



NUTRITIONAL STATUS, FOOD SAFETY KNOWLEDGE,
ATTITUDE AND PRACTICES IN SAFETY NET-SUPPORTED
HOUSEHOLDS IN WOREDA TWO OF ADDIS KETEMA SUB-
CITY, ADDIS ABABA, ETHIOPIA

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Declaration

I hereby declare that the thesis entitled ‘**Nutritional Status, Food Safety Knowledge, Attitude and Practices in Safety net-supported households in Woreda Two of Addis Ketema Sub-city, Addis Ababa, Ethiopia**’ has been carried out by me under the supervision of Professor MogessieAshenafi, Center for food Security studies, Addis Ababa University. I further declare that this thesis is my original work and has not been submitted to any other university or institution for the award of any degree and all sources of materials used for the thesis have been duly acknowledged.

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Operational Definition

Attitudes: Attitudes are emotional, motivational, perceptive and cognitive beliefs that positively or negatively influence the behaviour or practice of an individual. An individual's feeding or eating behavior is influenced by his/her emotions, motivations, perceptions and thoughts. Attitudes influence future behavior no matter the individual's knowledge and help explain why an individual adopts one practice and not other alternatives (Macías and Glasauer, 2014).

Food safety: Food safety refers to the conditions and practices that preserve the quality of food to prevent contamination and food borne illnesses. It includes the production, processing, preparation and handling of food to ensure it is safe to eat (Griffith, 2000)

Food security: When all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2001).

Knowledge: Knowledge is the understanding of any given topic. In this manual, it refers to an Individual's understanding of nutrition, including the intellectual ability to remember and recall food- and nutrition-related terminology, specific pieces of information and facts (Macías and Glasauer, 2014).

Malnutrition: A deviation from the norm in a child's growth and development. It can manifest as either under or over nutrition (WHO, 1995).

Practices: In this context the term "practices" is defined as the observable actions of an individual that could affect his/her or others' nutrition, such as eating, feeding, washing hands, cooking and selecting foods (Macías and Glasauer, 2014).

Stunting: being short for age measured as height for age were defined by Z-score less than two standard deviation(SD) below the median of reference population and a sign of chronic undernutrition that reflects failure to receive adequate nutrition over a long period (CSA,2016)

Wasting: Refers to thinness and it is measured as weight-for-height at least 2SD below the median of a reference population. A measure of acute undernutrition that represents the failure to receive adequate nutrition (CSA, 2016)

Underweight: having low weight for age, defined by Z-score defined by Z-score less than -2 standard deviation (SD) below median of the population. It may indicate wasting or stunting (CSA, 2016)

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Acronyms

CSA:	Central Statistical Agency
CSFSS:	Center for Food Security Studies
FAO:	Food and Agriculture Organization
FMOH:	Federal Ministry of Health
FNS:	Food and Nutrition Security
FS:	Food Security
HACCP:	Hazard Analysis and Critical Control Point
HFIAS:	Household Food Insecurity Access Scale
HFS:	Household Food Security
HHS:	Household Hunger Scale
KAP:	Knowledge, Attitude and Practices
MDG:	Millennium Development Goal
MUAC:	Middle Upper Arm Circumference
PSNP:	Productive Safety Net Program
SPSS:	Social Packaging Statistical Soft Wear
UFSS:	Urban Food Security Strategy
UJCFSP:	Urban Job Creation and Food Security Program
WFP:	World Food Program
WHO:	World Health Organization
NHANES:	National Health and Nutrition Examination Survey
FANTA:	Food and Nutrition Technical Assistance
FAM:	Food Aid Management

ABSTRACT

Safety net-supported households participating in the Productive Safety Net Program (PSNP) are involved in public works to make them food secure in sustainable way. But there is insufficient information on the level of their knowledge, attitude and practice (KAP) related to food handling, personal hygiene and water sanitation. The general objective of the study was to investigate nutritional status, food safety KAP and food security status of PSNP-supported households in woreda two of Addis ketema sub-city, Addis Ababa. A cross-sectional survey was carried out among PSNP-supported households in the study area, between January and March 2019. Purposive sampling technique was applied to select the study woreda, and the study population. Study households were selected by systematic random sampling technique. A total of 273 household were selected, from among PSNP supported households involved in public work, as sample size. Data was analyzed by using SPSS version 25 through descriptive and Cross tabulation was used to analyze the association between socio economic factors and nutrition status. Majority (82.2%) of the household food handlers and public workers under PSNP were females and (17.92%) were males where most of the study population (74.71%) were >46 years of age. The KAP analysis indicated that food handling knowledge, positive attitudes and acceptable practices among the study population was less than 50%. Knowledge regarding personal hygiene was also at very low level (16%) although positive attitude towards good personal hygiene was markedly higher (66.8%), Water sanitation knowledge was 70.3%, positive attitude towards water sanitation was 47.7% and the respondents acceptable practices in water sanitation was 37.4%. Based on HFIAS measurement, 21.6% of the sample households were food secure, 52.9% were mildly food insecure, 21% were moderately food insecure and 4.5% were severely food insecure. Nutritional assessment data showed that prevalence of underweight, stunting, wasting and under-nutrition in sample household's were 33.3%, 41.7%, 18.2 % 19.4 %, respectively.

Generally the result revealed poor food handling, personal hygiene and water sanitation KAP among mothers in the study population. Poor hygienic practices by food handlers coupled with poor sanitary conditions in safety net-supported households can contribute to occurrences of food borne illnesses, resulting in nutrition and food insecurity.

Keywords: Knowledge, Attitude, Practices, Food Safety, Food Security, Nutritional status.

CHAPTER 1 INTRODUCTION

1.1. Background

Nutritional status refers to a state of the body in terms of nutrition expressed as malnutrition when nutrients are inadequate. Malnutrition denotes either of the two states, under nutrition, that is when nutrients needed by the body are deficient or, over nutrition when nutrients exceed required amounts. Nutritional status of an individual is generally dependent on two factors: external factors: food safety, cultural, social and economical factors and Internal factors: age, sex, nutrition behavior, physical activity and diseases of the person. Whereas nutrition Security is adequate nutritional status in terms of protein, energy, vitamins and minerals for all households members at all times (Nesamvuni CN, 2014). Food security is the satisfaction of availabilities and nutritional requirements for the people at global, national and regional levels as well as at the household levels (Hahn 2000). According to FAO (2002), food security is said to exist when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Food insecurity, on the other hand, is a situation in which people lack food enough to support productive lives (Degefa, 2007).

Ethiopia developed urban food security strategy in 2015 that has been implemented under the Ministry of Urban Development for Urban Job Creation and Food Security. In this program, safety net-supported households are engaged in public works for pay such as solid waste and environmental cleaning activities, urban beautification and greenery activities, urban integrated water shed development, urban social infrastructure and other services to mitigate vulnerability, which affects more than 4.7 million people living in the cities and towns. Such vulnerable people are supported by this program. About 55% of them live below the poverty line and 32% of the population are estimated to be undernourished (MUDH, 2016).

Although the availability of food is the most critical problem in food security of the urban poor, ensuring food safety for a better nutritional security should also be addressed to achieve the goal of healthy and active life. Nutrition transition and mal-consumption are the two major food phenomena leading to diet-related diseases (Paolo *etal*, 2014). Under situations of household food shortage, hygiene, safety and nutrition are ignored and people shift to less nutritious diet and

unsafe food that leads to different health hazards. Malnutrition and food borne illnesses, may also be aggravated, even in the presence of required amount of food, due to poor quality of preparation and storage up to consumption at the household level. These negatively influence food security situation (Cleaver *et al*,2006).

According to WHO (2002), the term food safety indicates the assurance when food is consumed in the usual manner that does not affect human health and wellbeing. However, WHO (2015) indicated that 600 million people globally fall ill and 420,000 die after consuming unsafe food each years.Because of this, currently the issue of satisfying one of the food security utilization requirements, namely “safe food”, is a critical concern (Patron 2004).

Even in the presence of more advanced technology, the occurrence of food-related diseases is not controlled and the problem affects both developing and developed nations (Kinfere and Abera 2007). Anthropometric and dietary consumption survey has been used to know and analyses the food utilization of the people.Availability and accessibility of adequate quality of food should correspond to utilization of safe food in order to achieve food security (Hahn 2000).

Food contamination is caused due to several factors, such as chemical, microbiological and others, which lead to loss of food safety during handling, preparation and storage of food due to lack of knowledge, attitude and practice on food safety and potable water sanitation as well as unsafe disposal of garbage(MulugetaKibret and BayehAbera 2012). Contaminated food results in disease, immune suppression and stunting(Amare,2016).

Food safety is one of the least considered interventions in developing countries that affect food security due to loss of nutritional value (WHO 2015). According to various studies, poor knowledge, attitude and practice of hygiene, lack of basic sanitary facilities in household food service and negligence in safe food handling are major causes of poor sanitary conditions of food and drinking water at the household level (WHO 2003).

Food safety problem is still rarely acknowledged by decision makers in many developing countries and is often given little priority by major donors. Therefore, this studywas carried out to investigateknowledge and practice of the sample population in food safety that can influence food security at household level in an urban setting.

1.2. Statement of the Problem

Globally, under nutrition is more common in poor households, but is also prevalent among wealthier households. Income is one—but not the only—determinant of stunting: food insecurity, diets lacking in diversity, high rates of infectious diseases and inappropriate infant feeding and care practices, and poor sanitation and hygiene practices also contribute to persistent stunting. Food and financial crises, as well as conflict and natural disasters, have worsened under nutrition in many regions, (World Bank2019).

Household food safety indicators include food handling practices, attitudes and knowledge of consumers with regards to domestic water, food and household environment (Taulo2008). Inadequate cooking and improper handling of food and cooking utensils are some of household food safety risks. The absence of food safety indicators in current measurements of household food security is viewed as presenting a huge gap in the progress towards achieving food security (Keenan *et al.* 2001). The reporting on food security is still based on availability and accessibility of food in the context of many developing countries (Coates *et al.* 2006), despite inclusion of food safety in the conceptualization of food security. However, according to various researchers, a household should not only be declared food secure when it is able to have access to sufficient available food but also when its members can utilize the food for a healthy and active life (Frankenberger 1992). Intervention strategies tend to focus on agricultural production and other means that would increase household food access such as governmental social development grants and food aid from humanitarian organizations.

The Government of Ethiopia developed the Urban Food Security Strategy (UFSS) through Urban Job Creation and Food Security Program (UJCFSP) to alleviate urban food insecurity and tackle the increasing levels of vulnerability by supporting the urban poor. This is expected to be achieved over a long-term period through a gradual roll-out plan in different phases. However, the program does not well address the issue of food safety at the household level.

Unsafe food causes gastro-intestinal illnesses. Such diseases result in loss of appetite, malabsorption of nutrients into blood, and loss of electrolytes and other nutrients through diarrhea, subsequently leading to malnutrition in ill persons, particularly infants and adults. Malnutrition weakens the natural immunity of the sick. This, in turn, predisposes them to food

infections. To stop this vicious cycle (malnutrition → diarrhea → malnutrition), maintaining food safety at household level is essential. Absence of proper food safety knowledge, attitude and practices affect food security status at the household level. In developing countries like Ethiopia, the problem attains great proportions mainly due to lack of KAP. Relevant literature on knowledge, attitude and practices (KAP) regarding household food safety, which influences nutrition and food insecurity, is insufficient in Addis Ababa or elsewhere in Ethiopia.

1.3. Objectives of the Study

General Objective

The main objective of this research was to investigate the status of food safety KAP and assess nutritional status of selected household members in Addis Ketema sub-city, *Woreda Two*, Addis Ababa, 2019.

Specific Objective

The study addressed the following specific objectives:

- To assess current nutritional status of selected household members using anthropometric methods.
- To investigate the status of food safety KAP in safety net-supported households.
- To evaluate access to food using Household Food Insecurity Access Scale.

1.4. Research Questions

Based on the above specific objectives, the research attempts to answer the following question:

- What is the current nutritional status of safety net-supported households in the woreda?
- What is the current status of food safety KAP in safety net-supported households?
- What is the current food security status of safety net-supported households in the woreda?
- How can awareness of the people about food safety and possible prevention mechanisms of food contaminations?

1.5. Limitation of the Study

The limitation of the study was unavailability of prior research in the study area or similar areas, making it difficult to compare the details of the finding of this research with similar studies.

The study focused only possible biological contaminants to food or water but did not consider physical and chemical contaminants, which are usually important in food processing or food service organizations.

1.6. Scope of the Study

The study was done particularly in Addis Ketema sub city woreda 02 on safety net-supported households from late January to early March on food safety and nutritional status of knowledge, attitude and practices.

1.7. Significance of the Study

This research has several important contributions. It shows the current KAP status of food safety and food insecurity in the households. It gives basis for further studying the status of knowledge, attitude and practices in food safety among safety net-supported households in other woredas in Addis Ababa or elsewhere in Ethiopia. It identifies the factors that result in poor knowledge, attitude and practices and points out the need for interventions. It also recommends possible prevention mechanisms of food contamination to improve food and nutrition security status.

1.8. Outline of the Thesis

This thesis consists of five chapters. Chapter One presents the general introduction of the thesis that includes background of the study, statement of the problem, objectives, research questions, significance of the study, scope and limitation of the study and definition of key words. The second chapter is devoted to a review of related literature through which various concepts relevant to the study are discussed. The third chapter deals with methodological issues, under which the general descriptions of the study area, the data sources and acquisition techniques as well as method of data analysis are discussed. The fourth chapter is devoted to discussion and analysis based on the processed primary and secondary data of the study. And finally the fifth chapter is dedicated to conclusion and recommendation based on the findings of the study.

CHAPTER 2 REVIEW OF LITERATURE

This chapter tries to present an overview of the theoretical literature, related empirical studies, the literature gap and the conceptual framework of the study. It focuses on the food safety knowledge, attitude and practice, nutritional status and food security.

2.1. Theoretical Review

Malnutrition is one of the world's most serious but least-addressed development challenges. Its human and economic costs are enormous, falling hardest on the poor, women, and children. In 2017, 151 million children were stunted (low height-for-age), which indicates not only a failure to achieve one's own genetic potential for height but is also a predictor of many other developmental constraints, including cognitive deficits and future economic opportunities, including impeding a country's ability to accumulate human capital. Since the 1990s, the worldwide prevalence of stunting declined from 40 percent in 1990 to 22 percent in 2017. However, stark regional differences persist, with South Asia and Sub-Saharan Africa remaining above the global average both in terms of prevalence and numbers of stunted children. Approximately 35 percent of all children under five were stunted in South Asia in 2017, decreasing from 61 percent in 1990. Even though the prevalence of child stunting in Sub-Saharan Africa fell from 49 percent in 1990 to 34 percent in 2017, the total number of stunted children in Africa increased by 13.9 million during the same period as a result of high fertility rates and lower rates of decline in stunting,(World Bank2019).

Food security (FS) evolved over the years from only embracing the supply point of view (Maxwell 2003) to later realization that there must be interaction of several factors for FS achievement (Rose and Charlton 2002).It was believed that global FS would be satisfied when food production is enough especially for countries that experienced food shortages (FAO 2003).

In the mid-1990s the more acceptable definition of FS was that of the 1992 United States Agency for International Development (USAID 1992) stating “when all people at all times have both physical and economic access to enough food to meet their dietary needs for a productive and healthy life”.

The four key FS dimensions used to assess FS status of people are named as food availability, food access, utilization and stability. The implication is that all four dimensions should be satisfied in order to declare FS achievement. The availability of sufficient food for all people is the responsibility of the government and of the markets to make sure that food needed by households is available at reasonable prices and reachable in terms of distance (Van Zyl and Kirsten 1992). Availability of food purchases and transfers added to it, means sufficiency for all individuals (Gross *et al.* 2000).

Sayed (2006) further states that the quality of available food in terms of adequate nutrition, food safety, cultural and social acceptability determines the achievement of nutrition security.

Utilization of food refers to either physical or biological use of available and accessed food. Physical utilization includes good care, feeding practices, food processing, food storage, and diversity of diet and intra-household distribution of food (FAO 2008). Biological use refers to bioavailability of nutrients to the body (FAO 2008). Determinants of utilization include nutritious and safe foods, adequate biological and social environments and proper health care (FAO 2008). Food quality in terms of its nutritional value is assessed often omitting food preparation methods that could compromise the nutrient and biological quality of food. Food stability impacts on all other three dimensions (Gross *et al.* 2000). Stability refers to the sustainability of food availability, accessibility and utilization over time for all people.

Food stability also includes avoidance of spoilage and/or major losses during storage and processing of available food (Sayed 2006). It also means the ability of the household to process food to the extension of shelf life of food for leaner seasons. Stability can be disturbed by natural disasters and political factors as well as social and economic standing.

2.2. Concepts of Food Safety and Empirical Literature Review

Unsafe food is linked to the deaths of an estimated two million people annually, including many children in the world (WHO 2013). Food containing harmful bacteria, viruses and parasites is responsible for more than 200 diseases ranging from diarrhea to cancer; in addition to this, various epidemiological data indicate that a substantial proportion of food-borne disease is attributable to improper food preparation practices at consumers' homes.

Solid waste disposal, sanitary condition and hand washing facilities, lack of knowledge of food safety, traditional beliefs, inadequate food safety laws, weak health extension service and lack of health education about food safety and hygiene affect the four food security dimensions.

Most of the food-borne diseases are preventable with proper food handling following the WHO's five keys to safer food: i) keep clean; ii) separate raw and cooked; iii) cook thoroughly; iv) keep food at safe temperatures; and v) use safe water and raw materials (WHO 2006).

Safe food refers to food free of environmental and microbial contaminants that can cause food and water borne infections, risk of chronic diseases or death (Unnevehr 2003). Conversely, unsafe food would be food unfit for human consumption due to environmental contaminants and pathogens. Food safety is assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use (Honiara 2010). The food safety health risk ranges from short-term food-borne infections to long-term ill-health conditions (cancer, hypertension or coronary heart disease) (Dodd and Bayerl 2012).

WHO estimates that in 2005, 1.8 million people died from diarrheal diseases caused by various pathogens (WHO 2007). In Addis Ababa Administrative Region, for example, in 1995, recorded food borne illnesses consisted of 12,568 cases of Ascariases, 3,167 of typhoid fever and 3,106 of tapeworm, among others (EHD/MOH 2003/4). Safety of foods can be ensured by identifying specific critical or hazardous points and putting in place control measures. Critical points at household level are purchasing, storage, preparation, cooking, serving and handling of left- over foods (FSIS 1998).

2.3. Household Food Security

HFS is the basic (micro) level where the degree of achievement in the progress of human development can be assessed (Hamelin *et al.* 1999). The focus shift of FS from the national and regional to the household level was investigated by observations of deficient food intakes by certain groups despite national supply sufficiency (Hahn 2000). It is clear however that HFS cannot be met if FS at the upper levels is not achieved. On the other hand HFS results can be used to describe the status of FS at regional and national levels.

Intra-household issues include food distribution inequalities within the same household such as fathers' intake satisfaction before children and mothers can receive their meal portions as well as food intake adjustments by mothers in favor of their children.

2.4. Conceptualization of Household Food Safety

Food safety has been a global issue of concern in the trade industry for a very long time (Taulo 2008). At household, food safety refers to all measures taken to ensure that food is safe for human consumption (Paolo *et al.* 2014). Household food safety, therefore, will refer to protective measures such as food handling practices from acquisition until consumption by the households, which guard against contaminants and pathogens. Unhygienic environment and handling of food in and around the homes have been shown to be a risk factor for the spread of infectious diseases and consequently childhood diarrhea (Takanashiet *al.* 2009).

Unsafe household food handling practices are the behavior of the food handler in the kitchen that causes or aggravates a food safety risk that could have been controlled or managed to avoid risk of illness (Gilbert *et al.* 2007).

Proper food handling practices are tested directly by investigating the behavior of food handlers when handling food or indirectly by measuring food handlers' knowledge, attitudes and perceptions as well as microbial content in domestic water, food and environment.

Lack or improper hand-washing of food handlers is implicated as facilitator of food contamination (Bloomfield 2007). Although hand-washing is often used as an indicator for food safety risk, there are other indicators measured including dishcloth handling, cooking methods, and meat and poultry thawing practices.

2.4.1. Food Handling Knowledge, Attitudes and Perceptions

Food handling knowledge, attitudes and perceptions are indirect measurements of food handling practices. Food handling knowledge by food insecure households is imperative for an effective control of pathogens or their toxins in food (Unusan 2007). Attitudes are believed to influence change of behavior (Wilcock *et al.* 2004). Consequently, food insecure households' knowledge and attitudes are often tested together with the assessment of food handling practices in food

safety studies (Karen 2014). Unusan (2007) found a relatively low level of knowledge compared to reported food handling practices, thus, supporting that food safety knowledge does not always ensure good food handling practices. Johnson *et al.* (1998) tested the food safety knowledge of the elderly on refrigerator settings. Socio-demographic factors such as age, gender and location were indicated as possible determinant factors of food safety knowledge (Unusan, 2007).

2.5. Household Food Insecurity Access Scale (HFIAS)

Questionnaire-based measures, such as the hunger scale questionnaire, have been used to obtain information on experiences and behaviors that would indicate presence and severity of food insufficiency in households (Bickel *et al.* 2000). The household Food Insecurity Access Scale (HFIAS) and Household Hunger Scale were validated for cross-cultural and developing countries use, respectively (Ballard *et al.* 2011) as the above mentioned ones were developed and used for Americans. Bickel *et al.* (2000), however, indicated the shortfall of these scales as only addressing food sufficiency thus omitting other important dimensions of the phenomenon.

The recommended questionnaire for HFIAS consists of nine occurrence questions that represent a generally increasing level of severity of food insecurity (access), and nine “frequency-of-occurrence” questions that are asked as a follow-up to each occurrence question to determine how often the condition occurred. The frequency-of-occurrence question is skipped if the respondent reports that the condition described in the corresponding occurrence question was not experienced in the previous four weeks (30 days). Some of the nine occurrence questions inquire about the respondents’ perceptions of food vulnerability or stress. The questions address the situation of all household members and do not distinguish adults from children or adolescents. All of the occurrence questions ask whether the respondent or other household members either felt a certain way or performed a particular behavior over the previous four weeks.

2.6. Anthropometric Measurements

According to Ulajaszek 1994 the word “anthropometry” is derived from the Greek word “anthropo” meaning “human” and the Greek word “metron” meaning “measure”. The field of anthropometry encompasses a variety of human body measurements. Anthropometry is defined as the measurement of size, weight, body proportions and ultimately the composition of the

human body. Anthropometric indicators measure the impact of both food insecurity and health status on the nutritional status of individuals.

The anthropometric indicators most commonly used in national surveys are based on weight and height (or length) of infants, young children, youth and adults.

The interpretation of the adequacy of the anthropometric indicators is based on well-established cut-off points(Rafael and Maria 2008). Several indexes and ratios can be derived from anthropometric measurements. Anthropometric Measuring Techniques: MUAC, Weight Body mass index(BMI), Weight for age, Weight-for-height and Height-for-age.

Knowledge, Attitudes and Practices (KAP)

Sanitation is one of the basic determinants of quality of life and human development index. It is a fundamental requirement to ensure safe health, environment and the overall wellbeing of the society. Safe storage and treatment of water at point of use brings about approximately 30 to 50% reduction, hand washing with soap over 40% reduction and safe disposal of feces approximately 30% reduction in prevalence of water borne diseases (Mohd 2017).Sanitation and hygiene practices are heavily influenced by people's knowledge and attitudes towards it. The lack of appropriate information on knowledge and practices of sanitation and hygiene is an impediment to identify priority needs.

Knowledge, Attitudes, and Practices (KAP) study is seen as the most viable way of obtaining updated information on hygiene behavior and practices in the community. Thus, the present study was conducted to obtain baseline information on the existing knowledge, attitude and practices in relation to sanitation and hygiene in the target population. Knowledge is information that the target population has about the sanitation and hygiene-related issues. Attitude is the way a person views something or tends to behave towards it. In context of the present study, attitude refers to what the target population feels or believes about the sanitation and hygiene-related issues. Practice refers to the ways in which people demonstrate their knowledge and attitudes through their actions (Mohd 2017).

2.6.1 Impact of Food Safety on Health

This is attributed to the fact that human handling errors have been responsible for most outbreaks of food poisoning in developing and developed countries. For example, the hepatitis A virus can be introduced by unwashed hands of food handlers who are themselves infected.

Therefore, good personal hygiene, as well as, sanitary handling practices in the food processing area is an essential component of any prevention programs for food safety. Food safety indicators at household level have been based on the idea that the food handlers are the key to prevention and control of food safety risks (Unusan 2007).

Conceptual Framework of Food Safety in Safety net-supported Households

Food safety refers to all measures taken to ensure that food is safe for human consumption (Paolo *et al.* 2014). Unhygienic environment and handling of food in and around the homes have been shown to be a risk factor for the spread of infectious diseases (Takanashi *et al.* 2009). Lack of knowledge, attitude and practice on food safety have a negative impact on nutritional security that leads to food insecure household. Lack of safe food is one of the world's most urgent food insecurity issues. So it is imperative to conceptualize the problem at hand with respect to knowledge, attitude and practice in safety net-supported household aspects. The conceptual framework of food safety in relation to safety net-supported household integration of different activities is shown as follows:

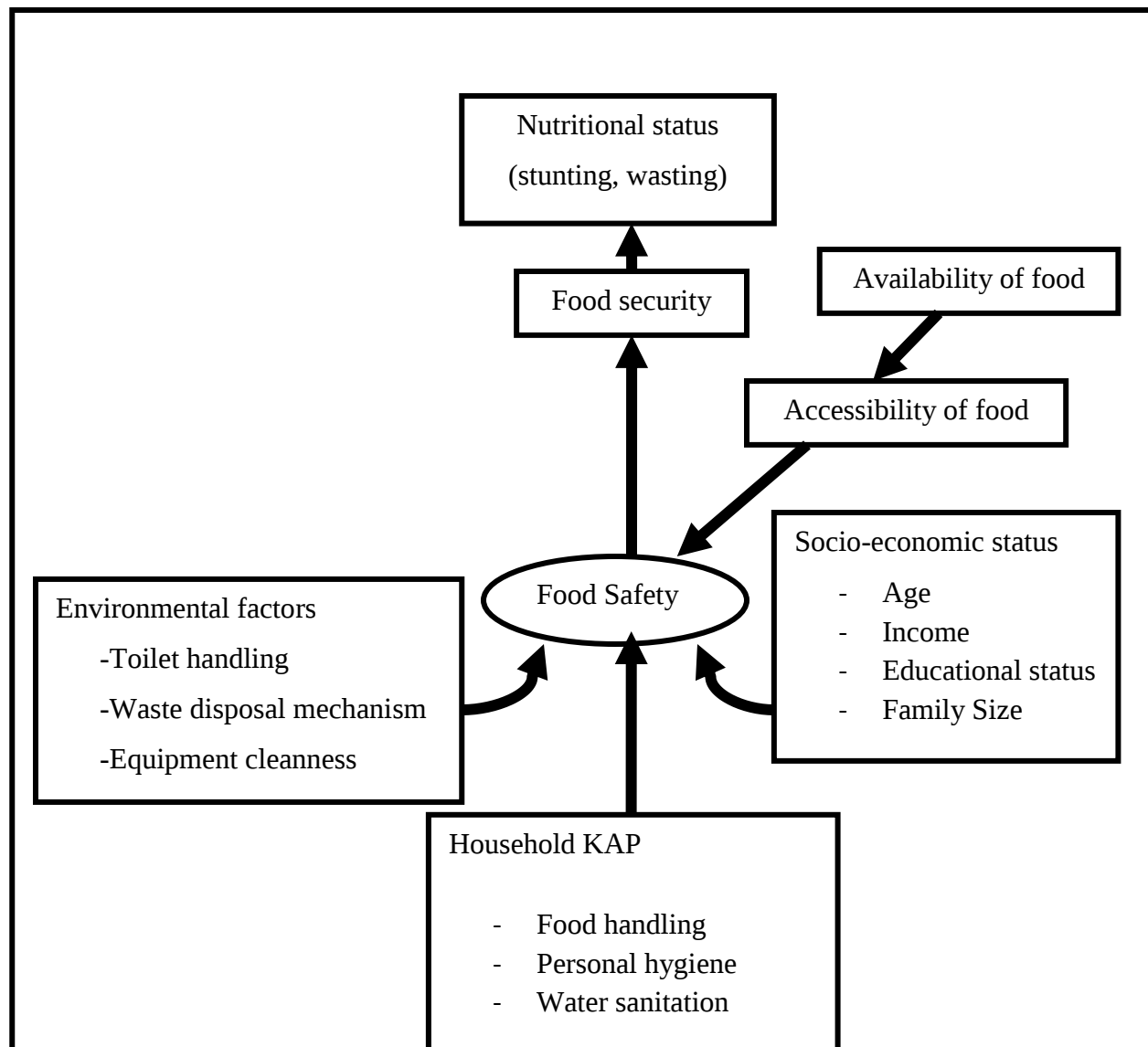


Figure 1 Food safety in HFS conceptual framework (Source: modified from Gross *etal.*(2000).

Figure2-1, shows an adaptation of the Gross *et al.* (2000) Food and Nutrition Security (FNS) conceptual framework to operationalize food safety at household level. The figure also shows that food safety is affected by Household KAP, Environmental factors, Socio-economic status and Accessibility of food that leads to poor food security, which in turn impacts Nutritional status (stunting, wasting). The implication indicates that even if enough food is available and accessible, the body cannot obtain the required amount of nutrients for good nutritional and healthy status. As a result, poor nutrient intake causes stunting and wasting. Thus, consumption of unsafe food may block the way to an active and healthy life. In addition, food borne illnesses are debilitating and fatal to susceptible groups of the population.

CHAPTER 3 DESCRIPTION OF THE STUDY AREA AND RESEARCH METHODS

3.1. Description of the Study Area

The study was carried out in one woreda in Addis Ababa, the capital city of Ethiopia. The average Latitude of the city is 2400meters above sea level. The city occupies a total area of 540Km². According to CSA (2011/12), the population of Addis Ababa, in 2017, was close to four million. Addis Ketema is one of the ten sub-cities of Addis Ababa, located in the northwestern part of the city, not far from its center (Figure. 2). It boards with the sub cities of Gullele in the north, Arada in the east, Lideta in the south and Kolfe/Keranio in the west. Addis Ketema sub-city comprises of 10woredas, and Africa's largest open-air market place (Mercato) is located in the sub-city. The City population of Addis Ketema sub city is 271, 664 of which 138,819arefemale and 132,825 are male with 30,183 total households.The population of the study area,woreda 02, is 31,315 of which 16,284 are female and15,031aremale with 3,427 total households. Woreda 02 is located towards the south western corner of the sub-city.

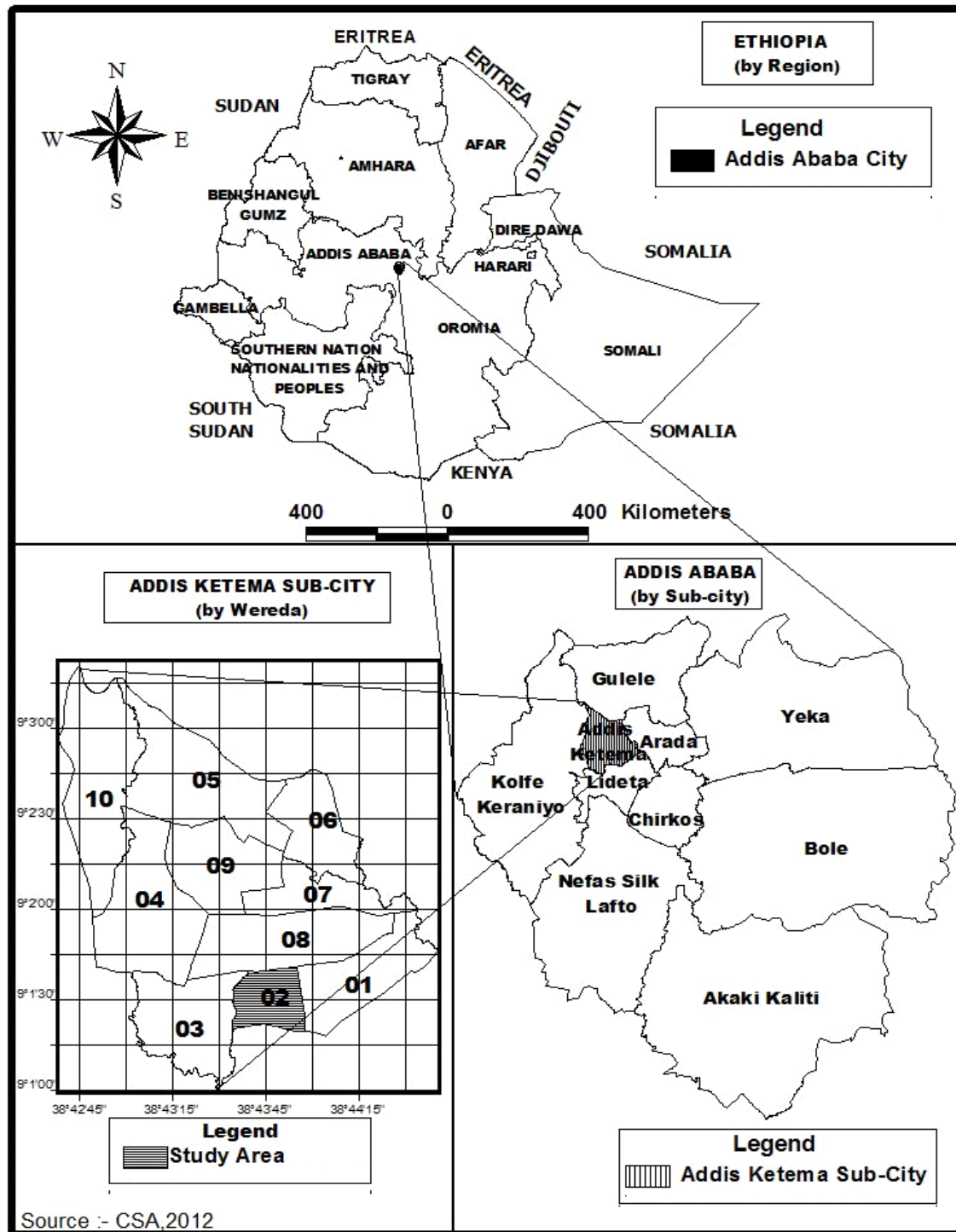


Figure 2 Addis Ketema sub-city woreda two geographical map (source CSA, 2012).

3.2. Research Design

The study used a cross-sectional design in order to capture information at a specific point in time. The study was conducted from January to March 2019.

3.3. Source Population

All households under productive safety net program (PSNP) living in Addis Ketema sub city, woreda 02 were the source population.

3.4. Study Population

All households under productive safety net program (PSNP) in woreda 02 who participated in public works, were the study population. Public works means food insecurity households under PSNP those who participated in public works engaged on urban solid waste management.

3.4.1. Inclusion Criteria:

All household, who were under PSNP participating in different public works.

3.4.2. Exclusion criteria:

Those households who were under PSNP but were beneficiaries of direct support without having to participate in any PSNP work. That means those are older (≥ 60 years) and patients unable to work are directly supported.

3.5. Sources of Data

The study used both primary and secondary data sources. The primary data was collected from the selected safety net-supported households. Secondary data was gathered from recorded documents from job creation and food security administration office of woreda 02. The data was collected directly by the researcher and health extension workers.

3.6. Sampling Techniques

A census was conducted to get list of safety net-supported households in Addis Ketema sub city. Woreda 02 was selected purposively because PSNP was implemented, as a pilot, in the sub city and highest numbers of safety net-supported households, registered as under the poverty lines, lived in this woreda. For the purpose of this research, purposive and systematic random sampling technique was applied to select the study area (woreda) and population (safety net-supported households), respectively. The sampling interval was the standard distance between elements selected in the sample. A systematic sample was applied and 273 safety net-supported households were selected as sample size from the total of 1397 safety net-supported households. So the sampling fraction was sample size/study population ($273/1397=1/5$). Therefore, the sampling interval was 5.

3.7. Sample Size Determinations

Systematic random sampling was the most common and the simplest method of sampling. Each unit of the population has the equal chance of being drawn in the sample. Therefore, it is a method of selecting n units out of a population of size N by giving equal probability to all units. Cochran (1977) developed a formula to calculate a representative sample for proportions as:

$$n_0 = z^2 pq / \epsilon^2 \dots (1)$$

Where, n_0 : was the sample size, z is the selected critical value of desired confidence level, The value for Z is found in statistical tables which contain the area under the normal curve (Z statistics: 1.96), p is the estimated proportion of an attribute that is present in the population, $q=1-p$ and ϵ is the desired level of precision, Cochran, (1963).

$$n_0 = (1.96)^2 0.32(1-0.32)/(0.05)^2 = 336$$

There were a total of 1397 public workers who participate in the safety net program in woreda two. The sample population consists of randomly chosen households and the sample size was calculated based on Cochran's formula for calculating sample size when population size is infinite:

Cochran pointed out that if the population is finite, then the sample size can be reduced slightly. This is due to the fact that a very large population provides proportionally more information than that of a smaller population. For populations that are large, Cochran, (1963) developed the

Equation 1 to yield a representative sample for proportions .He proposed a correction formula to calculate the final sample size in this case which is given below:

$$n = n_0 / 1 + (n_0 - 1) / N \dots \dots \dots (2)$$

Here, n_0 is the sample size derived from equation (1) and N is the population size. Now, suppose we want to calculate the sample size for the population of our study where, population size is $N = 1397$. The sample size was calculated at 95% confidence level with margin of error equal to (0.05).

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

$$n = \frac{336}{1 + \frac{(336-1)}{1397}} = 273$$

So, in this case the representative sample size for our study is 273.

3.7.1. Tools and Techniques of Data Collection

A structured questionnaire was developed based on Yvette and Glasauer (2014) for the purpose of data collection. Questionnaire consisted of six sections: Section-1 contained demographic variables such as age, sex, income of the family, religion, education, occupation, marital status, family size etc. Section-2 contained anthropometric data (weight, height, BMI and MUAC), Section-3 contained HFIAS, Section-4 Food handling Attitude, Knowledge and Practice, Section-5 personal hygiene KAP and Section-6 water sanitation KAP. The questionnaire was designed in English, translated into the local language, Amharic, for easy communication with respondents and pre-tested for any translation errors. In case of data collection by enumerators, regular observation and reviewing of the completed questionnaire was carried out by the researcher daily to maintain data quality. For the qualitative method, the researcher used the pre-designed checklist to probe the desired answers from the households.

Data on nutritional status of study population was also collected using standard anthropometric measurements, and HFIAS was measured using questionnaires (Timothy 2015). Data was carried out in morning hours to get maximum number of study subjects at home and public work place. Efforts were made to interview the head of the household.

3.7.2. Anthropometry Equipment and Procedures

Height/length Measurement was based on horizontal length (for those who could not stand erect) or standing height (for all above 13 months of age). Measurement was reported to the nearest 0.1 cm. A health extension worker used height board to measure height/length of children.

Weight- Weight was taken to the nearest 0.1 kg with child wearing just a layer of undergarment, Measurement. It was measured using hanging plastic pants and a Salter scale recommended for measuring weight of infants.

MUAC- The left arm of a child was used to measure the mid-upper arm circumference (MUAC. To determine the point of measurement, the arm was bent at the elbow to make a right angle. The tape was placed at zero on the tip of the shoulder and the tape was pulled to the tip of the elbow. The midpoint of the arm was marked with a pen. The arm was then straightened; the tape placed around the marked area and the reading was taken twice to get an average.

Age determination- Information on age was obtained from a written birth card or similar document, with verbal information on date of birth from the mother and age was calculated in months. Child's nutritional status was assessed using child's weight, height, and age. Using this measurement three indices were used in the evaluation of nutritional status; height-for-age (HAZ below -2SD) which measures stunting; weight-for-height (WHZ below -2SD) which reflects wasting; and weight-for-age (WAZ below -2SD) that reflects underweight.

Body mass index (BMI)

BMI is a measure to define overweight and thinness. BMI is defined as the weight in kilos divided by the square of height in meters. In developing countries, the BMI is primarily used with age-independent cutoffs to identify chronic energy deficiencies (or obesity) in adults [5].

$$\text{BMI} = \text{Weight (kg)} / \text{Height}^2 \text{ (meter)} = (\text{kg/m}^2).$$
 BMI values were calculated using measured height, in meters, and weight, in kilograms. BMI = weight/height. BMI weight categories were underweight (BMI values < 18.5), normal or desirable weight (BMI values 18.5-24.9), overweight (BMI values 25.0-29.9), obese-Class I (BMI values 30.0-34.9),

Obese-Class II (BMI values 35.0-39.9), and extremely obese (BMI values > 40.0) (National health and nutrition examination survey, 2009).

The most important points to ensure the collection of accurate anthropometric data Procedure are:

- Make sure all equipment is correctly calibrated on a regular basis.
- Conduct training based on recommended measurement protocols as well as standardization Sessions for those who collect the data.
- Take the child's date of birth from a written record if available. Otherwise ask for both the Child's date of birth and age on the day measured, since the year of birth is frequently reported Incorrectly. If birth dates are not recorded or known with certainty, probe the caregiver for the approximate date of birth based on local event calendars.
- Measure recumbent length in children younger than 24 months of age and standing height from 24 months onwards.
- Always enter the information on whether recumbent length or standing height was measured.
- If age is not known, children who can stand up and are willing to stand should be measured Standing whereas children who cannot stand up or are too weak to do so should be measured in recumbent position.
- Always indicate if the child has oedema or not.
- After the age, sex, weight, and length/height information have been entered, the user should check the results by using the graphing option to view single and multiple measurements.
- MUAC was measured by using the tape at the midpoint between the shoulder and elbow of the child by halving the distance between the shoulder and the tip of elbow. The child's arm was uncovered as far as the shoulder and hanged straight. During the measurement process, the tape was placed comfortably around the arm at the marked mid-way point, and measurement were taken and recorded Children were classified according to nutritional classification.

If a child appears to have extreme values beyond the flag boundaries should be re-measured immediately.

3.7.3. Data Quality Managements

Data quality was managed by using a pre-tested structured questionnaire and observational checklist. The structured questionnaire was pretested on 5% of the sample size in one randomly selected household to evaluate the face validity and to ensure questions were understood. Based on the pre-test result, amendments were made for the questionnaire. Researcher gave training for one day to the data collectors in data collection sites. Completed questionnaires were collected on daily basis and checked for completeness and consistency. Cleaning was done on daily basis and timely feedback was communicated to the data collectors. Data was collected from 273 households on their work place and homes so effectively that the response rate of the study participants was 100%.

In order to verify the accuracy of data entries, two generic data verification strategies were employed. As the first step, a random selection of 5% of the questionnaires was thoroughly checked. Then, descriptive statistics, including results from cross-tabulations and frequency distributions were examined before performing statistical analysis. Daily supervision was done by the principal and co-investigators to check the completeness and reliability of the data. Collected data were entered in SPSS version 25 and then cleaned before analysis.

3.8. Study Variables

3.8.1. Dependent Variables

Nutrition status of safety net-supported households, and food safety knowledge, attitude and practice of safety net-supported households.

3.8.2. Independent Variables

Age group (mother), marital status, number of children per household, age of children (months), religion, education (mothers), occupation and monthly household income.

Indicators used to Quantify KAP

Total knowledge percentage among respondents was calculated as

$$\text{Percent of knowledge} = \frac{\text{Sum of correct responses given by all respondents}}{\text{Total number of responses given by all respondents}} \times 100$$

Total positive attitude among respondents was calculated as

$$\text{Percent of positive attitude} = \frac{\text{Sum of positive responses given by all respondents}}{\text{Total number of responses given by all respondents}} \times 100$$

Similarly, appropriate practice was calculated as

$$\text{Percent of appropriate practices} = \frac{\text{Sum of appropriate responses}}{\text{Total number of responses given by all respondents}} \times 100$$

3.8.3. Techniques of Data Analysis

Data was analyzed by using SPSS for windows version 25. Anthropometric and HIFAS were analyzed by descriptive statistics. Cross tabulation was used to analyze the association between multiple variables and the association between dependent and independent variables by Chi-square test at 0.05 level of significance.

3.8.4. Ethical Consideration

The study was carried out after it obtained ethical clearance from Center for Food Security Studies, Addis Ababa University Ethical committee. Verbal informed consent was obtained from respondents, the leader of the group of 30 and coordinator of PSNP public workers. Consent form was prepared before conducting the data collection. Researcher and enumerators promised to keep confidentiality regarding respondents' details. Written consent was obtained from managers of the PSNP office. Interview was carried out only with full consent of the person being interviewed. Each respondent was assured that the information provided by her/his was kept confidential and used only for the purpose of this research.

CHAPTER 4 RESULT AND DISCUSSIONS

4.1. Socio-Economic and Demographic Characteristics

The Socio-demographic characteristics of households who participated in Productive Safety Net Program, engaged in public works, in Addis Ketema sub city Worda 2 is presented in **Table 1** below. The response rate of the study participants was 100%. The majority (82.2%) of the participants were female household heads. These were considered as the poorest because they are widowed and had children. Poor households in Ethiopia face a series of economic, social and environmental risks and vulnerabilities with risks often higher for women. Women participating in PSNP are tasked with manageable loads also have a “flex-work” schedule to allow for household and childcare responsibilities without affecting the payment they receive (Naqvi *et al.* 2019). Over 70% of the participants were greater than 46 years old. Over 25% had no formal education. Respondents participated in PSNP in solid waste cleaning and urban beautification. About 61% of respondents had monthly income of ETB 800-1500. About 57% of households had two or three children, whereas 27% had five or more children. Over 92% of the children in the various households are 18 years or older. The rate of salary per person was ETB 375 and prorated according to the number of children. No child above 18 years old was considered for payment, unless disabled and bed-ridden. Many households contain healthy and work-able children, who still depended on what the household and shared available food with household members. This made the economic situation of PSNP participating mothers even worse. In addition, households were expected to save a fifth of their monthly earnings for later use when they would graduate from the safety net program, although there was no significant difference in terms of food availability between graduated and non-graduated rural households (Arega Bazezew, 2018). Some mothers complained that their older children “got into some kind of addiction and even stole whatever money I set aside”. Some had gone into theft from other people. So these mothers are in continuous economic problem even though the assistance they get from the safety net program.

Table 1: Socio economic and demographic status of the study population in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city,N=273,2019. Source: Own survey data

Mothers Age Group	No.	%
18-29	17	6.51
30-45	49	18.77
>46	195	74.71
Fathers Age Group	No.	%
18-29	2	3.5
30-40	19	33.33
>46	36	63.15
Marital status	No.	%
Married	45	16.5
Single	21	7.7
Divorced	38	14
Widowed	164	60
Widower	5	1.8
No. of children per house hold	No.	%
None	12	4.4
One	15	5.5
Two	66	24.17
Three	69	32.60
Four	36	13.18
Five and above	75	27.5
Age of children (months)	No.	%
6-17	1	0.1
18-29	13	1.4
30-41	12	1.3
42-53	15	1.7
54-59	7	0.8
60-126	24	2.6
>216	843	92.1
Religion	No.	%
Muslim	80	29.3
Orthodox	121	44.32
Catholic	9	3.3
Protestant	63	23.1
Education (mothers)	No.	%
Illiterate	81	25.47
Read and write	76	38.05
Grades 1-8	102	32.07
Grades 9-12	14	4.4
Monthly household income (ETB)	No.	%
800 -1500	168	61.5
1500-2800	105	38.5

4.2. Anthropometric Data

Child anthropometric assessments, based on age, weight and height, showed varying prevalence of under-weight(33.3%),stunting(41.7%), and wasting (18.2 %) (Table 2a and b). Prevalence of under-weight and wasting observed in our study was higher but that of stunting was lower than that reported value of from ShireIndaselassie by Gezae.and Nigatu,(2014). Prevalence of underweight, wasting or stunting in our study was again higher than that reported value of from Somali region (Yirgu, *al.* 2015).MUAC measurements showedthat 19.4 % of the children suffered from under-nutrition. The higher prevalence of malnutrition in our study might be due to the fact that all respondents were among the poorest of the poor and might have been exposed to food insecurity for a long time.Wasting of children was significantly associated with household family size ($p < 0.05$) indicating that food was short for household members in quality or quantity.The other socio-demographic parameters did not have any association with nutritional status (table2c).

Table 2a Weight-based anthropometric evaluation of children (6-126 months),in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city,N=72 ,2019.

Age group (months)	Sex	Number	Median Weight (kg)	Median Height (cm)	weight-for-age		weight-for-height	
					under-weight(<-2 z-score)	Normal	Wasting(<-2z-score)	Norma
6-17	F	0	0	0	0	0	0	0
	M	1 (100%)	7.3 (100%)	73 (100%)	1 (100%)	0	0	1 (100%)
	Comb	1 (100%)	7.3 (100%)	73 (100%)	1 (100%)	0	0	1 (100%)
18-29	F	10 (77%)	10.05 (48 %)	78.5(8.6%)	0	7 (58.33)	2 (100%)	8 (72.7%)
	M	3 (23 %)	10.9 (52%)	83 (51.4%)	1(100 %)	5 (41.66%)	0	3 (27.3%)
	Comb	13(100%)	20.95 (100%)	161.5 (100%)	1 (100 %)	12 (100%)	2 (100%)	11 (100%)
30-41	F	4 (33.33%)	12.25 (49.3%)	82.75(48.6%)	1 (50 %)	3 (30%)	1 (100%)	3 (27.3%)
	M	8 (66.66%)	12.6 (50.7%)	87.5 (51.4%)	1 (50 %)	7 (70%)	0	8 (72.7%)
	Comb	12 (100%)	24.85 (100%)	170.25 (100%)	2(100 %)	10 (100%)	1 (100%)	11 (100%)
42 to 53	F	5 (33.33%)	14.5 (52%)	91 (47.9%)	3 (62.5 %)	2 (22.2%)	2 (40%)	0
	M	10 (66.66%)	13.25 (48%)	99 (52.1%)	3 (37.5%)	7 (77.8%)	3 (60 %)	10 (100%)
	Comb	15 (100%)	27.25 (100%)	190 (100%)	6 (100%)	9 (100%)	5 (100%)	7 (100%)
54 to 59	F	2 (28.6%)	14.55 (49.2%)	99.5 (48.4%)	1(100 %)	1 (16.66%)	0	2 (28.6%)
	M	5 (71.4%)	15 (50.8%)	106 (51.6%)	0	5 (83.33%)	0	5 (71.4%)
	Comb	7 (100%)	29.55 (100%)	205.5 (100%)	1 (100%)	6 (100%)	0	7 (100%)
60-126	F	13 (54.2%)	16.4 (47%)	112 (48 %)	5 (38.5%)	8 (72.7%)	0	13 (68.4%)
	M	11 (45.8%)	18.5 (53%)	121.5 (52 %)	8 (61.5%)	3 (27.3%)	5 (100%)	6 (31.6%)
	Comb	24 (100%)	34.9 (100%)	233.5 (100%)	13 (100%)	11 (100%)	5 (100%)	19 (100%)
Total		72 (100%)	--	--	24 (33.3%)	48 (66.7%)	13 (18.2%)	56 (77.8%)

Table 2b Height & MUAC-based anthropometric evaluation of children (6-126 months), in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=72, 2019.

Age group	Sex	Number	Median Height (cm)	Height for age		MUAC (mm)	
				Stunting(<-2 z-score)	Normal	under-nutrition	Normal
6-17 months	F	0	0	0	0	0	0
	M	1(100 %)	73 (100 %)	0 (0 %)	1 (100%)	1(100%)	0 (0%)
	Comb	1(100 %)	73 (100 %)	0	1 (100%)	1 (100%)	0
18-29 months	F	10 (77 %)	78.5(48.6 %)	7 (100 %)	3 (50%)	4 (66.7%)	6(85.7 %)
	M	3 (23 %)	83 (51.4 %)	0	3 (50%)	2 (33.3%)	1 (14.3%)
	Comb	13 (100 %)	161.5(100%)	7 (100 %)	6 (100%)	6 (100%)	7 (12.5%)
30-41 months	F	4 (33.33%)	82.75(48.6 %)	2(33.33 %)	2 (33.33%)	2 (100%)	2 (20%)
	M	8(66.66 %)	87.5(51.4 %)	4(66.66 %)	4 (66.66%)	0	8 (100%)
	Comb	12(100 %)	170.25(100 %)	6 (100 %)	6 (100%)	2 (100%)	10 (100%)
42-53 months	F	5(33.33 %)	91 (47.9 %)	5 (83.3 %)	0	0	5 (50%)
	M	10(66.66%)	99 (52.1 %)	1 (16.7 %)	9 (100%)	5 (100%)	5 (50%)
	Comb	15(100%)	190 (100 %)	6 (100 %)	9 (100%)	5 (100%)	10 (100%)
54 - 59 months	F	2(28.6 %)	99.5(48.4 %)	0	2 (33.3%)	0	2 (28.6%)
	M	5 (71.4 %)	106 (51.6 %)	1 (100 %)	4 (66.7 %)	0 (0%)	5 (71.4%)
	Comb	7 (100 %)	205.5(100%)	1 (100 %)	6 (100 %)	0	7 (100%)
60-126 Months	F	13(54.2%)	112 (48 %)	7 (70 %)	6 (42.86%)	0	13 (54.2%)
	M	11(45.8 %)	121.5(52 %)	3 (30 %)	8 (57.14%)	0	11 (45.8%)
	Comb	24 100 %)	233 (100 %)	10 (100 %)	14 (100%)	0	24 (100%)
Total		72(100 %)	-----	30(41.7 %)	42 (58.3 %)	14(19.4 %)	58 (80.6 %)

Source: Own survey data

Table-2C.Independent variable* children (Under weight, Wasting Stunting and Under nutrition)Cross tabulation, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city,

Variable	Category	weight-for-age			weight-for-height			Height for age			MUAC (cm)		
		Under weight (N=24)	Row Tot	P	Wasting (N=13)	Row Tot	P	Stunting (N=30)	Row tot	P	Under nutri (N=14)	Row Tot	P
Household income	0-1400 EB	17 (70.8 %)	46	.386	12 (92.3 %)	46	.153	20 (66.7 %)	46	.678	7 (50 %)	46	.228
	1401-2500 EB	7 (29.2 %)	26		1 (7.7%)	26		10 (33.3 %)	26		7 (50%)	26	
Education mothers)	0-3 Grade	6 (25%)	25	.197	4 (30.8 %)	25	.452	9 (30 %)	25	.408	4 (34.7 %)	25	.884
	4-8 Grade	37 (70.8 %)	46		9 (69.2 %)	46		20 (66.7 %)	46		9 (64.3 %)	46	
	9-12 Grade	1 (4.2%)	1		1 (1.7%)	1		1 (3.3%)	1		1 (1.7%)	1	
family size	1-3	5 (20.8 %)	23	.013*	5 (38.5 %)	27	.607	10 (33.3 %)	23	.831	3 (21.4 %)	23	.347
	4-7	19 (79.2 %)	49		8 (61.5 %)	45		20 (66.7 %)	49		11 (78.6 %)	49	

N=72 ,2019.

Source: Own survey data, Chi-square significance: * = $p < 0.01$, ** = $p < 0.05$; *** = $p < 0.1$

Based on the adult anthropometric data 79.9% of the respondents were under-weight, 17.3 % were normal and 2.8% were overweight obese class 1 (Table3).The high prevalence of under-weight was a manifestation of food insecurity as the majority of households were found under any one of the food insecurity categories. Under weight of adult was significantly associated with household family size ($p < 0.05$) indicating that food was short for household members in quality or quantity. But the other socio-demographic parameters did not have any association with BMI(table 3a).

Table 3a BMI-based anthropometric evaluation of adults of family members (18-59 years), in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=318, 2019.

Age Group (Years)	Sex	Number	Underweight (BMI<18.5)	Normal (BMI:18.5-24.9)	over weight (BMI 25-29.9)
18 - <30	F	17 (89.5 %)	9 (52.9 %)	6 (35.3 %)	2 (11.76 %)
	M	2 (10.5 %)	2 (100 %)	0.0	0.0
30 - <46	F	49 (72 %)	46 (93.87 %)	2 (4 %)	1 (2.13 %)
	M	19 (28 %)	9 (47.36 %)	10 (52.6 %)	0
≥46	F	195 (84.4%)	155 (79.5 %)	34 (17.43 %)	6 (3.07 %)
	M	36 (15.6 %)	33 (91.66 %)	3 (8.34 %)	0.0
Total		318 (100 %)	254 (79.87 %)	55 (17.30 %)	9 (2.83 %)

Source: Own survey data

Table 3b. Independent variable* Adults of family members BMI (Under nutrition, Normal & Overweight) Cross tabulation, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=318, 2019.

Variable	Category	BMI of adult household headed				
		Under nutrition (N= 254)	Normal (N= 55)	Overweight (N= 9)	Row Total	P
Household income	0-1400 EB	168 (66.14%)	29 (52.70%)	2 (22.2%)	199	.433
	1500- 2500 EB	86 (33.80%)	26 (47.30%)	7 (77.80%)	119	
Education (mothers)	0-3 Grade	75 (29.50%)	29 (52.70%)	3 (33.30%)	107	.484
	4-8 Grade	165 (65%)	25 (45.50%)	6 (66.70%)	196	
	9-12 Grade	14 (5.50%)	1 (1.80%)	0	15	
family size	1-3	47 (21.10%)	15 (36.60%)	4 (44.40%)	66	.036*
	4-7	176 (78.90%)	26 (63.40%)	5 (55.60%)	207	

Source: Own survey data, Chi-square significance: * = $p < 0.01$, ** = $p < 0.05$; *** = $p < 0.1$

4.3. Household Food Insecurity Access (HFIAS)

Table 4 shows household food insecurity access. Households belonged to any one of the four food insecurity category. Food secure households consisted of 21.6% of the study population. The majority (52.9%) fell under mildly food insecure category because, predominantly, they had to consume food they did not prefer or rarely consumed food of insufficient quality. About 21% were moderately food insecure mainly because they consumed food of insufficient quality or quantity sometimes and 4.5% were severely food insecure because they experienced hunger, though rarely.

Table 4HFIAS in the past four weeksin PSNP-public workers households in Woreda 02, Addis Ketema Sub-city,N=273,2019.

HFIAS	Occurrence		Frequency		
	Yes	No	Rarely	Sometimes	Often
1. In the past four weeks, did you worry that your household would not have enough food?	209 (76.5%)	64 (23.4%)	209 (100%)	0.0	0.0
Anxiety and uncertainty	209 (76.5%)	64 (23.4%)	209 (100%)	0%	0%
2. In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	234 (85.7%)	39 14.2%)	234 (100%)	0.0	0.0
3. In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	239 (87.5%)	34 (12.4%)	231 (96.6%)	8 (3.3%)	0.0
4. In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	211(77.3%)	62 (22.7 %)	202 (51.0%)	9 (4.2%)	0.0
5. In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	169 (61.9%)	104 (38.09%)	161/169 (95.2%)	8/169 (4.7 %)	0.0
6. In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	79(28.9 %)	194(71.06%)	76(96.2 %)	3(3.7 %)	0.0
7. In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	2(0.73 %)	271(99.2 %)	2(100%)	0.0	0.0
8. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	55(20.14%)	218(79.8%)	55(100%)	0.0	0.0
9. In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	-	273/273 (100%)	0%	0.0	0.0

* Rarely (1 or 2 times), sometimes (3 to 10 times), Often (more than 10 times)

Source: Owen survey data

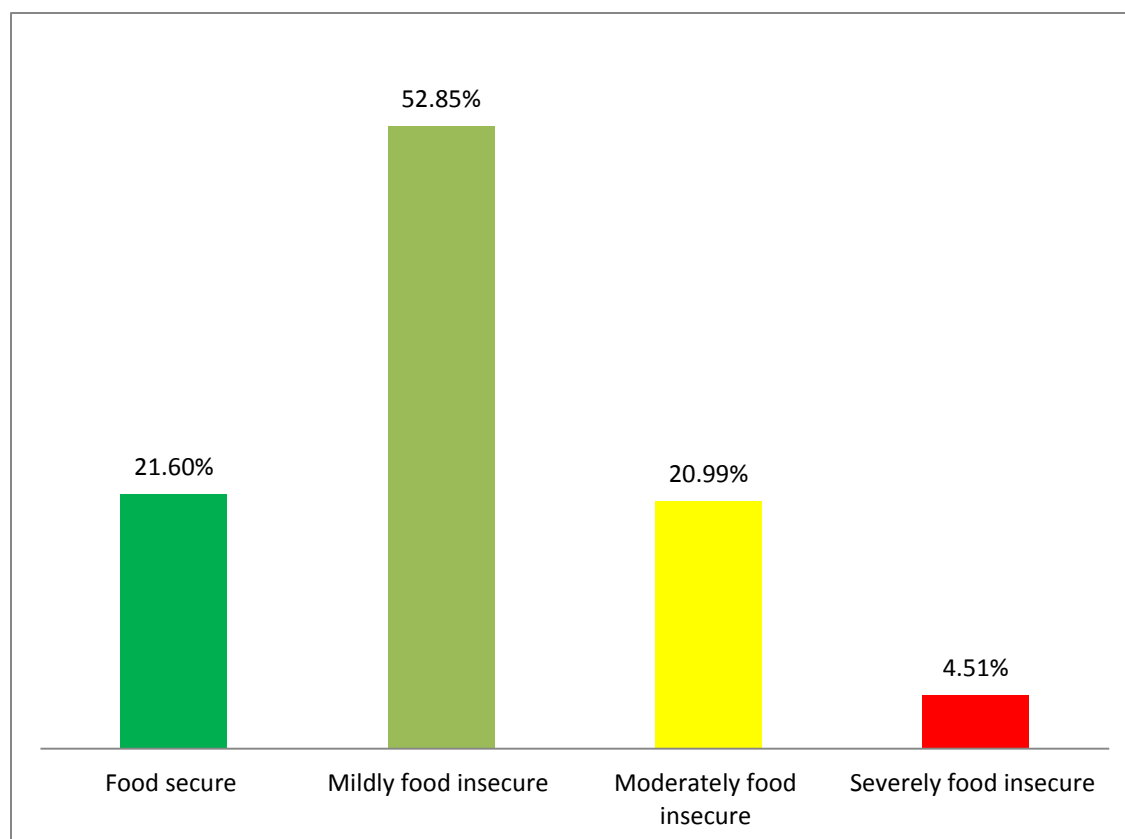


Figure 3. Safety net-supported households with Household food insecure access scale category.

4.4. Food Safety Knowledge, Attitude and Practice

4.4.1. Food Handling Knowledge

Food handling knowledge, as related to separation of raw and cooked foods, is presented in table 5. Total knowledge of food handling among the respondents is very low (17.6%). Low knowledge about food handling was also reported from Lahore, Pakistan (Raza2018). Food handling is an activity that occurs in every household and is crucial in determining if the household can be exposed to any one of the many foodborne illnesses. Therefore, this indicates the need for awareness creation on household food safety issues to the population through health extension services. It is generally believed that training program can further improve mothers' food safety knowledge and practices (Ayaz *et al.* 2018).

Most respondents had incorrect knowledge regarding separation of cooked and raw foods (67.4%) or signs of thorough cooking of food (93.4%). Similarly, Takanashiet *al.* (2009) reported that mothers in did not separate utensils for raw or cooked food. Of the given options on which perishable foods should be stored at cool places, 70.3% of respondents answered only one item. The majority (74%) of respondents did not know why left-over foods, that were not kept in cool places, should be avoided. In safety net-supported households, left-over foods are part of the daily meal plan, and it may be inappropriate to advise to discard them. However, as they are common sources of illness, if contaminated and stored in warmer places, training to households regarding how left-over food should be handled is helpful. Awareness creation had resulted in being well informed in handling left-over foods in Accra, Ghana (Akonor and Akonor 2013). Regarding washing of raw fruits and vegetables before eating, a good majority (69%) did not wash them with clean water because they thought that water would speed up their spoilage and they would rather vigorously shake them to remove attached particles. Such problem is indicative of lack of awareness on simple steps of avoiding food borne diseases.

Table 5 Food Handling Knowledge in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273,2019.

Food Handling Knowledge				
	Know	Number of correct answers		
		Three	Two	One
1: Reason for separation of raw and cooked foods				
			24 8.8%)	249 (91.2%)
“ Raw animal foods often contain germs	83 (30.4%)			
“ Other	184 (67.4%) ¹			
- Don’t know	6 (2.2%)			
2: Signs of thorough cooking of soups and stews for safety and readiness to be served				
				273 (100%)
“ They are boiling/ well cooked	18 (6.6%)			
“ Other	255 (93.4%) ²			
“ Don’t know	-	-	-	-
3: Kinds of perishable foods to be stored in refrigerator or in a cool place				
		9 (3.3%)		264 (96.7%)
“ Meat, offal	14 (5.1%)	-	-	-
“ Poultry	39 (14.3%)	-	-	-
“ Fish	28 (10.3%)	-	-	-
“ Milk/dairy products	192 (70.3%)	-	-	-
- Cooked foods	-	-	-	-
“ Other	-	-	-	-
“ Don’t know	-	-	-	-
4: Reasons for avoiding eating leftovers that were not kept in a cool place				
				273 (100%)
“ Because food is not safe anymore	65 (23.80%)	-	-	-
- germs multiply very quickly and can cause illness or spoilage	6 (2.2%)	-	-	-
“ Higher temperatures make germs grow faster	-	-	-	-
“ Other	-	-	-	-
“ Don’t know	202 (74%)	-	-	-
5: Washing raw fruits and vegetables before eating				
“ Wash them with clean water	85 (31.13%)	-	-	-
“ Other	188 (68.87%)			
“ Don’t know	0	-	-	-
Total knowledge = 530/3003=17.6%				

¹Because the contact will result in bad smell or odor of the cooked food.

² By tasting from palm, by seeing change in color (cooked vegetable or thin porridge) or by cooked odor.

4.4.2. Food Handling Attitude

Most respondents (95.6%) perceived that it was likely to get ill from eating contaminated food, though about 43% thought the illness was not serious (Table 6). Less than half of the respondents could not see the benefit in cold storage of perishable food, or re-heating left-over food or washing fruits and vegetables with clean water. They believed that when fruits and vegetables were washed, remaining moisture on them would speed up their spoilage. They preferred to vigorously shake off any particulate matter before consumption. Over 90% thought that keeping perishable foods in cool place was difficult because they could not use electric power for technical reasons and could not afford to use fire wood. In general, total positive attitude among respondents was 41.2%.

Table 6 Food Handling Attitude, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273, 2019.

Food Handling Attitude			
Perceived susceptibility: Likelihood of getting sick from eating contaminated food?	It is	It is not	Not sure
	261 (95.6%)	-	12 (4.4%)
Perceived severity: Seriousness of getting sick from eating contaminated food.	117 (42.9%)	124 (45.4%) ¹	32 (11.7%)
Perceived benefits: Goodness of keeping meat, poultry, fish, or cooked food in a cool place.	29 (10.6%)	13 (4.8%) ²	231 (84.6%)
Goodness of re-heating left-over before eating or serving them	128 (46.9%)	136 (49.8%) ³	9 (3.3%)
Goodness of washing fruits and vegetables with clean water	91 (33.3%)	182 (66.7%) ⁴	-
Perceived barriers; Difficulty of keeping these foods in a cool box or in the refrigerator.	251 (92%) ⁵	22 (8.1%) ⁻	
Difficulty of re-heating leftovers before eating or serving them	10 (3.7%) ⁶	50 (18.3%)	213 (78.0%)
Difficulty of washing fruits and vegetables with clean water	-	201 (73.6%)	72 (26.4%)

¹ It is not so serious. If it occurs, taking lemon juice with water will take care of it.

² Because food kept in the refrigerator for more than three days causes cancer

³ Because reheated stew does not taste good, causes heart burn and fever resulting in stomach pain.

⁴ Remaining moisture after washing fruits and vegetables speeds up their spoiling. Therefore, we just shake off any particulate matter by hand before eating them.

⁵ Because we do not own refrigerator.

⁶ Because we cannot use electric power due to technical difficulties. We use fire wood so sparingly that we cannot afford to use it for re-heating.

Food Handling Practice

Food handling practice was assessed in terms of cleaning kitchen surface and utensils and storing perishable fresh foods (Table 7). Only about 20% washed them using hot water of detergents. According to Ayazet *al.* (2018) mothers in Saudi Arabia had moderate knowledge of usage and maintenance of kitchen facilities. Very few respondents kept perishable foods in the refrigerator (4%) or separated from cooked foods (18%). The level of acceptable practices among the respondents was only 24%.

Table 7 Food Handling Practice, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273, 2019.

Food Handling Practice		
	No.	%
Usual cleaning of kitchen surfaces and utensils after preparing dinner		
“ Scrape excess food into rubbish bin	162	59.3
“ Wash with hot water	52	19.1
“ Wash with detergent	59	21.6
Storing perishable fresh foods such as raw meat, poultry and seafood		
“ In the refrigerator (below 5 °C)/cool box	11	4.0
“ Covered (protected from insects, rodents, pests and dust)	214	78.4
“ Separated from cooked or ready-to-eat foods	48	17.6
“ Other		

4.4.3. Personal Hygiene Knowledge

Assessment of personal hygiene focused on actions taken to prevent to prevent food poisoning from germs coming from feces (Table 8). Less than 30% of respondents knew about hand washing after toilet use or washing the baby's bottom, and less respondents knew about removal of feces from home and surrounding.

The majority (57%) did not believe in hand washing, and left it all to “God to guard them” from being sick. Of the six options given regarding key moments of hand washing, over 90% of respondents identified only one key moment. Among them, most (39%) identified hand washing before preparing or handling food. In general, total knowledge of personal hygiene among the respondents was only 16%. Mothers' practices related to hygiene was low as many reported (Dad andHabib 2017; Takanashiet *al.* 2009) although a campaign against dirty hands had resulted into good knowledge of hand washing in Lagos, Nigeria (Ogwezzy-Ndisika and Solomon 2019). A high knowledge in personal hygiene was also reported by Fawzi and Shama(2009).

Table 8 Personal Hygiene Knowledge,in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273,2019.

Personal Hygiene Knowledge			
	Know	Number of correct answers	
		Two	One
1.Action for preventing food poisoning from germs from feces			
		-	273 (100%)
“ Wash hands (after going to the toilet and cleaning the baby’s bottom)	81 (29.7%)	-	
“ Remove feces from the home and surroundings	36 (13.2%)	-	
- Other	156 (57.1%) ¹		
- No answer	81 (29.7%)	-	
; Total knowledge = 117/546 = 21.4%			
2. Key moments for hand washing			
		19 (7%)	254 (93%)
“ After going to the toilet/latrine	53 (19.4%)		
“ After cleaning the baby’s bottom/ changing a baby’s nappy	16 (5.9%)		
“ Before preparing/handling food	106 (38.8%)		
“ Before feeding a child/eating	35 (12.8%)		
“ After handling raw food	9 (3.3%)		
“ After handling garbage	14 (5.1%)		
- Other	40 (14.7%) ²		
- No answer	-		

¹Our parents and grandparents prepared food and fed us without prior hand washing. It did not make us sick. We live on God’s will. We get sick only when He gets angry with us.

² Mostly we wash our hands after preparing food or after we are through our safety net job of cleaning roads and watering plan.

4.4.4. Personal Hygiene Attitude

Positive attitude towards personal hygiene was relatively higher (Table 9). About 84% or respondents thought not washing hand could result in illness and 63% believed that the illness could be serious, although a few did not believe in hand washing. Almost all respondents (97%) were positive towards washing one's hands before preparing food or feeding a child. Only about 34% of respondents did not have confidence in washing one's hands properly. Total positive attitude among the respondents was 66.2%. Unfortunately, the high level of positive attitude did not translate in appropriate practice.

Table 9 Personal Hygiene Attitude, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273, 2019.

Personal Hygiene Attitude			
	It is	It is not	Not sure
Perceived susceptibility Likelihood of oneself or child having stomach ache or diarrhea, from not washing your hands	228 (83.5%)		45(16.5%)
Perceived severity Seriousness of oneself or child getting diarrhea from oneself not washing one's hands.	172 (63%)	58 (21.3%) ¹	43 (15.8%)
Perceived benefits Goodness of washing ones hands before preparing food or before feeding a child/eating	264 (96.7%)	-	9 (3.3%)
Perceived barriers: Difficulty to wash ones hands before preparing food or before feeding a child/eating	-	148 (54.2%)	125 (45.8%)
Perceived self-efficacy: Confidence in washing ones hands properly?	92 (33.7%)	-	181 (66.3%)

¹ Respondents gave several reasons for this. Some said "No one got sick and died from not washing ones hands", "I do not give any attention to washing hands", "It is not serious, If God wills it, we will not be spared from getting sick. Thanks God that he watches upon us; all that doctors talk of is havoc, they make simple things look complicated. We get sick when we are economically wanting and hungry.

4.4.5. Personal Hygiene Practice

Personal hygiene practice was assessed step by step description of hand washing (Table 10). The majority (54.2%) of respondents had poor hand washing practice. Among those who had appropriate practice of hand washing, most washed with somebody pouring clean water for them from a jug and others used running water from pipe. But use of soap or ash was quite limited (18%). Total acceptable practice among respondents was about 64%. The appropriate practice level in this study was higher than that observed by Dad and Habib (2017).

Table 10 Personal Hygiene Practice, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273, 2019.

Personal Hygiene Practice		
Step-by-step description of hand washing	Poor	Appropriate
a. Washes hands in a bowl of water (sharing with other people)	148 (54.2%)	-
b. With someone pouring a little clean water from a jug onto one's hands - appropriate practice	-	65 (23.8%)
c. Under running water — appropriate practice	-	11 (4%)
d. Washes hands with soap or ashes— appropriate practice	-	49 (18%)
e. Other	-	-
f. Do not know	-	-

4.4.6. Water Sanitation Knowledge

Knowledge in water sanitation was assessed in terms of ways of treating unsafe water (Table 11). Of the seven options given, all gave only one answer. Only less than 10% of the respondents knew about treating unsafe water by boiling or by adding chlorine, although about 60% discarded unsafe water to get water from a safe source. Total knowledge of water sanitation among the respondents was only 23%. Lower level of knowledge on water sanitation was also reported by other workers (De1 and Taraphdar, 2016; Pathaket *al.* 2015).

Table 11. Water Sanitation Knowledge, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273, 2019.

Water Sanitation Knowledge				
	Know	Number of correct answers		
		Three	Two	One
1: Treating unsafe water				
		-	-	273 (100%)
” Boil it	18 (6.6%)			
” Add bleach/chlorine	13 (4.8%)			
” Strain it through a cloth	-			
” Use a water filter (ceramic, sand, composite, etc.)	-			
” Use solar disinfection	-			
” Let it stand and settle	81 (29.7%)			
” Discard it and get water from a safe source	161 (59%)			
- Other	-			
- Do not know	-			

4.4.7. Water Sanitation Attitude

About 98% of respondents believed that an adult or a child could get diarrhea from unsafe water. However, over 58% believed that getting sick from drinking unsafe water was not serious, for various erroneous reasons (Table 12). More than 85% thought boiling water was either not good “because boiling changes the taste and color of water” or difficult to do “because of unaffordability of fire wood”. Lack of confidence in boiling water emanated from the belief that “wood smoke and ash particles from it would contaminate the water even worse”. Total positive attitude among the respondents was 32%.

Table 12 Water Sanitation Attitude, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273, 2019.

Water Sanitation Attitude			
Perceived susceptibility Likelihood of oneself or one's child to get diarrhea from using unsafe water	It is 268 (98.2%)	It is not -	Not sure 5 (1.8%)
Perceived severity: Seriousness of getting sick from using unsafe water	114 (41.8%)	159 (58.3%) ¹	-
Perceived benefits: Goodness of boiling water before drinking or using it	18 (6.6%)	233 (85.3%) ²	22 (8.05%)
Perceived barriers: Difficulty of boiling water before drinking or using it	233 (85.3%) ³	18 (6.6%)	22 (8.05%)
Perceived self-efficacy Confidence in boiling water before drinking or using it	18 (6.6%) ⁴	233 (85.3%)	22 (8.05%)

¹ When pipe water starts to flow after a long interruption, it is sort of turbid and has some odor. We use that for drinking. We also drink water from the Jerry can after long storage. Since God watches upon us, we don't get sick. If contaminated water could make people sick, all rural people would die from drinking water directly from the river.

² Boiling is not good because it changes the taste and color of the water.

³ We sparingly use wood for cooking; we can't afford using wood to boil water

⁴ We don't boil water because wood smoke and ash particles from it would contaminate the water even worse.

4.4.8. Water Sanitation Practice

The majority (94%) of the respondents collected water from a source piped into the yard using Jerry can (Table 13). They washed collection item using materials with rough surface, and with smoke from glowing olive branch splinters. They washed Jerry cans using sand and water. Only a small proportion of respondents (13%) appropriately stored water in clean and covered container. The proportion of respondents who boiled or added bleach to water to make it safe was very low (17% and 13%, respectively). A study by Pathaket *al.* (2015) showed that although respondents used improved source of water, practice of purifying water before drinking was very low. In our study, total acceptable practice among the respondents regarding water sanitation was only 37%.

Table 13 Water Sanitation Practice, in PSNP-public workers households in Woreda 02, Addis Ketema Sub-city, N=273, 2019.

Water Sanitation Practice	
Main source of water for household for drinking, cooking and hand washing	
“ Piped into dwelling	-
“ Piped into yard or plot	256 (94%)
“ Public tap/standpipe	17 (6 %)
- Other	-
Collection of water for domestic use	
Yes (item used)	273 (100%) Jerry can
No	-
Treating collection item to make it clean	
“ Yes (how?)	273 (100%) ¹
“ No	-
“ Use of water and soap (clean container)	
Description of how water is stored	
“ Clean container or jar	68 (24.9%)
“ Covered container or jar	169 (61.9%)
“ Clean and covered container or jar	36 (13.2%)
“ Don’t know/no answer	-
Treatment of water to make it safe to drink	
“ Yes	102 (37.4%)
“ No	171 (62.6%)
“ Don’t know/no answer	-
Actions usually done to the water to make it safer to drink	
“ Boil it	18 (17.7%)
“ Add bleach/chlorine	13 (12.7%)
“ Strain it through a cloth	-
“ Use a water filter (ceramic, sand, composite, etc.)	-
“ Let it stand and settle	71 (69.6%)
“ Don’t know/no answer	

¹ After thorough washing collection item using a material with rough surface, smoking item using olive branch splinters. Jerry can is washed using water and sand.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This study showed that adult anthropometric data under-weight (79.9%), normal (17.3 %) and over weight (2.8%) and children were anthropometric assessments, based on age, weight and height, showed that under weight (33.3%), stunting (41.7%), wasting (18.2 %) and under-nutrition (19.4 %).The knowledge, attitude and practices analysis indicated low food handling knowledge(17.6%),attitude(41.2%)andpractices(24%),water sanitation knowledge(23 %),attitude(32%)and practices(37%)and personal hygiene knowledge(16%),but relatively positive attitudes (66.2%) and practices(64%) towards personal hygiene. Household food insecurity access scale measurement indicated that Food secure households consisted of 21.6% of the study population but majority of households were mildly (52.9%) or moderately food insecure (21%), and few were severely food insecure (4.5%),even if they were supported by PSNP productive safety net program. Generally the finding indicated poor food handling, personal hygiene and water sanitation knowledge, attitude and practices in safety net-supported households. Poor hygienic practices coupled with poor sanitary conditions in safety net-supported households can contribute to occurrences of foodborne illnesses, food and nutrition insecurity.

5.2 Recommendations

Based on the findings of this study, the following issues are recommended to minimize the poor nutrition, food safety knowledge, attitude and practices status in safety net-supported households.

- ✓ Educational programs targeted to change the practices of food handlers about food safety KAP of those participants of public works in safety net-supported households.
- ✓ Strengthen counseling of the safety net-supported households about the appropriate way of feeding the safe and nutritious food to the household members.
- ✓ The poor hygiene crowded communal toilet and kitchen are contributed to poor food handling, so house provider's Woreda administration office should balance the number of people with the required toilets and kitchen space for communal service.
- ✓ Further research is needed to identify the factors affecting food safety KAP on nutritional status of safety net-supported households.

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APPNDIX -1

English version Questionnaire and interviews

Addis Ababa University College of development studies center for food security studies

The aim of this study will be to investigate the status of knowledge, attitude and practices in food safety in food in secured households in Woreda Two of Addis Ketema sub-city, and asses' nutritional status of household members. The information you provide used only for academic purpose. So, please put a thick mark and short answer for the following questionnaires.

“I would like to thank you in advance for sharing your time with me!”

Part1: Socio-economic and demographic data safety net-supported households

NO	QUESTION	RESPONSE OPTIONS	COD E
1.1	Sex	1=M ; 0=F	
1.2	Age of Father Age of Mather Age of children Sex of children		
1.3	Religion	-----	
1.4	Marital status	01.= Marred 02= single 03=divorced 4. Widowed 5. Widower	
1.5	Occupation of Mather	1=Agriculture; 2=Private 3=solid waste clinging and urban beatification; 4= watershed development 5.House wife 6.Daily labor	
	Occupation of Father	1=Agriculture; 2=Private 3=solid waste clinking and urban beatification; 4= watershed development 5.House wife 6.Daily labor	
1.6	Educational status of Mather	01= Illiterate 04= 9-12 Grade 02= Writing and reading 05= Diploma 03=1-8 Grade 06=Above Diploma	
	Educational status of Mather	01= Illiterate 04= 9-12 Grade 02= Writing and reading 05= Diploma 03=1-8 Grade 06=Above Diploma	
1.7	Monthly income (Birr)	-----	
1.8	Family Size	-----	

Part 2 Anthropometric data

NO	QUESTION	RESPONSE OPTIONS	CODE
2.1	Weight (kg)	-----	
2.2	Height (m)	-----	
2.3	MUAC(MUAC tape)	-----	

Part 3. Household Food Insecurity Access Scale (HFIAS) Measurement Tool

NO	QUESTION	RESPONSE OPTIONS	CODE
3.1	1. In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to Q2) 1 = Yes	 ☐
3.1a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	 ☐
3.2	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No (skip to Q3) 1 = Yes	 ☐
3.2a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	 ☐
3.3	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to Q4) 1 = Yes	 ☐
3.3a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	 ☐

3.4	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to Q5) 1 = Yes	 ☐
3.4a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	 ☐
3.5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q6) 1 = Yes	 ☐
3.5a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	 ☐
3.6	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q7) 1 = Yes	 ☐
3.6a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	 ☐
3.7	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q8) 1 = Yes	 ☐
3.7a	How often did this happen?	1 = Rarely (once or twice in the past	 ☐

		fourweeks) 2 = Sometimes (three to ten times in the pastfour weeks) 3 = Often (more than ten times in the past fourweeks)	
3.8	In the past four weeks, didyou or any household member go to sleep atnight hungry because there was not enough food?	0 = No (skip to Q9) 1 = Yes	 _
3.8a	How often did this happen?	1 = Rarely (once or twice in the past fourweeks) 2 = Sometimes (three to ten times in the pastfour weeks) 3 = Often (more than ten times in the past fourweeks)	 _
3.9	In the past four weeks, didyou or any household member go a whole dayand night without eating anything because there wasnot enough food?	0 = No (questionnaire is finished) 1 = Yes	 _
3.9a	How often did this happen?	1 = Rarely (once or twice in the past fourweeks) 2 = Sometimes (three to ten times in the pastfour weeks) 3 = Often (more than ten times in the past fourweeks)	 _

4. Food handling KAP

Knowledge			
NO	QUESTION	RESPONSE OPTIONS	CODE
4.1	Why should you prevent raw meat, offal, poultry and seafood from touching other foods such as those that are cooked or ready to eat?	1= Raw animal foods often contain germs (which may be transferred to cooked and ready-to-eat foods) 2= Other 3= Don't know	
4.2	When cooking soups and stews, what sign shows that these are ready and safe to be served?	1= They are boiling/ well cooked 2= Other 3 =Don't know	
4.3	What kinds of food should be placed in the refrigerator or in a cool place, such as an icebox or cool box? Perishable foods	1=Meat, offal 2=Poultry 3=Fish 4=Foods from the sea or lake 5=Milk/dairy products 6=Cooked foods 7=Other 8=all 9=Don't know	
4.4	Why should someone avoid eating leftovers that were not kept in a cool place?	1=Because food is not safe anymore 2=Foods get spoiled (germs multiply very quickly and can cause illness) 3=Higher temperatures make germs grow faster 4=Other 5=Don't know Any of the three first response options is correct.....	
4.5	What should you do before eating raw fruits and vegetables?	1=Wash them with clean water 2=Other 3=Don't know	

Attitudes			
NO	QUESTION	RESPONSE OPTIONS	CODE
4.6	How likely do you think you are to get sick from eating spoiled food?	1= Not likely 2= You're not sure 3=Likely If Not likely: Can you tell me the reason why it is not likely?	
4.7	How serious do you think it is to be sick from eating spoiled food?	1= Not serious 2= You're not sure 3=Serious If Not Serious: Can you tell me the reason why it is not serious?	
4.8	How good do you think it is to keep meat, poultry, fish, seafood or cooked food in a cool place, for example in a cool box or in the refrigerator?	1= Not good 2= You're not sure 3= Good If Not good: Can you tell me the reasons why it is not good?	
4.9	How difficult is it for you to keep these foods in a cool box or in the refrigerator?	1= Not difficult 2=So-so 3=Difficult If Difficult: Can you tell me the reasons why it is difficult?	
4.10	How good do you think it is to reheat leftovers before eating or serving them?	1=Not good 2=You're not sure 3= Good If Not good: Can you tell me the reasons why it is not good?	
4.11	How difficult is it for you to reheat leftovers before eating or serving them?	1=Not difficult 2=So-so 3= Difficult If Difficult: Can you tell me the reasons why it is difficult?	

4.12	How good do you think it is to wash fruits and vegetables with clean water?	1=Not good 2=You're not sure 3= GoodIf Not good:Can you tell me the reasons why it is not good?	
4.13	How difficult is it for you to wash fruits and vegetables with clean water?	1=Not difficult 2=So-so 3= Difficult If Difficult: Can you tell me the reasons why it is difficult?	

Practices			
NO	QUESTION	RESPONSE OPTIONS	CODE
4.14	After you have prepared dinner, kitchen surfaces, pots, pans, plates and utensils are dirty. Can you describe how you clean them usually?	1= Scrape excess food into rubbish bin 2=Wash with hot water 3=Wash with detergent 4= Don't know/no answer	
4.15	How do you store perishable fresh foods such as raw meat, poultry and seafood?	1= In the refrigerator (below 5 °C)/cool box 2= Covered (protected from insects, rodents, pests and dust) 3= Separated from cooked or ready-to-eat foods 4= Other 5= Don't know/no answer	

Part 5: Personal hygiene

Knowledge			
NO	QUESTION	RESPONSE OPTIONS	CODE
5.1	Food poisoning often results from contact with germs from faeces. What can you do to avoid sickness from germs from human or animal faeces?	1=Wash hands (after going to the toilet and cleaning the baby's bottom) 2=Remove faeces from the home and surroundings (use a latrine, teach small children to use a potty and put children's faeces in the latrine, and clean up faeces from animals) 3=Other 4=Don't know	
5.2	There are key moments when you need to wash your hands to prevent germs from reaching food. What are these key moments?	1=After going to the toilet/latrine 2=After cleaning the baby's bottom/changing a baby's nappy 3=Before preparing/handling food 4=Before feeding a child/eating 5=After handling raw food 6=After handling garbage 7=Other 8=Don't know	

Attitudes			
NO	QUESTION	RESPONSE OPTIONS	CODE
5.3	How likely do you think you are to become sick, such as having stomach ache or diarrhoea, from not washing your hands?ORHow likely do you think it is that your child will become sick, such as having stomachache or diarrhoea, from you not washing your hands?	1= Not likely 2=You're not sure 3=Likely If Not likely: Can you tell me the reason why it is not likely?	
5.4	How serious do you think it is if you or your child gets sick from you not washing your hands? OR How serious do you think diarrhoea is for your health? OR How serious do you think is diarrhoea for a baby's health?	1=Not really serious 2= Neutral/unsure 3=Serious If Not Serious: Can you tell me the reason why it is not serious?_____	
5.5	How good do you think it is to wash your hands before preparing food? OR How good do you think it is to wash your hands before feeding a child/eating?	1= Not good 2= You're not sure 3=Good If Not good: Can you tell me the reasons why it is not good? _____	
5.6	How difficult is it for you to wash your hands before preparing food? OR How difficult is it for you to wash your hands before feeding a child/eating?	1=Not difficult 2= So-so 3=Difficult If Difficult: Can you tell me the reasons why it is difficult? _____	
5.7	How confident do you feel in washing your hands properly?	1= Not confident 2= Ok/so-so 3= Confident If Not confident: Can you tell me the reasons why you do not feel confident? -----	

Practices			
NO	QUESTION	RESPONSE OPTIONS	CODE
5.8	Could you please describe step by step how you wash your hands?	1=Washes hands in a bowl of water (sharing with other people)-poor practice. 2=With someone pouring a little clean water from a jug onto one's hands — appropriate practice 3=Under running water — appropriate practice 4=Washes hands with soap or ashes 5=Other 6=Don't know/no answer	

Part 6: Water and sanitation

Knowledge			
NO	QUESTION	RESPONSE OPTIONS	CODE
6.1	If you know that the water you are going to use for cooking or drinking is not safe or does not come from a safe source, what should you do?	1=Boil it 2=Add bleach/chlorine 3=Strain it through a cloth 4=Use a water filter (ceramic, sand, composite, etc.) 5=Use solar disinfection 6=Let it stand and settle 7=Discard it and get water from a safe source 8=Other 9=Don't know	

Attitudes			
NO	QUESTION	RESPONSE OPTIONS	CODE
6.2	How likely do you think you are to get diarrhoea from using unsafe water? OR How likely do you think your child is to get diarrhoea from using unsafe water?	1=Not likely 2=You're not sure 3= Likely If Not likely: Can you tell me the reason why it is not likely?	
6.3	How serious do you think it is to get sick from using unsafe water?	1=Not really serious 2=Neutral/serious 3=Serious If Not serious: Can you tell me the reason why it is not serious?	
6.4	How good do you think it is to boil water before drinking or using it?	1=Not good 2=You're not sure 3=Good If Not good: Can you tell me the reasons why it is not good?	
6.5	How difficult is it for you to boil water before drinking or using it?	1=Not difficult 2=So-so 3=Difficult If Difficult: Can you tell me the reasons why it is difficult?_____	
6.6	How confident do you feel in boiling water before drinking or using it?	1=Not confident 2=Ok/so-so 3=Confident If Not confident: Can you tell me the reasons why you do not feel confident?	

Practices			
NO	QUESTION	RESPONSE OPTIONS	CODE
6.7	What is the main source of water used by your household for drinking, cooking and hand washing?	1=Piped water 2=Piped into dwelling 3=Piped into yard or plot 4=Public tap/standpipe 5=Tube well/borehole 6=Dug well 7=Protected well 8=Unprotected well 9=Water from spring 10=Protected spring 11=Unprotected spring 12=Rainwater collection 13=Tanker-truck 14=Cart with small tank/drum 15Surface water (river, stream, dam, lake, pond, canal, irrigation channel) 16=Bottled water 17=Other (specify) _____ 18=Don't know	
6.8. A	Do you collect water for domestic use?	1=Yes.....Go to question P.2B. 2=No..... Go to question P.3.	
6.8.B	What item do you use to collect water?	-----	

6.8.C	To know if the item is clean probe: Did you treat this item in any way to make it clean?	1= Yes 2=No 3=Don't know	
6.8D	If Yes: How?	1=Use of water and soap (clean container) 2=Other 3=Don't know/no answer	
6.9	Could you describe how you store water?	1=Clean container or jar 2= Covered container or jar 3=Clean and covered container or jar 4=Other 5= Don't know/no answer	
6.10.a	Do you treat your water in any way to make it safe to drink?	1=Yes 2=No 3=Don't know/no answer 4= If Yes: Go to next question	
6.10.b	What do you usually do to the water to make it safer to drink?	1=Boil it 2=Add bleach/chlorine 3=Strain it through a cloth 4=Use a water filter (ceramic, sand, composite, etc.) 5=Use solar disinfection 6=Let it stand and settle 7=Other 8=Don't know/no answer Anything else? (Record all items mentioned)	

ክፍል 3. Household Food Insecurity Access Scale (HFIAS) Measurement Tool ምግብ ዋስትናቸውን ያላረጋገጡ ቤተሰብ መለኪያ

ተ.ቁ	ጥያቄ	የመልስማራጭ/	መልስ
3.1	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ አይኖረኝም ይሆናል ብለው ሰግተው ያውቃሉ;	0 = አይደለም (ወደጥያቄ 2) 1=አዎ	__
3.1a	ባለፉት አራት ሳምንታት ውስጥ ይሄ ስጋት ስንት ጊዜ ደርሶብዎታል?	1= አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ) 2 = አንዳንድ ጊዜ(3-10 ጊዜ) 3 = ሁለ ጊዜ(ከ 10 ጊዜ በላይ)	_
3.2	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል የወደዱትን ምግብ ሳይበሉ ቀርተው ያውቀሉ?	0 = /አይደለም(ወደጥያቄ 3) 1=አዎ	_
3.2a	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1, አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = አንዳንድ ጊዜ(3-10 ጊዜ) 3= ሁለ ጊዜ(ከ 10 ጊዜ በላይ)	_
3.3	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል የተወሰኑ የምግብ አይነቶች ብቻ በልታችኋል?	0 = አይደለም (ወደ ጥያቄ 4) 1 = አዎ	_
3.3a	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1 = /አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = /አንዳንድ ጊዜ(3-10 ጊዜ)3 =) ሁለ ጊዜ(ከ 10 ጊዜ በላይ)	_
3.4	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል መብላት የማትፈልጉትን ምግብ በልታችኋል?	0 = አይደለም (ወደ ጥያቄ 5) 1 = አዎ	_
3.4a	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = አንዳንድ ጊዜ(3-10 ጊዜ) 3 = ሁለ ጊዜ(ከ 10 ጊዜ በላይ)	_
3.5	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ሳትጠግቡ ለመነሳት ተገዳችኋል?	0 = አይደለም (ወደ ጥያቄ 6) 1 = አዎ	_

3.5a	ባለፉት አራት ሳምንታት ውስጥ ይህን ትግል አጋጥሞታል?	1 አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = /አንዳንድ ጊዜ (3-10 ጊዜ) 3 ሁለት ጊዜ (ከ 10 ጊዜ በላይ)	. _
3.6	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ባለመኖሩ ምክንያት ርስ ወይም ማንኛውም የቤተሰብ አባል ቁርስ፤ ምሳ ወይም ራት መብላት ሳትችሉ ቀርታችኋል?	0 = አይደለም (ወደጥያቄ 7 1 = አዎ	. _
3.6a	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1=አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 =አንዳንድ ጊዜ (3-10 ጊዜ) 3 =ሁለት ጊዜ (ከ 10 ጊዜ በላይ)	. _
3.7	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት በቤተሰቡ ውስጥ የሚላስ የሚቀመስ ያልነበረበት ጊዜ ነበር?	0 =አይደለም (ወደጥያቄ 8 1 = አዎ	. _
3.7a	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = /አንዳንድ ጊዜ (3-10 ጊዜ) 3 = ሁለት ጊዜ (ከ 10 ጊዜ በላይ)	. _
3.8	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስ ወይም ማንኛውም የቤተሰብ አባል እየራበው ወደ መጃታ የሄደበት ጊዜ ነበር?	0 = አይደለም (ወደጥያቄ 9 1 = አዎ	. _
3.8a	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1 = አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = አንዳንድ ጊዜ (3-10 ጊዜ) 3 = ሁለት ጊዜ (ከ 10 ጊዜ በላይ)	. _
3.9	ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስ ወይም ማንኛውም የቤተሰብ አባል ቀኑን ሙሉ ሳይበላ ውሎ ሳይበላ ያደረበት ጊዜ አለ?	0 = የለም 1 = አዎ	. _
3.9a	ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞታል?	1 = /አልፎ አልፎ (አንድ ወይም ሁለት ጊዜ) 2 = /አንዳንድ ጊዜ (3-10 ጊዜ) 3 = ሁለት ጊዜ (ከ 10 ጊዜ በላይ)	. _

ክፍል4 Food safety (ምግብደህንነት)ስለምግብደህንነትአመለካከት/

ተ.ቁ	ጥያቄ	የመልስአማራጭ/	መልስ
4.1	ምግብከዘጋጁበኋላየማብሰያአካባቢው፣ ድስቶች፣ መጥበሻዎች፣ ሰሃኖችእናሌሎችመገልገያዎችመጽዳትይኖርባቸዋል። አብዛኛውንጊዜእንዴትእንደሚያጸዷቸውሊነግሩኝይችላሉ?	1= ጥራጊውንወደቆሻሻማጠራቀሚያው እደፈዋለሁ።2= በሞቀው ሃ አጥበዋለሁ። 3= በሳሙና(አጃክስ)ወይምበፈሳሽሳሙና አጥበዋለሁ4= መልስየለም	
4.2	ቶሎሊበላሹየሚችሉምግቦችን (እንደሰጋ፣ ያልተሰራዶሮወይምአሳ) እስኪሰሩድረስእንዴትያቆዩዋቸዋል?	1=ፍሪጅውስጥ 2=አቧራወይምአይጥእንዳይደርስበትተሸፍኖ 3=ለምግብነትከተዘጋጁምግቦችጋርእንዳይነካተላይቶ 4=ሌላ 5= መልስየለም	

Food safety Knowledge (የምግብደህንነትእውቀት)

ተ.ቁ	ጥያቄ/	የመልስአማራጭ/	መልስ
4.3	ጥሬስጋ፣ የሆድእቃስጋዎች (እንደጨንፈ፣ ወተትአንጀት፣ ጉበት፣ ከላሊት፣ ልብአይነት) ከበሰሉወይምለምግብነትከተዘጋጁምግቦችጋርእንዳይነካኩማድረግለምንያስፈልጋል?	1=ከእንስሳትየሚገኙያልበሰሉምግቦችብዙ ጊዜጀርሞችይገኙባቸዋልእነዚህጀርሞችወደበሰሉወይምለምግብነትወደተዘጋጁምግቦችሊተላለፉይችላሉ 2=ሌላ3= መልስየለም	
4.4	ወጥወይምሾርባበሚሰሩበትጊዜመብሰሉን (ለምግብነትለመቅረብዝግጁመሆኑን) እናጤናማመሆኑንእንዴትያውቃለሁ?	1= ይንተከተካል / በደንብይበስላል 2=ሌላ 3=መልስየለም	
4.5	ፍሪጅወስጥ፣ ማቀዝቀዣሳጥንውስጥወይምቀዝቀዝ ያለበታመቀመጥያለባቸውምግቦችምንምንአይነቶቹናቸው?	1=ስጋ፣ የሆድእቃስጋዎች2=የዶሮስጋ3=አሳ 4=ወተት / የወተትአስተዋጽኦዎች 5= የበሰሉምግቦች6=ሌላ 7=ሁሉም8= መልስየለም	
4.6	ተዘጋጅቶከቀረበበኋላሳይበላየተፈፈም ግብቀዝቃዛባታውስጥካልቆየበስተቀር እንደገናለምግብነትመቅረብየሌለበትለምንድንነው?	1=በሽታሊያስከትልስለሚችል 2=በምግቡውስጥጀርሞችበፍጥነትተባዝተውምግቡለበሽታስለሚያጋልጥ3= ሞቅያለመጠነ- መቀትጀርሞችፈጥነውእንዲራቡስለሚረዳ4=ሌላ5=መልስየለም 6=(	

		ከመጀመሪያዎቹ ሶስት አማራጮች መካከል ይገኛል)	
4.7	ፍራፍሬዎችን ወይም ጥሬ አትክልቶችን (እንደ ጎመን፣ ሰላጣ፣ ቆስጣ፣ ቃርያ፣ ቲማቲም ያሉትን) ከመመገባችሁ በፊት ምን ማድረግ አለባችሁ?	1=በንጹህው ሃማጠብ 2= ሌላ 3= መልስ የለም	

አመለካከት ወይም አስተሳሰብ: (የሚገመት ተጋላጭነትና ከባድነት)

ተ.ቁ	ጥያቄ	የመልስ አማራጭ/	መልስ
4.8	የተበከለ ምግብ መብላት ለበሽታ ሊያጋልጥ ይችላል ብለው ያስባሉ?	1=አላስብም 2=እርግጠኛ አይደለሁም 3=አዎ አስባለሁ (መልሱ አላስብም ከሆነ) አላስብም ያሉበትን ምክንያት ሊነግሩኝ ይችላሉ;	
4.9	የተበከለ ምግብ በመብላት የሚመጣ በሽታ ምን ያህል ከባድነው ብለው ያስባሉ?	1=—ከባድ አይደለም 2=እርግጠኛ አይደለሁም 3=ከባድነው (መልሱ ከባድ አይደለም ከሆነ) ከባድ አይደለም ያሉበትን ምክንያት ሊነግሩኝ ይችላሉ?	
4.10	ስጋን፣ የዶሮ ስጋን፣ አሳን ወይም የበሰለ ምግብን ቀዝቃዛ ቦታ ማቀዝቀዣ ሳጥን ወይም ፍሪጅው ስጥ) ማስቀመጥ ምን ያህል ጥሩነው ብለው ያስባሉ?	1=. ጥሩ አይደለም 2=. እርግጠኛ አይደለሁም 3=. ጥሩነው (መልሱ ጥሩ አይደለም ከሆነ) ጥሩ ያልሆነበትን ምክንያት ሊነግሩኝ ይችላሉ? _	
4.11	እነዚህን ምግቦች ማቀዝቀዣ ሳጥን ወይም ፍሪጅው ስጥ ማስቀመጥ ለርስዎ ምን ያህል ከባድነው?	1. ከባድ አይደለም 2. እንደነገሩ 3. ከባድነው 4 መልሱ ከባድነው ከሆነ ከባድ የሆነበትን ምክንያት ሊነግሩኝ ይችላሉ?	
4.12	ሳይበሉ የተረፉ ምግቦችን (እንደ ወጥ ያሉ) ከመብላት ወይም ለምግብነት ከማቅረብ በፊት እንደ ገና ማንተክተኩ ምን ያህል ጥሩነው ብለው ያስባሉ?	1=. ጥሩ አይደለም 2=. -እርግጠኛ አይደለሁም 3=. -ጥሩነው (መልሱ ጥሩ አይደለም ከሆነ) ጥሩ ያልሆነበትን ምክንያት ሊነግሩኝ ይችላሉ? _	
4.13	ሳይበሉ የተረፉ ምግቦችን (እንደ ወጥ ያሉ) ከመብላት ወይም ለምግብነት ከማቅረብ በፊት እንደ ገና ማንተክተኩ	1=ከባድ አይደለም 2=እንደነገሩ 3=ከባድነው መልሱ ከባድነው ከሆነ ከባድ የሆነበትን ምክንያት ሊነግሩኝ ይችላሉ?	

	ከምን ያህል አስቸጋሪ ይሆንብዎታል?		
4.14	ፍራፍሬዎችን እና አትክልቶችን በንጹህ ወሃ ማጠብ ምን ያህል ጥሩ ነው ብለው ያስባሉ?	1=ጥሩ አይደለም 2=እርግጠኛ አይደለም 3=ጥሩ ነው (መልሱ ጥሩ አይደለም ከሆነ) ጥሩ ያልሆነበትን ምክንያት ሊነግሩኝ ይችላሉ? _	
4.15	ፍራፍሬዎችን እና አትክልቶችን በንጹህ ወሃ ማጠብ ምን ያህል ይከብድዎታል? ..	1= ከባድ አይደለም 2= - እንደነገሩ 3=ከባድ ነው መልሱ ከባድ ነው ከሆነ ከባድ የሆነበትን ምክንያት ሊነግሩኝ ይችላሉ? _____	

ክፍል 5: Personal hygiene (የግል ሃይጅንነት መለከት) Personal hygiene የግል ሃይጅንነት መለከት) Practices (ልምድ)

ተ.ቁ	ጥያቄ/	የመልስ አማራጭ	መልስ
5.1	እጆችዎን እንዴት እንደሚታጠቡ በቅደም ተከተል ሊነግሩኝ ይችላሉ?	1=እጆችን ሰሃን ውስጥ ባለው ሃውስ ጥንክሩ ከሌሎች ሰዎች ጋር አብሮ መታጠብ (መጥፎልም ይቻላል) 2= ሌላ ሰው ትንሽ ንጹህ ወሃ አያንቆረቆረ መታጠብ (ትክክለኛልም ይቻላል) 3= ከቧንቧ በሚወርድ ወሃ መታጠብ (ትክክለኛልም ይቻላል) 4=እጆችን በሳሙና እና ወሃ መታጠብ 5= ሌሎች 6= መልስ የለም	

Personal hygiene (የግልሃይድንንበተመለከተ) Knowledge (እውቀት)

ተ.ቁ	ጥያቄ	የመልስአማራጭ	መልስ
5.2	አብዛኛውንጊዜየምግብመረዝየሚፈጠረውከዓይነትምድርከሚወጡጀርሞችጋርንክኪበመፍጠርነው፤ ከሰውወይምእንስሳትዓይነትምድርበሚመጡጀርሞችምክንያትየሚፈጠርበሽታንለመከላከልምንማድረግይችላሉ?	1=መጸዳጃቤትከተጠቀሙወይምየህጻንታፋ (ቂጥ) ካጠቡበኋላእጅንመታጠብ 2=ከቤትውስጥእናከአካባቢውዓይነትምድርንማስወገድ (መጸዳጃቤትንመጠቀም፤ ልጆችፖፖውስጥእንዲጸዱዳዱማስተማርእናየህጻናቱንዓይነትምድርመጸዳጃቤትጉድጓድውስጥመድፋት፤ እንስሳትላይያለዓይነትምድርንማጽዳት) 3= ሌሎች4=መልስየለም	
5.3	ጀርሞችምግብውስጥእንዳይገቡለማድረግእጅመታጠብብየሚያስፈልግባቸውወሳኝጊዜያትአሉ፤ እነዚህወሳኝጊዜያትመቼመቼናቸው?	1=መፀዳጃቤትከተጠቀሙበኋላ 2=የልጅንታፋ (ቂጥ) ካጠቡበኋላ / የልጅንየሽንትጨርቅከቀየሩበኋላ3=ምግብማዘጋጀትከመጀመርበፊት4= ህጻንንከመመገብበፊት5=ጥሬ (ያልበሰለ) ምግብከነኩበኋላ6= ቆሻሻከሰበሰቡእናከጣሉበኋላ 7= ሌሎች8=መልስየለም	

Personal hygiene (የግልሃይድንንበተመለከተ)Attitudes (አመለካከትወይምአስተሳሰብ)

ተ.ቁ	ጥያቄ	የመልስአማራጭ	መልስ
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5.4	እጅዎንባለመታጠብዎቸውንሳለሆድህመምወይምለተቅማጥዮመጋለጥዎአጋጣሚዎንያህልነውብለውያስባሉ? ወይም እርስዎእጅዎንባለመታጠብዎምክንያትልጅዎበሆድህመምወይምበተቅማጥለመታመምያለውአጋጣሚዎንያህልነውብለውያምናሉ?	1=. የሚታመምአይመስለኝም 2=. እርግጠኛአይደለሁም 3=ሊታመምይችላል። (መልስየሚታመምአይመስለኝም ከሆነ) የሚታመምየማይመስልዎምክንያትምእንደሆነሊነግሩኝይችላሉ? _____	
5.5	እርስዎእጅዎንባለመታጠብዎምክንያትእርስዎወይምልጅዎብትታመሙምንያህልከባድየሚሆንይመስልዎታል ? ወይምተቅማጥለጤንነትዎምንያህልከባድነውብለውያስባሉ? ወይምተቅማጥለልጅዎጤንነትምንያህልከባድነውብለውያስባሉ?	1=. ከባድአይመስለኝም 2=. እርግጠኛአይደለሁም 3=.ከባድነው መልሱከባድአይደለምከሆኑከባድየማይሆንበትምክንያትምእንደሆነሊነግሩኝይችላሉ? _____	
5.6	ምግብማዘጋጀትከመጀመርዎበፊትእጅዎንመታጠብምንያህልጥሩነውብለውያስባሉ? ወይምህጻንከመመገብዎወይምራስዎከመመገብዎበፊትእጅዎንመታጠብምንያህልጥሩነውብለውያስባሉ?	1=ጥሩአይደለም 2=. እርግጠኛአይደለሁም 3=ጥሩነው መልሱጥሩአይደለምከሆነምክንያቱንሊነግሩኝይችላሉ? _____	
5.7	ምግብማዘጋጀትከመጀመርዎበፊትእጅዎንመታጠብምንያህልያስቸግርዎታል? ወይምልጅዎንከመመገብዎበፊትወይምራስዎከመመገብዎበፊትእጅዎንመታጠብምንያህልያስቸግርዎታል?	1=. አያስቸግረኝም 2=. እንደነገሩ 3=ያስቸግረኛል የሚያስቸግርከሆነለምእንደሚያስቸግርዎትምክንያቱንሊነግሩኝይችላሉ? _____	
5.8	እጅዎንበአግባቡመታጠብዎምንያህልበራስዎመተማመንይፈጥርልዎታል?	1=. አልተማመንም 2=በመጠኑ / እንደነገሩ3=. እተማመናለሁ። አልተማመንምካለብራስዎየማይተማመኑበትንምክንያቶችሊነግሩኝይችላሉ?-----	

ክፍል 6: Water and sanitation (ውሃ እና ሳኒቴሽን) Practices (ልምድ)

ተ.ቁ	/ጥያቄ	የመልስ አማራጭ	መልስ
6.1	በቤት ያለው ስጥለ መጠጥ፣ ለማብሰያ እና እጅን ለመታጠቢያ የሚሆን ውሃ የሚያገኙት በዋነኛነት ከዞትነው?	1= የቧንቧ ውሃ 2= ቤት ውስጥ ካለ የቧንቧ ውሃ 3= ግቢ ውስጥ ካለ የቧንቧ ውሃ 4= ከቦኖ ውሃ 5= ከጉድጓድ በቧንቧ ካሚወጣ ውሃ 6= ጉድጓድ ካሚጠለቅ ውሃ 7= - ከአካባቢ ውቆሻሻ እንዲገባበት መከላከያ ካለው ጉድጓድ 8= ከክፍት ጉድጓድ 9= የምንጭ ውሃ 10= መከላከያ ካለው ምንጭ 11= መከላከያ ካለው ምንጭ 12= የዝናብ ውሃ በማጠራቀም 13= ውሃ ካሚያድል የመኪና ሮቶ 14= የውሃ በር ማልካለው ጋሪ 15= የጸ-ምድር ውሃ (ወንዝ፣ ምንጭ፣ ግድብ፣ ሃይቅ፣ ከራ፣ ቦይ፣ የመስኖ ቦይ 16= (የታሸገ ውሃ) 17= ሌሎች (ዘርዘር) _____ 18= መልስ የለም	
6.2. A	ለቤት ውስጥ አገልግሎት ውሃ ይቀዳሉ?	1=. መልሱ አዎ ከሆነ ወደ ሚቀጥለው ምርጫ ይሂዱ 2=. መልሱ አልቀዳም ከሆነ ወደ ጥያቄ 3 ይሂዱ	
6.2.B	ውሃ ለመቅዳት ምን እይነት መቅጃ ይጠቀማሉ?	-----	
6.2.C	መቅጃውን ጸሐፊ ሆነ መቅጃውን ጸሐፊ ሆነ ድረ ግጥሚያ ጠቀሙት ነገር አለ?	1=አዎ 2= ምንም አልጠቀምም 3= መልስ የለኝም፡፡ መልሱ አዎ ከሆነ እንዴት? ----- ----- 4= መቅጃውን በሳሙና እና በውሃ አጥባቃለሁ 5= ሌላ 6= አላውቅም / መልስ የለም	
6.3	ውሃውን እንዴት እንደሚያጠራቅሙ ሊያብራሩልኝ ይችላሉ?	1= ጸሐፊ ውሃ ማጠራቀሚያ ውስጥ 2= የተከደነ ውሃ ማጠራቀሚያ ውስጥ 3= ጸሐፊ ከየተከደነ ውሃ ማጠራቀሚያ ውስጥ 4= ሌላ 5= አላውቅም መልስ የለም	
6.4.A	የቀዱት ውሃ ለመጠጣት ጤናማ እንዲሆን የሚያከሙበት መንገድ አለ?	1= - አዎ 2=አይ 3= አላውቅም/ መልስ የለም መልሱ አዎ ከሆነ ወደ 4 ላይ ይሂዱ	
6.4.B	የቀዱት ውሃ ለመጠጥ ጤናማ እንዲሆን በዙፋን ውስጥ ከሚገኙት የደርጋሉ	1= ማፍላት 2= በረከት መጨመር 3= በጨርቅ ማጥለል 4= የውሃ ማጣርያ መጠቀም (ሴራ ሚክ፣ አሸዋ፣ ቅልቅልጠጠር)	

	?	5= በጸሃይ6= ቆሻሻው እስኪዘቅጥማስቀመጥ7= ሌላ 8= አላውቅም/መልስ የለም	
6.5	ስለምግብ ደህንነትና ጥንቃቄ የጤና ኤክስቴንሽን ንምክርናት ምህርት ለጥተዎት ያውቃሉ?	0= በወርውስ ጥየላም 1= 1-2 ጊዜ በወርውስ ጥ 2= ከ 3 ጊዜ በላይ በወርውስ ጥ	

Water and sanitation (ውሃ እና ሳኒቴሽን) Knowledge (እውቀት)

ተ.ቁ	ጥያቄ	የመልስ አማራጭ	መልስ
6.6	ምግብ ለመስራት ወይም ለመጠጣት የሚጠቀሙበት ውሃ ጤናማ አለመሆኑን ወይም የተቀዳበት ቦታ ጤናማ አለመሆኑን ሲያውቁም ንማድረግ አለብዎት?	1=, አፈላግደለሁ 2= በረከ ና እጨምር ቦታ ልሁ 3= በጨርቅ አጠለዋለሁ 4= በውሃ ማጣርያ (ሴራሚክ፣ አሸዋ፣ የተቀላቀለ ጠጠር) እጠቀማለሁ 5= ለጸሃይ በማጋለጥ ጀርሞች እንዲሞቱ አደርጋለሁ 6= እስኪዘቅት አቆየዋለሁ 7= - እደፋው ናከጤናማ ቦታ ሌላው ሃ አመጣለሁ 8= ሌላ 9= መልስ የለም	

Water and sanitation (ውሃ እና ሳኒቴሽን) Attitudes (አመለካከት ወይም አስተሳሰብ)

ተ.ቁ	/ጥያቄ/	/የመልስ አማራጭ	መልስ
6.7	ጤናማ ያልሆነው ሃመጠቀም ተቅማ ጥሊ ያመጣ እንደሚችል ምን ያህል ያስባሉ? ወይም ጤናማ ያልሆነው ሃበመጠጣት ልጅ ያበተቅማ ጥሊ ታመም እንደሚችል ምን ያህል ያስባሉ?	1= አላስብም 2= እርግጠኛ አይደለሁም 3= አስብላለሁ። የሚያስቡ ስህተት ቅማ ጥሊ ያመጣ ምብለው የሚያስቡበት ምክንያት ምን እንደሆነ ሊነግሩኝ ይችላሉ?	
6.8	ጤናማ ያልሆነው ሃመጠጣት የሚያስከትለው በሽታ ምን ያህል ከባድነው ብለው ያስባሉ?	1=. ከባድ አይደለም 2=. ቀለል ያለ ነው 3=. ከባድ ነው። ከባድ ካልሆነ ከባድ የማይሆንበት ምክንያት ምን እንደሆነ ሊነግሩኝ ይችላሉ?	
6.9	ውሃን ለመጠጥ ወይም ለሌላ ስራ ከመዋሉ በፊት ማፍላቱ ምን ያህል ጥሩ ነው ብለው ያስባሉ?	1=. ጥሩ አይደለም 2=. እርግጠኛ አይደለሁም 3=. ጥሩ ነው። ጥሩ አይደለም ከተባለ ጥሩ ያልሆነበት ምክንያት ሊነግሩኝ ይችላሉ?	
6.10	ውሃን ለመጠጥ ነት ወይም ለሌላ ስራ ከመጠቀም ያለፈው ማፍላቱ ምን ያህል ያስቸግርዎታል?	1=. አያስቸግረኝም 2= እንደነገሩ 3= ያስቸግራል የሚያስቸግርክ ሆኖም እንደሆነ ምክንያቱን ሊነግሩኝ ይችላሉ? _____	