



SEEK WISDOM, ELEVATE YOUR INTELLECT AND SERVE HUMANITY!



**COLLEGE OF DEVELOPMENT STUDIES
CENTER FOR FOOD SECURITY STUDIES**

**ASSESSMENT OF SOLID WASTE MANAGEMENT PRACTICES AND
IMPLICATIONS TO WASTE PICKERS FOOD SECURITY IN ARADA
SUB-CITY ADDIS ABABA**

BY
ASAYE LIKNAW

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

Dec, 2020
Addis Ababa, Ethiopia



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DECLARATION

This thesis 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.

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(Advisor)

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Date

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This is to certify that the thesis prepared by Asaye Liknaw Wubie entitled with assessment of solid waste management practices and implications to waste pickers food security in *Arada* sub-city *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 meets 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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List of Abbreviations

CAE	Centre for Advanced Engineering
EEPA	Ethiopian Environmental Protection Authority
EU	European Union
FAO	Food and Agriculture Organization
KII	Key Informant Interview
MSW	Municipal Solid Waste
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organization
SDGs	Sustainable Development Goals
SSE	Social and Solidarity Economy
SSEO	Social and Solidarity Economy and organization
SWM	Solid Waste Management
UNDP	United Nations Development Program
UNEP	United Nation Environmental Program
USAID	United States Agency for International Development
WFP	World Food Program
WHO	World Health Organization
WIEGO	Women in Informal Employment: Globalizing and Organizing

Abstract

The aim of this study was to assess solid waste management implication to waste pickers' food security in Arada Sub-City, Addis Ababa, Ethiopia. 76 Waste pickers were selected based on the product of Yamane formula using Simple random and purposive sampling techniques to get information and quantitative data were collecting using questionnaire survey and analyzed using measure of central tendency (mean) and measure of dispersion (standard deviation). Qualitative data were collected through key informant interview and secondary data sources were analyzed using thematic content analysis and there was inadequate solid waste management due to lack of strict rules and regulation as well as lack of social awareness exist in the sub city in particularly in Arada sub-city. The findings of this study revealed that there is limited financial, physical, and human resources, lack of waste management policy, social inclusiveness of waste pickers, and scarcity of food stay alive in the sub city. The waste pickers have challenges of income for their livelihood, lack of adoption of capital-intensive, lack of awareness of communities and there is lack of government attention on solid waste management. The level of education of waste pickers was low because they were immigrants from rural areas due to that they were not effective in adoption of technologies. The distance of transfer station, inappropriate waste collection, and informal community waste containers had also direct impact on solid waste management. Location of waste storage, food insecure of waste pickers, factors related to financial constraints, weak enforcement of rules and regulations, socio-economic, cultural factors and awareness of the communities affects them. Thus, it was recommend that to increase awareness of the community, responsible bodies (Government, Community and Health Bureau) should pay attention to the issue in order to improve the current poor solid waste management practices and to improve the food security of waste pickers in the town.

Keywords: Waste, economic incentives, management, food security, pollution, sub city

CHAPTER ONE

1.1 Background of the Study

The expansion of globalization around the world favors the unexpected growth phenomena to urbanization. The intense growth of urbanization on one side brought modernization, economic growth, and strong interrelation among world community. On the other hand, it possesses many challenges that 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, bidders, 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 picking benefits of workers by providing a source of employments are very poor and received little education. It profit 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. The practice of solid waste management in the region is mostly open dumps without proper control over ecologically or hydrological sensitive areas. Accordingly, solid waste generation has become an increasing environmental and public health problem everywhere in the world, particularly in developing countries. Consequently, solid waste is not only increasing in quantity but also changing in composition from organic to more paper, packing wastes, plastics, glass, metal wastes among other types, a fact leading to the low collection rates. 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).

The environmental problems also have socio-economic consequences and Poor environmental quality of cities can deprive citizens of good quality of life by affecting their health and wellbeing. The product of swift urbanization is creating challenges for growing cities in our country. Developing Cities make available as major growth engines by providing opportunities for employment of their countries, education, and technology. The conversion of farmlands and watersheds for residential purposes has negative results in food security, water supply and the health of the people (Mesfin, 2006).

WEIGO (2017) found that many waste pickers' cooperatives have difficulties in accumulating and achieving economies to acquire their own venues pay their bills or reduce member's insecurity and instability. To address these challenges, it is essential for primary waste pickers' cooperatives to join or form cooperative that can support primary-level cooperatives in improving operations, accessing services and skills training and escalating bargaining superiority and current waste collection capacity and disposal management system are not matching with the growing waste generation rate in developing countries.

Other challenges are attribute to limited government support and absence of legal identity and recognition for waste pickers and their organizations. In Turkey, according to the recent times passed-law, the position of waste pickers were not formally acknowledged and purchases from informal waste pickers is punishable with a fine. Very few governments provide favorable procurement conditions to

cooperatives in waste management systems for their social development function for their members and communities (ILO, 2017).

Tadesse (2004) also states that inadequate solid waste collection that is generated from houses and industries create a larger range of environmental problems in Addis Ababa and its surroundings. The major contributor to high morbidity and mortality among the urban poor is lack of basic solid waste disposal service. Demographic, socioeconomic changes, way of waste management and consumption patterns are the main factors that affect the waste management system in Addis Ababa. Recognizing the seriousness of the problem, Addis Ababa City Administration established and institutionalized the waste management agency up to Wereda level. Understanding the waste management practice is extremely important for engagement of waste pickers as daily workers. In this research, the waste management of Arada sub city was considered. The solid waste management office gain evidence about labor of waste pickers' organization.

1.2 Statement of the Problems

Ethiopia has a deep range of solid waste management problem, including inadequate waste collection, transportation systems, inadequate waste handling, and improper final disposal that result in urban environmental pollution. There are many challenges like, inadequate funds to support waste management, inadequate waste storage, draining systems, way of collection and disposal, low collection coverage and irregular collection services, dumping and burning system without air and water pollution control. These problems were being aggravated by the growing waste generation rates associated with population growth in urban areas (Degnet 2008).

The current rate of solid waste generation is paying for enterprises 132.94 birr per m³ or 0.6647 birr per kilogram in the city of Addis Ababa. Accurate information with regard to solid waste is important to establish proper waste management system and for regulatory, financial, and institutional decisions making. There is lack of timely information about the generation and composition of solid waste management in Addis Ababa specifically in Arada sub-city (Addis Ababa city administration solid waste management Agency, 2011).

In many cases the introduction of solid waste management practices and its implication to food security of waste pickers bring economic benefit also to save in waste disposal costs, it has also relevant sources for other researchers as reference, due to that most in Arada sub-city there are a lot of

unemployment youth and female head households participated to collect the waste and they almost become permanent/temporary monthly salary with formal and informal situation to diminish their poverty. It gives a brief idea of the problems starting from the source of the wastes to final waste disposal station and to observe the food security status of waste pickers in the sub city (Degnet, 2008).

Solid waste management implication to improve food safety and security for health advancement with the services of collection, transfer and disposal of solid waste in the urban area of developing countries are either sparse or ineffective and the wastes are often improperly disposed. Solid waste produced in urban areas in the lower income as well as poorest parts of middle-income countries is estimate to be left uncollected. The same sources indicate that it is less than 30% of the urban population that have access to proper and regular garbage disposal and less than 20% of the waste produced in developing countries is treated properly (Zerbock, 2003). Due to that, the researcher would like to address on such kinds of problem to identify whether the solid waste management is significant for waste pickers.

Most studies conducted so far in line with this thesis give more emphasis to the issues like; willingness to pay SWM collection (Aklilu, 2002) generation rate of the waste (Lemma, 2007 and Melaku, 2008), Determinants of Solid Waste Disposal Practices in Urban Area (Degnet, 2008), and Waste Pickers: Strategies to Enhance Livelihoods, (Marta, 2013). Which are very far away from now and even special emphasis is given to the determinants of recycling of solid wastes; which is revolving on developing nations. However, such assessments do not guarantee to conclude about the Contribution of waste disposal management practices and its implication to household food security of waste pickers in Arada Sub-City Addis Ababa. Therefore, this thesis was intended to fill the current literature gap related to contribution of solid waste disposal management practices and its implication to food security of waste pickers in the sub city.

1.3 General Objectives

The general objective of this study is to investigate the assessment of waste disposal management practice and its implication on household food security of waste pickers in Arada Sub-City Addis Ababa.

1.3.1 Specific Objectives

Specifically, the study is intended to:

- Describe the solid waste management practices of the sub city.
- Assess the contribution of solid waste management practice to waste pickers and communities.
- Determine the food security situation of waste pickers.

1.4 Research Questions

- ✓ What are the impacts of solid waste management to waste pickers and to the society?
- ✓ How can identify solid waste management practices in Arada sub city?
- ✓ To what extent, the Contribution of solid waste management utilize to waste pickers on food security.

1.5 Significance of the Study

Various researches 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

Administratively, Addis Ababa city is made to be structured at three layers of government: city government at the top, 10 sub-cities administrations in the middle and 116 *woredas* level administrations at the bottom. The study was conducting in *Arada* Sub-city Addis Ababa. Even if the sub city is old, comfort for live, destructing and constructing for commercial centre, existence of solid, liquid and gas wastes around the sub city specifically, 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. Although there is improper waste

management process in the sub city, low awareness of population for the waste management (or waste disposal) and waste pickers, the activities and actions required to manage waste from its starting to its final disposal, high population density, absence of technological machine to waste collection, contain the sub city difficult to waste collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process.

1.7 Limitation of the Study

The study considers only waste management and its contribution to food security of waste pickers, to the best of the researcher capacity efforts were made to achieve the best quality of study from starting stage through data collection ,analysis , interpretation and drafting of reports however, the researcher believe that a study can't done free from any limitation. It was constraint during distributing and collection of questionnaire to get respondents due to the occurrence of current covid-19 epidemic disease in the county and to get tangible evident from respondents. There was also limitation during collecting of information from available reference materials 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 being one of the few preliminary works, it has limitation in generalizing findings to broader scope also this study may have limitation with regard to data acquisition (in amount and time horizon) because of limited available financial and time resources.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1 Definitions and concepts

“**Waste**” means any substance or object, which carrier of discards, be going to, or is required to discard; “**Waste management**” (WM) means the collection, transport, recovery and disposal of waste, including the supervision of such operations and the after-care of disposal sites (EU, 2008).

“**Municipal solid waste**” (MSW) is a term usually applied to a diverse collection of wastes produced in urban areas; the nature varies from region to region. The characteristics and magnitude of the solid waste generated in a county is not only a utility of the livelihood standard and lifestyle of the region's inhabitants, but also of the plenty and type of the region's natural resources. Urban wastes can be sub-divide into two major components organic and inorganic materials (Jamal, 2002).

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 community trucks that collect and transport waste to discarding locations (Marta, 2013).

WIEGO: It is more focused on the women in the Informal Employment, Globalizing and Organizing of a global research-policy-action network that seeks to improve the status of the working poor, especially women, in the informal economy participation. WIEGO- constructs association with, and represents its membership from, three constituencies: membership-based organizations of informal workers, researchers and statisticians working on the informal economy, and professionals from development agencies interested in the informal economy.

2.2 Theoretical Related Literature

WIEGO- pursue its intention by helping to assemble and strengthen networks of informal worker organizations; undertaking policy analysis, statistical research and data analysis on the informal economy, providing policy recommend and describe collectively, dialogues on the informal economy; and documenting and disseminating good practice in support of the informal workforce.

Millions of people globally make a livelihood by searching, collecting and processing materials that someone else thrown away. Waste pickers, are the universal term adopted by the first World

Conference of Waste Pickers in 2008 and it can range from people working on dumping or look through trash on the street and informal personal collectors of recyclables sell to middle-men or business or transform waste into new products (WIEGO, 2017).

The most important variation between wastes generated in developing states and those generated in developed countries is the higher organic content characteristic of the previous one. In which is present information relative to the quantity and composition of municipal solid wastes generated in several countries.

According to Marta and Ann (2014) working paper explanation, the terms:-

“Waste pickers,” “waste collectors” 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 on the municipal trucks that collect and transport waste to disposal locations”.

WIEGO (2017) highlighted that: - originate more or less all the investigation waste pickers’ cooperative contribute and facilitate access for technical or officially permitted training for their members. The members receive supplementary benefits such as extensive education on waste recycling, skills training on processing of various types of waste management, training on business administration, as well as protective clothing and recycling equipment. Raising public awareness on the role of waste pickers or Self and social recognition of waste pickers as recycling workers is a pre-requisite toward building collective voice and self-representation and appealing in negotiations with waste pickers, suppliers, buyers and middlemen. Waste pickers’ supportive and SSEOs conduct research and tries to raise public awareness on their role in collaboration with researchers, civil society organizations and other support institutions.

Even though their each day efforts to get enhanced their situation, more than 15 million waste pickers live underneath of the economic pyramid, struggling alongside their families to survive. still their efforts distribute almost all recyclable materials for recycling chain, they remain most vulnerable actors within a highly profitable industry, where the price of raw materials generate a lot in profits for those at the top of the pyramid. It is viable for an environmentally sustainable economy to make available opportunities to waste pickers for decent work and to recover their social security (WIEGO, 2017).

Currently there are many social, environmental, and economic issues associated with waste management that require attention in Ethiopia. There is chance for all stages of waste management to

become more efficient. Although Addis Ababa has the most developed waste management system in Ethiopia today, there are still flaws in the current system. The lack of a citywide waste management arrangement in Addis Ababa suggests that much inadequacy in the system is due to poor communication and poorly established authority boundaries between sub-city and Kebele levels. Since Addis Ababa is still struggling with these institutional issues, all emerging cities are subject to the same confront. Just as the solid waste system in Ethiopia can get better with recycling, it can also improve with the reuse of organic waste through composting. The present composition of waste in Addis Ababa today suggests ideal conditions for this strategy. Additionally, this process could improve food security in an environmentally sustainable manner, contributing to both social and economic progress in Ethiopia today. Transportation is one of the largest barriers to sustainable waste management systems in Ethiopia today. Through, it is clear that many areas lack adequate infrastructure to support waste transportation vehicles (Kelly K. & Björn K. 2012).

Economic growth inevitably influences the food chain. Growing demand with changes in lifestyle and health consciousness encourage use of packaged and pre-prepared foods. The needs of environmental protection from waste generated are largely overlooked, and a lack of knowledge about the impact on the environment and its health effects constitute food security/safety problems. Food production and waste generation directly affect resource consumption and often contaminate the environment (Angela Y. 2009).

2.3 Food security and insecurity

The 1996 World Food Summit agreed on the following definition of **food security**, which is used by FAO: “*Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life*”. The definition encompasses four dimensions:

Availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports including food aid.

Access of individuals to adequate resources for acquiring appropriate food for a nutritious diet

Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met

Stability in the availability of and access to food, regardless of sudden shocks of an economic or climatic crisis or cyclical events like seasonal food scarcity (WFS, 1996)

Food security is a difficult concept to measure since it deals in very broad terms with the production, distribution and consumption of food. Food insecurity on the other hand lends itself more readily to measurement and analysis. It should be stressed that food security, famine, and hunger are not to be confused: food security refers to the availability of food whereas famine and hunger are the consequence of the non-availability of food, in other words the results of food insecurity.

The FAO definition of **food insecurity** is:

“A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life”

Any analysis of food security can examine whether a change from security to insecurity or insecurity to security actually takes place and the probability of such a change happening. Factors that may lead to a situation of food insecurity include non-availability of food, lack of access, improper utilization and instability over a certain time (WFS, 1996).

The increase of solid waste generation in turn, increases the worsening of ecosystem of the environment and human health's problems. Therefore, inappropriate handling and on site disposal of solid wastes poses a serious crisis, which contribute to high morbidity and mortality rate in the city. The waste at the source itself, uncovered vehicle aided ways of solid waste transportation in Addis Ababa risks the community to health problem from the origin of the waste through the paths of the vehicle. In municipality solid waste management system, an important starting point is the knowledge of basic data from the sources of the waste that is the domestic such as the generation rate, characteristics, formal and informal operations in place including producers' behavior (Solomon K. 2017).

In several cities especially in developing countries, waste pickers provide the solitary form of waste collection. In 2010, UN Habitat journal says, “waste pickers achieve between 50-100 per cent of all ongoing waste collected works in most cities in developing countries services for which they are not paid”. Their work improves sanitation, thus it has public health and artistic benefits. Diverting recyclables, that otherwise end up in dumps or landfills saves almost 30 per cent of space disposal. Collectively with the decrease of collection and transportation fleets, waste pickers save municipalities considerable costs.

Yet in most places, municipalities, residents and local businesses pay nothing for these services. Not as good as, some private companies that hold contracts for collected works and committal declare to have done thus with waste the informal recyclers have diverted, thus adverse investments realized from first to last the informal recycling sector and undermining waste pickers' contributions.

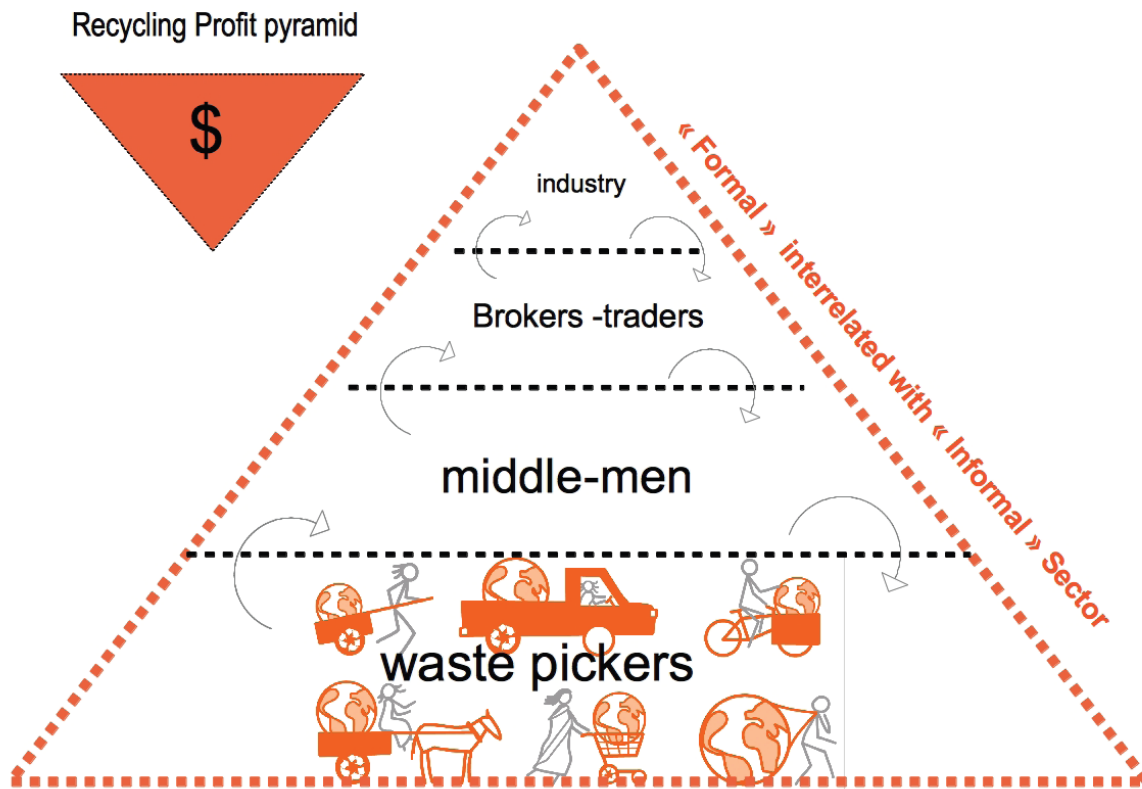


Figure 2.1 Recycling Labor vs Recycling Profit Pyramid

Source: Elaborated by Lucia Fernandez, WIEGO, 2012.

Recycling is labor-intensive work in the developing country and it provide millions of jobs and In actuality, an estimated more than 15 million people worldwide are engaged in recycling, collecting, sorting, grading, cleaning, or compacting waste, as well as processing waste into new products. The vast mainstream of these jobs about 80 percent are in the informal economy. Recycling is a labor-intensive model of waste management providing millions of jobs, and it is one of the cheapest and fastest ways to reduce greenhouse gas emissions. Consider this reducing one ton of CO₂ emissions through recycling costs 30 per cent less than doing so through energy efficiency and 90 per cent less than through wind power. Recycling decrease emission 25 times more than burning does and burning emit more CO₂ per unit of electricity than do coal-fired power plants (WIEGO, 2012).

Valuable waste management is indispensable to safeguarding public health and sanitation, protecting environment, and improving resource efficiency. SWM is usually the responsibility of local governments and is often their single largest budget item particularly in developing countries. On the other hand, it remains confront due to limited financial, physical and human resources. In countries and cities where formal waste management systems are underdeveloped, informal waste pickers have

long played a key role in collecting, sorting and recycling waste. Waste pickers variety from people look through garbage in search of food, clothing and other basic daily needs to informal private collectors of recyclables for sale to middlemen or businesses, in addition to organized collectors and sorters of recyclables. The majority of waste pickers see eye to eye with public solid waste that In current years and waste pickers have started to recover electrical and electronic waste (e-waste) as an additional source of recyclable material (ILO, 2017).

Rapid urbanization, population growth, rising incomes and changing consumption patterns have resulted in a massive increase the amount of solid waste generated worldwide, especially in cities. By 2025, the world's urban centres are projected to produce 2.2 billion tons of waste a year, almost twice the 1.3 billion tons produced in 2012. Public solid waste management has thus emerged as one of the most pressing challenges in towns and cities. Sustainable waste management practices generate considerable socioeconomic co-benefits, particularly in developing countries, where they can create employment and improve public health. Recycling can save energy, supply valuable raw materials to industry and create jobs, although reducing the production of waste is obviously preferable. If handled poorly, however, the collection, transportation, treatment and disposal of solid waste can pose severe risks to urban residents and the environment at large. Poor waste management practices can exacerbate flooding by blocking drainage channels and lead to public health issues, such as respiratory conditions, dengue fever and diarrhea. They can also cause air, water and land pollution and contribute to climate change, through the production of methane, a potent greenhouse gas (UN Habitat, 2010).

Improper wastes disposal and management causes all types of pollution: air, soil, and water. Haphazard dumping of wastes contaminates outside and ground water supplies. In urban region, wastes block drains, creating torpid water for insect breeding and floods during rainy seasons and no manage burning of wastes and improper incineration contributes significantly to urban air pollution. Harmful effect of wastes are a serious threat to health and environmental development due to that Sound management of waste can support the attainment of the Sustainable Development Goals (SDGs), good health and environment for all by contributing to poverty elimination, food security and health security; promoting sustainable cities and communities; ensuring sustainable consumption and production; and mitigating climate change (Armour, 1996).

Problems to consider surrounding waste management include transport, procurement, occupational safety, use and disposal of materials and pollution prevention, all of which can acquire significant costs. It is consequently recommend that governmental ministries develop laws specifying that where possible, waste should be recycled and/or reused (Roswitha, 2018).

In the developing countries, like the continent of Africa, uncontrolled and unplanned rapid urbanization has brought a serious environmental degradation. One of its most urgent matters is the management of solid and liquid waste. A visit to any African city will be the evidence of this situation where garbage lays besides the roads, streams blocked with rubbish and toxic waste polluting the environment and threatening human health (Onibokun and Kumuyi, 1999).

The waste policy and regulation focus on waste minimization, and future probable waste and cleaner production. Regardless of this regulation plan, different kinds of wastes are still dumped in an uncontrolled manner with hazardous waste seriously poisoning the environment, which endangers the health of both humans and animals. SWM in developing countries has been and still stay behind a challenge, waste is left in nature and this has the potential for negative health effects on people and animals as well as degrading land and aquatic ecosystems also has impact on food safety and security in developing world. Sources of waste includes homes, experiments, teaching centers, hospitals, timber treatment, petrol storage, metal finishing, paint manufacture, vehicle servicing, tanneries, agriculture/horticulture, electricity distribution and dry cleaning (NEMA, 2012).

Waste is related with human culture from prehistory to today and no doubt continue for the future. People have to manage the produced waste. Throwing away of waste into the neighboring locality has to date been the usual practice with little concern for the environment and waste has to be managed properly to preserve the planet for the coming generations. The management exceptionally increasing volumes of the wastes became a very important accordingly. Deficient management of waste led to contamination of environment, water, soil, and atmosphere and to a serious collision on public health. Health impacts of unprofessional conduct of waste are well known and can be observing obviously in developing countries like Ethiopia (WHO, 2017).

In Brazil, combination of waste pickers' cooperatives in the early 1990s resulted from the willingness of the municipalities run by the Workers' Party to integrate waste pickers' demands. The realization of waste pickers' supportive and SSEOs in the country has owed in large part to such political commitment. In this view, production of reliable data and understanding on waste pickers and the regulatory environment around their organizations including cooperatives, particularly important in informing policy change (ILO, 2013).

2.4 Empirical Related Literature

Addis Ababa was established in 1887 and it is the capital city of Ethiopia and the city is home to more or less a quarter of urban residents in the country. In addition to that, the Ethiopian Ministry of Health launched the first hygiene service in 1958, providing guidelines for the construction of wells, drains, and garbage and sewer systems of the country (Alem, 2007).

Addis Ababa is the largest city in Ethiopia and the city is especially subject to waste management challenges related to population growth due to migration from rural areas. The city suffers at a high rate of population increase. Waste management is important to improve health and environmental impact, due to that, to partially solve the problem, waste pickers have organized into cooperatives, a particular business model with special attention to social needs. While this has raised income, further strategies are necessary to improve the living and working conditions of waste pickers, with positive consequences for the environment and the local community. A central principle of this thesis is that waste pickers struggle to make a livelihood and develop their business because the current model of waste picking is limited in amount and capacity. Limitation in scale is caused by social discrimination and economic exploitation. It is important to empower waste pickers because their job has significant potential for social, environmental and health issues (Marta, 2013).

The practice of waste picking provides income earnings for the workers by providing a source of employment for those who are very poor and received 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 collection furthermore benefits the communities; cleaner neighborhoods increase the standard of living whereas decreasing the spread of disease. Moreover, waste collection generates jobs that mitigate the risk of people engaging in criminal and illegal activities. Finally, yet importantly, waste pickers reduce the cost of the municipal waste management system, essentially providing a very cheap service for the local government (Marta, 2013).

There are strategies to increase waste pickers' productivity, although these cases appear to describe different situations, there are certain commonalities. In this part, the researcher extrapolates from the cases three strategies to increase waste pickers' productivity and improve waste pickers' livelihoods. The three strategies are strengthening the internal organization, adding value to materials through technology and capitalization, establishing closer linkages with the public and private sectors (Marta,

2013). Empowering of the waste pickers improves not simply their social status, but also waste collectors improve their incomes and working conditions. In short, empowering waste pickers means supporting the triple bottom line by providing environmental, social, and financial benefits.

2.5 Conceptual Framework

Solid waste management and its contribution to food security are obvious and direct but may also be indirect and not obviously linkable to poor food security outcomes of a population. This sub-section presents a framework to aid understanding the inter-linkages between waste management and food security affects to gives the rationale for maintaining proper waste management as an investment in preventing food insecurity. The concepts discussed are not entirely new but are applied to a context of a developing country urban setting where the challenge of waste management is growing without adequate interventions to manage it. Finally, the inter-linkages and pathways between waste and the ill health and how these can be exploited for implementation of cost effective interventions is provided (Evly et al., 2013).

Waste management in developing countries has been given less attention from policy makers and academics than that of other environmental problems, such as air pollution, polluted water treatment. Nevertheless, the improper handling and disposal of solid waste constitutes a serious problem; it contributes to high morbidity and mortality rate in many developing country cities. Currently, collecting, transporting and disposing of solid waste represent a large expenditure for cities of developing countries: waste management usually accounts for 30-50 % of municipal operational budget. Despite these high expenses, cities collect only 50-80 % of the refuse generated. For incidence about 50% of solid waste obtain in India, 33% in Karachi, 40% in China, 50% in Cairo and 60% in Addis Ababa was the only the amount of solid waste collected in 2000 (Medina, 2004).

Usually in low-income community, residents tend to gather and dump their garbage at the nearest vacant lot, public space, near river or simply burn it in their surroundings. The wastes that aren't collected may accumulate on the street and blocked drains when it rains which may cause flooding.

Thus if these wastes are not collected, treated and disposed of properly; health, psychological and environmental conditions will further deteriorate in developing countries. Different measures have been put into practice in order to enlarge refuse collection, upgrade disposal facilities and diminish the risk to human health and the environment associated with inadequate waste management. The

measures, which are proposed to the problem in solid waste management in these countries, have socio-economic, demographic, and institutional features (Eshuan, 2002).

Although production of solid waste is minimal, environmental problems are possible to occur due to improper handling and lack of service that result from different characteristics of solid waste in developing countries. Besides, collecting, transporting and disposing, solid waste requires high expenditure, which is still scarce in the developing world. Even though small amount of solid wastes are produced in the developing countries, responsible authorities do not properly handle and dispose their solid waste. Thus, an adverse effect of improper solid waste handling brings about health and environmental problems in most developing countries. In general based on the literature reviewed, a profound difference exist between developed and developing countries in terms of income, standard of living, consumption patterns, institutional capacity and capital available for urban dwelling investment. Even in conventional solutions, usually do not take into account these differences, resulting in less than optimum outcomes (Eshuan, 2002).

The literature supporting the framework is summarized in different major categories: exposure to waste management and the mechanism that bring about health and environment outcomes, Land and water sanitation impacts. Under exposure categories of how individuals can be exposed are considered including: exposure to waste by waste generators; exposure from handling waste among waste pickers Financial impacts; pickers at Related un/employment, and collection of wastes substances from the surrounding have health and environment consequence subsequently in the food chain.

The conceptual framework stated a few point about dependent and independent variables conceptually. In this regard, the elements that can be aligned determinant factors for assessment of waste disposal management practices and Its implication to household food security of waste pickers in Arada Sub-City Addis Ababa including diversified Demographically impacts, Sex, social and educational status, HHs size and marital status, Environment & health impact, morbidity, mortality and pollution, Waste management impacts, Institutional lack of budget, collecting, transporting and disposing of wastes, Livelihood, Awareness, initiative, expenditure, standard of living, and distance of disposal place, Household participation in SWM practice, socio-economic characteristics considered as independent variables. On the other hand, the dependent variable can be household Food security of households.

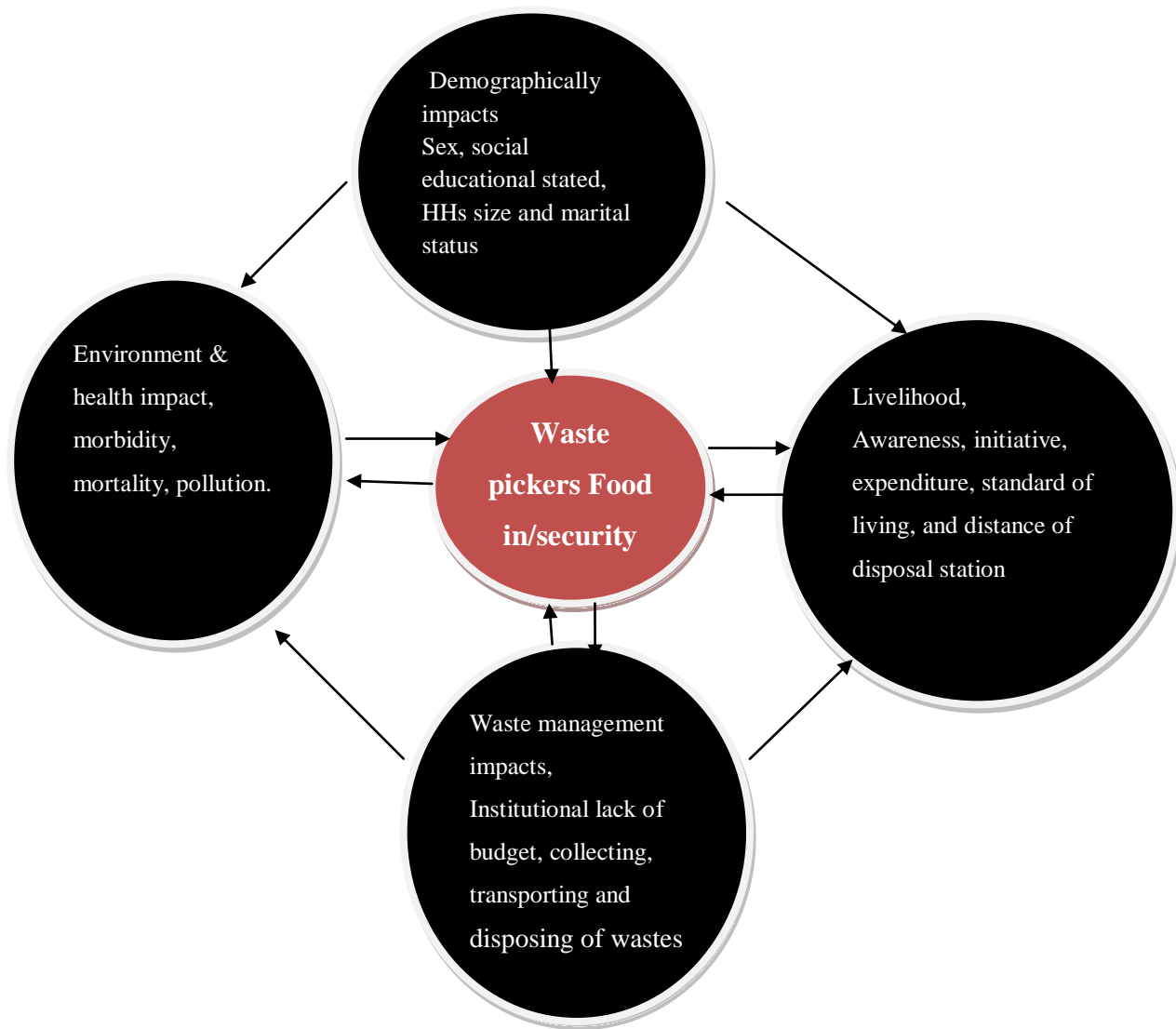


Figure 2.2 Diagrammatically representation relationship of the variables
 Source: My own understanding from literature

CHAPTER THREE

3. THE STUDY AREA AND RESEARCH METHODOLOGY

3.1 Descriptive of Study Area

Addis Ababa city was making to be structure at three layers of government: city government at the top, 10 sub-cities administrations in the middle and 116 *Woredas* level administrations at the bottom. Specifically, the study area is finding in *Arada* Sub-city, which is one of the 10 sub-cities of Addis Ababa with Area of: 9.9sq.km. In addition, the total Population is: 225,999, Male: 105,963, Female: 120,036, the Population density per sq. m: 22,805.1. No. of Weredas: 10, Geographically, The district is located in the northern area of the city, nearby the centre. It's boundary with the neighborhood of Gullele, Yeka, Kirkos, Lideta and Addis Ketema. Its standard elevation is 2,500 meters above sea level, and it has a moderately favorable climate and moderate weather conditions (CSA, 2012).

Gathering of waste involves the process of picking up of wastes, loading them into a vehicle, and transporting it to processing facilities, transfer stations. Gathering of wastes in Arada sub city often involves in person contract between generator/producer and collector/waste picker. The intensity of service is near to the low, generators frequently have to carry their wastes for long distances and place it in containers, and gathering of waste financial records a significant portion of total price.

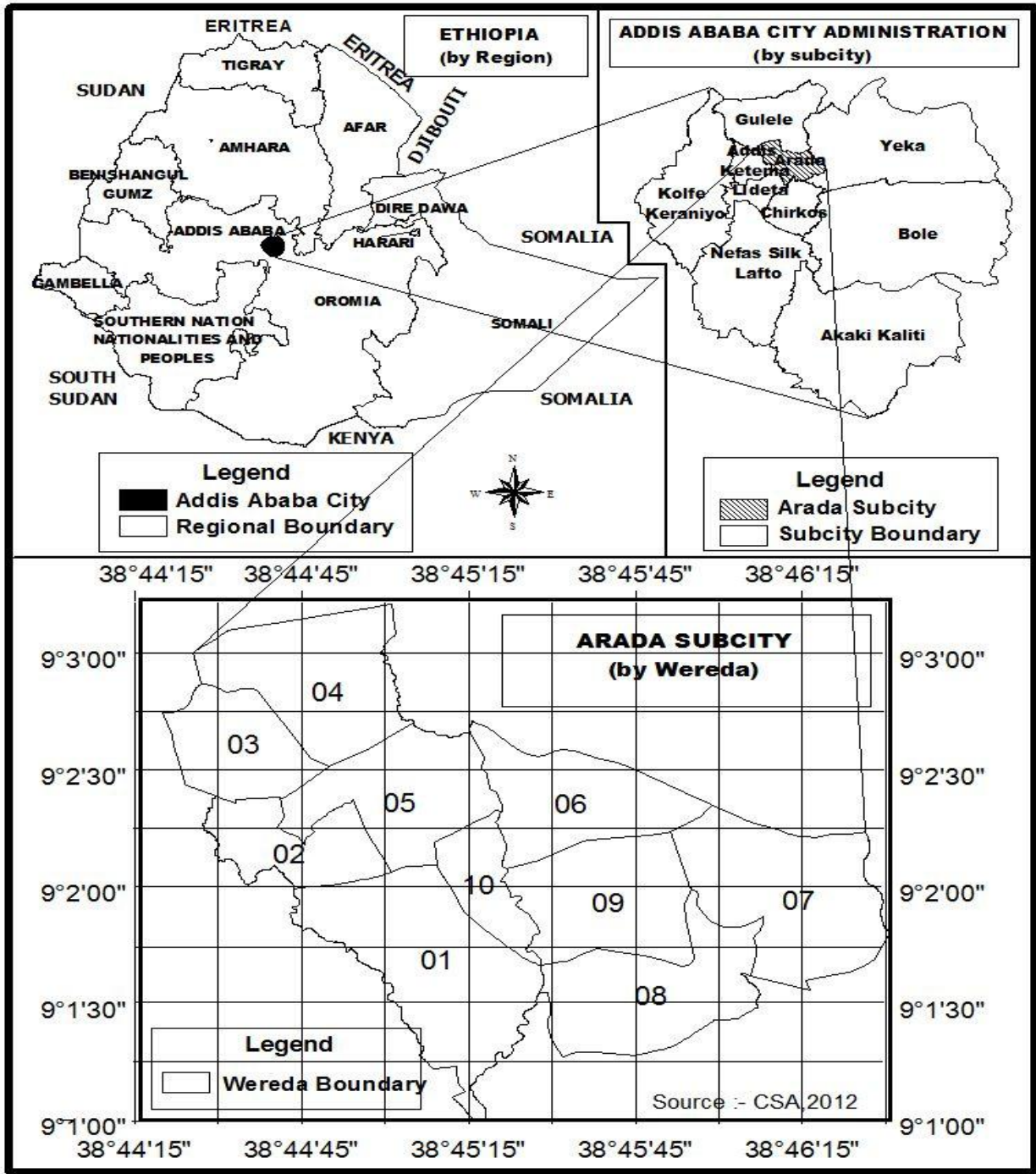


Figure 3.1 All the sub-city of Addis Ababa and zebra one is Arada sub-city

3.2 Research Methodology

Research methodology indicates the success of the research in advance and guides the research to prepare the main tools that enable a researcher to achieve the objectives, and to answer the forwarded central questions. It is collecting, analyzing and interpreting of data in order to produce a result related

to research problems systematically. Therefore, qualitative and quantitative methods of approach were selected in this study to overcome some barriers and to increase validity of the result expected.

3.2.1 Research design and method

Research design is needed because it facilitates the smooth various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money. The researcher can employ Correlation Research Design because it is a non-experimental research design technique, which helps researcher to establish a relationship between two closely connected variables. The research methods are strongly pertinent and they are strategies, processes and/or techniques that employ in the collected works of data or evidence for analysis in order to uncover new information or create better understanding of a topic so in this research descriptive/ research design was using. It enables the researcher to collect both qualitative and quantitative data respectively. Qualitative data collected through field observation, key informant interview and secondary data sources were analyzed using thematic content analysis and quantitative data were collected using questioner survey were analyzed using measure of central tendency (mean) and measure of dispersion (standard deviation). While the HFIAS model is used to assess the waste picker's food security.

3.2.2 Sample Size Determination and Sampling Techniques

Simple random and purposive sampling techniques were use to get information from 76 respondents and stakeholders as a supplementary ideas. Simple random sampling technique was select because, it used to assist in minimizing bias when dealing with the population and the total population is 317, from these male 165 and female 152, which is finding from *Arada* Sub-City's from three enterprises. *Legese ena Abebech* and their members male 47 and female 48, *Yadamkal ena Guadegnochua* and their members male 73 female 50 then *Hayelom ena Abrham* and their member of male 45 and female 54 micro enterprises. The sample size determination of a research is taking the act of choosing the number of observations to include in a statistical sample in the sub-city, based on their product using Yamane formula.

According to Yamane 1988, the sample sizes are expressed in this way.

$$n = \frac{N}{1+N(e)^2} = \frac{317}{1+317(0.1)^2} = 76$$

Where,

n = sample size

N = population size

E = level of precision

The researcher wants to disseminate the questionnaire, then males are more in number than female and there are 40 males and 36 females respondents/waste pickers from three enterprises of Arada sub-city. Then the number of sample size (the number of respondents for the questionnaire survey) can determined to be about 76 (23.9% of the total population) with $\pm 10\%$ precision level for more accuracy and 90% confidence interval using Yamane formula.

3.2.3 Data type, Sources and Tools

The data collection tools that are used to gather data from sample respondents is questionnaires survey, KIIs and field observation in primary data collection. The question can be contained both close ended and open ended questions used to secure factual information and few open ended questions used to enable respondents to express their opinion about problem. This selection is because; to help to gather data with minimum cost. The respondents are work in *Arada* Sub City and they can read or not answer the questions more freely to express their idea on the issue. Thus, the research was employ questionnaire survey, KIIs and field observation in primary data collection and the researcher can employ primary source like interview, observing the waste areas and secondary source like referring literatures.

3.2.4 Household Surveys

Household-based surveys would be administered to respondents by using a consent of the respondents as a research ethics and 10 households of waste generators were interviewee as complementary to the main interviewee and the questionnaire were translate to the respondents local language. In order to maintain the quality of data, scientific principles and guidelines during questionnaire designing, data collection, data filling, encoding, data entry and processing would be apply. Data collectors would be oriented on issues related to data collection procedures and ethics. Computer-based data cleaning can

be carrying to check for the completeness, consistency and accuracy of data and to identify errors that may occur during data collection or coding process.

3.2.5 Key Informant Interviews (KII)

In addition to the household survey, carried out some key persons in sample waste pickers staffs interviewed to obtain relevant information. KII was focus on organizing formal interview with the aim of facilitating open interaction between the key informant and the researcher through inviting key figures in the respective organization relevant for the matter under dialogue to participate in open interview forum. The KII was done face-to-face and the key informant interview had carried out with 5 waste management leaders, experts, supervisors and management officers.

3.2.6 Field Observation

In addition to the above data collection methods, the researcher try to validate executed field visit and supplement the information obtained through other primary and secondary data collection tools, due to that there were 10 interviewee and the waste pickers' response about their standard of living. In the area of waste dumping station, the socio-economic or income, related conditions of waste pickers' were explored through the additional questionnaire and interview in the study area.

3.2.7 Secondary Data Sources

Besides the above mentioned data collection techniques and procedures, intensive desk review of published and unpublished literatures such as books, journals, articles, reports and e-resources should carried out. Documents from various bureaus, Ministry of education, websites of benefit (partnership to promote food security, income and safety) and capacity building for scaling up of evidence-based best practices in waste pickers production in Ethiopia, federal solid waste management agency, sub-city and *Wereda* level and additional, environmental protection agency and ministry o health related to waste management were reviewed in a relevant way.

3.2.8 Data Analysis Methods

Data was coded and entered in to SPSS version 24 for analysis and descriptive statistical summary measures (i.e. means, standard deviation, frequencies, percentages and cross tabulation) were used to understand the collected data and inferential statistics test for determine the involvement between

waste pickers on food security. Quantitative data that were collected using questionnaire survey were analyzed using measure of central tendencies (mean), and measures of dispersion (standard deviation). Qualitative data, collected through field observation, key informant interview and secondary data sources were analyzed using thematic content analysis. Appropriate procedures such as theme identification, paraphrasing and summarizing were used in order to describing investigating the interrelation between solid wastes management impacts on waste pickers through food security using descriptive research methods.

3.2.8.1 Analysis of waste management to food security on waste pickers

Investigating the interrelation between waste management and food security is a very complex analysis that needs to be take care of with a combination of different intertwined issues. The meteorological station located in the town of *Addis Ababa* particularly *Arada* sub city considered to be representing the sample sub city as it is located almost at the center of the town. This was used to look into the historical background of the city as you know it is oldest sub city that exist longer time than other sub cities and this long living time affects the sub city in case of it the central city, the area is needed by investors due to infrastructural development and most well standard living peoples leaved the area and it still occupy by people who have not well standard living. Due to that they release the solid, liquid and gases wastes simply knowingly or unknowingly and the sub city informal waste pickers collect the waste for their income purpose with their legally enterprises.

3.3 Ethical Consideration

In case of data collection, ethical considerations was seriously taken into account to ensure the protection, integrity, anonymity, consents and other human elements of the informants. The respondents were not identifying by name and their consent was required during interview at any time. There should not be direct communication with respondents to avoid the bias. During carry out a qualitative study it is very important to make sure that the subjects are well informed about the research, what it is about, where the results were published and that their participation is volunteer (Kvale, 1997). What is essentially it means that the subjects have the opportunity to leave the interview if they do not want to continue. In addition, the information on those who participate was confidential; therefore, all information collected that can identify a participant was well protecting.

CHAPTER FOUR

4. DATA ANALYSIS AND INTERPRETATION

4.1 Result and Discussion

Investigating the interrelation between waste management and food security is a very complex analysis that needs to be treating with a combination of different intertwined issues. Most well standard living peoples leave the area and the part still occupy by people and they have no well living standard due to that they release the solid wastes simply knowingly or unknowingly and the sub city informal waste pickers collect the waste for their income purpose in general. This chapter explains the descriptive representation result of the study. The descriptive statistic result includes demographic and socio-economic characteristics, implemented solid waste collection to food security.

4.1.1 Demographic characteristics of study participants

4.1.1.1 Sex and education status of Households

The following Table 4.1 shows the sex profile of the respondents, from the major respondent category, more male respondents (52.6% of the total 76 respondents) than females (47.4%). From the total interviewee, male waste pickers were larger in number and, most males were work as a labor intensive and waste picking itself need power to collect from individual households to transfer into waste dumping station so young males are significant in waste collecting organization to be effective and efficient work and their food security improvement. While female waste pickers calling the households to release the wastes near to the waste picker space from each individual households and received the wastes, after that males pick up by the car to travel into dumping station, hence females are good common waste collectors from costumer of home to home, as a result the female collectors are also significant for the enterprises to strength and to raise their income for better livelihoods.

According to Solomon, K. (2017) participation of large percentage of female waste pickers in the respondents' of questionnaire increases the degree of validity and accuracy of the research findings. This is because of the cultural practices of woman nearness to solid waste gathering and house cleaning activity in our country; particularly in the study area, these finding is almost slightly opposite with my study because the study area is different.

Table 4.1 Sex of waste pickers

Sex	Frequency	Percent
Male	40	52.6
Female	36	47.4
Total	76	100.0

Author construction based on 2020 survey

76 respondents were included for the analysis of contribution of solid waste disposal management practices and its implication to food security of waste pickers in Arada Sub-City Addis Ababa. Among the study participants, 47.4% and 52.6% were female and male waste pickers respectively. 6.6 percent of waste pickers were unable to read and write and only 13.2% of waste pickers can read and write, 44.7% was attending formal education that was primary school education, 15.8% was secondary education, 10.5% had certificate and 9.2% were diploma holder in the collection of waste. In general the waste pickers were strongly vary in their educational status and they are not well educated so, it affects the work performance them as well as adopting technology or capital intensive. The educational level of farmers considered important for technology adoption (Tesfaye et al., 2001).

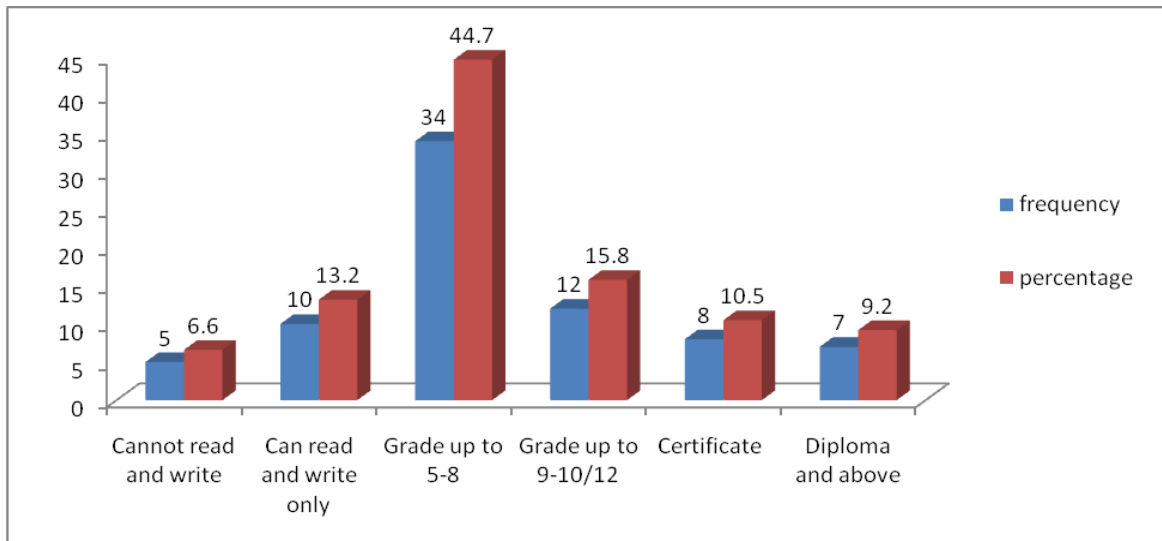


Figure 4.1 Educational statuses of waste pickers

Author construction based on 2020 survey

4.1.1.2 Age, family size and marital status of waste pickers

The age group structure indicates high amount of the respondents were found in the age of 21 to 40 years, productive age and they have even high prospective for higher population growth rate that have

direct impact on solid waste collection and can affect the work and discarding of solid waste management (Solomon K. 2017).

According to survey result, “Age of the respondents in the study Sub-city ranged from 20 to 50 and the ages of the respondents from 21-30 years were the frequency of 44, from 31-40 the frequency of 22, from 41-50 years were 6” and the young labors positively affects the process of waste colleting in the sub city, adult age group of the waste pickers have positively impact to waste collection process, While the age of waste pickers becoming old and old, their labor ability or flexible performance of waste pickers reduces and that affect the organization of waste pickers.

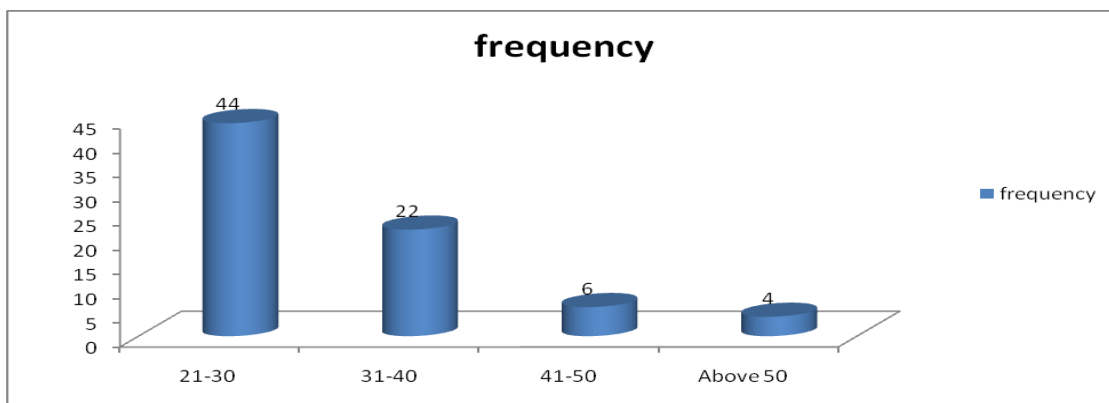


Figure 4.2 Distributions of waste pickers by Age.
Author construction based on 2020 survey

The family size of sampled respondents also ranged from 1 to 10 and the average family size was around 1.53 persons and family size of waste pickers have strong impact to food security means, the holder of large family size have the problem of food security while limited number of households size reduces their of food insecurity situation. The quantity of Solid Waste Management depends on the size of the waste pickers households. Meaning, raise the number of family, increases utilization, which also increases waste generation and contributed to the creation of pressure on food security (Solomon K. 2017).

Table 4.2 Distribution of waste pickers by Family size

Family size	Frequency	Percent
1-3	46	60.5
4-6	22	28.9
7-9	6	7.9
10 and above	2	2.6

Author construction based on 2020 survey

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 its management experience at home. But these survey shows that, respondents 46 of them were single youth or most they are not married even, if the study area was different that means the waste pickers do their work with positive effect and they had no additional consumer or they do not worry about households food shortage, so their income is already satisfactory but not good and 39.5% of them were married, due to that they had responsibility to manage all the families with small income by waste collecting and selling to Qoshe land fill, so they worry about food and house rent for their household, these affect the work performance of waste pickers.

4.1.2 Factors Affecting solid waste disposal management practices

Table 4.3 Coordination of stakeholders

		Frequency	Percent
Valid	Very strongly	15	19.7
	Strongly	20	26.3
	Averagely	11	14.5
	Less influence	20	26.3
	No influence	10	13.2

Author construction based on 2020 survey

Poor stakeholder’s coordination is a challenge that leads to poor solid waste management in almost all parts of the country. As the researcher observed during the interviewees of the institutional officials, there is very weak coordination between the municipality officials of the sub city and other stakeholders involved in the environmental protection issues. Municipal solid waste management is a complex task that requires appropriate organizational integration between numerous stakeholders. Micro and small-sized enterprises of primary cooperatives face difficulties in negotiating with local authorities and competing with larger private actors in the waste value chain (ILO, 2015).

The findings of Table 4.4 shows that there is poor coordination; the coordination being done by anybody, whether socially at local level or any governmental structure affects the solid waste management at waste pickers level Coordination of stakeholders “strongly and very strongly affect solid waste disposal management practices” (46%), Coordination of stakeholders averagely

affect solid waste management practices (14.5%) and Coordination of stakeholders Less influence (26.3%) responded, while no influence (13.2%).

According to Solomon (2017), “Poor institutional coordination is a challenge that leads to poor solid waste management in almost all parts of the country. There is very weak coordination between the municipality officials of the sub city and other stakeholders involved in the environmental protection issues. Municipal waste management is a complex task that requires appropriate organizational integration between numerous stakeholders”.

Even among these well-established waste pickers enterprises present, one can observe a variety of constraints, highlighted poor enterprises internal and external coordination. The single most important obstacle to expansion is the lack waste pickers coordination as internal challenge while communities way of waste collection, lack of space and institutional factors were external impacts

Table 4.4 Households way of collecting of waste

Types of waste you collected from communities		Percent
Valid	food wastes	63.2
	Paper, wood and plastics	21.1
	metals and Glasses	5.3
	Organic or Ash, Dung and manure	7.9
	Other	2.6

Author construction based on 2020 survey

The types of waste that collecting from communities was food waste take large amount of quantities of trash, which is (63.2%), and it implies that most the communities release the food wastes. Next to that, they trash Paper, wood and plastics in their trash bag and it is almost (21.1%), Organic or ash, dung and manure are the categories of wastes are (7.9%), Metals and Glasses are also the wastes released. Finally, other unknown materials were released during trash removal in the households’ waste collecting area.

Table 4.5 Effect of expert supporting on waste pickers job

Effect of expert supporting		Percent
Valid	good	39.5
	a small help	46.1
	they never help	6.6
	they have no regular program	6.6
	We do not know them.	1.3

Author construction based on 2020 survey

The waste pickers need training to improve the techniques of waste collecting and they want to improve their saving and way life to feed their households. Even if their respond is here in frequency and percentage, (46.1%) of them said that they gain training in a small help or there is not satisfactory training to amend their way of living mechanism. Based on the above Table 4.6, shows that (39.5%) of them said that there is good experts supporting on waste picking while, (6.6%) of they said that they never help which means the waste pickers did not get training/help/ from experts. Also (6.6%) of they said that they have no regular program and the last one is (1.3%) of they said that they do not know them.

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 Arada sub-city.

Waste pickers to recommend and to increase the productivity of waste collecting system

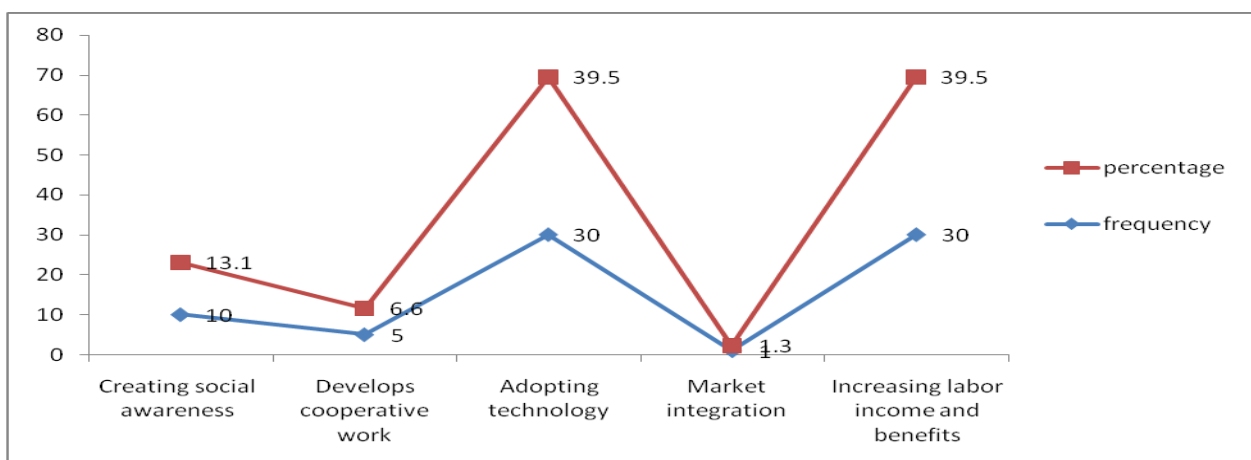


Figure 4.3 Waste pickers’ recommendation to increase the productivity.

Author construction based on 2020 survey

The waste pickers to recommend and to increase the productivity of waste collecting system were presented in the above figure due to that, the waste pickers said that both adopting technologies and increasing their labor income and benefits take (39.5%) the same percentage respectively, While creating social awareness, develop cooperative work and market integration take (13.2%), (6.6%) and (1.3%) respectively and this indicates that they recommend to adopt modern technologies and increase their income/benefits/.

Households' Solid waste storage system

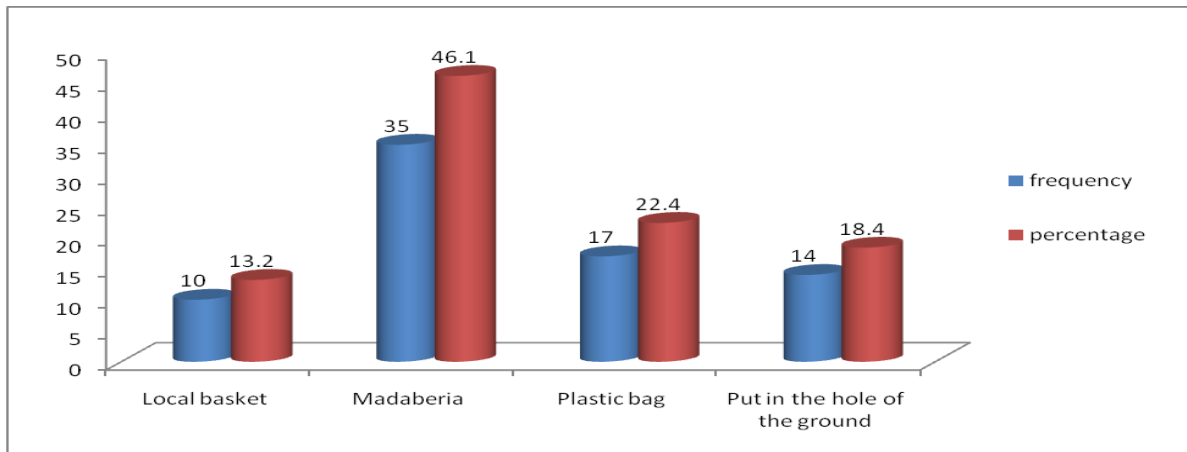


Figure 4.4 Households' Solid waste storage system

Author construction based on 2020 survey

The communities way of waste collecting in their local areas are (46.1%) of them collecting their waste in local name Madaberia which is very important for transferring to waste picker without any dispersing at any place while (22.4%) of them collect their waste in plastic bag even if this collecting system is less important from Madaberia, (18.4%) of them collect the waste in the hole of the ground which is difficult for environmental, health and water pollution, the other households collect their waste in local basket which is not largely occur in the sub-city and this way of collecting the is least pertinent due to weak and breakable basket.

According to Arada Sub-city SWM officials' substantial population growth in urban centers, the size of population increase in case of migration from rural to urban centers and there is lack of infrastructure to provide basic services. Inappropriate storage of waste in the Sub-city, poor receive minimal of wage of waste pickers during any waste collection service, households settlements simply evolve without planning and generally do not pay taxes or solid waste collection fees due to that the residents do not receive services, lack of proper disposal of waste; lack use of dumpsites, low or no

costs associated with sitting or operations, use of inappropriate technology and equipment strongly affects the solid waste management protecting of wastes by waste pickers.

Concern of waste disposal management

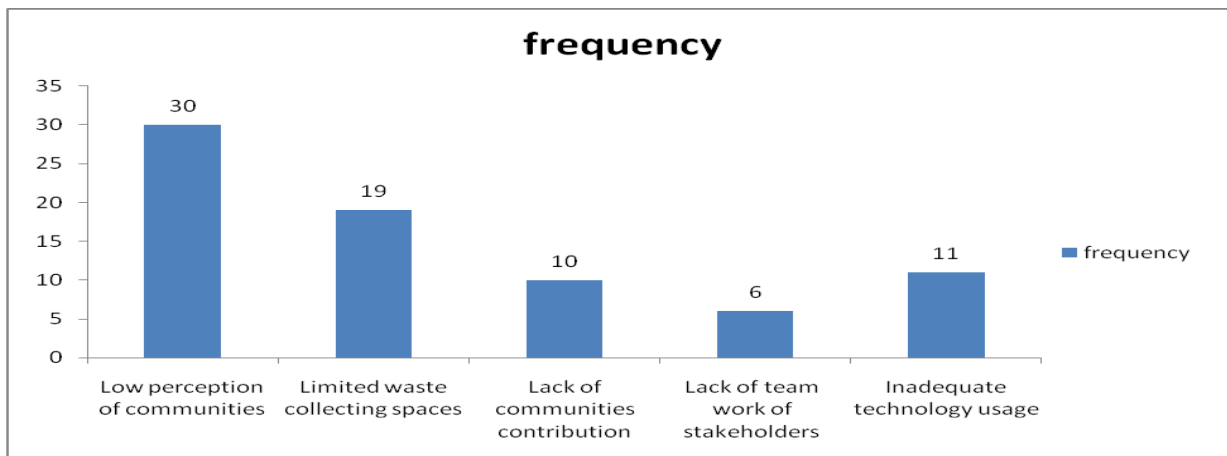


Figure 4.5 Specific challenges during the collecting of wastes

Author construction based on 2020 survey

Low perception of communities towards waste pickers can affect completely solid waste management system of the sub-city 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 Low perception of communities, limited waste collecting spaces, lack of communities contribution, Lack of team-work of stakeholders and inadequate technology usages were affects the waste collection mechanisms, low perception of the communities takes 30 respondents, limited waste collecting spaces takes 19 respondents, Lack of communities contribution takes 10 respondents, Lack of team work of stakeholders takes 6 respondents, and inadequate technology usages were challenges to waste pickers of waste management to enhance their livelihood.

In addition to the questionnaire, there were supportive interviewee in the sub-city, Wereda experts and household’s response, Waste pickers worldwide lack a dignified and decent work. Despite of their comprehensive contributions, they frequently earn very little and have no social protection of waste workers while, they facing great risks. These and the like ward works are the most obvious hardships they face, but what’s left hidden can root even greater difficulties for their livelihoods in their working space. The waste pickers were exposed to incredible price fluctuations, and artificially they exploited by low wage (ILO, 2015).

In adding together to the basic salary, there was not any additional income or support and poverty, unemployment, Improper Collecting wastes, way of transporting and disposing of wastes, institutional lack of budget, distance of transfer station and financial shortage/poorness were challenges. To address these challenges, it is necessary for primary waste pickers' to make cooperatives and join or form cooperative federations that can support primary-level cooperatives in improving operations, accessing services, skill training for waste pickers and rising bargaining power them, in organization with trade unions and other support institutions (WEIGO/ ILO, 2017).

Table 4.6 Lack of rules and regulations;

Rules and regulations influences the SWM on FS	Percent
Very strongly	19.7
Strongly	35.5
Averagely	18.4
Less influence	13.2
No influence	13.2
Total	100.0

Author construction based on 2020 survey

The study has found that lack of adequate legislation makes it difficult to assign clear mandates to different sectors connected with waste management services. The rules and regulations and their implementation program in Arada sub city was weak. On the other hand, there was no enough effort made to create awareness about solid waste management in the community including the rules and regulations and associated penalties in a regular basis. Therefore, lack of rules and regulations can considered as influential factor of solid waste management practices that affect the waste picker's livelihood.

As the finding of analysis, Table 4.7 above when observed as a whole influential factor very strongly affects the waste management of waste pickers is 19.7%, strongly affects the waste management 35.5%, averagely affects the waste management 18.4%, less influence 13.2%, and no influence takes 13.2% solid waste management in the locality.

According to ILO, 2015 there should be recognize waste pickers as self-employed workers who provide a public service that, by its nature, generates high impact environmental benefits. Instrument should be making possible to ensure waste pickers earn a livelihood income with improved state of

affairs and that social protection is in place. Therefore, they can remain in the occupation and enjoy decent and safe working conditions. In the face of these challenges, waste pickers are organizing, trying to negotiate with their municipalities, and testing developing inclusive waste management models, where waste pickers are officially recognized and the waste collectors develop into part of the system of collection and recycling.

In some places especially in several developing countries, there is strong promotion for waste pickers integrated into the existing system to perform segregation of recyclables, some of them are organized pickers/sorters linked to unions, cooperatives or associations but Recycling is labor-intensive, providing millions of jobs. In fact, an estimated more than 15 million people worldwide are engaged in recycling: collecting, recovering, sorting, grading, cleaning, baling, or compacting waste, as well as processing waste into new products. The vast majority of these jobs about 80 percent are in the informal economy (WIEGO, 2012).

Due to the informal character of the waste pickers work, the satisfactory documentation statistics on waste pickers are still limited/ not enough/. The International Labor Office (2013) expected that just one fifth of waste workers in the waste management and recycling industry are informal employment. Although little concrete data was exists and a significant number of workers involved in recycling and waste management were women, often working as waste pickers at the lower end of the informal economy.

4.1.3 Waste management affects socio-economic and food security

In this section, the socio economic profile of 76 respondents from the public who were given a well-structured questionnaire instrument for quantitative data and other 25 interviewees who were interviewed by both qualitative and quantitative approaches of semi-structured interviews for additional information from sub city officers, households of waste generators and experts.

4.1.3.1 Monthly Income

The standard monthly earnings of respondents was also considered as vital variable that could influence people's perception and attitude about WM system in the city as waste generation rates have direct relationship with income level (D. Wells 2006).

From the socio-economic conditions, the amount of annual income of the waste pickers has an impact on waste pickers of solid waste management on food security status. Information on the income of some waste pickers were very difficult to obtain due to different reasons such as low level of education which culminates fears of being taxed; inability to keep the record of their sales and irregularity of their income and the researcher categorized and presented the income level in detail according to the following.

Waste pickers monthly income gap

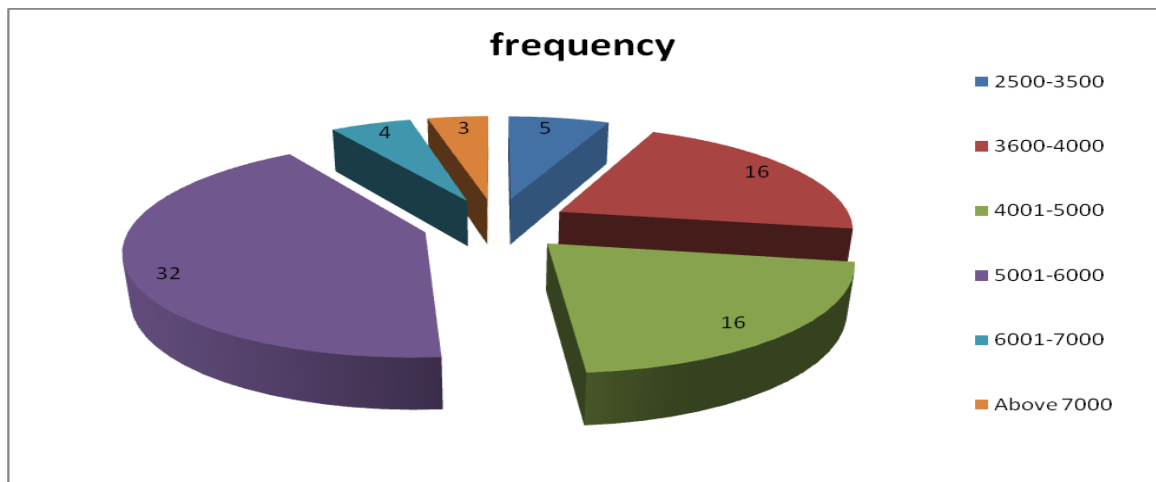


Figure 4.6 Distribution of waste pickers' households by Income.

Author construction based on 2020 survey

The average monthly income of respondents was considered as an significant variable that could pressure people's perception and attitude about solid waste management system in the sub city that have direct relationship with income level (Solomon K. 2017).

According to survey result, data of figure 4.6, shows, monthly average income of waste pickers peak is above 7,000 birr/month which is a frequency of 3 of the total respondent and 4 of respondents monthly income is between 6,001-7000 birr/month, majority of respondents were 32 with average income of 5001-6000, in the next one 16 with 4001-5000 with average income, In the same case 16 of the respondents were fall between 3600-4000 and 5 of them were in minimum salary, between 2500-3500 birr/month. On the other hand, the average monthly income of interviewees was totally below 5000 birr/month. As observed by the researcher during the time of data collection the respondents' status is low. This may arise from traditionally securing of wealth possessed by sub-city. The income level of waste pickers can affect the rate of waste generation and collection, transportation and disposal. Low-

income contributes low participation, which leads to low level of waste management at large that brings the severe food insecurity of waste pickers.

In addition to ILO, (2017) states that; “although half of all the respondents considered that their organizations ensure income for their members, a similar number confirmed that their organizations are not economically sustainable and are unable to secure regular jobs and decent incomes for their members”.

Table 4.7 Measurement of dispersion between the independent variables

Measurement of dispersion	Poverty	unemployment	inadequate communication facilities	Improper waste disposal
Valid	76	76	76	76
Mean	2.17	2.53	1.92	2.07
Std. Deviation	.839	1.371	.949	.984
Range	2	4	4	4

Author construction based on 2020 survey

The central tendency illustrates that the central point of the distribution and the variability describes how the scores are scattered around that central point of view. Collectively, the central tendency and variability are the two most important values that are used to explain a distribution of scores. While the sample population variability value is shows small, all of the scores are clustered close together and any individual score or sample can necessarily provide a good representation of the entire set. On the other hand, when variability is large and scores are widely spread, it is easy for one or two extreme scores to give a distorted picture of the general population. The range is also represents the variability of the value that the total distances covered by the distribution, from the highest score to the lowest score (using the upper and lower real limits of the range). The other one is the standard deviation, which are measures the standard (average) distance between a score and the mean.

The poverty rate of mean is 2.17 and its standard deviation is .839, due to that, all of the scores are not perfectly cluster or close together and any individual score or sample can not necessarily provide a good representation of the entire set. This indicates that there is no good related evidence, on the other hand, when variability/dispersion is large and scores are widely spread, it is easy for one or two extreme scores to give a distorted picture of the general population so, poverty rate is not strongly impact the food security status of waste pickers during waste picking home-to-home as a job rather internal and external factors.

The unemployment rate mean is 2.53 and its standard deviation is 1.371, due to that, all of the scores are perfectly cluster or close together than others and any individual score or sample were necessarily afford a good quality representation of the entire set in the research collected data. This indicates that there is good related evidence, On the other hand, when variability/dispersion is large and scores are widely spread, it is easy for one or two extreme scores to give a distorted picture of the general population so unemployment rate is strongly affects the food security status of waste collectors during waste picking from home-to-home as a job.

The inadequate communication facilities rate of mean is 1.92 and its standard deviation is .949, due to that, all of the scores are perfectly cluster or close together and the individual score or sample population was automatically provide a good representation of the entire set. This indicates that there is good related evidence, On the other hand, when variability/dispersion is large and scores are widely spread, it is easy for one or two extreme scores to give a distorted picture of the general population so inadequate communication facilities rate is strongly affects the food security status of waste collectors during waste picking from home-to-home as a job.

The Improper waste disposal mean is 2.07 and its standard deviation is .984, due to that, all of the scores are perfectly cluster or close together and any human being score or sample was automatically afford a good representation of the entire set. This indicates that there is good related evidence, On the other hand, when variability/dispersion is large and scores are widely spread, it is easy for one or two extreme scores to give a distorted picture of the general population so unemployment rate is strongly affects the food security status of waste collectors during waste picking from home-to-home as a job.

4.1.4 Waste pickers food security status and copying mechanism

The HFIAS model showed that 2.92% and 97.08% of households were food secure and food insecure respectively. Among food insecure households, 41.67% were mildly food insecure, 46.64% were moderately food insecure and 8.77% of the respondents were severely food insecure (see figure 1). Majority of households in Arada sub-city enterprises waste pickers 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 factor between stakeholders and enterprises itself. However, this research confirmed 8.77% of the respondents were severely food insecure out of the total participant and they were below medically

recommended dietary food intake in amount. FDG and KII data source confirmed starting from October were the period of waste picker's shortage of income due to the handled waste become less weighty in measurement of kg. While mainly in summer season, they indicated rainfall variability and incidence of waste become Weighty and brings major cause of food insecure.

Percentage and frequency of food security status of HHDS

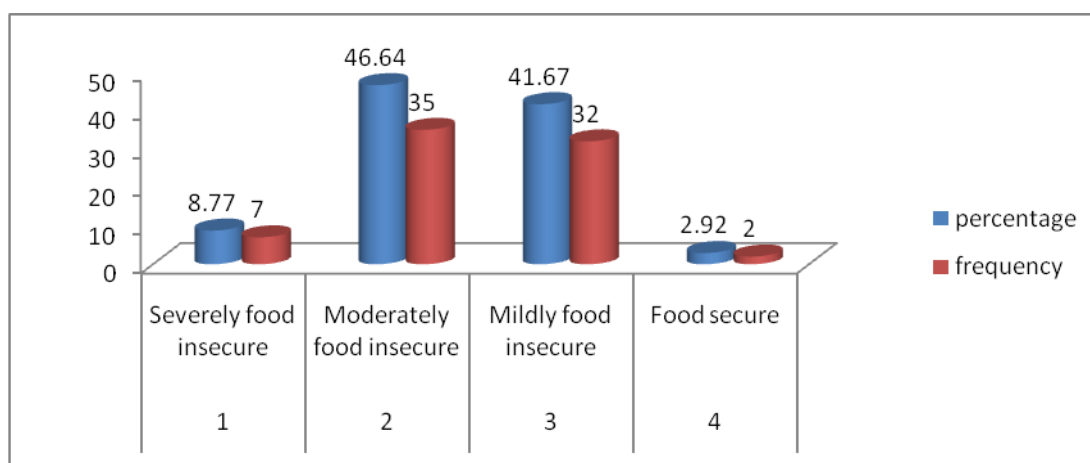


Figure 4.7 Percentage and frequency of food security stratified by waste pickers

Author construction based on 2020 survey

Figure 4.7 shows that, about 46.64 % of food insecure households were mainly used relied on less preferred and less expensive food 8.77% household were severely food insecure mostly exist by borrowing food from friend or relatives. Waste pickers reduce the amount of their mealtime and they live with working additional labor major coping strategies for food insecure household and most waste pickers did not exist long working lie due to lack of income or they shift their work.

An ILO/WEIGO study (2017) found that “Many waste pickers’ cooperatives have difficulties in accumulating and achieving economies of scale to acquire their own venues, pay their bills or reduce members’ insecurity and precariousness” This complicatedness is frequently correlated with the waste pickers weak negotiate power and restricted economic and financial capacities of them. In adding together to that, waste pickers are also harmfully affected by the acceptance of capital-intensive technologies such as waste-to-energy plants and the privatization of waste management.

The hard-work of waste pickers to grow their professional recognition and legitimization as workers, as well as their development and formalization, should be maintain, without undermining their existing and long-term contributions. intensification of waste pickers' organizations that they can collectively improve the factors that lead to economic and social dignity, and can form a voice to represent them in local, national and international policy is crucial. This can result in better working conditions and earnings for waste pickers, as well as more resource recovery and a more sustainable environment.

In reaction to these confront, the waste pickers have set up cooperatives and other social and solidarity economy organizations (SSEOs), especially in Latin America and South Asia. Cooperatives were strongly considered amid pathways to shift informal economy workers to formal, including waste pickers, to the formal economy through strengthening their collective voice and representation, securing jobs, profits and smooth the progress of access to basic services and social protection.

Cooperatives of waste pickers played a key responsibility in integrating waste pickers into formal waste management chains, this is employing particularly in Brazil, Argentina, Colombia, India, and South Africa. Due to that, the government of Ethiopia should be give attention and the informal way of economy enhancing mechanism can be integrated with the formal system to facilitate the development of homegrown economy.

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Successful solid waste management is necessary to defend public health, hygiene, to improve the livelihood of waste pickers, protect the environment, and improve resource efficiency in every country but these types of issues are concentrated in the current situation. Solid waste management is relatively all the time the responsibility of local governments and it is often their single largest budget item particularly in developing countries. However, it remains a challenge due to limited financial, physical and human resources. Inclusive waste management policies with waste pickers into formal recycling chains can contribute not just the encouragement of reuse and resource flow, but also to the establishment of well-mannered work, scarcity of food/ poverty/, and social inclusion for waste pickers.

Low earnings and weak arrangement of waste pickers influences the livelihood of waste pickers particularly, when they were unorganized, they often have a weak bargaining position and they receive low prices. There was lack of rules and regulations attributed to limited government support and absence of legal identity and recognition for waste pickers and their organizations. The working positions of waste picker's were not formally acknowledged. Governments provide not favorable procurement conditions to cooperatives in waste management systems for their social development function for their members and communities (ILO/WIEGO, 2017).

Social stigma and discrimination affects Waste pickers and it often belong to socially disadvantaged and vulnerable groups like migrants and refugees, unemployed, women, children, persons with disabilities, and ethnic and religious minorities. Challenge can linked to cooperatives' inside their capacities, mainly; small-sized primary waste pickers' cooperatives face confront in terms of waste management and authority. In addition to that, limited rights were the members' domestic difficulties. The Waste pickers work of cooperatives is insecure and low-paid with lacking any formal provision; members tend to go away when they get better jobs or/and other opportunities towards formal employment.

This recent joint International Labor Organization (ILO) and Women in Informal Employment: Globalizing and Organizing (WIEGO) initiative aims to deepen understanding on the nature and role of waste pickers cooperatives and other Social and Solidarity Economy /SSE/ and group in formalizing the informal economy, with a focus on waste pickers. Hope the report was help to promote further discussion and inform outlook act on cooperatives and other Social and Solidarity Economy /SSE/ and alliance in the transition from the informal to the formal economy.

The majority of waste pickers cooperative members earn a living by selling their products/wastes/ or the recyclables materials they collect directly. The most important role of the cooperatives is to make possible the earnings of their members by supporting them to access marketplace and provided that tangible space to carry out their activities, exclusive of acting as a fully-fledged project paying wages.

The waste picker's members gain training and skills improvement to suitable characteristics of each sector but it is not satisfactory. For waste workers, the training is frequently center on production skills, training on new apparatus, design, accounting and finally marketing which is pertinent to their livelihood.

Waste pickers training respond to the legal difficulties that they face, and serve to enhance advocacy efforts for recognition. Waste pickers were gaining training on technical skills that is relating to waste management of the sub-city. Technical skills look like fundamental in some contexts of waste pickers union even if the dogmatic framework of the union is inclusive of waste pickers. Most waste pickers can realize the significant economies of extent, similar to lower costs of manufacturing, through joining or/and forming cooperatives. The economies capacity were achieved through buying cheaper inputs from market, sharing apparatus, and costs through pooling of resources and joint selling of production, like bulk recyclables. Their cooperatives mostly negotiate with suppliers of goods, middlemen and manufacturers of products as well as with large producer of waste to take delivery of recyclables as donations.

Waste pickers generate the economy from first to last by sharing of cooperatives come up with the money for collection carts, pressing and baling machines to pertinent transfer place station. Their cooperatives look like to provide work for more in negotiations with governments of the country that are related with waste management agencies, Addis Ababa city waste management and disposal office, sub-city waste management Bureau and to the last *Wereda* waste administration office. This is most likely outstanding to their tough associational power and the ability of their need to negotiate with general authorities to local one in waste management systems of the administration. They have key

theme for negotiation, advocacy and policy work in the government and NGO sectors includes primary access to health services provision sectors and retirement fund system, tag along by humanizing working situation and profits. Addressing legal protection and provision of storage space/ transfer station/, poor stakeholders' coordination, lack of rules and regulations, poverty, unemployment, inadequate waste disposal and the like are most important issues.

Workers in the informal economy, especially the self-employed, have also required cooperatives or other forms of collaboration to respond to their economic needs and they have been mainly energetic in adopting the cooperative, especially in parts of South America and South Asia. Making of helpful permit to waste pickers' to gathering their resources, distribute the benefits and the risks of them to attain economic gains toward formalization, allowed for the negotiation of basic labor rights such like including social and cultural protection, increasing of wages or/and incomes, improved working conditions/decent work/ of them, supplying occupational safety and health for saving of life and also cooperatives facilitate to access for a range of services for them in the informal economy, such as finance, housing, and education, among others. The most important problems that waste pickers faced In Arada Sub-city, waste pickers were a common complaint among waste pickers were lack of gloves, masks, and wearing clothes to protect their bodies were raised as an issue. Their work is hazardous and they are exposing to dangerous materials, which always harm them with disease as patient to death/ loss of life/.

Most important functions and activities of the surveyed waste picker cooperatives are the collection, sorting and recycling of house and road waste from the sub-city. These three activities and functions are always correlated each other and shiny the environmental nature of their waste collectors work. When portraying the waste collector's task, activities, and the members of them give emphasis to the social meaning that they assign to their economic activity. A further important issue contributing to increasing economic benefit is taking of the cooperative training and skill improvement during working time with the experience life.

Waste pickers organizations need to act in accordance with many formal requirements to meet their social and cultural need, among other things, to develop managerial skills, as well as the ability to relate with productive citizens in the sub-city. The governments should accept their recommendations to improve the sub-city solid waste management systems and should recognize the economic, environment, health and socio-cultural benefits seriously including informal waste pickers in waste management system of the country in a good way of planning.

According to international labor organization/ILO/ report in (2015), waste pickers are often not legally recognized as formal workers even they suffer from poor working conditions, lack social, cultural, health, and food security due to lack of income from their labor intensive work. For example, these are the waste pickers' challenges facing in the sub-city. Frequently they face risk of disease, injuries of their physical and mental by being exposed with toxic, hazard and flammable materials, pollute residues, or sharp-edged items injure them frequently in workspace when they go to open dumps or landfills the labor confront particular risk of injuries or can be occur even loss of life in complicated manner. This study analyzes the situation of waste pickers on waste collecting work and their food security status with their health, environment and social impact clearly visible in their life long through workplace to residency with their neighbors' perception.

5.2 Conclusion

The waste management practice of waste pickers in the study site was income earnings and the waste management organization providing a source of employment for those who are very poor and received 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 benefits the communities by cleaning neighborhoods and increased the standard of living whereas decreasing the spread of disease. Empowering of the waste pickers improves not simply their social status, but also waste pickers improve their incomes and working conditions but according to the site result, waste pickers discouraging by the perceptions of the communities and lack of government and private organizational integrate in practice of waste management in Arada Sub-City.

The HFIAS model showed that 2.92% and 97.08% of households were food secure and food insecure respectively. Majority of households in Arada sub-city enterprises waste pickers were food insecure. Waste pickers of the sub-city consider considerable contributions to municipal health, sanitation, and environment at local, national and international levels by promoting resource circulation and reducing the amount of landfill. 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 pickers enterprises had variety of constraints, highlighted poor enterprises internal and external coordination. The most important obstacle to expansion is the lack waste pickers coordination as internal challenge while households' way of waste collection, lack of space and institutional factors were external impacts.

5.3 Recommendations

The researcher only wants to focus on some points that are primarily addressed the assessment of solid waste disposal management to food security of waste pickers.

- I recommend that solid waste management agency (SWMA) should look forward to strategic measures for the inclusiveness of the activities in sub-city all the way through Strategies, laws and regulations.
- Waste pickers' union/ cooperatives/ and/ or Social and solidarity economy and organization (SSEO) have played key roles in integrating and formalizing the work of waste pickers in the recycling value chain Such like strengthening voice and representing waste pickers voice, Providing and formalizing waste management service, facilitating access to basic services and social protection system; and raising public awareness on the role of waste pickers.
- Governments at national, regional, zonal, sub-city or *Wereda* /local/ level can formally recognize waste picking as an occupation and provide legal identity to waste pickers and their organizations to encourage the participation of these organizations in policy-making processes that would improve waste pickers' food security.

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APPENDIX 1

ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTER FOR FOOD SECURITY STUDIES

Part I.

Questionnaire to be filling by waste collectors/Pickers/ of Arada sub city

Introduction and purpose

Dear Respondent: Thank you for the willingness to respond to my questions. The following questions are not meant for testing your knowledge. The problem needing to be solved presented to understanding, from the waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa, Issues that the study areas should be noted and addressed at this level to ensure successful compilation of the adaptation. The aim of this study to analyze the gap between the waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa; The attached questionnaire is designed to assess the practices and challenges of implementing waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa. I would appreciate if you could help me by responding to the attached questionnaire. It has four parts it may take 30 to 40 minutes to complete.

For this purpose data will be collected through questionnaire, interview and observation checklist. The survey data will be analyzed on a collective basis hence confidentiality is maintained. The information you share with me will be secured with the at most confidentiality and your personal identity will be kept anonymous. There are no unknown risks and discomfort associated with this study. The expected benefits associated with this study are the end results that may be helpful to improve our WM systems. I would be happy to share the findings with you after the study is completed or even while in process. I assure you again, your names will not be associated with the research findings in any way, and your identity as a participant will be known only to me.

Thank You in advance for your assistance.

Questions concerning to the Demographic and socio Economic profile of the respondents (Please, put “X” at the appropriate response of space provide) by ticking (☐) on one of the alternative for one question in the box and write the correct answers for open ended questions.

Demographic data

1. Sex: ☐ Male ☐ Female
2. Your age: -----
3. Marital Status: ☐ Married ☐ Single
4. Family size: ☐ 1 to 3, ☐ 4 – 6, ☐ 7 – 9, ☐ 10 and above
5. Educational status: ☐ cannot read & write ☐ can read & write only ☐ (grade 5-8) ☐ (grade 9-10/12) ☐ Certificate (10/12+1) ☐ Diploma ☐ Degree and above

Main information

6. Types of waste you collected from communities.
 - A. food wastes
 - B. Paper, wood and plastics
 - C. metals and Glasses
 - D. Organic or Ash, Dung and manure
 - E. Other
7. What is your customer Solid waste storage system used?
 - A. Local basket
 - B. Madaberia
 - C. Plastic bag
 - D. Put in the hole of the ground
8. How do you collect your daily solid wastes?
 - A. All together
 - B. Separated
 - C. Both
9. The community waste bin stayed without picking
 - A. 3 days
 - B. 5 days
 - C. A week
 - D. more than a week
10. Is there any problem when you collecting solid waste from sources? A. Yes B. No
If your answer is Yes, ☐ Very high ☐ High ☐ Moderate ☐ little

11. With your personal opinion about the current action of waste collecting system, Is it productive?
A. yes B. No C. other-----
12. What is the effect of expert's supporters on your job? A. good B. a little bit they help C. they never help. D. they have no regular program. E. We do not know them.
13. Why not continuous change in waste collecting in Arada sub-city? A. lack of team work B. Lack of effective training C. lack of stakeholders attention D. lack of professional
14. Are you discussing on strategies of waste picking techniques?-----A. yes B. No, If your answer is No Why-----
15. Do you think that waste collection is relevant for fast and continuous economic development in our country?----- A. yes B. No, If your answer is No, why?.
16. What are your waste collecting tools?----A. Modern B. cultural, reason-----
17. What is your quality of work in your local waste collection? A. very good B. good C. moderate D. less
18. Do you think all members of co-workers have equal work performance and interest? A. yes B. No C. reason----
19. What is the perception of the communities about your job? A. difficult B. Low C. moderate D good.
20. Do you have market integrated problem to sell the collected wastes? A. yes B. No C. reason
21. Is there any change in your feeding system before and after you come into this job? A. very god change B. good. C. Moderately D. a little bit E. nothing
22. What are the main challenges during the collecting of wastes? A. low perceptions of communities B. The problems of waste collecting areas. C. Lack of communities contribution D. Lack of team work of communities.
23. What do you recommend to increase the productivity of waste collecting system? A. creating social awareness B. develops cooperative work C. Adopting technologies D. market integrating E. Increasing labor income and benefits
24. How much is a person's average income per month?-----
25. Do you think that your salary/income is satisfactory for your food security expenditure? A.yes B. No: If your answer is no why -----

26. In addition to you basic salary, is there any additional income or support? A) Yes B) No
Reason-----

27. Do you think that your salary/income able to feed three time a day properly? A) yes B) No

Reason-----

28. Do you think your salary is satisfactory to feed dietary diversity system in your household?

Reason-----

Thank you!

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)	<input type="text"/>
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? How often did this happen?	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)	<input type="text"/>
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)	<input type="text"/>
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)	<input type="text"/>
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)	<input type="text"/>
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)	<input type="text"/>

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)	<input data-bbox="1362 259 1444 383" type="text"/>
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)	<input data-bbox="1362 461 1444 584" type="text"/>
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= often (more than 10 times in the past 30 days)	<input data-bbox="1362 707 1444 831" type="text"/>

Table 1

❖ Tick under your choice of degree of agreement in the table below about **factors affecting effective solid waste management / social awareness impacts/** in your area

Social awareness impacts		Factors level				
		Very strongly(5)	Strongly (4)	Averagely (3)	Less influence(2)	No influence(1)
1	Poor coordination					
2	Lack of awareness					
3	lack of rules and regulations					
4	Lack of initiative					
5	Unreliable service					

Table 2

❖ Tick under your choice of degree of agreement in the table below about **factors affecting effective solid waste management food security status / socio-economic impacts/** in your area.

socio-economic impacts		Factors level				
		Highest	Higher	Medium	Minimum	Less
1	poverty					
2	Unemployment					
3	Improper Collecting wastes					
4	Way of transporting and disposing of wastes					
5	Institutional lack of budget					
6	Distance of transfer station					
7	Financial shortage/poorness					
8	Inadequate technology usage					

Table 3

Tick under your choice of degree of agreement in the table below about **factors affecting effective solid waste management / Environment and health impact /** in your area

Environment and health impact		Factors level				
		Very strongly(5)	Strongly (4)	Averagely (3)	Less influence(2)	No influence(1)
1	Mortality					
2	Morbidity					
3	Air pollution					
4	Water pollution					
5	Unsafe living conditions					
6	Breeding insects					
7	Spread of disease					
8	Ill occupations					
9	Recourses degradation					
10	Food pollution					
11	Poor sanitation					

Table 4

Tick under your choice of degree of agreement in the table below about **factors affecting effective solid waste management / Demographical impacts/** in your working area.

Demographical Impacts/ variables/		Factors level				
		Very high(5)	Higher (4)	Moderately(3)	Less influence(2)	No influence(1)
1	Sex					
2	Age					
3	Educational Level					
4	HHs size					
5	Marital Status					

Table 5

Tick under your choice of degree of agreement in the table below about **factors affecting effective solid waste management / impacts/** in your working area.

Variables/ impacts		Factors level				
		Mostly	More	Medium	small	least
1	Inadequate provision of services					
2	Inadequate communication facilities					
3	Urban slums					
4	Improper waste disposal					
5	Hazard wastes					

Part II

Interview Questions to be answer by sub city waste management agency officers

Introduction and purpose

Dear Respondent: Thank you for the willingness to respond to my questions. The following questions are not meant for testing your knowledge. The problem needing to be solved presented to understanding, from the waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa, Issues that the study areas should be noted and addressed at this level to ensure successful compilation of the adaptation. The aim of this study to analyze the gap between the waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa; The attached questionnaire is designed to assess the practices and challenges of implementing waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa. I would appreciate if you could help me by responding to the attached questionnaire. It has four parts it may take 30 to 40 minutes to complete.

For this purpose data will be collected through questionnaire, interview and observation checklist. The survey data will be analyzed on a collective basis hence confidentiality is maintained. The information you share with me will be secured with the at most confidentiality and your personal identity will be kept anonymous. There are no unknown risks and discomfort associated with this study. The expected benefits associated with this study are the end results that may be helpful to improve our WM systems. I would be happy to share the findings with you after the study is completed or even while in process. I assure you again, your names will not be associated with the research findings in any way, and your identity as a participant will be known only to me.

Thank You in advance for your assistance.

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

1. Are there policies and strategies concerning waste management in municipality and government level? Yes/No, reason-----

2. Did you have Promotion plan related issues like plan to promote production of enterprises and marketing activity? Yes/No, reason-----

-----3. What about allocating of sufficient budget for promotion purposes?-----

Thank you!

Part III

Interview Questions to be answer by Woreda Waste Management Bureau experts (Woreda WM Stakeholders)

Introduction and purpose

Dear Respondent: Thank you for the willingness to respond to my questions. The following questions are not meant for testing your knowledge. The problem needing to be solved presented to understanding, from the waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa, Issues that the study areas should be noted and addressed at this level to ensure successful compilation of the adaptation. The aim of this study to analyze the gap between the waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa; The attached questionnaire is designed to assess the practices and challenges of implementing waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa. I would appreciate if you could help me by responding to the attached questionnaire. It has four parts it may take 30 to 40 minutes to complete.

For this purpose data will be collected through questionnaire, interview and observation checklist. The survey data will be analyzed on a collective basis hence confidentiality is maintained. The information you share with me will be secured with the at most confidentiality and your personal identity will be kept anonymous. There are no unknown risks and discomfort associated with this study. The expected benefits associated with this study are the end results that may be helpful to improve our WM systems. I would be happy to share the findings with you after the study is completed or even while in process. I assure you again, your names will not be associated with the research findings in any way, and your identity as a participant will be known only to me.

Thank You in advance for your taking time.

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

1. What were the main activities you have been planned in the previous waste management implementation years?
2. What is the level of participation of stakeholders in the implementation of waste management service?
4. What do you expect the waste management system to assure and enhance quality waste management activities in your office?
5. To what extent Addis Ababa waste management agency perform their responsibility in the implementation of the full package service?
6. What major functions are performed at the time of follow up?
7. What are the major challenges observed in the implementation of waste management service?
8. What solutions are taken to avoid and or minimize the challenges and or problems?
9. What is your suggestion for the better implementation of waste management service in the future?
10. Do you have local rules and regulation concerning to waste management with your neighborhoods?

Thank you!

Part IV

Interview Questions to be answer by Arada Sub-City households at home from source of wastes.

Introduction and purpose

Dear Respondent: Thank you for the willingness to respond to my questions. The following questions are not meant for testing your knowledge. The problem needing to be solved presented to understanding, from the waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa, Issues that the study areas should be noted and addressed at this level to ensure successful compilation of the adaptation. The aim of this study to analyze the gap between the waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa; The attached questionnaire is designed to assess the practices and challenges of implementing waste disposal management practices and its implication on household food security of waste collectors in Arada Sub-City Addis Ababa. I would appreciate if you could help me by responding to the attached questionnaire. It has four parts it may take 30 to 40 minutes to complete.

For this purpose data will be collected through questionnaire, interview and observation checklist. The survey data will be analyzed on a collective basis hence confidentiality is maintained. The information you share with me will be secured with the at most confidentiality and your personal identity will be kept anonymous. There are no unknown risks and discomfort associated with this study. The expected benefits associated with this study are the end results that may be helpful to improve our WM systems. I would be happy to share the findings with you after the study is completed or even while in process. I assure you again, your names will not be associated with the research findings in any way, and your identity as a participant will be known only to me.

Thank You in advance for your assistance.

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

1. Did you store waste from the beginning / source? Yes/No reason-----

2. Did you properly store all the wastes at home? Yes/No reason-----

3. Did you recycle and reuse the solid waste at home? Yes/No reason-----

4. Did you burn the waste at home? Yes/No reason-----

5. Did you bury the waste in your compound? Yes/No reason-----

6. Did you transport and dump the stored waste? Yes/No reason-----

7. Do you implement the instruction of waste collectors to avoid your waste? Yes/No reason-----

8. What you recommend the effective avoiding system of wastes? Yes/No reason-----

Thank you!

APENDEXES 2

ክፍል 1

አዲስ አበባ ዩኒቨርሲቲ

የሀገር ልማት ጥናት ኮሌጅ

የምግብ ዋስትናና ጥናት ማዕከል

መረጃ መሰብሰቢያ ቃለመጠይቅ

በአራዳ ክፍለ ከተማ ውስጥ በሚገኙ ወረዳዎች ውስጥ ቆሻሻን በመልቀም የሚተዳደሩ የህብረተሰብ ክፍሎች የሚሞላ ቃለ-መጠይቅ

የሚሰጡን ግልጽና ታማኝነት ያለው መረጃ ወሳኝ ስለሆነ እባክዎትን በጥንቃቄ ይሙሉት፡፡

አመሰግናለሁ፡፡

መመሪያ: እባክዎ እንዲመርጡ በሚጠይቀው የቃለመጠይቅ ክፍል ላይ የመረጡትን ፊደል ወይም ፊደላት ብቻ በመክበብ እንዲመርጡ እጠይቃለሁ፡፡ እንዲሁም በክፍት ቦታው ላይ እንዲጽፉ በተጠየቀው የቃለ መጠይቅ ክፍል ላይ ደግሞ ግልጽና አጭር መልስ በመጻፍ እንዲተባበሩን እጠይቃለሁ፡፡

ግለሰባዊ መረጃ

- 1. ያታ- ሀ) ወንድ ለ) ሴት
- 2. እድሜ-----
- 3. የጋብቻ ሁኔታ- ሀ) ያገባ ለ) ያላገባ
- 4. የቤተሰብ ምጣኔ ብዛት ሀ) 1-3 ለ) 4-6 ሐ) 7-9 መ) ከ 10ና በላይ
- 5. የትምህርት ደረጃዎ: ሀ) ማንበብና መፃፍ ያልቻለ/ች ለ) ማንበብና መፃፍ የሚችል ሐ) 5-8ኛ ክፍል መ) 9-12ኛ ክፍል ሰ) ሰርተፊኬት ር) ዲፕሎማ ሰ) ዲግሪና በላይ

ዋና መረጃ

- 6. በብዛት ከማህበረሰቡ የምትሰበሰቡት የቆሻሻ አይነት ሀ) የምግብ ቆሻሻ ለ) ወረቀት፣ እንጨትና ፕላስቲክ ሐ) ብርጭቆና ብረታብረት መ). ኦርጋኒክ ወይም አመድ፣ ብስባሽና እበት
- 7. ደንበኞቻችሁ የሚያስወግዱትን የደረቅ የቆሻሻ በምን ያጠራቅሙታል; ሀ) በቅርጫት ለ) ማዳበሪያ/ጅንያ ሐ) የፕላስቲክ ባግ/ፔስታል መ) መሬት ላይ በግዴላሽነት በመጣል
- 8. በየቀኑን የሚወገዱ የደረቅ ቆሻሻ እንዴት ታጠራቅማላችሁ ሀ) ሁሉን ባንድ ላይ ለ) በየግል ሐ) በግልና በተናጠል
- 9. ደንበኞች ያጠራቅሙት/የጣሉት ቆሻሻ ሳይሰበሰብ ከማጠራቀሚያ ውስጥ የሚቆይበት ጊዜ ሀ) እስከ 3 ቀን ለ) እስከ 5 ቀን ሐ) እስከ ሳሚንት መ) ከሳሚንት በላይ
- 10. ቆሻሻ ስታጠራቅሙ የሚገጥሟችሁ ችግር አለ ወይ; ሀ) አዎ ለ) የለም፣ መልስዎ አዎ ከሆነ፣ ምክንያትዎ ይግለጹ፡-----
- 11. በግል አመለካከትዎ አሁን እየተተገበረ ያለው የቆሻሻ ለቀማ አገልግሎት ውጤታማ ነው ብለው ያስባሉ? ሀ)አዎ ለ)አይደለም ሐ) ሌላ ካለ
- 12. ስለ ባለሙያዎች ወይም ድጋፍ ስለሚያደርግሎት አካል ምን ማለት ይፈልጋሉ? ሀ)ጥሩ ይረዳናል ለ) በትንሹ ይረዳናል ሐ) ጭራሽ አያግዘንም መ) ወጥ የሆነ-ፕሮገራም የላቸውም ሰ) እንዲያውም አናውቃቸውም
- 13. በቆሻሻ ለቀማ ትግበራ ላይ ምንድን ነው ቀጣይነት ያለው ለውጥ ሊመዘገብ ያልቻለው; ሀ) የድርጅቱ አባላት በጥምረት አለመስራት ለ) ውጤታማ ስልጠና አለመሰጠቱ ሐ) የባለሙያዎች ትኩረት ያለመስጠት መ) የሰለጠነ የሰው ሀይል በቂ ያለመሆን
- 14. በአደረጃጀትና በመሳሰሉት የመወያያ መድረኮች ትወያያላችሁ; ሀ) አዎ ለ) አንወያይም ሐ) መልስዎ አንወያይም ከሆነ፣ ምክንያትዎ ይግለጹ፡-----

15. ለሃገራችን የኢኮኖሚ ዕድገትና ልማት የቆሻሻ አወጋገድ አገልግሎት ጉልህ ሚና አለው ብለው ያስባሉ; ሀ) አለው ለ) የለውም፤ መልስዎ የለውም ከሆነ ለምን፤-----

16. የምትጠቀሙባቸው መሳሪያዎች ምን ዓይነት ናቸው;

ሀ) ባህላዊ ለ) ዘመናዊ; ባህላዊ ከሆነ ምክንያትዎ ይግለጹ፤-----

17. የምትሰጡትን የአገልግሎት ጥራት እንዴት ታዩታላችሁ;

ሀ) በጣም ጥሩ ለ) ጥሩ መካከለኛ ሐ) ዝቅተኛ

18. ሁሉም የድርጅቱ አባላት እኩል የሥራ ፍላጎት እና አፈፃፀም አላቸው ብለው የስባሉ? ሀ) አላቸው ለ) የላቸውም፤ መልስዎ የላቸውም ከሆነ፤ ምክንያትዎ ይግለጹ፤-----

19. ማህበረሰቡ ለድርጅታችሁ ያለው አመለካከት ምን ይመስላል;

ሀ) አስቸጋሪ ለ) ዝቅተኛ ሐ) መካከለኛ መ) ጥሩ

20. የለቀማችሁትን ቆሻሻ የመሸጥ/ የገበያ ትስስር ችግር/ አለባችሁ;

ሀ) አዎ ለ) የለም፤ አዎ ከሆነ መልስዎ ለምን፤-----

21. ይህን ስራ ከመጀመራችሁ በፊት የነበራችሁ የአመጋገብ ስርዓት እና ከጀመራችሁ በኋላ ምን ለውጥ አለው ሀ) በጣም ጥሩ የአመጋገብ ለውጥ አለ ለ) ጥሩ ለውጥ አለ ሐ) መካከለኛ ነው መ) በጥቂቱ ሠ) የለም

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

23. እርስዎ ለደረቅ ቆሻሻ አሰባሰብ ስርዓት ውጤታማነት ምን መሰራት አለበት ይላሉ፤ ሀ) የግንዛቤ ማስጨበጥ ስራ መስራት ለ) ሁሉም አካል በትብብር መስራት ሐ) የቆሻሻ አሰባሰብና አወጋገድ ስርዓትን ማዘመን መ) የገበያ ትስስር መፍጠር ሠ) የሰራተኞችን ደመወዝና ጥቅማጥቅም መጨመር

24. ያንድ ሰው ወርሃዊ አማካኝ ገቢ ስንት ይሆናል-----

25. በምትሰሩት ስራ የሚከፈላችሁ ክፍያ/ደመዎዝ/ ለምግብ ፍጆታ ዋስትናችሁ አጥጋቢ ነው ብለው ያምናሉ ሀ) አዎ ለ) አይደለም፤ መልስዎ አይደለም ከሆነ ምክንያትዎን ይግለጹ-----

26. የደረቅ ቆሻሻ ስራ ሰርተው ከሚከፈለዎት ክፍያ በተጨማሪ ሌላ ተጨማሪ ድጋፍ ያገኛሉ-----

27. እርሶዎ ሰርተው በሚያገኙት ገቢ በቀን ሶስት ጊዜ መመገብ ያስችላል ብለው ያስባሉ -----

28. እርሶዎ ሰርተው የሚያገኙት ገቢ የተመጣጠነ የአመጋገብ ስርዓትን ለመተግበር ያስችላል ብለው ያስባሉ -----

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 ያውቃሉ?	0 = አልሰጋሁም (ወደ ጥያቄ 9) 1= አዎ	_____
1.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ 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 ያውቀሉ?	0 = አይደለም (ወደ ጥያቄ 10) 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 11) 1 = አዎ
3.1	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1 አልፎ አልፎ (አንድ ወይም ሁለትጊዜ) 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 አባል መብላት የማትፈልጉትን ምግብ በልታችኋል?	0=አይደለም (ወደ ጥያቄ 12) 1 = አዎ
4.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1 አልፎ አልፎ (አንድ ወይም ሁለትጊዜ) 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 13) 1 =አዎ

5.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1, አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10 ጊዜ) 3=ሁል ጊዜ(ከ10 ጊዜ በላይ)	-----
6.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ቁርስ፣ ምሳ ወይም እራት መብላት ሳትችሉ ቀርታችኋል?	0 = አይደለም (ወደ ጥያቄ 14) 1 = አዎ	-----
6.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1, አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10 ጊዜ) 3=ሁል ጊዜ(ከ10 ጊዜ በላይ)	-----
7.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት በቤተሰቡ ውስጥ የሚላሰብ የሚቀመስ ያልነበረበት ጊዜ ነበር?	0 = አይደለም (ወደ ጥያቄ 15) 1 = አዎ	-----
7.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1, አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10 ጊዜ) 3=ሁል ጊዜ(ከ10 ጊዜ በላይ)	-----
8.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል እየራቀው ወደ መኝታ የሄደበት ጊዜ ነበር?	0 = አይደለም (ወደ ጥያቄ 16) 1 = አዎ	-----
8.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1, አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2=አንዳንድ ጊዜ(3-10 ጊዜ) 3=ሁል ጊዜ(ከ10 ጊዜ በላይ)	-----
9.	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ቀጥታ ሙሉ ሳይበላ ውሎ ሳይበላ ያደረገበት ጊዜ አለ?	0 = የለም 1 = አዎ	-----
9.1.	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1, አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = አንዳንድ ጊዜ (3-10 ጊዜ) 3= ሁል ጊዜ (ከ 10 ጊዜ በላይ)	-----

እባክዎ በዓረፍተ ነገር ረድፍ ላይ የሚገኙትን በጥንቃቄ ያንብቡና በምርጫዎት ስር የ (✓) ምልክት በማድረግ ይመልሱ

ቆሻሻን መቀነስ ዋናዋና ወይም ክምንጨቴ ያልተቻለበት ምክንያቶች	የችግሮች ደረጃ				
	በ/ከፍተኛ (5) ተፅእኖ	ከፍተኛ (4) ተፅእኖ	መካከለኛ (3) ተፅእኖ	ዝቅተኛ ተፅእኖ(2)	ምንም ተፅእኖ የለውም(1)
1 የትብብር ማነስ					
2 የግንዛቤ እጥረት					
3 የኢኮኖሚ ችግር					
4 የህገ-ደንብና መመሪያ ችግር					
5 የተነሳሽነት ማነስ					
6 የአገልግሎት ታማኒነት ማጣት					

አመሰግናለሁ