1981The focus of food security is progressively shifting from the national and international to the home and individual levels. There are almost 200 definitions of food security, each offering a unique viewpoint on the continued occurrence of hunger, malnutrition, and famine, according to Smith et al. (1993). The World Bank defined food security as "access of all people at all times to enough food for an

active and healthy life" (WB, 1986). The concept of "all-time" food security adds another component to the concept, referring to the constant and unbroken availability of food. The FAO defines food insecurity as not having access to enough food for a healthy and active life. Food security is achieved when there is always enough food available to everyone (Degefa, 2002). The 1996 World Food Summit Definition is a more widely accepted and thorough definition: "Anyone having physical and economic access to enough, safe, and nutritious food to meet dietary requirements and food preferences, to lead 10 an active and healthy life at all times" is the definition of food security. Based on the definition of food security offered by the World Food Summit in 1996, FAO (2005) defined the four pillars of food security: food availability, food access, food utilization, and food stability.

Food availability the state in which food is physically accessible on a domestic, international, household, and individual level is known as food availability. Food aid, domestic production, and commercial imports all have a role. The availability of food is significantly impacted by macroeconomic factors (Anderson et al., 2015). Food access is the capacity of a household to obtain food, whether through self-production or purchase. It depends on the market price, household income, and the availability of resources to produce or purchase the food required to sustain consumption, according to Anderson et al. The diversity of jobs increases the likelihood of receiving food from the market. "Food utilization" refers to the proper consumption of healthful food. Appropriate food preparation, preservation, and storage, together with adequate nutritional understanding and health and sanitation services, all have a role in determining it (Anderson et al). Food Stability: There should be no chance that the household's present degree of food security may compromise its level of food security in the future. Food stability can be hampered by a variety of factors, including low nonfarm and off-farm revenue, weather, political unpredictability, unemployment, and rising food prices (FAO, 2008). Food insecurity can be defined as chronic, seasonal, cyclic, or temporary based on its origins, effects, and timing. Food insecurity in all its forms is a persistent issue in Ethiopia (Devereux, 2000). A household experiences chronic food insecurity, or a protracted lack of enough food, when they are unable to purchase food from the market or from their own food production system (FAO, 2005). Transitory food insecurity is defined as extremely quick and transient shortages in food availability and access (Barett and Sahn, 2001). Periodic food shortages, particularly during the pre-harvest period, also referred to as the "hungry season," are a defining feature of the topic of

our study, seasonal or cyclical food insecurity (Devereux et al., 2008). Food security is a difficult concept to measure since it encompasses a wide range of food production, distribution, and consumption activities. Conversely, food insecurity is simpler to measure and examine. The distinction between hunger, famine, and food security must be emphasized. Food security is the availability of food, whereas hunger and famine are the result of food insecurity or the lack of food.

2.1.4.2. Conceptualizing Household Food and Nutrition Security

The concept of household food security has surfaced more lately. Most of the literature from the 1980s made the connection between national food security and food self-sufficiency. Food self-sufficiency is an essential but insufficient solution to the family-level issues of malnutrition and food insecurity, according to Rukuni (2002). Over time, the concept of food security has evolved. It is defined as food that is readily available at all times, easily accessed by all people, and sufficiently stable to be utilize for a healthy lifestyle. More specifically, food security is reached when all people can always get enough safe, nourishing food to meet their dietary needs and preferences for a healthy, active life, regardless of their physical, social, or economic circumstances (Jateno, W., et al. 2023). To assess and explain families' food and nutrition security situation, the literature provides conceptual models (like UNICEF's model of malnutrition), frameworks (like Sen's entitlement framework), and tools (like the Sustainable Livelihood Approach). The own-labor entitlement, the trade-based entitlement, the inheritance and transfer entitlement, and the production-based entitlement were the four specific entitlements presented by Sen in 1981. He claims that families who receive these benefits are able to stay out of starvation. Production-based entitlement improves families' food security by making food more available; other entitlements, such as trade-based, own-labor, inheritance-and-transfer, and others, achieve the same goal by providing families with access to food. Sen's rights were also viewed more broadly by Chambers et al. (1992)'s introduction of the Sustainable Livelihood Approach (SLA). This strategy is also known as physical, financial, social, human, and natural capital. The five capitals given in SLA also explain the food security status of families. As households with natural and physical resources are able to produce more food, the availability of food will increase. Social, financial, and human resources all contribute to families' increased capacity to purchase food. According to a conceptual model developed by UNICEF in 2020,

family dietary variety is increased when food is used and made available in a way that is influenced by social norms and available resources. Moreover, the concept of food and nutrition security has to incorporate the two elements. The food security framework focuses greater attention on an economic approach, where food is considered as a commodity, than the nutrition framework, which adopts a biological perspective where humans are the starting point. Thus, food security must be addressed in order to promote access to a wide variety of foods and to address the improved nutritional status of households (Hans et al., 2020). Developing countries like Ethiopia must attain optimal intake of a range of meals in order to help the battle against all forms of malnutrition (Akalu et al., 2019).). A study conducted in 2022 by John and Yisehac found a correlation between household per capita consumption and nutritional diversification. This implies that households consuming a wider variety of foods also have easier access to food. Thus, eating a greater variety of food types is associated with a higher energy intake (Kant, 2004; Ismael et al., 2002). Moreover, the diversity of a household's diet is mean to indicate their financial access to food. A higher dietary score denotes the use of foods high in nutrients (FAO, 2013). Furthermore, information shows a strong relationship between household energy availability and diversity in food and per capita income. Suggesting that one useful indicator of the access component of food security may be dietary diversity (Ruel MT 2003). Ethiopia is among the countries having the highest rates of malnutrition. This low level of dietary diversity may be partly attribute to Ethiopian diets, which are particularly low in red meat, poultry, fruits, and vegetables (Jateno, W., et al. 2023). The degree of dietary diversity in a household is influence by several socioeconomic and demographic factors. A few studies (Derso et al., 2021; Abdulhalik et al., 2021) have been conducted in Ethiopia to investigate the factors that influence the variety of diets in households.

2.1.5. Coping Strategies against Food Insecurity

Coping mechanisms, coping strategies, or coping procedures are the real responses to crises in livelihood systems in the face of unfavorable circumstances, according to Berkes and Jolly (2001). They are regard as stopgap measures. According to Maxwell D. (2008), families that face food insecurity and do not have the money or other resources to buy food use four different types of coping techniques. Families can first switch their diets to include less preferred foods instead of their preferred foods. The second option is to make an effort to increase resources by using

short-term strategies like borrowing, begging, consuming wild edibles, and the like. The third option is to feed fewer people by distributing some to neighbors or other family members. Restricting the amount of food that the household has access to for example, by lowering the amount served or the frequency of meals or by favoring some family members over others is the fourth and most widely used strategy for dealing with the shortage (Maxwell, 2017).

2.1.6. Empirical Literature

2.1.6.1. Solid Waste Collection Disposal Practice

The global urban population has grown astronomically in the last several years. In 2008, the world's population was evenly distributed among urban and rural areas for the first time. Approximately 74% of residents in more developed countries were urban, compared to 44% of residents in less developed ones. By 2050, 70% of people on Earth are expected to live in cities, with less developed countries enduring the most of this development. Still, several of these countries are rapidly becoming more urbanized (Satterth, 2009). It has been established that globalization has a negative effect on solid waste management in developing cities. The impacts on waste management include the transfer of urban and internationalized waste management methods and ideologies, the conflicting involvement of multinational corporations with local initiative groups, the engagement of national and local governments in waste management issues, and other factors that directly or indirectly affect the waste sector. These impacts are compounded by an increase in the volume and variety of waste resulting from increased flows of goods and services, as well as changes in lifestyle and consumption patterns (African conference, 2003). WIEGO conducts statistical research, policy analysis, and data analysis on the unorganized sector; provides recommendations and collective descriptions for policies regarding the unorganized sector; and, in order to fulfill its mission, works to support the formation and growth of networks of organizations that represent the interests of unorganized workers. Keeps track of and disseminates best practices for unorganized industry. Millions of individuals worldwide rely on the search, collection, and processing of materials that someone else has thrown away to support themselves. The term "waste pickers" was formally adopted at the first World Conference of Waste Pickers in 2008. This phrase can be used to describe anyone who works on street sweeping or rubbish pickup, as well as unofficial private collectors of recyclables who sell to companies or middle men or recycle waste to create new items (WIEGO, 2017). The

primary distinction between the waste generated in wealthy and developing countries is that the former produces more organic waste. It includes information on the volume and composition of municipal solid waste generated internationally.

2.1.6.2. Solid Waste Collection Disposal Practices in Urban Areas

Solid waste disposal and collection are persistent problems in Addis Ababa. The City generates 787,305 m3 of garbage annually, whereas it generates 2014 m3 (or 671 tones) of rubbish every day. Of this municipal rubbish, 78.16 percent is collected. Apart from being disposed of in open spaces, ditches, rivers, drainage channels, and valleys, 21.4 percent of waste is disposed of in an unauthorized way or is not collected (SBPDA, 2008). Low public awareness and insufficient waste collection are the main causes of this. This trash has the potential to seriously harm the environment and public health if it pollutes the air, water, or land. When they increase in locations with insufficient collection, storage, and disposal techniques for solid waste management, a variety of vermin, such as cockroaches, flies, mosquitoes, and rats, can serve as vectors for spreading illness. In urban environments, litters and solid waste accumulation attract wild dogs searching for food and drink remnants (Zeleke, 2002). Poor communities in many cities usually have the least efficient systems or none at all for collecting waste. Most disadvantaged households have relatively little space, especially in populated areas and informal settlements. This makes it difficult to store waste or transport it to a location for controlled disposal. According to Desalegn (1998), significant portions of destitute villages are located on terrain that is difficult for cars to reach.

2.1.6.3. Solid Waste Management Practices in Addis Ababa

Any fluid that has lost value for the person in charge of it is considered solid waste. Solid waste is sometimes included in the same sentence as words like garbage, refuse, trash, or junk. In addition to street littering, residential dwellings, commercial and industrial enterprises, and institutional and healthcare facilities all produce solid waste in cities. As streets are often used as dumping grounds, street garbage is a heterogeneous mix of refuse from various sources. In areas with inadequate sanitation services and a large stray animal population, street litter frequently contains significant amounts of manure and human feces. In addition, a lot of trash from buildings and demolitions is regularly disposed of in streets (WB, 2008The collection and

disposal of solid waste is currently one of the biggest problems affecting the urban environment in the majority of countries worldwide. For solid waste management solutions, sustainable financial, technological, social, legal, and environmental considerations are all required. This is mostly due to the burden that this kind of solid waste is putting on the local budget in addition to its growing production. Solid waste management is associated with significant expenses as well as a lack of understanding about numerous variables that affect the processing and collection system as a whole. Ethiopia's largest city, Addis Ababa, faces unique waste management issues because of the country's expanding population. The city experiences a high pace of population growth because of migration from rural areas. To enhance the impact on the environment and human health, waste management is crucial. As a result, rubbish pickers have banded together in cooperatives, a unique economic model that pays particular attention to social issues, in an attempt to partially solve the problem. Even while this has increased revenue, more measures are required to enhance the living and working circumstances for rubbish pickers, which will benefit the neighborhood and the environment. This thesis examines the challenges waste pickers face in sustaining themselves and their businesses due to the limitations of the current waste-picking model, particularly in terms of the quantity of waste available and the constraints on their capacity to collect and process it. Economic exploitation and social discrimination are the root causes of the scale limitations faced by waste pickers. Waste pickers deserve greater recognition and empowerment, given the high social, environmental, and health risks associated with their work (Marta, 2013).

2.1.6.4. Impact of Rising Food Prices on Low-Income Workers

Variations in food prices have a significant effect on low-income groups, especially those who depend on sporadic, unpaid labor, such solid waste collectors. This relationship is exemplified by insights gained from Ethiopia's food crises of 2007–2008 and 2010–2011. In their 2017 study, Bachewe and Headey examined wage trends for unskilled laborers in Ethiopia's cities and developed a price index that mirrored the dietary habits of the 40% of the population living in poverty. This approach offers a helpful foundation for comprehending how disadvantaged groups such as waste collectors, who frequently come from lower-income backgrounds, are disproportionately affected by rising food prices. Similar to this, studies conducted in South Asia have shown that, despite the development of new dietary indices based on food-based guidelines,

it is still challenging to afford wholesome, balanced diets (Dizon & Herforth, 2018). According to this study, the majority of individuals in these countries cannot afford the nutrient-dense diets that are advised; this is a global trend that was also noted by Hirvonen et al. (2020), who assessed how affordable the EAT-Lancet diet is. The World Bank concluded that about 3 billion people globally lack access to wholesome food using data from the 2017 International Comparison Program (ICP) (World Bank, 2023a). This research emphasizes how crucial inexpensive diets are for the underprivileged. In response, agencies like the Food and Agriculture Organization (FAO) have emphasized the necessity of incorporating cost-effectiveness into social welfare initiatives, investment choices, and agricultural policies in order to guarantee year-round access to a healthy food (FAO et al., 2022). Food security monitoring systems must combine real-time data on household incomes or suitable income proxies with information on food prices in order to accomplish this purpose. Solid waste collectors can follow income patterns among the populations most at risk from rising food prices in a reliable and affordable method by gathering salary data from unskilled laborers. These households are especially susceptible to fluctuations in food prices since they usually rely on revenue from the sale of their labor. To better understand the financial challenges faced by unskilled workers, such as solid waste collectors, food security monitoring systems should incorporate wage data from these individuals. This strategy is supported by two World Food Programme (WFP) publications (Caccavale & Flämig, 2017; Islam, 2013), which advise WFP country offices to gather and examine wage information for unskilled workers as a component of larger initiatives to monitor food security. Researchers and policymakers can better understand how food price inflation affects solid waste collectors' capacity to address nutritional demands by using this approach on them. Integrating pay data in food security systems is crucial for personalizing interventions that can help minimize food insecurity among waste collectors, ensuring that they can afford nutritious diets year-round. Concentrating on the dynamics of food prices, this study aims to better understand the economic pressures faced by solid waste collectors and contribute to strategies that can mitigate their vulnerability to food insecurity.

2.2. Conceptual Framework

Food security in the home is a crucial problem that has an impact on people's quality of life and communities all over the world. Understanding the factors that affect household food security status and coping methods is crucial for establishing effective interventions to enhance the lives of these vulnerable individuals, particularly in the setting of solid waste collectors in Nefas Silk Lafto, *Woreda* 9, Addis Ababa. The study's dependent variable is the waste collectors' home food security status. The term "household food security status" describes a home's capacity to get and pay for a sufficient and adequate meal for each member. Numerous factors, including as exposure to food poverty, income, employment position, education level, and social support networks, all have an impact on this variable. Demographic variables; including age, gender, marital status, and family size of home are among the independent variables in this study. Occupational variables include working conditions, access to training and income level. These factors may have a major influence on the level of household food security since they have an effect on solid waste collectors' capacity to make a steady living and support their families. Another significant component of this research is coping techniques, which show how solid waste collectors in Nefas Silk Lafto, *Woreda* 9, Addis Abeba, deal with obstacles including food insecurity. Using social support networks, cutting back on food intake, looking for other sources of money, and getting by on unofficial or illegal means are a few examples of coping mechanisms. These coping mechanisms' efficacy varies based on the unique circumstances and outside variables. The relationship between solid waste collectors in Nefas Silk Lafto, *Woreda* 9, Addis Ababa, is complex and multidimensional. To enhance the food security and general well-being of this vulnerable group, policymakers and practitioners can design focused interventions by determining the dependent and independent variables that impact these results. This summary is explained in the following Figure.

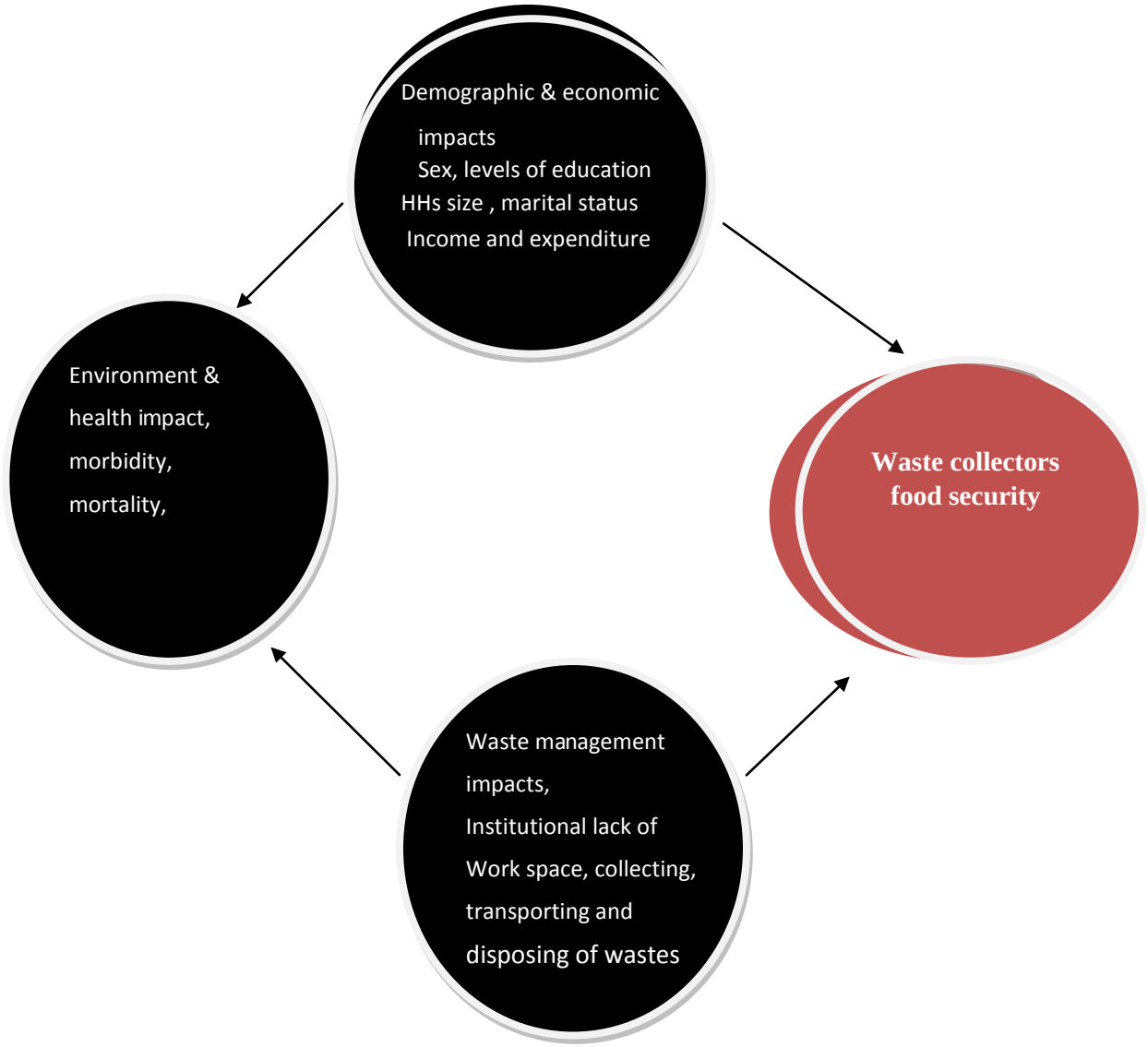

Figure 1: Diagrammatically representation relationship of the variables

Source: From Asaye, 2020 and adopted by the researcher

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Description of the Study Area

The study was conducted in Addis Ababa, the capital city of Ethiopia since 1886. The city point indicator was located at 9°1′48″N 38°44′24″E coordinates. It has an area of 527 km2 and an estimated population of 3,040,740, as stated by (CSA, 2014). The City is simultaneously experiencing high rates of economic growth and urbanization, having 25 % of the urban population of Ethiopia (UNHABITAT, 2017; World Bank Group, 2015). According to the State of Ethiopian Cities 2015 Report 2, Addis Ababa's share in GDP accounts for 29 % of the total urban centers (UNHABITAT, 2017). Addis Ababa ist also a political center, being the Headquarter for the African Union and the United Nations Economic Commission for Africa.

The Addis Ababa City Administration has eleven Subcities, one of which is Nefas Silk Lafto. At latitudes 8º57'26"N and longitudes 38º43'30"E, the district is situated in a suburb of the city, facing southwest. Kolfe Keranio, Lideta, Kirkos and Bole, as well as Akaky Kaliti, are its neighboring districts. The study area is Nefas Silk Lafto Subcity, which consists of 12 woredas. 5879.02 hectares, or 11.31% of the city's total land area, make up the Nefas Silk Lafto subcity's land area, placing it fifth out of 11 subcities in terms of land covered. The largest area is covered by Woredas 01, which covers 2592.83 hectares, or 44, 12 % of the total area among the 12 woredas in Nefas Silk Lafto. There are high, medium, and low-income-Populations in both urban and peri-urban areas. The overall population of this Subcity, as of the 2007 Census, is 285,457, or 10, 42 % of the city's total population. With 39,512 Residents, Woredas 01 is home to a large population. The subcity has 48.58 persons living in each hectare, on average. Of those woredas, Woreda 09 is the Study Area. According to the Participation and Voluntary Coordination Office of Woreda 09, there are 13,437 households, headed by both male and female individuals comprising 52% of the total population. In contrast, there are 5,232 male residents and 8,205 female residents in this woreda Gosa (2021).

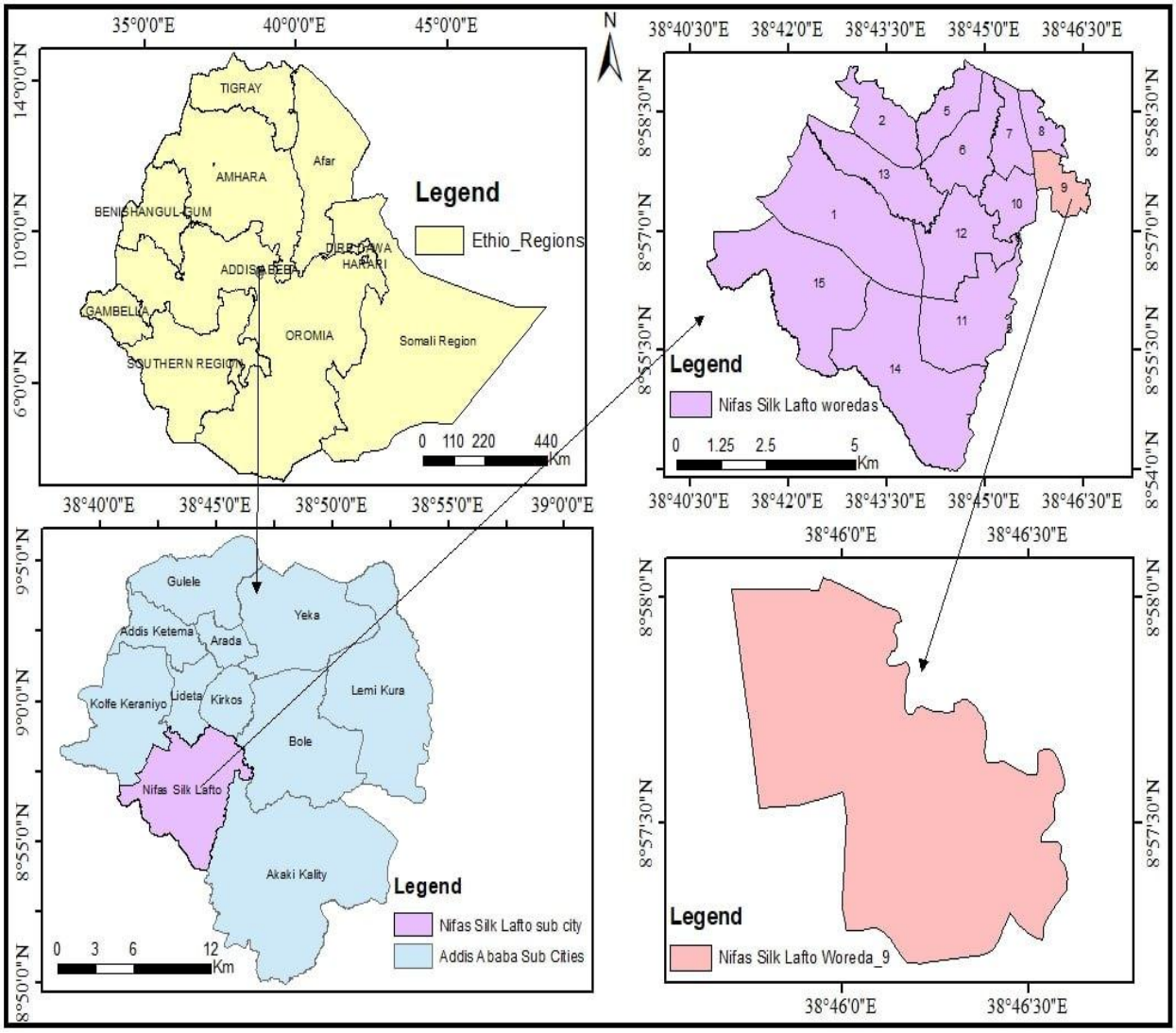

Figure 2: The peach color highlights the area of Nefas Silk Lafto Woreda 9.

Source: Researcher own survey, 2024

3.2. Research Design and Approach

The selection of a cross-sectional research design for this study on food security among solid waste collectors in Woreda 9 is justified for several compelling reasons. First, a cross-sectional design provides an over view of the current food security status and coping strategies of this marginalized group at a specific point in time. This approach is particularly beneficial for understanding immediate issues without the complications associated with changes over time.

Additionally, given the smaller sample size, the cross-sectional design allows for efficient and cost-effective data collection, facilitating the gathering of significant insights without the extensive time commitment required for longitudinal studies. This efficiency is crucial when working with solid waste collectors, who may face barriers to participation due to their work schedules and living conditions. Moreover, the cross-sectional design enables the collection of data from a diverse range of solid waste collectors, ensuring that variations in food security status and coping mechanisms are captured effectively. By integrating qualitative and quantitative methods within this framework, the study enhances the depth and breadth of analysis, providing a comprehensive understanding of how various factors interact to influence food security among these workers. By triangulating quantitative and qualitative data, the study bolsters validity and reliability, ensuring robust findings and conclusions (Creswell, 2003).

3.3. Data Type and Source

Both qualitative and quantitative data are used in this research. While qualitative data is descriptive and focuses on phenomena that can be experienced but not quantified, quantitative data is information about amounts and hence numbers. In order to gather pertinent data and insight, primary and secondary sources of information were also used. First-hand information that the researcher has collected for the first time is referred to as primary data. It is termed real-time data because it is factual, unique, and gathered to solve the current issue (Ajayi, 2017). The primary data was gathered via survey questions, focus groups with team leaders of solid waste collectors, and interviews with experts, supervisors, administrators, and key informants from Nefas Silk Lafto Sub-City Cleansing Office. On the other hand, secondary data was gathered from both unpublished and public sources, including books, journals, articles, websites, and reports. Secondary data sources desk examination of relevant literature from earlier studies both published and unpublished including books, journal articles, reports, reviews, working papers, guidelines, dissertations, and internet resources was used to collect the secondary data.

3.4. Sampling and Sample Size

From the study area of Nefas Silk Lafto Woreda 9, the sample was taken from the entire population, which consisted of 58 individual waste collectors; 30 are male and 28 are female solid waste collectors. They were included in the assessment using the census survey method

because a census approach is commonly used in research methodology when the study population is small enough to allow for the collection of data from each individual or unit within the population. This approach ensured thorough coverage and eliminated the possibility of sampling errors that could occur when working with larger populations.

3.5. Tools of Data Collection

The data was collected from both primary and secondary sources to identify the main factors that determined levels of household food security. A review of relevant published and unpublished literature on the topic was used to collect secondary data. Conducting questionnaire surveys to the target areas' households was the primary method of gathering data. In order to gather ideas from the community on the subject, focus groups were also conducted. Key informant interviews were used as a useful tool for gathering insights from regional authorities. The purpose of the survey was to collect numerical data for descriptive analysis, while focus groups and interviews provided qualitative insights. After being categorized and arranged thematically, these qualitative results were examined.

3.5.1. Survey Questionnaires

To collect quantitative data from the individual solid waste collector households head in *Woreda* 9 and do statistical analysis on their responses, a questionnaire survey was conducted. A survey, according to Ponto (2015), is a method of gathering data from a sample of people by asking them questions, while a questionnaire is a type of research instrument that consists of a list of questions intended to elicit information from respondents. In order to assess the current situation of food security and coping strategies, 58 individual heads of households was provided with questionnaires. This method of data collection allowed for the gathering of complete knowledge about the level of food security, the variables affecting food security at home, and the range of coping strategies used by households who were facing food insecurity. This goal was the reason behind the creation of the questionnaire, which had a clear and achievable survey aim in its design. The survey questionnaires was translated into Amharic, the native language of the study area's population, to make the procedure easier. Prior to conducting the real surveys, five randomly selected heads of households was used for preliminary tests or studies. This allowed

the researcher and trained field assistants to modify any questions that was considered unnecessary or out of context.

3.5.2. Key informant Interviews

People who knew about what was happening in the study were the subjects of key informant interviews, which also included qualitative in-depth interviews. To gather important information about the Variables that influenced or added to the food security circumstances of the solid waste collectors' homes in the study, five (5) Key Informant Interviews (KIIs) were undertaken. The key informants included Supervisors, Agency-Solid-waste-Management-Experts management experts from the City, Sub-City, and woreda level managers from the Cleansing Office. Key informant interviews, as defined by Kumar (1989), are in-depth, qualitative interviews conducted with individuals selected for their first-hand expertise on a particular subject. The interviews are based on a list of topics to be explored and are therefore loosely arranged.

3.5.3. Focus Group Discussions

Focus group discussions, or FGDs, were a useful tool for learning about the customs, behaviors, and varying viewpoints of a particular group of people. Focus group interviews, in accordance with Kumar (1987), are a low-cost, quick appraisal method that can give managers a wealth of qualitative data regarding the effectiveness of development activities, services, and products, or other issues. They can also be used to generate direct quotes that can serve as a representation of the group's viewpoints or qualitative perceptions. Separate group conversations were scheduled with the *Woreda* 09 cleansing office staff and the team leader of the solid waste collection to record common experiences, challenges, and coping mechanisms pertaining to household food security. A more focused exploration of each Group's distinct viewpoints and discoveries was made possible by this division. Both men and women took part in the study at the area where it was carried out. Six participants in two (2) Focus-Group conversations were arranged.

3.6. Techniques of Data Analysis

Both quantitative and qualitative methods of data analysis were employed, because the data for this study were produced using both quantitative and qualitative approaches. Quantitative Descriptive and inferential statistics were employed in the analysis of data obtained from

household surveys and secondary sources of information to express and verify hypothesized relationships between variables. Measures of central tendency such the mean, and standard deviation were employed in addition to frequency distributions to characterize the data. Data from solid waste collectors was gathered through desk reviews, KIIs, and facilitation of FGDs. Through narrative analysis, the data were assessed and conclusions were drawn. The software "SPSS Version 25" was used for the transcription, coding, and analysis of the data.

3.6.1. Descriptive Statistics

Descriptive statistics were utilized to summarize the institutional features, food security status, socioeconomic characteristics, and demographics of the household study using the mean, percentage frequencies, and standard deviation. Furthermore, the produced income and food and non-food spending expenditures of the solid waste collector were described using descriptive statistics.

3.6.2. Food Security Analysis

Measuring food security's availability, accessibility, consumption, and stability required measuring it at the national, international, and household levels. The situation of food therefore became evident when people were consistently unable to obtain a sufficient and secure food supply. According to Simon, G. A. (2012), depending on the aims and objectives of the assessment, a variety of measuring tools were available to evaluate the food security status of families. Similar techniques, such as the household food insecurity access scale and coping mechanisms, were employed to generate the data for this study. Recognizing that no single composite indicator could capture every element of food security is crucial. Food availability, food access, food stability, food consumption, multidimensionality, and HFIAS and CSI Measurements and Indicators was some of the terms used to describe food security. To track the evolution of ideas and arguments throughout the key publications on the issue, an ancestry technique (Ike et al., 2015) was used.

3.6.3. Household Food Insecurity Access Scale (HFIAS)

Based on the idea that having access to food, even in situations of food insecurity, caused predictable feelings and behaviors, a survey was used to gather, measure, and summarize these

responses on a scale (Coates et al., 2007). This method was employed to assess household food security (access) by observing how they responded to food scarcity, including anxiety, difficulty finding food that met their needs in terms of both quantity and quality, and supply volatility. Nine generic questions were used to collect information on households' access to food over a 30-day recall period. The data were examined based on the frequency of occurrence (rarely, if once or twice; occasionally, if three to ten times; or often, if more than ten times). The home food security scale was created using continuous variables derived from these answers, and the households that were food secure and those that were not were identified by the scale's cutoff point. Thus, the degree of food security in households was categorized using the scale's cutoff criteria. A higher HFIAS score indicated more household food insecurity and poorer food access (Coates et al., 2007).

As suggested by Coates et al. (2007), three specific food insecurity access conditions were summarized from HFIAS questions as domains, scale, and prevalence. The domains noted are simply further categorizations of the nine. HFIAS questions into three domains such as anxiety (question 1), insufficient quality (question 2, 3, and 4), and inadequate intake of food and its physical consequences (question 5, 6, 7, 8, and 9) to facilitate the analysis of varying levels of access conditions and obtain a better understanding of the characteristics of food security in the surveyed household. The HFIAS is a food security assessment used to look at household food security status. It is based on the replies of selected households describing their availability of food, including never, rarely, sometimes, and often Regassa and Stoecker (2012) For the purpose of determining the incidence and situations of accessible-related issues and investigations of household food insecurity, access scales were used. The nine generic items of the HFIAS were also created to reflect the different categories of food security status and represent different levels of food insecurity. The domains below are never, rarely, sometimes, and frequently. On this scale, "no" for all HFIAS occurrence questions indicates there are no access issues, and "frequently" for all occurrence questions indicates there are serious food security issues.

3.6.4. Household Food Insecurity Access Prevalence

The HFIAP indicator classifies household food insecurity (access) into four categories: food secure, mild, moderate, and severely food insecure households. The ultimate statistical metric quantifies the degree of food insecurity in a categorical manner. Households are divided into four

basic categories by this HFIAP indicator: food secure, slightly, moderately, and severely insecure about their access to food. Households that respond well to more harsh conditions and/or encounter those situations more frequently are classified as having a higher level of food insecurity, Coates et.al (2007).

Table 1: HFIAS categories

Category	Indicator
Food secure	If [(Q1a=0 OR Q1a=1) and Q2=0 and Q3=0 and Q4=0 and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0
Mildly food insecure	If[(Q1a=2 or Q1a=3 or Q2a=1 or Q2a=2 or Q2a=3 or Q3a=1 or Q4a=1) and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0]
Moderately food insecure	If[(Q3a=2 or Q3a=3 or Q4a=2 or Q4a=3 or Q5a=1 or Q5a=2 or Q6a=1 or Q6a=2) and Q7=0 and Q8=0 and Q9=0]
Severely food insecure	If [Q5a=3 or Q6a=3 or Q7a=1 or Q7a=2 or Q7a=3 or Q8a=1 or Q8a=2 or Q8a=3 or Q9a=1 or Q9a=2 or Q9a=3]

Source: Author construction based on 2024 survey

3.7. Coping Strategies Index (CSI)

The CSI was used to look at the main household coping strategies for food scarcity. This indicator was designed to draw attention to the most popular coping strategy in the study area in the event of a food shortage. The CSI was a quick and easy method to evaluate family food security because it has a good relationship with other, more sophisticated food security measures (Maxwell, 2008). The "context-specific" approach was taken in this study since it was based on local settings and facilitated the generation of thorough data on the condition of food security (Maxwell, 2008). In the questionnaires, individuals were asked to name their favorite coping techniques, based on the source indicated. To generate a suitable list of coping strategies and gauge the effectiveness of each strategy, community-level focus group discussions were employed. Multiple coping strategies were identified in order to collect the data. The degree to which home-coping mechanisms among solid waste collectors in the study areas could be determined from the CSI-data

3.8. Multiple Linear Regression Model (MLRM)

The multiple-linear-regression-analytical-framework is well-suited for modeling dichotomous endogenous variables. By using food security as the dependent variable, this study aimed to estimate the factors that influenced a household's food security status through a multiple regression model. Initially, a multivariate model was employed to investigate the potential relationship between the dependent variable (household food security status) and the independent variables.

3.9. Description of Study Variables

The study investigated the household food security status and coping strategies of solid waste collectors. Accordingly, the household food security status was the dependent variable (DV), socio-demographic variables such as age, sex, educational status, marital status, Effect of expert supporting, household size, household expenditure, and household income were taken as independent variables (IV) that could potentially influence the food security status of waste collectors.

3.10. Ethical Consideration

The study was undertaken after obtaining approval from the ethical review committee of Addis Ababa University. An official letter was written from the University, providing a detailed explanation of the purpose and importance of the study to Nefas Silk Lafto Sub-City Administration. The study participants were informed about the purpose of the study, and informed verbal consent was obtained from all study subjects before conducting the interviews and discussions. A consent form was read to each participant, which explained the purpose and importance of the study, confidentiality, and the respondent's right to answer or decline to answer the questions at any time during the study. Each Interview was conducted only after informed verbal consent was secured. All the collected data were kept securely by the primary investigator. The researcher ensured that proper credit was given to all right holders when using others' products and services.

CHAPTER FOUR: RESULT AND DISCUSSION

This chapter presents the study's analysis and findings. This is divided into five sub-sections, the first of which discusses the demographic and socioeconomic aspects. The data collected from the sample households was described using the descriptive-analytic method. The study's level of food security is shown in the second subsection. The third sub-section displays the results and factors affecting the degree of food security of families for the solid waste collectors in the research area. Food-insecure households' coping strategies are covered in the fourth sub-section. The final sub-section: Challenges faced by waste collectors in the study area. Tables, graphs, regression analysis and descriptive statistics were used to display and summarize the data gathered from 58 solid waste collector individual household heads.

4.1. Demographic Characteristic

Sex and education status of Households

The following Table 2 shows the sex profiles of the respondents: from the major respondent category: more male respondents (51.7% of the total 58 respondents) than females (48.3%). From the total interviewee, male waste pickers were larger in number and, most males were work as a labor intensive and waste picking itself needs Power to collect from individual households to transfer to waste dumping station, so young males are significant in the Waste collecting Organization for effective and efficient work and their Food Security Improvement. After the men picked up the waste in their vehicles to go to the disposal station, the female waste collectors called the houses to release the wastes close to the waste picker space from each individual household. As a result, women make excellent general waste collectors who move from home to home. Consequently, the female collectors play a crucial role in strengthening the firms and increasing their earnings, ultimately leading to improved livelihoods. According to Solomon, K. (2017), the degree of validity and accuracy of the research findings is increased when a significant proportion of female waste pickers participate in the questionnaire. This is a result of the cultural norms in our nation that place women close to activities such as collecting solid waste and cleaning the home; in particular, in the study area, where these findings are almost totally at differences with my own research due to its differences.

Table 2: Sex of waste collectors

	Description	N	%
Sex	**Male**	**30**	**51.7**
	Female	**28**	**48.3**
	Total	**58**	**100.0**

Source: Author construction based on 2024 survey

While the educational level has been identified as a key factor in technology adoption (Tesfaye et al., 2001), the educational status of waste pickers in this study offers a different picture. Among the 58 respondents in Nefas Silk Lafto *Woreda* 9, 34.5% were illiterate, 15.5% could read and write, 27.6% had primary school education and 22.4% had secondary education. Waste pickers usually received little or no education, thus they lack basic business management and business administration knowledge needed to run a small enterprise (Marta, 2013). This indicates a wide range of educational attainment among the waste pickers, with a majority lacking formal education. This lack of Education could potentially impact their work performance and limit their ability to adopt new technologies or capital-intensive methods.

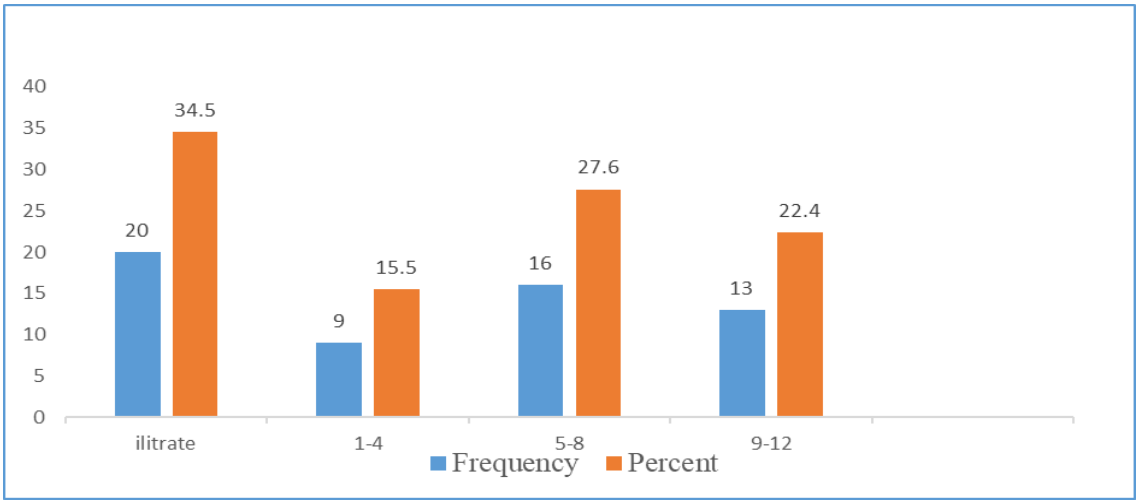

Figure 3: Educational status of solid waste collector

Age, family size and marital status of waste collectors

The age group distribution shows, that a significant number of respondents between 31 and 40 years old, a productive age group with a strong potential for growth in population. This group has the potential to have a direct impact on solid waste collection, affecting waste collection

methods' functionality and effectiveness, Solomon, (2017). The age of the solid waste collectors found in the solid waste association has a significant impact on the effective collection of solid waste disposal. According to the survey results, the ages of respondents in the study area ranged from 20 to over 50 years. Specifically, there were 19 respondents aged 20-30, 30 respondents aged 31-40, 8 respondents aged 41-50, and 1 respondent over 50. These age groups represent 32,8%, 51,7%, 13,8% und 1,7 % of the total, respectively. Overall, this result indicated that the highest numbers of respondents were between the ages of 31-40 years productive age. The young waste collectors have a favorable influence on the waste collecting process in the *Woreda*. But as waste collectors get older, their labor force participation and adaptability decline, which has a negative impact on the Waste Collection Organization. The responses from Table 3 reported that the average family size is 1.12 persons, with a range of 1 to 10. Food security is significantly impacted by the size of waste pickers' households. Smaller households are less likely to experience food insecurity than larger families, who often encounter greater issues in this area. Food security may be indirectly impacted. The size of the households served by waste collectors can indirectly affect food security. Larger households tend to generate more waste, potentially increasing the workload and impacting waste collectors' income. However, food insecurity among waste collectors is often a result of broader socioeconomic factors, such as limited access to resources and low income (Solomon, 2017).

Table 3: Distribution of waste collectors by Age, Family size and marital status

	Description	**N**	**%**
Age	20-30	19	32.8
	31-40	30	51.7
	41-50	8	13.8
	50 and above	1	1.7
	Total	58	100.0
Family size	1-5	51	87.9
	5-10	7	12.1
	Total	58	100.0
Marital status	Unmarried	11	19.0
	Married	33	56.9
	Divorce	9	15.5
	Widowed	5	8.6
	Total	58	100.0

Source: Author construction based on 2024 survey

As shown in table 3 the family size of sampled respondents ranged from 1 to 5, with a frequency of 51, and from 5 to 10, with a frequency of 7. The family size of waste pickers significantly impacts food security. Larger families are more likely to experience food security issues, while smaller households face fewer challenges in this regard. With 7 respondents having family sizes between 5 and 10, it indicates that larger households are more affected. The quantity of solid waste generated depends on the size of the waste collectors' households. As family size increases, so does consumption, leading to more waste generation and greater pressure on food security (Solomon, 2017). The survey indicates that out of the respondents 11 were unmarried youth, suggesting that they are not married. In a different context, this implies that waste collectors, without additional dependents, operate with a positive impact, experiencing less concern regarding household food shortages. Consequently, their income, while satisfactory, remains modest. On the other hand, 33 % of respondents were married. According to Solomon K. (2017), the largest population of waste pickers gets married. At this status, they believed to have adequate knowledge about waste generation and a management experience at home. Additionally, 9 respondents were divorced, indicating that, despite having children to care for, they struggle to effectively perform their work duties, and 5 respondents widowed also struggle to feed their family and perform effectively.

4.1.1. Socio-economic Characteristics

Monthly income

The relationship between waste generation rates and income level are directly correlated, respondents' typical monthly incomes were also seen to be important variables that could affect how individuals experienced and perceived the city's waste management system (D. Wells 2006).

Table 4: Waste collectors monthly income obtained from waste collection

Monthly income		N	Percent
	5000-6000	56	96.6
	6100-7000	2	3.4
	Total	58	100.0

Source: Field survey, 2024

The research findings reveal that majority of 56 waste collectors monthly income are between 5000 and 6000 the remain 2 waste collectors income are between 6100 to 7000. In the survey participants rely only on waste collection as their primary source of income. They do not engage in any other off-farm activities, indicating a complete dependence on this single-income-stream. The respondents' standard monthly earnings were identified as a crucial factor that could influence their perceptions, work performance, and attitudes towards the city's waste management system (D. Wells, 2006) and socio-economic conditions. According to FGD, "Waste collectors are paid based on the weight of waste collected, and while the amount of waste collected increases during the summer months; their earnings often fall short of expectations." This is due to unreliable payment practices and a low price per kilogram, frequently disrupted by irregular salary payments, particularly during holiday periods. "This inconsistency poses a critical threat to their livelihoods and food security." The waste collectors, to recommend and to increase the performance and productivity of the waste collecting system, were presented in figure 5 below. due to that, the waste collectors said, that creating social awareness (15.5%),developing cooperative work and Adopting technologies (20.7%) and (17.2%) respectively, increasing their labor income and benefits takes (44.8%), while market integration takes (1.7%), and this indicates, that they recommend increasing labor income and benefits.

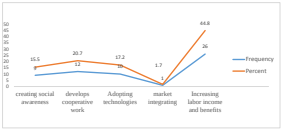

Figure 4: Waste collectors' recommendation to increase the productivity.

Source: Field survey, 2024

Access to credit

According to the focus-group-discussion, waste-collectors in this city previously had access to credit through a program facilitated by the government in partnership with (*Siket* Savings and Microfinance) that were found in *Woreda* 9 Administration. These program required members of the waste collection enterprise to save 20 % of their monthly salary, which enabled them to access loans. However, they are currently unable to access credit because their savings have dwindled due to frequent withdrawals, often made up to three times a month, to cover vehicle repair costs.

4.2. Food Security Analysis of the Study Households

Table 5: Food security status of study households based on HFIAS results

HFIAS Questions	Solid waste collector Yes response		FREQ in a month		
	N	percent	Rarely	Sometimes	Often
Q1.Worry about food	41	70.7	18	17	6
Q2.Unable to eat preferred foods	44	75.9	12	17	15
Q3.Eat a limited variety of foods	54	93.1	5	19	30
Q4. Eat foods they really do not want eat	23	39.7	11	8	4
Q5 Reduce amount of meal	30	51.7	12	13	5
Q6.Reduce frequency of in days meal	37	63.8	19	15	3
Q7.No food of any kind in the household eat	21	36.2	15	5	1
Q8.Go to sleep at night hungry	20	34.5	15	4	1
Q9.Go a whole day and night without eating	7	12.1	5	0	2

Source: Field survey, 2024

Based on the nine generic questions on the analysis of the HFIAS score, 31%, 10.3%, 13.8% and 44.8% of the households were categorized as " food secure", Mildly food insecure access," "Moderately Food Insecure Access," and "Severely Food Insecure Access," respectively. The minimum and maximum scores for the HFIAS value have been found to be 0 and 27,

respectively, with an average score of 3.29 (SD =0.726). For the welfare of the household and other development initiatives to be successful, access to enough food is crucial Endale et al., (2014). Cited Abebaw and Betru (2019) Food security challenges have risen to the top of emerging nations' priorities in recent years. As suggested by Coates et al. (2007), three specific food insecurity access conditions were summarized from HFIAS questions as domains, scale, and prevalence. The domains noted are simply further categorizations of the nine. HFIAS questions into three domains such as anxiety (question 1), insufficient quality (question 2, 3, and 4), and inadequate intake of food and its physical.

Table 6: Prevalence of food access in solid waste collector households as measured by HFIAS (N=58)

Question	No	Rarely	Sometimes	Often	Total
1a	17	18	17	6	58
2a	14	12	17	15	58
3a	30	5	19	0	58
4a	35	11	8	4	58
5a	33	12	13	0	58
6a	21	19	15	3	58
7a	37	15	5	1	58
8a	38	15	4	1	58
9a	51	5	1	2	58

Source: Field survey, 2024

The result shows in the above table 6 about two-thirds of households (68.9) were food insecure. That was, they were, at times, uncertain of having or unable to acquire enough food for all household members, because they lack of money and other resources for food. The food security status of households is mildly food insecure (10.3%) and moderately food insecure (13.8%) of the households, while the remaining 44.8 % of the study-households are severely food insecure, respectively. This implies that these high numbers of waste collector and their family did not have regular access to nutritious and sufficient food, even if they were not necessarily suffering from hunger, thus putting them at greater risk of various forms of malnutrition and poor health than the food-secured population. The remaining (31.0%) of waste collectors were food secured, meaning that they had access at all times to enough food for an active, healthy life for all the

enterprise members. based on the HFIAS result of this data the majority of waste collectors are severely food insecure they need food assistance and food aid.

4.3. Factors Affecting Food Security Situation

The waste pickers need training to improve the techniques of waste collection, and they want to improve their saving and ways of life to feed their households. Even if their Response is here in frequency and Percentage, 39 % of them said that they get support in a small amount of help or there is not satisfactory support to amend their way of living mechanism. Based on the Table 7 below shows that (31.0%) of they said that there are good experts supporting waste picking, while (17.2%) of they said that they never help, which means the waste pickers did not get support/help/from experts. Also (12.1%) of they said, that they have no regular program. According to Casey et al. (2019), describes: "Another important factor contributing to increased economic benefit is skills upgrading." "Almost all of the surveyed cooperatives provide and/or facilitate access to technical or legal trainings for members." However, in our country there is not satisfactory training for waste pickers especially in Nefas Silk Lafto *Woredas* 9.

*Table 7: Eff*ect of expert supporting on waste collectors job

		N	Percent
Valid	Good	18	31.0
	Lit bite	23	39.7
	They never help	10	17.2
	They have no regular program	7	12.1
	Total	58	100.0

Source: Field survey, 2024

Regression Analysis

Regression analysis was employed household food security status and coping strategies of solid waste collectors in Nefas silk Lafto, *Woreda* 9, the result helps us to understand which variables among five independent variables are more determine the level of household food security. The findings further indicate model summary result on coefficient of regressions.

Table 8: Dependent and Independent variable model summary

Model		R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin - Watson
1		.461[a]	.212	.169	.23913	1.933
	a. Predictors: (Constant), Socio economic factor, demographic factor					
	b. Dependent Variable: Household food security status					

Sources: SPSS out put

As it can be depicted from, the table there is a positive and statistically significant relationship between independent and dependent variables. In overall, the results revealed that all independent variables accounted for 21.2 % of food security the variance (R2 = 0.212). Thus, 21.2 % of the variation in household food security can be explained by the independent variables, and other unexplored variables may explain the variation in household food security status is accounted 78.2 %.

4.4. Coping Mechanism of Food Insecure Households

The HFIAS model showed that there were 31% food-secure households from the study-respondents. Among food-insecure households, 10.3% were mildly food-insecure, 13,8% were moderately food-insecure and 44.8% of the respondents were severely food insecure (see Figure 4). All of households in Nefas Silk Lafto *Woredas* 9 enterprises (waste collectors) were food insecure. According to WIEGO' (2015), risk prevention and preparedness study, reported that there was a challenge to minimize enterprises' food gap, which had food shortage due to coordination between stakeholders and enterprises itself. However, this research confirmed, 44 % of the respondents were severely food insecure out of the total participant and they were below the medically recommended dietary food intake in amount. The CSI keeps track of what people do when they don't have access to enough food. In reaction to food insecurity, people commonly use a number of predictable behavioral responses or coping techniques. These coping mechanisms are simple to observe. Information on coping mechanisms can be gathered more quickly, easily and affordably than actual household food intake data.

Table 9: Coping mechanisms of solid waste collectors in the study area

No.	Coping strategy index (CSI)	Yes respondent	Frequency		
			1-2 day	3-6 day	daily
1	Less preferred and less expensive foods	25	16	8	1
2	Borrow food, or help from a friend	5	5	0	0
3	Food on credit	7	5	2	0
4	Limit portion size at mealtimes	26	16	10	0
5	Restrict consumption by adults in order for small children to eat	22	12	10	0
6	Reduce the number of meals eaten in a day	10	10	0	0
7	Skip entire days without eating	0	0	0	0

Source: Field survey, 2024

The participant claimed that the households of waste collectors used a number of coping mechanisms in reaction to food shortages. The Strategies, by which households withstand the problems, are: Purchase food on credit (responded by 12.1%) in the study area, where Restrict consumption by adults in order for small children to eat (responded by 37.9%), and Limit portion size at mealtimes (responded by 44.8% respondents). Another common coping mechanism is to reduce the number of meals eaten in a day (responded by 17.2 % respondents), the frequency of eating less preferred foods (43%) and borrow food from friend or relative (8.6 %). According to the finding, the four most often employed techniques by the study households to deal with food insecurity were: eating less preferred foods, limiting portion size at mealtime, restricting consumption by adults in order for small children to eat and to Reduce the number of meals eaten in a day. The study's findings supported the idea that households in the study area developed a variety of coping strategies when faced with food scarcity or insecurity.

4.5. Challenges Faced by Waste Collector in the Study Area

Among the 58 respondents, 18 (31.0%) expressed low perceptions of communities, 16 (27.6%) identified issues within waste collection areas, 4 (6.9%) noted a lack of community contribution, and 20 (34.5%) highlighted deficiencies in community teamwork.

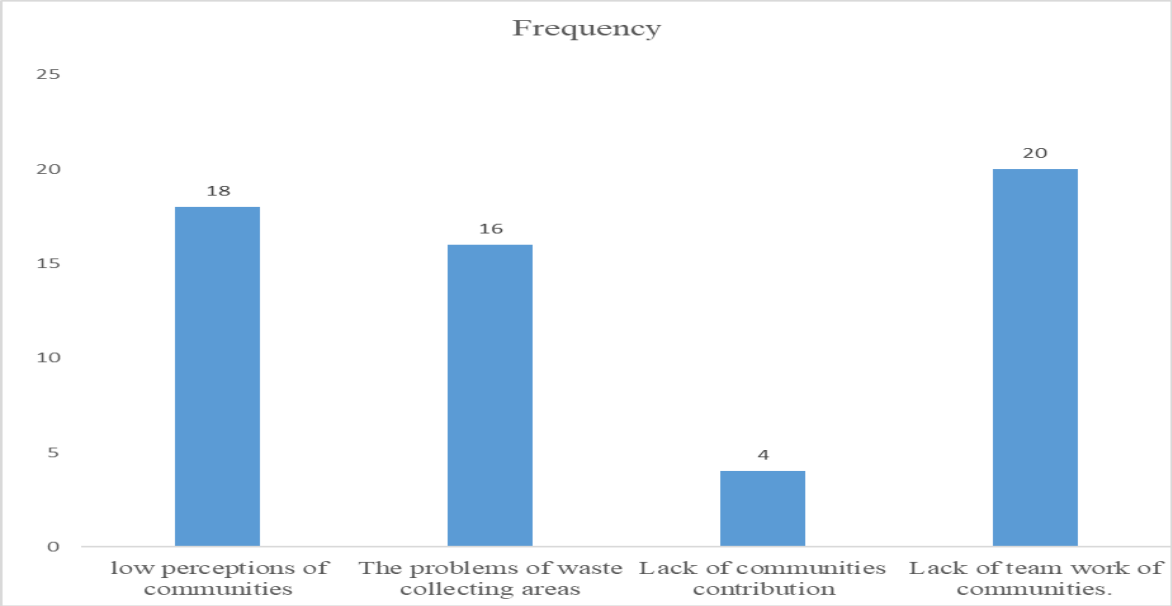

Figure 5: Specific challenges during the collecting of wastes

Source: Field survey, 2024

From the above figure shows, lack of teamwork of communities was challenges to waste collectors of waste management to enhance their livelihood. In addition, the large number of respondent were said to lack of teamwork this is directly affected waste collector. KI interview say the lack of care in waste-handling- and disposal-practices poses a significant challenge for waste-collectors. Residents often carelessly discard mixed waste, including metal and glass, in plastic bags. „This practice leads to injuries, such as cuts to the fingers, and increases the risk of various health hazards for collectors, directly impacting their well-being and hindering effective waste management.“ Low perception of communities towards waste collectors can affect the solid waste management system of the Nefas Silk Lafto *Woreda* 9 and steps in solid waste management, starting from household waste storage to waste segregation, recycling, collection frequency, willingness to pay for waste management services and disposal facilities, depend on. Lack of teamwork of stakeholders takes (20) respondents. Low perception of the communities, the problem of waste collecting and lack of community's contribution, which affects the waste collection mechanisms. Low perception of the communities takes (18) respondents; problem of waste collecting (16) respondents, lack of community's contribution takes (4) respondents, challenges to waste collectors of waste management to enhance their livelihood. In addition to the survey, additional insights were obtained through key informant interviews and household

interviews in Nefas Silk Lafto *Woreda* 9. Waste collectors around the world frequently lack decent working conditions and proper recompense for the important task they do. They often have low incomes and little social security, which puts them at risk for Health problems and other hazards. The livelihoods of waste-collectors may be seriously hampered by these obvious difficulties as well as underlying problems. They already difficult circumstances faced by waste collectors are made worse by elements like price fluctuations and low pay (ILO, 2015). In addition to their base salary, waste collectors did not receive any extra income or support, and they faced challenges such as poverty, unemployment, improper waste collection, transportation and disposal methods, institutional budget constraints, distance to transfer stations, and financial hardship. To tackle these issues, it is crucial for primary waste collectors to establish cooperatives and to join or form cooperative federations. These cooperatives can provide support to improve operations, access services, offer skill training for waste collectors, and enhance their bargaining power. Collaboration with trade unions and other support institutions is also essential in addressing these challenges (WEIGO/ILO, 2017).

Co-worker performance

Among the 58 respondents, 35 disagreed, and 23 said their performance was comparable to that of their coworkers. It became clear from the FGD and interviews that the presence of people battling addiction and age differences were factors in the performance disparities. Addicts sometimes lack the fortitude, discipline, and appropriate behavior needed for their jobs and can even demand unfairly large extra wages. Further aggravating performance inequalities, respondents noted out that physically taxing jobs like waste collection and transportation provide difficulties for elderly people. the health status of waste collector out of 58 respondent 82.8% were healthy and capable to work and 17.2% of waste workers were unhealthy this result indicated some amount of respondent health status is highly affect the work performance and income of waste collector also affected their food security.

Table 10: Solid waste collector's health status and performance

	Description	N	%
Co-Worker performance	Yes	23	39.7%
	no	35	60.3%
	Total	58	100.0%
Health status	Yes	48	82.8%
	no	10	17.2%
	Total	58	100.0%

Source: Field survey, 2024

Working place and material

From KI-Interview, interview and FGD discussion collectors in this City have a tough job. The enterprise faces significant challenges, including traveling the collected waste from the community to the dumping station using an old vehicle. Most of the time this leads to a repair-service-cost. The other is limited workspace and a shortage of basic safety equipment. Although the government occasionally provides support in the form of cleaning equipment such as work clothes, gloves, sweepers, shovels, and pickaxes, this assistance is insufficient and fails to adequately address the enterprise's needs. Do not even have a proper place to change their clothes after work. Making things worse, the sub-city sent Compactors to transport Waste from *Woreda* 9 dumping station to the final disposal site (Qoshe) Landfills frequently arrive later than expected and the Waste they collect sometimes starts to rot, making the bags unusable for future pickups. They cannot store large amounts of trash, which limits how much they can collect each day, hurting their income and making it hard for them to buy food for themselves and their families.

CHAPTEAR FIVE: CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The waste management practice of waste pickers in the study site was income earnings, and the waste management organization provided a source of employment for those, who are very poor and received a little education level; even some of them are illiterate. It benefits the environment because more material is recycled, thus increasing the capacity of landfills and reducing water and air pollution from inappropriate disposal of waste. Waste pickers' furthermore benefit the communities by cleaning neighborhoods and increasing the standard of living, while decreasing the spread of disease. Empowering waste pickers improve not simply their social status, but also waste pickers improve their incomes and working conditions, according to the study result, waste pickers are discouraged by the perceptions of the communities and the lack of governmental and private organizations in the practice of waste management in *Woreda* 9. Food insecurity is a serious problem that many of these people are facing, according to the findings, and it can have a negative impact on their general well-being and quality of life.

This study assessed food security among waste collectors in *Woreda* 9 using the Household Food insecurity Access Scale (HFIAS), establishing a cutoff score of 17 to distinguish between food secure, mildly food insecure, moderately food insecure and severely food insecure households. From the total respondent (44.8%) was classified as severely food insecure, with additional groups experiencing moderate (13.8%) and mild (10.3%) food insecurity, while 31 % were identified as food secure. The study also explored the impact of waste management on the feeding situations of waste collectors, revealing that a majority (23) reported a moderate change in their feeding habits after engaging in this work, suggesting a potential positive effect on food security. The analysis further identified key factors influencing food security in *Woreda* 9, including family size, education attainment, access to credit services and income, the family size of sampled respondents ranged from 1 to 5, with a frequency of 51, and from 5 to 10, with a frequency of 7. The family size of waste pickers significantly impacts food security. Larger families are more likely to experience food security issues, while smaller households face fewer challenges in this regard. With 7 respondents having family sizes between 5 and 10, it indicates that larger households are more affected. The educational status of waste pickers in this study

offers a different picture. Among the 58 respondents in Nefas Silk Lafto *Woreda* 9, 34.5% were illiterate, 15.5% could read and write, 27.6% had primary school education and 22.4% had secondary education. Waste pickers usually received little or no education, thus they lack basic business management and business administration knowledge needed to run a small enterprise (Marta, 2013). The research findings reveal that majority of 56 waste collectors monthly income are between 5000 and 6000 the remain 2 waste collectors income are between 6100 to 7000. In the survey participants rely only on waste collection as their primary source of income. They do not engage in any other off-farm activities, indicating a complete dependence on this single-income-stream. The respondents' standard monthly earnings were identified as a crucial factor that could influence their perceptions, work performance, and attitudes towards the city's waste management system (D. Wells, 2006) and socio-economic conditions. Waste collectors in this city previously had access to credit through a program facilitated by the government in partnership with (Siket Savings and Microfinance) that were found in *Woreda* 9 Administration. However, they are currently unable to access credit because their savings have dwindled due to frequent withdrawals, often made up to three times a month, to cover vehicle repair costs, highlighting the complex interplay of economic resources and household characteristics in determining food security status.

Furthermore, the participant claimed that the households of waste collectors used a number of coping mechanisms in reaction to food shortages. The Strategies, by which households withstand the problems, are: Purchase food on credit (responded by 12.1%) in the study area, where Restrict consumption by adults in order for small children to eat (responded by 37.9%), and Limit portion size at mealtimes (responded by 44.8% respondents). Another common coping mechanism is to reduce the number of meals eaten in a day (responded by 17.2 % respondents), the frequency of eating less preferred foods (43%) and borrow food from friend or relative (8.6 %). According to the CSI-finding indicate that in the study area, the four most often employed techniques by the study households to deal with food insecurity were: eating less preferred foods (43%), limiting portion size at mealtime (44.8%), restricting consumption by adults in order for small children to eat (37.9%) and reduction of the number of meals eaten in a day (17.2%). This demonstrates that more than half of the households in the study area adjust to a local coping mechanism when there are food shortages at the household level. Waste pickers of the *Woreda* 9 consider considerable contributions to municipal health, sanitation and the environment at local,

national and international levels by promoting resource circulation and reducing the amount of landfill. Based on the finding there are challenges that waste collectors faced during their work Lack of teamwork of stakeholders takes (20) respondents. Low perception of the communities, the problem of waste collecting and lack of community's contribution, which affects the waste collection mechanisms. Low perception of the communities takes (18) respondents; problem of waste collecting (16) respondents, lack of community's contribution takes (4) respondents, challenges to waste collectors of waste management to enhance their livelihood. In addition to the survey, additional insights were obtained through key informant interviews and household interviews in Nefas Silk Lafto *Woreda* 9. Waste collectors around the world frequently lack decent working conditions and proper recompense for the important task they do. They often have low incomes and little social security, which puts them at risk for Health problems and other hazards.

Poor institutional coordination is a challenge that leads to poor solid waste management, and there is very weak coordination between the municipality officials of the sub-city and other stakeholders involved in the environmental protection issues. Waste Management is a complex task that requires appropriate organizational Integration between numerous Stakeholders. Waste picker s enterprise had a variety of constraints, highlighting poor enterprises internal and external Coordination. The most important challenge is the presence of alcohol and drug use members coworker performance were internal impact .It makes the team unhealthy or less productive, on the other hand lack of working space, lack of safety equipment, scarcity of food in the *woreda* and institutional factors, were external impacts, those can be potentially affected the enterprise productivity indirectly also affected waste collectors food security.

5.2. Recommendation

Based on the findings of the study, the following recommendations can be made to enhance the food security status of solid waste collectors in Nefas Silk Lafto *Woreda* 9:

1. **Enhance the provision of safety equipment and vehicles**; the City Cleansing Office (Agency) should provide solid waste collectors with appropriate safety equipment to protect them from health risks and hazards associated with their work. Many collectors lack the Potential or earning capacity to acquire this essential gear on their own. By equipping them with the necessary safety tools and vehicles to address the service, this can enhance their work efficiency and income.

2. **Increase the price of waste per kilogram**; the government should raise the price per kilogram that enterprises pay for collected waste. Currently, the low rates discourage waste collectors and contribute to their low incomes. By increasing this price, waste collectors can earn more, which will significantly improve their livelihoods and incentivize better waste management practices in the community.

3. **Address Addicted Members with Targeted Training and Support**; Some members of the waste collection enterprise struggle with addiction, hindering their work performance and their understanding of waste-collection as their primary source of income. To address this, the *Woreda* Administration should provide training to help these members change their behavior and contribute to a standardized waste collection service, ultimately aiming to increase customer satisfaction.

4. **Empowering waste collectors through legal support is essential;** the government should implement policies that provide comprehensive legal coverage, simplifying operational challenges for these enterprises.

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APPENDICES

Appendix I: Household Survey Questionnaires for quantitative study

Part I: Socio-demographic characteristic of household

	Background of the households		
No	Question	Response	Code
1.	Sex of household head	Female	0
		Male	1
2.	Age of household head in years		
3.	Household size in number	Female	
		Male	
3.1.	Number of household members aged <14		
3.2.	Number of household members aged < 65		
4.	Education level of household	Cannot read and write	1
		Grade 1 – 4	2
		Grade 5 – 8	3
		Grade 9 – 12	4
		Higher education	5
5.	Occupation of the household	Unemployed	1
		Trader	2
		Waste collector	3
		Daily wage	4
		Government employed	5
		others	6
6.	Marital status	Single	1
		Married	2
		Divorced	3
		Widowed	4
7.	Religion	Orthodox	1
		Muslim	2
		Protestant	3
		Other	4
8.	Is there any problem when you collecting solid waste from sources?	Yes	1
		No	2
8.1.	If 'yes' please rate the severity of the problem	very high	1
		high	2
		moderate	3
		little	4
9.	What is the effect of expert's supporters on	good	1

	your job?	a little bit they help	2
		they never help	3
		they have no regular program	4
		We do not know them	5
10.	Why not continuous change in waste collecting in *Woredas* 09?	lack of team work	1
		Lack of effective training	2
		lack of stakeholders attention	3
		lack of professional	4
11.	Do you think all members of co-workers have equal work performance and interest?	Yes	1
		No	2
11.1	If 'no' why?		
12.	What is the perception of the communities about your job?	difficult	1
		Low	2
		moderate	3
		good	4
18.	What are the main challenges during the collecting of wastes?	low perceptions of communities	
		The problems of waste collecting areas	
		Lack of communities contribution	
		Lack of team work of communities.	
19.	What do you recommend to increase the productivity of waste collecting system?	creating social awareness	1
		develops cooperative work	2
		Adopting technologies	3
		market integrating	4
		Increasing labor income and benefits	5
20.	Is the health status of the household head active/capable to work?	yes	1
		No	2
22.1.	If 'no' why?	Sick	1
		Aged	2

		Disable	3
		Other, specify	4
23.	The amount of income obtained from waste collection		
24.	Do you have access to credit services?	Yes	1
		No	2
24.1.	If 'yes', for what purpose do you receive credit? (multiple response is possible)	To purchase improved seed	1
		To purchase fertilizer	2
		To purchase farm equipment/ tools	3
		To start income generating activities	4
		Other, specify	5
25.	Tell as the amount of household expenses on food and non-food items		

Part II: Household food security status questionnaires

This part consists the Household Food Insecurity Access Scale (HFIAS) and Coping Strategy Index (CSI) **Read each statement carefully and respond to each item by expressing your degree of agreement or disagreement by writing 0, 1, 2 or 3 in the rectangle marks.**

HFIAS Measurement tools

For each of the following questions, consider what has happened in the past 30 days. Please answer whether this happened never, rarely (once or twice), sometimes (3-10 times), or often (more than 10 times) in the past 30 days?			
No	Questions	Responses options	code
1 1.a	Did you worry that your household would not have enough food? How often did this happen?	0= No (skip to Q2), 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= often (more than 10 times in the past 30 days)	
2 2.a	Were you or any household member not able to eat the kinds of foods you Preferred because of a lack of resources?	0= No (skip to Q3), 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= often (more than 10 times in the past 30 days)	

	How often did this happen?		
3 3.a	Did you or any household member eat just a few kinds of food day after day due to a lack of resources? How often did this happen?	0= No (skip to Q4), 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= often (more than 10 times in the past 30 days)	
4 4.a	Did you or any household member eat food that you preferred not to eat because a lack of resources to obtain other types of food? How often did this happen?	0= No (skip to Q5), 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= often (more than 10 times in the past 30 days)	
5 5.a	Did you or any household member eat a smaller meal than you felt you needed because there was not enough food? How often did this happen?	0= No (skip to Q6), 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= often (more than 10 times in the past 30 days)	
6 6.a	Did you or any household member eat fewer meals in a day because there was not enough food? How often did this happen?	0= No (skip to Q7), 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= often (more than 10 times in the past 30 days)	

7 7.a	Was there ever no food at all in your household because there were not resources to get more? How often did this happen?	0= No (skip to Q8), 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= often (more than 10 times in the past 30 days)	
8 8.a	Did you or any household member go to sleep at night hungry because there was not enough food? How often did this happen?	0= No (skip to Q9) 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= often (more than 10 times in the past 30 days)	
9 9.a	Did you or any household member go a whole day without eating anything because there was not enough food? How often did this happen?	0= No (finished), 1= Yes, go to frequency 1= rarely (once or twice in past 30 days) 2= sometimes (three to ten times in past 30 days) 3= CSI1	

Coping strategy index (CSI)		
	In the past 7 days, if there have been times when you did not have enough food or money to buy food, how many days has your household had to:	Frequency (0-7)
1	Rely on less preferred and less expensive foods?	
2	Borrow food, or rely on help from a friend or relative?	
3	Purchase food on credit?	
4	Limit portion size at mealtimes?	
5	Restrict consumption by adults in order for small children to eat?	
6	Reduce the number of meals eaten in a day?	
7	Skip entire days without eating?	

Appendix II: key Informant Interview

Dear, participants

The overall aim of this study is to gather data on the food security status of solid waste collector households in Nefas Silk Lafto, *Woreda* 09. The data will be primarily used for academic purposes. If you agree to take part in this study, you will be doing so voluntarily, and there will be no payment. You are also allowed to refuse to answer any questions that you do not feel comfortable answering or to withdraw from the study completely. It will take you about an hour to respond to the questions in this interview.

Directions: Responds to open ended questions by writing your own word, please provide brief responses on the blank spaces offered.

1. To what extent Addis Ababa waste management agency perform their responsibility in the implementation of the full package service?----------
---

2. What major functions are performed at the time of follow up? ----------
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3. What are the major challenges observed in the implementation of waste management service?

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4. What solutions are taken to avoid and or minimize the challenges and or problems? ----------
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5. What is your suggestion for the better implementation of waste management service in the future? ----------
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Appendix III: Focus group discussion

Dear, participants

The overall aim of this study is to gather data on the food security status of solid waste collector households in Nefas Silk Lafto, *Woreda* 09. The data will be primarily used for academic purposes. If you agree to take part in this study, you will be doing so voluntarily, and there will be no payment. You are also allowed to refuse to answer any questions that you do not feel comfortable answering or to withdraw from the study completely. It will take you about an hour to respond to the questions in this discussion.

1. Do you think that the diversity of food groups is accessible, available, and affordable in this Nefas Silk Lafto sub-city of *Woreda* 09 for solid waste collector? Explain what it is or is not.

2. What difficulties do solid waste collectors in Nefas Silk Lafto *Woreda* 09 face in maintaining waste management and how do these challenges affect their work performance during waste collection?
3. How does the seasonal variability of waste collection affect household food security?

4. Is there any support from community organizations or government programs to maintain livelihood and food security for solid waste collectors themselves and their families?

ክፍሌ 1

አዲስ አበባ ዩኒቨርሲቲ
የሀገር ልማት ጥናት ኮሌጅ
የምግብ ዋስትናና ጥናት ማዕከል

<u>መረጃ መሰብሰቢያ ቃለመጠይቅ</u>

በንፋስ ስልክ ላፍቶ ክፍለ ከተማ ውስጥ በሚገኙ ወረዳዎች ውስጥ ደረቅቆሻሻን <u>በመሰብሰብ ና በማንዝዝ የሚተዳደሩየህብረተሰብ ክፍሎች</u> የሚሞላ ቃለ-መጠይቅ። የሚሰጡን ግልጽና ታማኝነት ያለው መረጃ ወሳኝ ስለሆነ እባክዎትን በጥንቃቄ ይመሉት።

አመሰግናለሁ።

መመሪያ: እባክዎ እንዲመርጡ በሚጠይቀው የቃለመጠይቅ ክፍል ላይ የመረጡትን ፊደልወይም ፊደላት ብቻ በማክበብ እንዲመርጡ እጠይቃለሁ፡ እንዲሁም በክፍት ቦታው ላይእንዲጽፉ በተጠየቀው የቃለ መጠይቅ ክፍል ላይ ደግሞ ግልጽና አጭር መልስ በመጻፍእንዲተባበሩን እጠይቃለሁ።

1. የቤተሰብ አስተዳዳሪ ጾታ ሀ) ሴት ለ) ወንድ
2. የቤተሰብ አስተዳዳሪ ዕድሜ----------
3. የቤተሰብ ብዛት በቁጥር ? ሴት--- ወንድ----

3.1. ዕድሜያቸው<14 የሆኑየቤተሰብአባላትብዛት ----------

3.2. ዕድሜያቸው<65 የሆኑየቤተሰብአባላትብዛት ----------

4. የቤተሰብየትምህርትደረጃ ሀ) ማንበብና መጻፍ የማይችል ለ) 1ኛ ክፍል - 4

ሐ) 5-8ኛ ክፍል፣ መ) 9 - 12 ክፍል፣ ሠ) ከፍተኛ ትምህርት

5. የቤተሰቡ ስራ ሀ) ሥራ አጥለ) ነጋዴሐ) ቆሻሻ ሰብሳቢመ) ዕለታዊ ደመወዝሠ) የመንግስት ስራረ) ሌላ
6. የጋብቻ ሁኔታሀ) ያላገባለ) ያገባሐ)ፍቺ የፈፀመ መ)በሞት የተለዬ
7. ሃይማኖትሀ) ኦርቶዶክስለ) ሙስሊምሐ)ፕሮቴስታንት መ) ሌላ
8. ቆሻሻ ስታጠራቅሙ የሚገጥሚችሁ ችግር አለ ወይ; ሀ) አዎ ለ) የለም

8.1. መልስዎ አዎከሆነ፣ የችግሩን ደረጃ ይግለፁ ሀ) በጣም ከባድ ለ) ከባድ ሐ) መካከለኛ መ) ትንሽ

9. በግል አመለካከትዎ አሁን እየተተገበረ ያለው የቆሻሻ መሰብሰብ አገልግሎት ውጤታማ ነው ብለው ያስባሉ? ሀ)አዎ ለ)አይደለም ሐ) ሌላካለ

10. ስለባለሙያዎች ወይም ድጋፍ ስለሚያደርግሎት አካል ምን ማለት ይፈልጋሉ? ሀ)ጥሩ ይረዳናልለ) በትንሹ ይረዳናል ሐ) ጭራሽ አያግዘንም መ) ወጥ የሆነ-ፕሮገራም የላቸውም ሠ) እንዲያውም አናውቃቸውም

11. በቆሻሻ አሰባሰብ ትግበራ ላይ ምንድ ነው ቀጣይነት ያለው ለውጥ ሊመዘገብ ያልቻለው;
ሀ) የሽርክና አባላት በጥምረት አለመስራት ለ) ውጤታማ ስልጠና አለመሰጠቱ

ሐ) የባለሙያዎች ትኩረት ያለመስጠት መ) የሰለጠነ የሰው ሀይል በቂ ያመሆን

12. በአደረጃጀትና በመሳሰለት የመወያያ መድረኮች ትወያያላችሁ;
13. ሀ) አዎ ለ) አንወያይም ፣መልስዎ አንወያይም ከሆነ፣ ምክንያትዎ ይግለፁ፤----------
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14. የምትጠቀሙባቸው መሳሪያዎች ምን አይነት ናቸው;ሀ) ባህላዊለ) ዘመናዊ; ባህላዊ ከሆነ ምክንያትዎ ይግለፁ፤----------

15. የምትሰጡትን የአገልግሎት ጥራት እንዴት ታዩታላችሁ;ሀ) በጣም ጥሩ ለ) ጥሩ ሐ) መካከለኛ መ) ዝቅተኛ

16. ሁለም የሽርክናአባላት እኩል የስራ ፍላጎት እና አፈፃፀም አላቸው ብለው ያስባሉ? ሀ) አላቸው ለ) የላቸውም፣መልስዎ የላቸውም ከሆነ፣ ምክንያትዎ ይግለፁ፤----------
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17. ማህበረሰቡ ለማህበራችሁ/ ለድርጅታችሁያለው አመለካከት ምን ይመስላል፡ሀ) አስቸጋሪ ለ) ዝቅተኛ ሐ) መካከለኛ መ) ጥሩ

18. የሰበሰባችሁትን ቆሻሻ የመሸጥ/ የገበያ ትስስር ችግር/ አለባችሁ;ሀ) አዎለ) የለም፤ አዎ ከሆነ መልስዎ ለምን----------

19. ይህን ስራ ከመጀመራችሁ በፊት የነበራችሁ የአመጋገብ ስርዓት እና ከጀመራችሁ በኋላ ምን ለውጥ አለው ሀ) በጣም ጥሩ የአመጋገብ ለውጥ አለለ) ጥሩ ለውጥ አለ ሐ) መካከለኛነው መ) በጥቂቱ ሠ) የለም

20. ለስራችሁ ዕንቅፋት እየፈጠረ ያለው፤ ሀ) የማህበረሠቡ አመለካከት ዝቅተኝነት ለ)የማጠራቀሚያ ርቀት ሐ) የማህበረሠቡ ተነሳሽነት ማነስ መ) በቡድን መስራት አለመቻል

21. እርስዎ ለደረቅ ቆሻሻ አሰባሰብ ና አጓጓዝ ስርኣት ውጤታማነት ምን መሰራት አለበት ይላሉ፡ ሀ)የግንዛቤማስጨበጥ ስራ መስራት ለ) ሁሉም አካል በትብብር መስራት ሐ) የቆሻሻአሰባሰብና አወጋገድ ስርዓትን ማዘመን መ) የገበያ ትስስር መፍጠር ሠ) የሰራተኞችንደመወዝና ጥቅማጥቅም መጨመር

22. የቤተሰብ አስተዳዳሪ የጤና ሁኔታ ጤናማ ነው/የመሥራት አቅም አለው? ሀ) አዎ ለ) አይደለም፤ አይደለም ከሆነ መልስዎ ምክንያቱን ይግለፁ ሀ) ህመም ለ) እድሜ መግፋት ሐ) አካል ጉዳት መ) ሌላ ካለ ይግለፁ
23. የቤተሰቡ አማካኝ አመታዊ ገቢ ስንት ብር ነው?----------
24. ከቆሻሻ መሰብሰብ ምን ያህል ገቢ ያገኛሉ ?----------
25. የብድር አገልግሎት ያገኛሉ? ሀ) አዎ ለ) የለም'አዎ' ከሆነ፣ ምን አገልግሎት ላይ ያውሉታል(ከ 1 በላይ መስጠት ይቻላል) 1) ዘር ለመግዛት 2) ማዳበሪያ ለመግዛት 3) የእርሻ መሳሪያዎችን / መሳሪያዎችን ለመግዛት 4) የገቢ ማስገኛ እንቅስቃሴዎችን ለመጀመር 5) ሌላ ካለ ይግለጹ
26. ለምግብ እና ምግብ ነክ ላልሆኑ ነገሮች የሚያወጡት ወጪ ስንት ነው----------
27. በምትሰሩት ስራ የሚከፈላችሁ ክፍያ/ደመወዝ/ ለምግብ ፍጆታ ዋስትናችሁ አጥጋቢ ነው ብለው ያምናለሀ) አዎለ) አይደለም፣ መልስዎ አይደለም ከሆነ ምክንያትዎን ይግለፁ----------
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ክፍል 2

Household Food Insecurity Access Scale (HFIAS) Measurement Tool

የምግብ ዋስትናቸውን ያላረጋገጡ ቤተሰቦች መለኪያ

ተ.ቁ	ጥያቄ	የመልስ አማራጭ/	መልስ
1.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ አይኖረኝም ይሆናል ብለው ሰግተው ያውቃለ?	0 = አልሰጋሁም (ወደ ጥያቄ 2) 1= አዎ	
1.1.	ባለፉት አራት ሳምንታት ውስጥ ይሄ ስጋት ስንት ጊዜ ደርሶብዎታል?	1= አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10ጊዜ) 3=ሁልጊዜ(ከ 10ጊዜ በላይ)	
2.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል የወደዱትን ምግብ ሳይበሉ ቀርተው ያውቃሉ?	0 = አይደለም (ወደ ጥያቄ 3) 1=አዎ	
2.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1=አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = አንዳንድ ጊዜ (3-10 ጊዜ) 3= ሁል ጊዜ (ከ 10 ጊዜ በላይ)	
3.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል የተወሰኑ የምግብ አይነቶች ብቻ በልታችኋል?	0 = አይደለም (ወደ ጥያቄ 4) 1 = አዎ	
3.1	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1=አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10ጊዜ) 3=ሁል ጊዜ(ከ10ጊዜ በላይ)	
4.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባልመብላት የማትፈልጉትን ምግብ በልታችኋል?	0=አይደለም (ወደ ጥያቄ 5) 1 = አዎ	

4.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1=አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10ጊዜ) 3=ሁል ጊዜ(ከ10ጊዜ በላይ)	.
5.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ሳትጠግቡ ለመነሳት ተገዳችኋል?	0 = አይደለም (ወደ ጥያቄ 6) 1 =አዎ	

5.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1=አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10ጊዜ) 3=ሁል ጊዜ(ከ10ጊዜ በላይ)	
6.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ቁርስ፤ምሳ ወይም እራት መብላት ሳትችለ ቀርታችኋል?	0 = አይደለም (ወደ ጥያቄ 7) 1 = /አዎ	
6.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1= አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10ጊዜ) 3=ሁል ጊዜ(ከ10ጊዜ በላይ)	.
7.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት በቤተሰቡ ውስጥ የሚላስ የሚቀመስ ያልነበረበት ጊዜ ነበር?	0 =አይደለም (ወደ ጥያቄ 8) 1 = አዎ	
7.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1=አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10ጊዜ) 3=ሁል ጊዜ(ከ10ጊዜ በላይ)	
8.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም	0 = አይደለም (ወደ ጥያቄ 9) 1 = አዎ	

	ማንኛውም የቤተሰብ አባል እየራበው ወደ መኝታ የሄደበት ጊዜ ነበር?		
8.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1=አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10ጊዜ) 3=ሁል ጊዜ(ከ10ጊዜ በላይ)	
9.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ቀኑን መሉሳይበሉውለውሳይበሉያደሩበት ጊዜ አለ?	0 = የለም (ጥያቄው አልቋል) 1 = አዎ	
9.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1=አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10ጊዜ) 3=ሁል ጊዜ(ከ10ጊዜ በላይ)	

Coping strategy index (CSI)		
	ባለፉት 7 ቀናትውስጥ፣ምግብለመግዛትበቂገንዘብለምን ያህል ጊዜአተዋል፣ በዛም ምክንያት ቤተሰብዎ ለምን ያህል ቀናት፡፡	ድግግሞሽ (0-7)
1	ጥራታቸው የወረዱ ወይም ዋጋቸው የቀነሱ ምግቦች ላይ ተመስርተዋል?	
2	ምግብተበድረውወይምከጓደኛእርዳታ ጠይቀው ያውቃሉ?	
3	በዱቤ ምግብገዝተው ያውቃሉ?	
4	በምግብሰዓትየሚመገቡትን ምግብ መጠናቸውን ቀንሰዋል?	
5	ትላላቆች ለታናናሻቸው ሲሉ የምግብ ፍጆታቸውን ቀንሰዋል ?	
6	በቀንየሚመገቡትን ምግብ ቀንሰዋል?	
7	መሉ ቀን ሳይበሉ ውለዋል ?	

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