MAGNITUDE AND ASSOCIATED FACTORS AFFECTING FOOD HANDLING PRACTICES AMONG FOOD HANDLERS IN LICENSED FOOD AND DRINKING ESTABLISHMENTS OF HARAR TOWN, EASTERN ETHIOPIA

MPH THESIS

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Magnitude and Associated Factors Affecting Food Handling Practices Among Food Handlers In Licensed Food And Drinking Establishments of Harar Town, Eastern Ethiopia

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APPROVAL SHEET

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I Hereby Certify that I have read and evaluated this thesis entitled Magnitude and Associated Factors Affecting Food Handling Practices among Food Handlers in Licensed Food and Drinking Establishments of Harar Town, Eastern Ethiopia, Prepared under my guidance by Zelalem Gizaw. I recommend that it will be submitted as fulfilling the thesis requirement.

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BIOGRAPHICAL SKETCH

The author was born in 1978 in Harar town, Eastern Ethiopia. He completed his Elementary school in First Model and in SOS Harar town. And he completed his Secondary School in Harar Senior Secondary School. After completion of Secondary School, He joined in Alamaya University of Agriculture in the Faculty of Health science and studied diploma in Environmental Health Science in 1998. After graduation he was employed and served in Harar prison Commission since, 2002 and Harar Shenkor Woreda since now and then joined to Haramaya University of Health Campus in Harar town in 2006 and got his BSc degree in Environmental Health Science Health in 2010 and served in Harar Shenkor till now and he joined Haramaya University Post Graduate Program Directorate as Self- sponsored student pursue his study in Master of public health in general.

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ACRONYMS/ABBREVIATIONS

AOR: Adjusted Odds Ratio

FBD: Food Borne Diseases

FMHACA: Food, Medicine and Health Care Administration and Control Authority

HEH: Hygiene and Environmental Health

IHRERC: The Institutional Health Research Ethics Review Committee

KAP: Knowledge, Attitudes and Practices

MOANR: Ministry of Agriculture and Natural Resources

NGOs: None Governmental Organizations

S.N.N.P: Southern Nation Nationals of Peoples

SPSS: Statistical Package for Social Sciences

SSA: Sub-Saharan Africa

WASH: Water, Sanitation and Hygiene

WHO: World Health Organization

ABSTRACT

Background: Every day in every country, people fall ill from the food they have eaten. Even though governments throughout the world do their utmost to improve the safety and quality of food, the high number of food borne illnesses is a major public health issue for all countries. However, there is shortage of evidence on the magnitude and associated factors affecting food handling practices among food handlers in licensed food and drinking establishments, particularly in the Harar town, eastern Ethiopia.

Objective: To assess magnitude of food handling practices and associated factors among food handlers of licensed food and drinking establishments in Harar town, eastern Ethiopia from March 10 to April 30, 2019.

Method: Cross sectional study was conduct among 632 food handlers in Harar Town. The study population was selected by using simple random sampling technique. Descriptive statistics such as, frequencies, proportions and summary statistics were used to describe the study population in relation to relevant variables. Association between dependent and independent variables was assessed. Adjusted odds ratio with 95% confidence interval was used to show associations. P-value of < 0.05 was considered statistically significant in the multivariate analysis.

Results: The magnitude of good food handling practices was 50 %. Food handlers who were wash hands after touching any materials (AOR =0.114, 95% CI (0.081-0.179),not chewing chate (AOR =0.100, 95% CI (0.057-0.148), not eaten food(AOR =1.114, 95% CI (0.052-2.143) in work area ,certified medical check-up certificate on hand (AOR =3.146, 95% CI(6.126-12.234,nail trimmed/cut shortly(AOR=3.154,95%CI (0.125-5.232) and weared guan/apron(AOR =2.200, 95% CI(0.108-3.295) were have significant associations with food handling practice.

Conclusion and recommendation: The study revealed that**,** the magnitude of food handling practices among food handlers to be lower compared to Dangla town, in Northern Ethiopia. Food handlers those had not using soap and water to washed hands, not weared white gown and hair cape, not nails shortly cut were factors affecting food handling practice.Therefore programmed and routine food and drinking establishment regulation should be performed regularly. More over regular training and medical check -up should be recommended.

Key words: Magnitude and associated factors, food handling practice, knowledge, licensed food and drinking establishment

1. INTRODUCTION

1.1Background information

Food handler is any person who directly handles packaged or unpackaged food, food equipment and utensils, or food contact surfaces and is therefore expected to comply with food hygiene requirements .Pathogens can be transferred from one food to another, either by direct contact or by food handlers, contact surfaces or the air.(CAC/RCP, 1969).

One of the keys to safe food is good personal hygiene of the people who prepare and serve it. The disease causing micro-organismslike food poisoning bacteria's ,viruses, and others can easily transfer from the hands and clothes of the people who handle the food, so it is important that food handlers have to responsibilities for food handling practices; that are Practicing personal hygiene : having a bath or shower daily, wear a clean apron and clean under garments daily, avoid the use of overpowering perfumes, washing and brush hair regularly and secure, shaving beards of male workers daily or should be washed daily and kept trim, cleaning teeth frequently to ensure oral hygiene and fresh breath, keeping fingernails clean, neat and well-trimmed, nail polish should not be worn when preparing food, do not smoke in food preparation or serving areas, wash hands and fingernails thoroughly before commencing work, no wear jewellers, rings and earrings, People with illnesses and those with wounds like cuts and scratches can spread illness through food without knowing it, a food handler also needs to be aware of unconscious body habits and must avoid actions such as scratching or rubbing the head, touching nose or other body parts, stroking hair/beards, picking pimples, licking fingers when tasting food and the like(WWW.CHILDSAFE.ORG.AU, 2018).

Everyone has to assume that they may be carrying food poisoning bacteria and so take precautions against spreading the disease. It is estimated that 50% of the population carry Staphylococcus Aureus in their mouths/noses. Staphylococcus Aureus may also be present in infected cuts and pimples. These food poisoning bacteria may be spread to food by a food handler coughing or sneezing over food, tasting food using fingers or working with an infected cut. Salmonella and Clostridium perfringens can be present in the intestine of seemingly healthy people. Inadequate washing of hands after going to the toilet may result in fecal material being transferred to the food (WWW.CHILDSAFE.ORG.AU, 2018)

Globally 327 Food borne diseases outbreaks were reported from January 2013 to December 2017, causing illness in 11155 individuals, with 8680 hospital visits, 494 hospital admissions and 49 deaths(Andronica Moipone, 2017).In 2015,in Addis Ababa the study revealed that 52.3% of food handlers had a poor food handling practice(Asrat Meleko, 2015).Where as in Arba Minch Town in Gamo Gofa Zone, Southern Ethiopia the study showed that 32.6% has good practice(Dejene Legesse, 2017).

1.2 Statement of the problem

Every day in every country, people fall ill from the food they have eaten. These food borne illnesses are caused by dangerous micro-organisms and/or toxic chemicals. Even though governments throughout the world do their utmost to improve the safety and quality of food, the high number of food borne illnesses is a major public health issue for all countries (Bruno Schiffers, 2011).In 2010, WHO estimates of the global burden of food borne diseases report described; 420–960 million food borne illnesses and 420,000 deaths.(WHO, 2015).

Donors and governments are massively under-investing in food-borne disease (FBD) management in Ethiopia, Burkina Faso, and Nigeria in sub-Saharan Africa (SSA). For instance FBD is massively under-reported, its surveillance is weak or absent, it seen as compulsory or voluntary reporting, commonly under-estimating the magnitude and consequence of FBD in health, economic, international trade relationship and truism industry.(Delia Grace, 2018)

In general assessing FBD in developing countries like Ethiopia; is not easy, because many infectious diseases never receive a definitive diagnosis. Even if a diagnosis is given, it may be difficult to know if the source was food, water, other people, animals or the environment. FBD has little information on the range of interventions in contrast to others, those having better information like malaria or “water, sanitation and hygiene” (WASH), vaccinating infants or providing potable water. FBD causes for billions of illnesses each year compare to that of malaria or nutritional deficiencies, it also incurring costs of tens of billions of dollars annually are seen as the gap. At least one in ten people fall ill from FBD and are responsible for around 50,000 deaths in the 3 countries. Estimated deaths from FBD per year per 100,000; In Ethiopia, Burkina Faso, and Nigeria were 13, 24, and 18 respectively, also in terms of cost of illness to

patients, government and donors total cost in Ethiopia and Nigeria were $ 424,122,064 and $ 547,941,614 respectively ;are showing how FBD serious and Sevier(Delia Grace, 2018).

In Ethiopia, in Southern Nation Nationals of Peoples (S.N.N.P) Region; out of the Top Leading causes of Hospital and Health Centers Morbidity in 2007/2008 ;Helminthes and Typhoid were accounted 226748 (8.6%) and 77001 (2.9%) respectively, in Gambella Region were accounted Intestinal Parasites 2765(14.6%) and Diarrhoea 360(1.9%).Also, in Harari Region ;Helminthes and Dysentery were accounted 1738(4.9%) and 1458(4.1%) respectively; FBDs are making a serious and Sever issues(Health, 2007/08)

Food, Medicine and Health Care Administration and Control Authority (FMHACA) Prepare and endorse national food safety policy, proclamation, regulation, guidelines, standards in collaboration with other sectors, identify and register all food producers and food service providers including street vendors ,audit food and drinking producers, vendors and food service providers and ensure the safety of food and water products by using continual testing and conformation throughout the value chain(Federal Democratic Republic of Ethiopia Ministry of Health, 2016).

Ministry of Agriculture and Natural Resources (MOANR) is controlling and monitoring the application of pesticides and herbicides in to farms to protect environmental pollution (water, food and soil) with toxic chemicals. So, this Hygiene and Environmental Health National strategy is designed taking into consideration all the drawback and gaps of the past and with a pragmatic and innovative plan for transforming the hygiene and environmental health (HEH) conditions in the future. By 2020 ensure food safety from farm to fork with a Strategic initiatives of Increasing institutional food safety surveillance and regulation, institutions implementing good manufacturing practice and other food safety management systems, and surveillance and regulation of food products, from the baseline to 100% (Federal Democratic Republic of Ethiopia Ministry of Health, 2016).

Because of the direct relationship of food, food-handlers practice, food-borne disease and factors associated with the food handling practices like, monthly income, educational and knowledge status of food handlers; data on food-handling practice among food handlers are scarce in Ethiopia, particularly the study area. Most data are not timely reviewed and made available for decision makers. Despite these facts, food-handling practice is unrecognized, so this requires

attention as other healthcares programmes and up-to date data on the magnitude and associated factors affecting food-handling practice among food handlers in licensed food and drinking establishments of Harar town, eastern Ethiopia to help plan and prioritize health programs.

1.3 Significance of the study

Mainly; the significant of this study was used for the fulfilment of the requirement of the masters of degree science in general public health. More over; it was used to ignite much knowledge in food handlers mind during data collation time on basic food handling practices. Also the finding and the recommendation was contribute to the local community, woreda health staffs, None Governmental Organizations (NGOs), and Regional health bureau program managers as well as designing planners to take any Public Health action and interventions. Also it used to the base line data for other studies that was conducted in the area.

1.4 Objective of the Study

1.4.1General Objective

- To assess magnitude of food handling practices and associated factors among food handlers of licensed food and drinking establishments in Harar town, eastern Ethiopia from March 10 to April 30, 2019.

1.4.2 Specific objective

- To assess the magnitude of food handling practices among food handlers of licensed food and drinking establishments.
- To identify factors associated with food handling practices among food handlers of licensed food and drinking establishments.

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2. LITERATURE REVIEW

2.1 Magnitude of food handling practice among food handlers

Study on food safety knowledge, attitude and practices of male food handlers employed in restaurants of King Saud University January 28 to May 16, 2015 , Saudi Arabia ;respondents on Personal hygienic practices have extremely good ;whereby 96.6% maintained safe practices, such as wearing uniforms and caps. Most of the handlers (95.4%) washed hands after smoking, coughing, sneezing and majority of the respondents (75.9%) removed personal stuffs like watches, rings and jewellery that can contaminate foods while working, most of respondents attended training related to food safety and just 5.7% had no previous training, about 97.7% of the respondents had their health cards (Nasser Abdulatif Al-Shabib, 2015).

On Assessment of the food hygiene practices of food handlers in the Federal Capital Territory of Nigeria from January to June 2014; shows the personal hygiene practices of the participants. One hundred and fifty (89.3%) of the subjects engaged in hand wash after the use of toilets, 83 (49.4%) use hand gloves, while 44 (26.2%) practice changing of hand gloves at work. Furthermore, 57 (33.9%) of subjects were observed with an open wound or cut while 94 (55.9%) make use of apron/head tie at work, 120 (71.4%) of the subjects undergo regular medical check-up (medical check-up includes, only 54 (32.1%) of the food handlers had undergone regular food hygiene training/health education as opposed to 114 (67.9%) who had not (ChigozieO, 2014).

Study conducted on Knowledge and food hygiene practices among a total of 86 food handlers in food establishments of India in an area of Suraram, Shapur, Jeedimetla, Gajulramaram, Chintal and Gandimaisamma from November 3, 2015 to December 11, 2015; maximum food handlers were not certified in food training (82.5%),Majority of food handlers (46.5%) had no addictions, all practices related to food hygiene were very well followed by majority of the food handlers in the study but only few like improperly practices or use of apron and cap were found to a minimum level that is (72.09%) and 69(80.2%) respectively (Saurabh Rkubde, 2016).

Study conducted on Assessment of the Sanitary Conditions of Catering Establishments and Food Safety Knowledge and Practices of Food Handlers in Addis Ababa University Students' Cafeteria from January, 2014 to May, 2014;About 210(69.5%) of food handlers worn gown during inspection among those who had gown 136(45%) of them kept their gown clean. Half,

160(53%), of them covered hair with restraints and 179 (59.5%) of them did not worn any finger ornaments, About 219 (72.5%) of food handlers' finger nail trimmed properly and almost all, 295 (97.7%), of them wash hands always before starting any activity, 152 (50.3%) of food handlers check ingredients expiry date before they use them. Nearly half, 137 (45.4%), of food handlers had not done medical check-up in the past one year and 141(44.4%) of them did check-up. Most, 197(65.2%), of them took training on basics food safety before they were recruited in this establishment (Asrat Meleko, 2015).

Out of 406 food handlers working in food and drink establishments of Dangila town administration from July to August 2013, 213 (52.5%) had good food handling Practices. Among the total food handlers observed during visits, 319 (78.6%) used outer garments/gown of which 203 (63.6%) had a good food handling practices. Of the total food handlers who used outer garments, 283 (88.7%) of the food handlers outer garments were clean, the majority; 362 (89.2%) had not taken food preparation and handling training. From trained respondents only 17 (4.2%) had certificate (Ayehu Gashe Tessema, 2014) .

Based on a cross-sectional study conducted to assess food handling practice and associated factors among food handlers of Restaurants in Bahir Dar Town, northwest, Ethiopia, from December 7, 2012 to January 2,2013;274 (65.7) food handler wear outer garments/gown during visit, 203 (48.7) wear Cleanness of outer garments, 123 (29.5) hair covered hair while working in food service,247 (59.2) short trimmed and clean finger nail ,19 (4.6) 59 (14.1) not wear any jewellery or ring on hand at time of visit,268 (64.3) clean and sanitize work surfaces after each task,271 (65) use soap/detergent for washing dishes,117 (28) use hot water for washing dishes,249 (59.7) wash hands with soap and water before working with food,268 (64.3) wash his/her hands with soap and water after visiting a latrine,280 (67.2) drink or eat food while serving or preparing food,257 (61.6) kept ready-to-eat foods in a clean container and covered properly and 243 (58.3) stored food utensils in well-arranged manner in shelf or cupboard,277 (66.4) use a separate clean utensil for each food item, and 268 (64.2)store raw food item in an area separate from cooked food (Terefe Derso, 2017).

Across-sectional study design conducted on food hygiene practices and prevalence of intestinal parasites among food handlers working in Mekelle university student's cafeteria, in January ,2011, Mekelle town; Among the 277 food handlers who were interviewed for the knowledge

and practice assessment, the majority, 179(64.6%) and 177(63.9%) of the respondents had fair knowledge and good practices on food hygiene measurements, respectively,195 (70.4%) of them stated that they had a habit of hand washing with soap or plain water particularly after toilet. Almost half of the respondents, 51.5% wash their hands after cleaning blowing nose, coughing and sneezing and the majorities,202(72.9%) used soap when they washed their hands before preparing food in any situations, 245(88.4%) kept their finger nail cut short,219 (79.1%) washing their personal cloth,230 (83%) hair at least once per week (Nigusse Daniel, 2012)

2.2 Factor associated with food handling practice

Cross-sectional study on food safety knowledge, attitude and practices of male food handlers employed in restaurants of King Saud University, Saudi Arabia from January 28 to May 16, 2015 in 87 food handlers; all the respondents were males with 55.2% aged between 26 and 35 years. From total respondents surveyed, only 1.1% was aged between 45 and 55 years while none were aged above 56 years. Only four respondents did not have formal education and 71 respondents (63.4%) were secondary school leavers. Most of the staff surveyed served as helpers (27.6%) while 18.4% of the respondents worked as chef, cookers and food servers. Around 65.5% have been in this sector for 1-5 years, 14 workers had experience ranging from 11 to 20 years while only 3 people (3.4%) have worked for over 20 years(Nasser Abdulatif Al-Shabib, 2015)

The descriptive cross sectional study on Assessment of the food hygiene practices of food handlers in the Federal Capital Territory of Nigeria from January to June 2014 in 168 food handlers identified, 71 (42.3%) of participants are males while 97 (57.7%) are females. While 87 (51.8%) of participants are married, 81 (47.6%) are single. As many as 122 (72.7%) of the subjects had secondary education and above, while 46 (27.3%) had primary education and below. Sixty-six (39.3%) of the respondents are semi urban dwellers, while 62 (36.9%) and 60 (23.8%) reside in rural and urban centers, respectively (ChigozieO, 2014).

An organization based cross-sectional study on Knowledge and food hygiene practices among a total of 86 food handlers in food establishments of India in an area of Suraram, Shapur, Jeedimetla, Gajulramaram, Chintal and Gandimaisamma from November 3, 2015 to December 11, 2015 were the age group of 25 – 34 years (43%) and minimum were found in the age group of more than 55 years i.e. only 6.9%, Maximum food handlers were illiterates (31.3%) and very

few were either just literate or above, Maximum food handlers had experience of less than five years (38.3%) whereas only a few reported that they were food handlers since 11 – 15 years (17.4%) (Saurabh Rkubde, 2016).

A cross-sectional study conducted on Assessment of the Sanitary Conditions of Catering Establishments and Food Safety Knowledge and Practices of Food Handlers in Addis Ababa University Students' Cafeteria from January, 2014 to May, 2014 in total of 302 food handlers ,the Majority, 212 (70.2) were females and 90(29.8) were males. Nearly half, 156 (51.7%), of them were aged between 22 and 29 and their median age were 29 with a minimum and maximum age of 22 and 47 respectively. About 156(45%) of them were educated from grade 9-10 and 153 (50.7%) of them were married. Almost all, 296(98%), of food handlers had an income ranged between 501 and 1000 birr and their mean work experience were about 2.41years (Asrat Meleko, 2015).

Cross-sectional quantitative study based on Factors affecting food handling Practices among Food handlers of Dangila town food and drink Establishments, North West Ethiopia from July to August 2013 in 406 food handlers, 255 (62.8%) were females. More than two third; 275 (67.5%) were single, half; 202 (49.8%) were attended primary school. Above half's; 234 (57.6%) were waiters (Ayehu Gashe Tessema, 2014).

A cross-sectional study conducted to assess food handling practice and associated factors among food handlers of Restaurants in Bahir Dar Town, northwest, Ethiopia, from December 7, 2012 to January 2,2013;from a total of 417 food handlers; above three-fourths(77.7%) of food handlers were females, more than one-third(39.3%) of the food handlers had primary school education, majority (83%) of participants did not take a food safety training (Terefe Derso, 2017).

Across-sectional study design conducted on food hygiene practices and prevalence of intestinal parasites among food handlers working in Mekelle university student's cafeteria, in January ,2011, in Mekelle town was showed; Out of 277 respondents 254(91.69%) were females. The mean age was 32 ± 8.42 SD and Almost half, 135 (48.9 %) and 142 (51.3%) were elementary school completed (less than 8th grade) and married (living together with their spouse), respectively. The median income of the respondents was 397 ETB ranged from 250 to 1940 ETB (Nigusse Daniel, 2012).

Cross-sectional study on food safety knowledge, attitude and practices of male food handlers employed in restaurants of King Saud University, Saudi Arabia from January 28 to May 16, 2015 in 87 food handlers; Food handlers had excellent practices towards food and personal hygiene. Attitude was also a crucial factor that influences food safety; food handlers' attitudes were favourable with total of mean scores being 80.76 ± 18.02 and total mean score of 2.69. A significant positive but not very strong correlation was observed between knowledge with attitudes ($rs = 0.371$, $p < 0.05$), knowledge with training (rs ¼ 0.107, $p < 0.05$), knowledge with personal hygiene ($rs = 0.303$, $p < 0.05$), training with personal hygiene ($rs = 0.174$, $p < 0.05$) and attitudes with personal hygiene ($rs = 0.173$, $p < 0.05$).Thus, the study suggests that some of the aspects related to hygiene and time and temperature control need to be stressed an continuous education and training should be organized to strengthen food handlers' knowledge in areas which seem to be lacking (Nasser Abdulatif Al-Shabib, 2015).

Based on the descriptive cross sectional study on Assessment of the food hygiene practices of food handlers in the Federal Capital Territory of Nigeria from January to June 2014; the establishments should provide disposable rubber gloves, plasters and other measures for minor cuts for use as necessary to the personnel who have contact with food, should train and retrain staff on good hygienic practices with emphasis on the importance of good hygiene and ideal hand washing practices. The staffs should be made to appreciate the impact of poor personal cleanliness and unsanitary practices on food safety, also; equally important to educate food handlers on the avoidance of unwholesome practice of scratching the head, placing finger in or about the mouth or nose and indiscriminate and uncovered sneezing and they should be encouraged to inculcate the habit of thorough and proper hand washing after using the toilet/bathroom, before and after eating (ChigozieO, 2014).

A cross-sectional study conducted on Assessment of the Sanitary Conditions of Catering Establishments and Food Safety Knowledge and Practices of Food Handlers in Addis Ababa University Students' Cafeteria from January, 2014 to May, 2014 was showed On multivariate analysis variables that were found as significant potential influencing factors were sex of food handlers with Adjusted odds ratio (AOR) = 1.66, 95% CI = 1.395-2.123, P = 0.012, training status of food handlers with AOR = 1.752, 95% CI = 1.056, 2.907, P = 0.03 and educational

status predominantly mainly secondary school (between grade 9 and 10) with AOR = 1.497, 95%CI 1.250-2.987, P = 0.046.Generally there was poor accessibility and cleanliness of latrine service in some cafeterias. The overall hygiene practice of food handlers depicts that most of them had poor food handling practice. Food handlers with better educational status and training had better practice score. Provision of training and basic sanitary facilities by management was recommended (Asrat Meleko, 2015).

The Cross-sectional quantitative study on Factors affecting food handling Practices among Food handlers by Marital status (AOR = 7.52, 95% CI, 1.45-38.97), monthly income (AOR = 0.395, 95% CI, 0.25-0.62) and knowledge about food handling (AOR = 1.69, 95% CI, 1.05-2.73), were found to be significantly associated with good food handling Practices (Ayehu Gashe Tessema, 2014).

Based on a cross-sectional study conducted to assess food handling practice and associated factors among food handlers of Restaurants in Bahir Dar Town, northwest, Ethiopia, from December 7, 2012 to January 2,2013;about 67.6% [95% CI 58.8, 76.4] of food handlers had good food hygiene practice. Two-third (65.7 and 64.3%, respectively) of food handlers wearied outer garments cleaned and sanitized work surfaces after each task had good food hygiene practice. However, below one-third (29.5%) of food handlers who covered their hair while working had good food hygiene practice (Terefe Derso, 2017).

Across-sectional study design conducted on food hygiene practices and prevalence of intestinal parasites among food handlers working in Mekelle university student's cafeteria, in January ,2011, in Mekelle town was showed ;Food handlers working in Ayder campus [AOR: 2.18, 95% CI: (0.87-5.47] and Having good food handler's training certificate,[AOR: 20.15, 95% CI: (4.40-91.8)] and having good knowledge on food hygiene, [AOR: 3.61, 95% CI: (1.51-8.65] were determinants for the practice of food handlers on food hygiene. The logistic regression analysis result also indicated that utilization of soap during hand washing [AOR: 0.15, 95% CI (0.06-0.38)], washing hands after toilet [AOR: 0.06, 95% CI (0.02-0.14)], practice of medical check-up [AOR: 0.47, 95% CI (0.22-0.97)] and history of de-worming [AOR: 0.25, 95% CI (0.11-0.54)] were determinants for intestinal parasitic infection (Nigusse Daniel, 2012)

2.3 Conceptual Framework

This conceptual framework was developed after reviewing different related literatures. The figures below shows the magnitude and associated factors affecting food handling practices among food handlers of licensed food and drinking establishments. These independent variables have direct and indirect contribution to the magnitude and associated factors affecting food handling practices among food handlers of licensed food and drinking establishments (figure below).

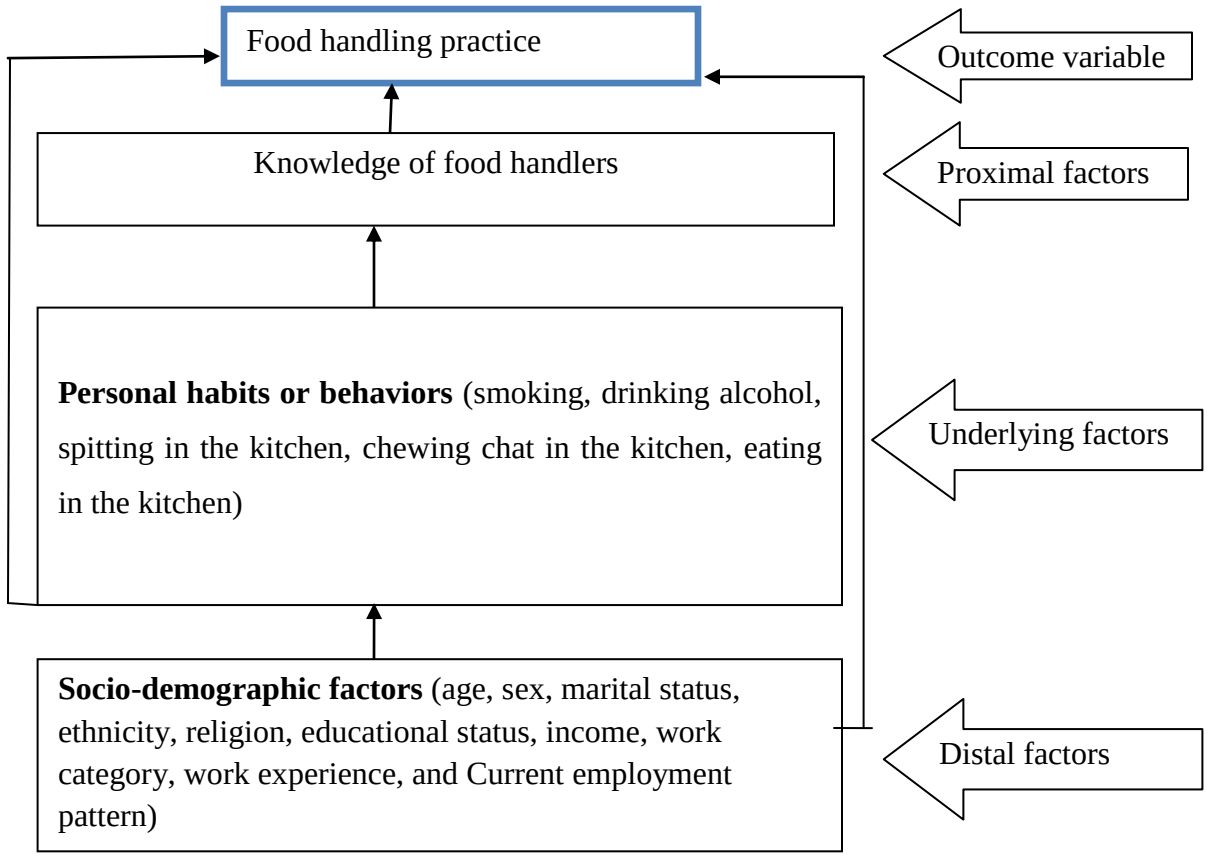

Figure 1: Conceptual frame work for magnitude and associated factors affecting food handling practices among food handlers in licensed food and drinking establishments.

Source: from different literatures

3. METHODS AND MATERIALS

3.1 Study area and period

The study was conducted in Harari regional state of Harar town from March 10 to April 30, 2019. It is located in Eastern part of Ethiopia. Its total area is around 304.51 square kilometres and it is apart about 526 kilometres from the capital, Addis-Ababa. Harari region has nine administrative woreda, as of which the six are urban (Hakim, Amir Nur, Aboker, Jinela and Shenkor administrative woredas) .Based on, the Central Statistical Agency data; the 2017/2018 projected population of the region was 257,309. Nearly 49.8 % of the population is male and 54% of the population resides in the urban. In Hakim, Amir Nur, Aboker, Jinela and Shenkor administrative woredas; 156, 59, 61,245 and 128 a total of 649 licensed foods and drinking establishments are found respectively. The study was done in Aboker, Hakim and Shenkor administrative woredas (Source Harari regional Health bureau).

3.2 Study design

Cross sectional study design was conducted.

3.3 Source population

The source population for this study was all food handlers working in the licensed food and drinking establishments in Harar Town.

3.4 Study population

The study population was food handlers working in the selected licensed food and drinking establishments in Harar Town.

3.5Inclusion and Exclusion Criteria

3.5.1 Inclusion criteria

All food handlers working in the selected licensed food and drinking establishments were included in the study.

3.5.2 Exclusion criteria

Food handlers, who were absent, those who were seriously ill and those who have hearing problem during data collection time, were excluded from the study.

3.6 Sample size determination

The sample size is calculated using a single population proportion formula. It is calculated taking 95% confidence interval, margin of error was 5%, and good food handling Practices of food handlers as 52.5% (Ayehu Gashe Tessema, 2014).To compensate for non- response 10% of the sample was added.

$$n = \frac{(Z_{\alpha/2})^2 \; P(1-P)}{d^2}$$

$$n = \frac{(1.96)^2 * (0.0525)*(1-0.0525)}{(0.05)^2}$$

n = 383

Where, n= the minimum sample size, Z= the desired level of confidence interval 95% (1.96), sample size was 383; by adding 10% non-response rate (421)

n = (383*10%) + 383

n = 383 + 38

n = 421

And by using design effect of 1.5 due to multistage nature of the study, the final sample size (n) of first objective was be 632.

The second objective sample size calculated by using Epi info version 7, taking Power 80%, confidence level 95% and exposed unexposed ratio of 2; in the following table.

Table1:- Sample size determination for magnitude and associated factors affecting food handling practices among food handlers in licensed food and drinking establishments of Harar town, eastern Ethiopia, in 2019.

Variables	Utilization among AYFRHS		AOR	Sample size	Final sample size(10% non-response add)	Reference
	Exposed	Non exposed				
≥2 year Work experience	26.4%	4.05%	3.4	146	161	(Terefe Derso, 2017)

Having food handler's training certificate	27%	7%	2.18	150	165	(Nigusse Daniel, 2012)
Educational status (Illiterate)	0.26%	4.96%	4.0	534	588	(Dejene Legesse, 2017)

The calculated Sample size result for the second objective is 161,165 and 588 based on the table. And the sample size calculated for the first objective (which is 632) is greater than the sample size calculated for the second objective (which is 588 comparing with the 161 and 165).So, the final sample size was be 632 food handlers.

3.7 Sampling procedure or technique

From the six urban administrative woredas of Harar town namely Abadir, Amir Nure, Aboker, Hakim, Jinela and Shenkor were selected the study population using multi-stage sampling technique. The Sampling procedure has three stages. At the first and second stage, using lottery methods; three administrative woredas among the six and (Hotels or Restaurants or Bars) were selected respectively. Finally, the study participant food handlers were selected proportionally through systematic random sampling method from each the selected licensed food and drinking establishments (Hotels or Restaurants or Bars).

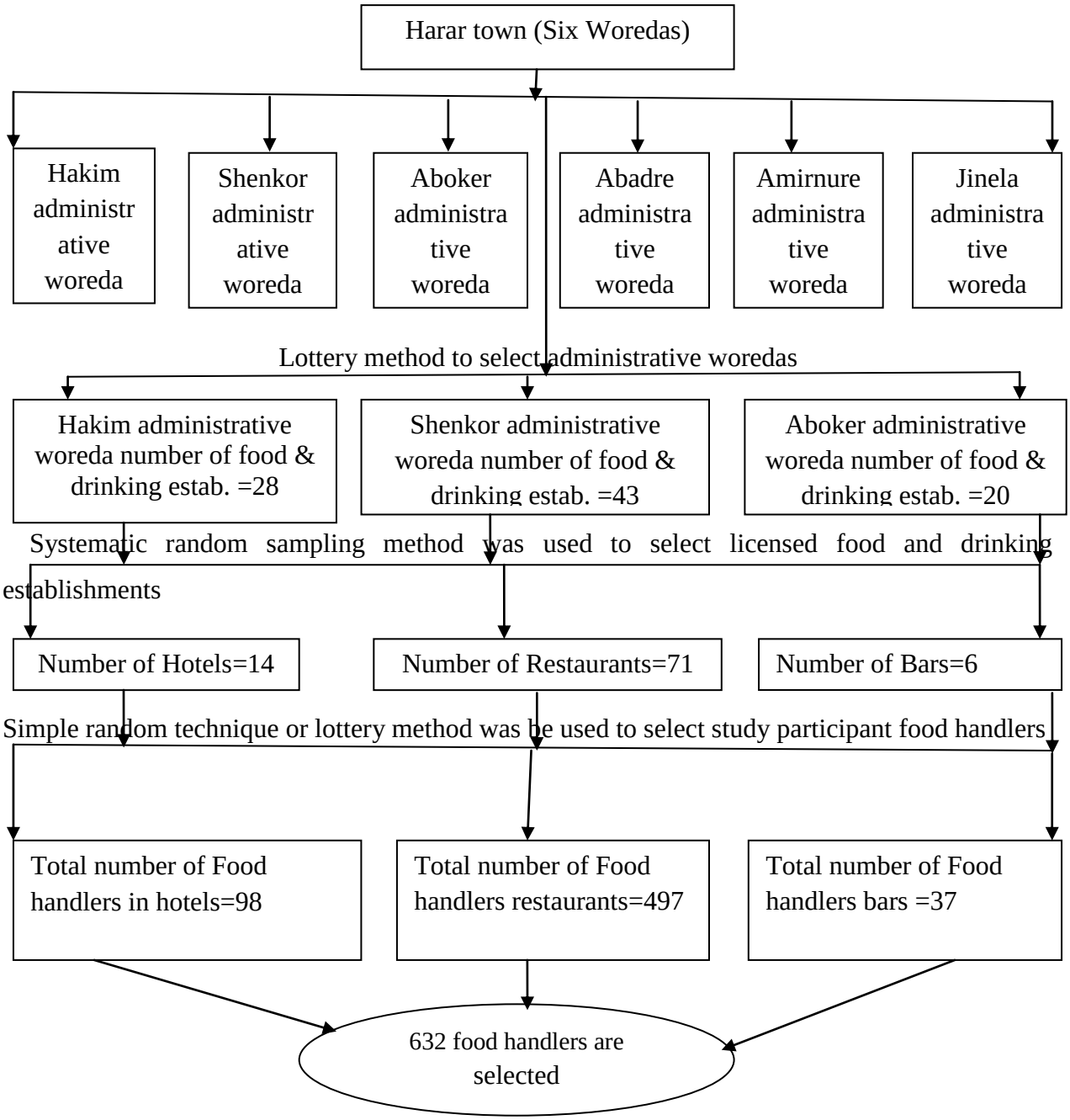

Figure 2: sampling procedure of magnitude and associated factors affecting food handling practices among food handlers in licensed food and drinking establishments of Harar town, Eastern Ethiopia, 2019.

$$Tni = \frac{Ni * Tn}{N}$$

Where; N =Total number of Food and Drinking
Establishments in all the six urban administrative woredas

Ni = Total number of Food and drinking
Establishments in each administrative woredas

Tn =Total sample size (total number of participant Food handlers) in the study
Selected from all the six urban administrative woredas
Tni =the total Sample size drawn for the study (the total number of participant food handlers of the selected administrative woredas)

Know, the total sample size of each food and drinking establishment's (Hotel's, Restaurant's, Bar's) participant food handlers was calculated by based on the proportion of the type of each licensed food and drinking establishments (Hotels, Restaurants, Bars) to the total number of licensed food and drinking establishments found in the selected each administrative woredas.

Formula:-

$$Tnh = \frac{TNH * Tni}{Ni}$$

$$Tnr = \frac{TNR * Tni}{Ni}$$

$$Tnb = \frac{TNB * Tni}{Ni}$$

And Tni from each licensed food and drinking establishments (Hotel, Restaurant, Bar)

$$Tni = \frac{Ni * Tnh}{TNH}$$

$$Tni = \frac{Ni * Tnr}{TNR}$$

$$Tni = \frac{Ni * Tnb}{TNB}$$

Where; TNH, TNR and TNB are total number of hotels, restaurants and bars respectively in each the selected administrative woredas.

Tnh, Tnr, and Tnb are the total sample size of Hotels, Restaurants, and Bars respectively in each the selected administrative woredas.

Tni =the total Sample size drawn for the study (the total number of participant food handlers of the selected administrative woredas)

3.8. Data collection methods

Data was collected with direct interviewing of each food handlers by recruited 10 health extension professional's data collectors and 3 Nurse Health professional supervisors. Pre-tested structured questionnaire and observational checklist adapted from different literatures was used to collect socio-demographic characteristics, educational status, food handling practice of the food handlers, working time of the workers, work experience and job category, regulation and supervision practice, health and related training, alcohol intake, chat chewing, smoking, job satisfaction, knowledge etc. First the questioners was prepared in English and translated to Amharic and pre tested on 5% food handler's out of the selected administrative woredas before the actual data collection and correction and modification was done based on the gap identified during interview.

3.9 Variables

3.9.1 Dependent variable

- Food handling practice of food handlers

3.9.2 Independent variables

- **Proximal factors**: knowledge of food handlers
- **Underlying factors**: Personal habits or behaviors (smoking, drinking alcohol, spitting in the kitchen, chewing chat in the kitchen, eating in the kitchen)
- **Distal factors**: Socio-demographic factors (age, sex, marital status, ethnicity, religion, educational status, income, work category, work experience, and Current employment pattern)

3.10 Operational definitions

Food handling practices: The level of food handling practice was determined by using 20 food handling practice questions complemented with direct observation. The food handling practice

was computed with a maximum score of 20. By considering the mean score (10), the food handling practice of food handlers were categorized as poor if their score was below 10, otherwise good practice; if their score was greater or equal to 10 (Terefe Derso, 2017).

knowledge: there have 4 questions ,but questions having two or more choices or answers were have to considered as fully answered, when respondents choices or answers above half of the average mean, and then the 4 questions were used to determine the food handler's knowledge about food handling practices .So, by considering the mean score as less than 2, the food handlers' knowledge was categorized as poor, however; if their score was greater than or equal to 2, their knowledge was categorized as good(Terefe Derso, 2017).

3.11 Data quality control

To ensure the quality of the data; Proper training for the data collectors and supervisors, Careful designing, translation and retranslation and pre-testing of the questionnaire was done. Close supervision and investigation of the data collection procedures, proper categorization and coding of the data, checking and reviewing of the collected data for accuracy and completeness was done by data collectors, supervisors, principal investigators.

3.12 Methods of data processing and analysis

After data collection, each questionnaire was checked for completeness and consistency by data collectors. The data was coded and entered in to EPI data version 7.0 software and export to statistical package for social sciences (SPSS) version 20 for analysis. Descriptive statistics such as, frequencies, proportions and summary statistics were used to describe the study population in relation to relevant variables.

Bivariate analysis was carried out to identify variables that are associated with food handling practice of food handlers.The multicollinearity effect test was done using standard error and Hosmer-Leme show test was performed to test for model fitness, for all independent variable.Variables whose p-value less than 0.25 in bivariate analysis and those fit for model of regression was included in multivariable logistic regression. Then multiple logistic regression analysis was performed for those factors that showed an association in bivariate analysis and investigate independent predictors by controlling for possible confounders. AOR at 95% CI with

p-value < 0.05 was estimated to identify the statistically significant associated factors on multivariable logistic regression.

3.13 Ethical considerations

Ethical approved was obtained from the Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University, College of Health and Medical Sciences. A formal and official letter of cooperation was obtained from Haramaya University, College of Health and Medical Sciences. Also, permission letter was obtained from the Harari regional state of health bureau and the concerned bodies.Then an informed, voluntary written and signed consent was obtained from manager or owner of each licensed food and drinking establishments and from each participant after it is well explained and understood the nature of the study in a locally understandable language. They were informed that the data was kept confidential and was used only for research purpose. They were also being informed that they have the right to refuse and withdraw any at time they want. If advice or training regarding food handling practices and personal hygiene of food handlers and other related topics require, it was provided to them.

3.15 Information dissemination

The final report of the study was presented and submitted to Haramaya University, College of Medical and Health Science.

4. RESULTS

4.1. Socio-demographic factors

A total of 632 food handlers working in 91licenced food and drink establishments of Harar town responded to the questionnaire with 100 % a response rate. The mean age of the respondent was 26.54 years ± 6.599 SD.

Out of the total food handlers; 387 (61.2%), 334 (52.8%), 341 (54%), 289 (45.7%) and 278(44%) were Orthodox, males, unmarried, Amhara in their ethnicity and attended secondary school respectively. Based on the category of the food handlers; 247 (39.1%) were food servers. Around two third; 414(65.5 %) and 398(63%) of the respondents were permanent employs and had less than two years work experiences respectively. Three hundred sixty three (57.4%) of the respondents average household income ranged were between 501.00 to 1000.00 birr per month. (Table 2)

Table 2:- Socio-demographic characteristics of food handlers in licensed food and drink establishments in Harar town, Eastern Ethiopia 2019. (n=632)

Characteristics	Category	Frequency	Percent
Age	18-24	262	41.5
	25-28	189	29.9
	29-34	103	16.3
	35-55	78	12.3
Sex	Male	334	52.8
	Female	298	47.2
Marital status	Married	259	41.0
	unmarried	341	54.0
	divorced	27	4.3
	widowed	5	0.8
Religion	Orthodox	387	61.2
	Muslim	185	29.3
	Protestant	60	9.5
Ethnicity	Amhara	289	45.7
	Oromo	268	42.4
	Harari	3	0.5
	Tigre	9	1.4
	Gurage	63	10.0

Educational status	No read and write	23	3.6
	Read and write	62	9.8
	Primary school	240	38.0
	Secondary school	278	44.0
	College/University	29	4.6
Work category	Chef	236	37.3
	Dish washer	87	13.8
	Cutter	62	9.8
	Server	247	39.1
Employment pattern	Temporary	218	34.5
	Permanent	414	65.5
Work experience	< 2 Year	398	63.0
	2-4 Year	142	22.5
	>4 Year	92	14.6
Monthly income	<500 birr	46	7.3
	501-1000 birr	363	57.4
	>1000 birr	223	35.3

4.2 Knowledge of food handlers

From the total food handlers working in licensed food and drink establishments in Harar town, the overall knowledge were 282 (44.6%) and of which 182(64.5%) had good food handling Practices. (Table3).

Table 3:- Overall knowledge of food handlers in licensed food and drink establishments of Harar town, Eastern Ethiopia 2019. (N=632)

Variable	Category	Number	Percent
Overall Knowledge of food handlers	No	350	55.4%
	Yes	282	44.6%

4.3 Food handling practices

Out of 632 food handlers working in licensed food and drink establishments in Harar town, 316 (50%) had good food handling Practices.

From the total food handlers observed during visits washed hand; before preparing meal 203(40.2%) and after touched and handled raw foods, after touched body parts and any materials were 34(16.6%),15(15.8%) and 58(34.9%) respectively, and those who used soap and water to washed hands, weared white gown, hair covered by cape, nails trimmed shortly, trained regarding food handling practice with evidence, covered foods and utensils and not smoked cigarette in working area had 197(43.9%) , 56(19.4%) , 49(19.5%) ,25(16.1%) ,22(25.3%) ,29(17.4%) and 287(49.3%) respectively.(Table 4).

Table 4:- Food handling practice of food handlers in licensed food and drink establishments of Harar town, Eastern Ethiopia, 2019. (N=632)

Variables	Category	Number & percent	Food handling practice	
			Good	Poor
Hands wash before preparing meal	No	127(20.1%)	113 (89.0%)	14 (11.0%)
	Yes	505(79.9%)	203 (40.2%)	302 (59.8%)
Wash hands after touching and handling raw foods	No	427(67.56%)	282 (66.0%)	145 (34.0%)
	Yes	205(32.44%)	34 (16.6%)	171 (83.4%)
Wash hands after touching body parts	No	537(84.96%)	301 (56.1%)	236 (43.9%)

	Yes	95(15.04%)	15 (15.8%)	80 (84.2%)
Wash hands after touching any materials	No	466(73.73%)	258 (55.4%)	208 (44.6%)
	Yes	166(26.27%)	58 (34.9%	108 65.1%)
Use soap and water to wash hands	No	183(28.95%)	119 (65.0%)	64 (35.0%)
	Yes	449(71.05%)	197 (43.9%)	252 (56.1%)
Wear white guan/apron	No	344(54.4%)	260 (75.6%	84 24.4%)
	Yes	288(45.6%)	56 (19.4%)	232 (80.6%)
Guan/apron clean	No	380(60.1%)	275 (72.4%)	105 (27.6%)
	Yes	252(39.9%)	41 (16.3%)	211 (83.7%)
Hair covered by cape	No	381(60.28%)	267 (70.1%)	114 (29.9%)
	Yes	251(39.72%)	49 (19.5%)	202 (80.5%)

Nails trimmed /cut shortly	No	477(75.47%)	291 (61.0%)	186 (39.0%)
	Yes	155(24.53%)	25 (16.1%)	130 (83.9%)
Training regarding food handling practice with evidence	No	545(86.23%)	294 (53.9%)	251 (46.1%)
	Yes	87(13.77%)	22 (25.3%)	65 (74.7%)
Covers foods and utensils	No	465(73.57%)	287 (61.7%)	178 (38.3%)
	Yes	167(26.43%)	29 (17.4%)	138 (82.6%)
Use disposable glove	No	605(95.72%)	311 (51.4%)	294 (48.6%)
	Yes	27(4.28%)	5 (18.5%)	22 (81.5%)
Certified medical check-up certificate on hand	No	502(79.43%)	281 (56.0%)	221 (44.0%)
	Yes	130(20.57%)	35 (26.9%)	95 (73.1%)
Not smoke cigarette in working area	No	50(7.91%)	29 (58.0%)	21 (42.0%)
	Yes	582(92.09%)	287 (49.3%)	295 (50.7%)

Not chewing chate/kate in working area	No	393(62.18%)	220 (56.0%)	173 (44.0%)
	Yes	239(37.82%)	96 (40.2%)	143 (59.8%)
Not drink alcohol in working area	No	62(9.81%)	50 (80.6%)	12 (19.4%)
	Yes	570(90.19%)	266 (46.7%)	304 (53.3%)
Not spit in working area	No	31(4.90%)	25 (80.6%)	6 (19.4%)
	Yes	601(95.1%)	291 (48.4%)	310 (51.6%)
Not eat food in working area	No	406(64.24%)	225 (55.4%)	181 (44.6%)
	Yes	226(37.76%)	91 (40.3%)	135 (59.7%)
Not blow nose in working area	No	53(8.38%)	26 (49.1%)	27 (50.9%)
	Yes	579(91.62%)	290 (50.1%)	289 (49.9%)
Not touch their head or other body part	No	166(26.26%)	91 (54.8%)	75 (45.2%)
	Yes	466(73.74%)	225 (48.3%)	241 (51.7%)

4.4. Association of socio-demographic factors on food handling practices

In bivariate analysis; all socio-demography variables like age, sex, marital status, current educational status, employment work pattern, work category, average monthly household income and work experience were factors that are candidates for multivariable logistic regression p-value <0.25 The factors under the categories of age between (29-34); 41(39.80%), marital status of married;122(47.10%),work category of cutter;30(48.39%) and shaff ;86(36.44%) and work experience of less than two year; 190(47.74%) were low food handling practice when compare to their groups.(Table 5).

Table 5: Bivariate logistic regression analysis between socio demographic characteristics of food handlers in licensed food and drink establishments of Harar town in Eastern Ethiopia 2019.(n=632)

variables	category	Food handling practice		COR (95% C.I)	P-value
		Good	Poor		
Age	(18-24)	149 (56.87%)	113 (43.13%)	1	1
	(25-28)	95 (50.26%)	94 (49.74%)	1.99(1.25 -3.17)	0.004
	(29-34)	41 (39.80%)	62(60.2%)	1.99(1.19 -3.35)	0.008
	(35-55)	31(40.26%)	47(59.74%)	0.758	0.027
Sex	Male	193(57.78%)	141 (42.22%)	1	1
	Female	123(41.28%)	175 (58.72%)	0.513(0.374 -0.705)	0.003
Educational status	No read and write	17(73.91%)	6(26.09%)	1	1
	Read and write	54(87.09%)	31(12.91%)	0.413 (0.167 -1.021)	0.056

	Primary school	120(50%)	120(50%)	0.611(0.277 -1.349)	0.223
	Secondary school	142(51.08%)	165 (49.92%)	0.686(0.312 -1.505)	0.347
	Collage/University	11(37.93%)	18(62.07%)	0.216(0.065 -0.713)	0.198
Marital status	Married	122(47.10%)	137 (52.90%)	1	1
	Unmarried	187(54.84%)	154 (45.16%)	3.117(1.218 -7.975)	0.018
	Divorced	6(22.22%)	21(77.78%)	3.562(0.39 3-32.304)	0.259
	Widowed	1(20%)	4(80%)	0.733(0.530 -1.014)	0.352
Ethnic	Amhara	143(49.48%)	146 (50.52%)	0.951(0.682 -1.326)	0.765
	Oromo	136(50.75%)	132 (49.25%)	0.490 (0.044 -5.461)	0.562
	Harari	2(66.67%)	1(33.33%)	0.122(0.015 -0.991)	0.049
	Tigre	8(88.89%)	1(11.11%)	1.306(0.754 -2.263)	0.341
	Gurage	27(42.86%)	36(57.14%)	1	1
Religion	Orthodox	193 (49.87%)	194 (50.13%)	1.097(0.772-1.557)	0.606
	Muslim	88(47.57%)	97 (52.43%)	0.711(0.410-1.232)	0.224
	Protestant	35(58.33%)	25 (41.67%)	1	1
Current employment pattern	Temporary	122(55.96%)	96 (44.04%)	1	1
	Permanent	194(46.86%)	220 (53.14%)	0.694(0.499-0.965)	0.202

Work category	Server	156(63.16%)	91(36.84%)	0.560(0.341-0.921)	0.000
	Dish washer	44(50.57%)	43(49.43%)	0.612(0.348-1.075)	0.088
	Cutter	30(48.39%)	32(51.61%)	0.334(0.231-0.484)	0.000
	Shaff	86(36.44%)	150 (63.56%)	1	1
Work experience	< 2 year	190(47.74%)	208 (52.26%)	1	1
	2-4 year	89(62.68%)	53(37.32%)	0.401(0.234-0.686)	0.001
	>4 year	37(40.22%)	56 (59.78%)	0.736(0.465-1.168)	0.620
Income	<500	25(54.35%)	21 (45.65%)	1	1
	501-1000	195(53.72%)	168(46.28%)	0.651(0.465-0.911)	0.012
	>1000	96(43.05%)	127(56.95%)	0.635(0.336-1.202)	0.039

Bivariate analysis regarding knowledge; Critical time to wash hands, hand washing items or materials , bad habit / behaviours and good food handling practices were factors that are candidates for multivariable logistic regression p-value <0.25.(Table 6).

Table 6:- Bivariate analysis between knowledge of food handlers in licensed food and drink establishments of Harar town, Eastern Ethiopia 2019. (N=632)

Variables	**Category**	**Food handling practice**		**COR (95% C.I)**	**p-value**
		Good	Poor		
Critical time to wash hands	Yes	35 (30.17%)	81 (69.83%)	0.5167(0.234-0.557)	0.000004
	No	235 (45.54%)	281 (54.46%)	1	

Hand washing items or materials	Yes	50 (31.84%)	107 (68.16%)	0.594(0.251 -0.538)	0.000
	No	209 (44%)	266 (56%)	1	
Bad habit / behaviours	Yes	87 (35.36%)	159 (64.64%)	0.861(0.269 -1.522)	0.000
	No	157 (40.67%)	229 (59.33%)	1	
Good food handling practices	Yes	13 (28.88%)	32 (71.12%)	0.433(0.196 -0.740)	0.004
	No	284 (48.38%)	303 (51.62%)	1	

In bivariate analysis; all except but; not blow nose in working area were candidates for multivariable logistic regression p-value <0.25.(Table 7)

Table 7:- Bivariate analysis of food handling practice of food handlers in licensed food and drink establishments of Harar town, Eastern Ethiopia 2019. (N=632)

Variables	Category	Number & percent	Food handling practice		COR (95% C.I)	p-value
			Good	Poor		
Hands wash before preparing meal	No	127(20.1%)	113 (89.0%)	14 (11.0%)	1	0.000
	Yes	505(79.9%)	203 (40.2%)	302 (59.8%)	0.083(0.046-0.149)	
Wash hands after touching and handling raw foods	No	427(67.56%)	282 (66.0%)	145 (34.0%)	1	0.000

	Yes	205(32.44%)	34 (16.6%)	171 (83.4%)	0.102(0.067-0.155)	
Wash hands after touching body parts	No	537(84.96%)	301 (56.1%)	236 (43.9%)	1	0.000
	Yes	95(15.04%)	15 (15.8%)	80 (84.2%)	0.147(0.083-0.262)	
Wash hands after touching any materials	No	466(73.73%)	258 (55.4%)	208 (44.6%)	1	0.000006
	Yes	166(26.27%)	58 (34.9%	108 65.1%)	0.433(0.300-0.625)	
Use soap and water to wash hands	No	183(28.95%)	119 (65.0%)	64 (35.0%)	1	0.000001
	Yes	449(71.05%)	197 (43.9%)	252 (56.1%)	0.420(0.294-0.600)	
Wear white guan/apron	No	344(54.4%)	260 (75.6%	84 24.4%)	1	0.000
	Yes	288(45.6%)	56 (19.4%)	232 (80.6%)	.078(.053-0.114)	
Guan/apron clean	No	380(60.1%)	275 (72.4%)	105 (27.6%)	1	0.000
	Yes	252(39.9%)	41 (16.3%)	211 (83.7%)	0.074(0.050-0.111)	

Hair covered by cape	No	381(60.28%)	267 (70.1%)	114 (29.9%)	1	0.000
	Yes	251(39.72%)	49 (19.5%)	202 (80.5%)	0.1040(.071-0.152)	
Nails trimmed /cut shortly	No	477(75.47%)	291 (61.0%)	186 (39.0%)	1	0.000
	Yes	155(24.53%)	25 (16.1%)	130 (83.9%)	0.123(0.077-0.196)	
Training regarding food handling practice with evidence	No	545(86.23%)	294 (53.9%)	251 (46.1%)	1	0.000
	Yes	87(13.77%)	22 (25.3%)	65 (74.7%)	0.289(0.173-0.482)	
Covers foods and utensils	No	465(73.57%)	287 (61.7%)	178 (38.3%)	1	0.000001
	Yes	167(26.43%)	29 (17.4%)	138 (82.6%)	0.130(0.084-0.203)	
Use disposable glove	No	605(95.72%)	311 (51.4%)	294 (48.6%)	1	0.001
	Yes	27(4.28%)	5 (18.5%)	22 (81.5%)	0.215(0.080-0.575)	
Certified medical check-up certificate on hand	No	502(79.43%)	281 (56.0%)	221 (44.0%)	1	0.000
	Yes	130(20.57%)	35 (26.9%)	95 (73.1%)	0.290(0.189-0.444)	

Not smoke cigarette in working area	No	50(7.91%)	29 (58.0%)	21 (42.0%)	1	0.240
	Yes	582(92.09%)	287 (49.3%)	295 (50.7%)	0.705(0.393-1.264)	
Not chewing chate/kate in working area	No	393(62.18%)	220 (56.0%)	173 (44.0%)	1	0.001
	Yes	239(37.82%)	96 (40.2%)	143 (59.8%)	0.528(0.381-0.732)	
Not drink alcohol in working area	No	62(9.81%)	50 (80.6%)	12 (19.4%)	1	0.000
	Yes	570(90.19%)	266 (46.7%)	304 (53.3%)	0.210(0.110-0.403)	
Not spit in working area	No	31(4.90%)	25 (80.6%)	6 (19.4%)	1	0.000116
	Yes	601(95.1%)	291 (48.4%)	310 (51.6%)	0.225(0.091-0.557)	
Not eat food in working area	No	406(64.24%)	225 (55.4%)	181 (44.6%)	1	0.000
	Yes	226(37.76%)	91 (40.3%)	135 (59.7%)	0.542(0.390-0.754)	
Not blow nose in working area	No	53(8.38%)	26 (49.1%)	27 (50.9%)	1	0.886
	Yes	579(91.62%)	290 (50.1%)	289 (49.9%)	1.042(0.594-1.829)	
Not touch their head or other body part	No	166(26.26%)	91 (54.8%)	75 (45.2%)	1	0.149

	Yes	466(73.74%)	225 (48.3%)	241 (51.7%)	0.769(0.539-1.098)

The results of multivariate model revealed that knowledge of food handlers based on bad habit or behaviours and food handling practise in working area were protected 62.5% and 61.9% respectively from poor food handling practise compared to their counter parts.(Table 8).

Table 8:- Multivariate analysis between knowledge of food handlers in licensed food and drink establishments of Harar town, Eastern Ethiopia 2019. (N=632)

Variables	Category	Number & percent	Food handling practice		COR (95% C.I)	AOR(95% C.I)
			Good	Poor		
Bad habit/behaviours	Yes	246 (38.9%)	87 (35.36%)	159 (64.64%)	0.861(0.269-1.522)*	0.375(0.269-0.522)**
	No	386 (61.1%)	157 (40.67%)	229 (59.33%)	1	1
Good food handling practices	Yes	45 (7.1%)	13 (28.88%)	32 (71.12%)	0.433(0.196-0.740)*	0.381(0.196-0.740)**
	No	587 (92.9%)	284 (48.38%)	303 (51.62%)	1	1

*candidate variables for multivariate ate analysis at p<=0.25, 1= reference category ** Significantly associated at, p<0.05, COR = Crude Odd Ratio, AOR=Adjusted odd ratio, CI= Confidence interval.

Female food handlers were 1.867 times more likely to have good food handling practices compared to males ;(AOR =1.867, 95% CI (1.310-2.662.Food handlers washed hands after touching any materials were1.114 times more likely to have good food handling practices compared to not washed hands (AOR =1.114, 95% CI (0.081-1.179), also food handlers not eaten food and chewed chate/kate in working area were1.094 and 2.10 times more likely to have good food handling practices compared to those who eat food and chewing chate (AOR =1.114, 95% CI (0.052-2.143) and (AOR =2.10, 95% CI 2.10(2.057-10.148) respectively.Food handlers

who certified medical check-up certificate on hand ,nails trimmed /cut shortly and weared white guan/apron were 3.146,3.154 and 2.200 times more likely to have good food handling practices compared to those who were not; certified medical check-up certificate on hand (AOR =3.146, 95% CI(6.126-12.234,nail trimmed/cut shortly(AOR =3.154, 95% CI (0.125-5.232) and weared guan/apron(AOR =2.200, 95% CI(0.108-3.295) respectively. But food handlers those who were not smoke cigarette and not touch their head or other body part had 92.2 % and 90% good food handling practice respectively .(Table 9).

Table 9:- Multivariate analysis of sex and food handling practice of food handlers in licensed food and drink establishments of Harar town, Eastern Ethiopia 2019. (N=632)

Variables	**Category**	**Food handling practice**		**COR (95% C.I)**	**AOR(95% C.I)**
		Good	Poor		
Sex	Male	193 (57.78%)	141 (42.22%)	1	1
	Female	123 (41.28%)	175 (58.72%)	0.513(0.374 -0.705)*	1.867(1.310-2.662)**
Wash hands after touching any materials	No	258 (55.4%)	208 (44.6%)	1	1
	Yes	58 (34.9%)	108 (65.1%)	0.433(0.300 -0.625)*	1.114(0.081-1.179)**
Not eat food in working area	No	225 (55.4%)	181 (44.6%)	1	1
	Yes	91 (40.3%)	135 (59.7%)	0.542(0.390 -0.754)*	1.094(0.052-2.143)**
Not chewing chate/kate in working area	No	220 (55.0%)	173 (44.0%)	1	1
	Yes	96 (40.16%)	143 (59.84%)	0.854(0.312 -0.965)*	2.10(2.057-10.148)**
Not smoke cigarette in working area	No	29 (58.0%)	21 (42.0%)	1	1

	Yes	287 (49.3%)	295 (50.7%)	0.705(0.393 -1.264)*	0.071(0.053-0.211)**
Not touch their head or other body part	No	91 (54.8%)	75 (45.2%)	1	1
	Yes	225 (48.3%)	241 (51.7%)	0.769(0.539-1.098)*	0.100(0.062-0.166)**
Certified medical check-up certificate on hand	No	281 (56.0%)	221 (44.0%)	1	1
	Yes	35 (26.9%)	95 (73.1%)	0.290(0.189-0.444)*	3.146(6.126-12.234)**
Nails trimmed /cut shortly	No	291 (61.0%)	186 (39.0%)	1	1
	Yes	25 (16.1%)	130 (83.9%)	0.123(0.077-0.196)*	3.154(0.125-5.232)**
Wear white guan/apron	No	260 (75.6%	84 24.4%)	1	1
	Yes	56 (19.4%)	232 (80.6%)	.078(.053-0.114)*	2.200(0.108-3.295)**
Use soap and water to wash hands	No	119 (65.0%)	64 (35.0%)	1	1
	Yes	197 (43.9%)	252 (56.1%)	0.420(0.294 -0.600)*	0.080(0.037-0.139)**

*candidate variables for multivariate ate analysis at p<=0.25, 1= reference category ** Significantly associated at, p<0.05, COR = Crude Odd Ratio, AOR=Adjusted odd ratio, CI= Confidence interval.

5. DISCUSSION

This study investigated the magnitude and associated factors affecting food handling practices.

Sex, Work category, knowledge, wear white gown/apron, hair covered by cape, training, trimming nails shortly and behaviors were found to be factors affecting food handling practices in the study area.

From all the interviewed respondents; 316(50) % food handlers had good food handling Practices. This finding is relatively lower than the study conducted in Saudi Arabia (96.6%)(Nasser Abdulatif Al-Shabib, 2015) , Nigeria(89.3%)(ChigozieO, 2014), Dangila Town, Ethiopia (52.5%)(Ayehu Gashe Tessema, 2014), and higher than the study done in Arba Minch Town Ethiopia (32.6%) (Dejene Legesse, 2017). This variation might be happened on account of difference in study setting, study population. For instance a study done in Saudi Arabia on food safety knowledge, attitude and practices of male food handlers employed in restaurants and related socio demographic variation. The probable reasons for the variation might be because of difference in socio demographic factor, the knowledge and the food handling practice of food handlers, the rules and regulation of the countries and the years of study and countries development variation.

Food handlers who had good knowledge of food handling practice were 0.381 times more likely to have good food handling practices compared to those who had poor knowledge (AOR = 0.381, 95% CI(0.196-0.740).This finding is in line with the finding in Dangla; Ethiopia with (AOR = 1.69, 95% CI, (1.05-2.73)(Ayehu Gashe Tessema, 2014).

Food handlers who were not smoke cigarette in working area were 0.071 times more likely to have good food handling practices compared to those who were smoke cigarette (AOR =0.071,95% CI (0.053-0.211).This finding was supported by the earlier study(Saurabh Rkubde, 2016).

Food handlers who were wear white guan/apron in working area were 0.200 times more likely to have good food handling practices compared to those who were not wear white guan/apron (AOR =0.200,95% CI(0.108-0.295).This finding was supported by the earlier study(Nigusse Daniel, 2012).

5.1 Limitation of the study

On account of the participant food handler's interview was performed during their working time, some respondents may not be collaborating for the study research to assess food handling practices of food handlers. So, it was selected and compensated other participants out of none selected food handler population working from none selected licensed food and drinking establishments (Hotel, Restaurant, Bar) using lottery method.

6. CONCLUSION AND RECOMMENDATION

6.1. Conclusions

The study revealed that**,** the magnitude of food handling practices among food handlers to be lower compared to Dangla town, in Northern Ethiopia. Food handlers those had not using soap and water to washed hands, not weared white gown and hair cape, not nails shortly cut were factors affecting food handling practice.

6.2. Recommendations

Based on the study findings; woredas and regional health office together with other responsible sectors should strengthen and regulate day to day programmed and routine food and drinking establishment regularly. More over regular training and medical check -up for food handlers and further studies should be recommended to new researchers to conduct on this study topic area.

7. REFERENCES

ANDRONICA MOIPONE, G., ET AL 2017. A review of food-borne disease outbreaks reported to the outbreak response unit national institute for communicable diseases South Africa 16.

ASRAT MELEKO, A., ET AL 2015 Assessment of the Sanitary Conditions of Catering Establishments and Food Safety Knowledge and Practices of Food Handlers in Addis Ababa University Students'Cafeteria. *Science Journal of Public Health,* 3**,** 733-743.

AYEHU GASHE TESSEMA, K., ET AL 2014. Factors affecting food handling Practices among food handlers of Dangila town food and drink establishments, North West Ethiopia. *BMC Public Health,* 14.

BRUNO SCHIFFERS, B., ET AL 2011. PRINCIPLES OF HYGIENE AND FOOD SAFETY MANAGEMENT. *PIP c/o COLEACP*.

CAC/RCP 1969. GENERAL PRINCIPLES OF FOOD HYGIENE. 1.

CHIGOZIEO, O., ET AL 2014. Assessment of the food hygiene practices of food handlers in the Federal Capital Territory of Nigeria. *Tropical Journal of Medical Research,* 17**,** 10-5.

DEJENE LEGESSE, M., ET AL 2017. Food Handling Practices and Associated Factors among Food Handlers in Arba Minch Town Public Food Establishments in Gamo Gofa Zone, Southern Ethiopia. *Epidemiology (Sunnyvale),* 7.

DELIA GRACE, S., ET AL 2018 Food safety investment expert advice:Burkina Faso, Ethiopia, Nigeria. *International Livestock Research Institute,* 2.

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA MINISTRY OF HEALTH 2016. National Hygiene and Environmental Health Strategy (2016-2020).

HEALTH, E. F. M. O. 2007/08. Top leading causes of Hospitals and Health center morbidity

NASSER ABDULATIF AL-SHABIB, S., ET AL 2015. Cross-sectional study on food safety knowledge,attitude and practices of male food handlers employed in restaurants of King Saud University,Saudi Arabia. *journal homepage: www.elsevier.com/locate/foodcont***,** 212-217.

NIGUSSE DANIEL, A., KUMIE ABERA 2012. Food hygiene practices and prevalence of intestinal parasites among food handlers working in Mekelle university student's cafeteria, Mekelle. *Global Advanced Research Journal of Social Science* 1.

SAURABH RKUBDE, J., ET AL 2016 Knowledge and food hygiene practices among food handlers in food establishments. *International Journal of Community Medicine and Public Health,* 3**,** 251-256.

TEREFE DERSO, A., ET AL 2017. Socio-demographic factors and availability of piped fountains affect food hygiene practice of food handlers in Bahir Dar Town, northwest Ethiopia: a cross-sectional study. *BMC Research Notes,* 10**,** 628.

WHO 2015. Who estimates of the global burden of food borne diseases.

WWW.CHILDSAFE.ORG.AU 2018. Safe Food Handling.

8. APPENDICIES

Appendix I- Information sheet and informed Voluntary Consent Form for Heads of licensed food and drinking establishments (----------)

Good morning, Good afternoon. My name is Zelalem Gizaw I am studying Master degree in General Public Health at Haramaya University, College of Health and Medical Sciences and I am here to ask your licensed food and drinking establishment voluntariness to participate in the study. Therefore I, kindly request you to lend me your attention to explain you about the study and your institution being selected as study setting.

The study/ project title: magnitude and associated factors affecting food handling practices among food handlers in licensed food and drinking establishments of Harar town, Eastern Ethiopia, 2019.

Purpose/ aim of the study: First the aim of this study is to write a thesis as a partial requirement for the fulfillment of a Master's program in the General Public Health. The finding of this study can be of a paramount importance for the administrative woredas health staffs ,Harari regional health bureau, trade and tourism bureau to plan intervention on factors that affecting food handling practices among food handlers in licensed food and drinking establishments, there by possible remedies was done to improve food handling practices among food handlers.

Procedure and duration: I was interviewing food handlers in your establishment using a structured questionnaire which having 58 numbers of questions and it also takes 20-30 minutes. So I kindly request you to allow conduct this study in your establishment.

Risks and benefits: The risk of being participating in this study is very minimal, but only taking a few minutes from the participant's time. There would not be any direct payment for participating in this study, but the finding from this research may reveal important information for the local health planners.

Confidentiality: The information we were provided was kept confidential. There was no information that was identifying the participants in particular. The finding of this study was general for the study community and was not reflecting anything particular of individual persons. The questionnaire was coded to exclude showing names. No reference was made in oral or written reports that could link participants to this research.

Rights: Participants for this study is fully voluntary and the right to declare to participate or not. If they decide to participate, they have the right to withdraw from the study at any time and this was not labeling them for any loss of benefits, which they otherwise are entitled. They do not have to answer any question that they do not want to answer.

Contact address: If there are any questions or enquires any time about the study or procedure, please contact in this address.

Principal investigator: Zelalem Gizaw, Phone number: - 0915757185 / 0921249433.

E-mail: zelalemgizaw2098@gmail.com

Institutional Health Research Ethics Review Committee (IHRERC): Office phone 0254662011or P.O.Box 235, Harar, Ethiopia.

Declaration of informed voluntary consent: I have read/was read to me the participant information sheet. I have clearly understood the purpose of research, procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things for that may have been unclear. I was informed that participant have the right to withdraw from the study at any time or not to answer any question that they do not want. I am also informed that the food and drinking establishment (----------) have the right to stop this study from being conducted if any misled and unethical procedures are observed during data collection process in the food and drinking establishment (----------). Therefore, I declare my voluntary consent on behalf of ---------- to allow this study to be conducted in the ----------with my initials.

Name and Signature of heads of food and drinking establishment (----------):----------

Date----------

Name and Signature of Investigator: ---------- Date----------

Appendix II: Information Sheet and Informed voluntary Consent Form Amharic Version for head of food and drinking establishment (----------)

ሚጃ ዉሂቀት እና ፍቃደኝነት ስምማት ፎርም ለደርጅቱ ባለቤት/ስራ አሰኪያጅ----------

ስሜ----------እባላለሁ ፡ አሁን እየሰራሁኝ ያለሁት በዚህ ደርጅት ለሚደረገው ጥናት ሚጃ ሰብስቢሆኜ ለዘላለም ግዛው በሐረማያ ዩኒቨርሲቲ በህብረተሰብ ጤና አጠባበቅ በማስተርስ ደረጃ ለመሟቂያ የሚሆን ጥናት ለማካሔድነው፡ ስለዚህ እንዴት ተሳታፊ መሆን እንደቻሉና ስለጥናቱ በተመለከተ ማብራሪያ እንደሰጥዎት የተወሰነ ጊዜ እንዲሰጠኝ በአክብሮት እጠይቃለሁ ፡

1 የጥናቱ ርዕስ ፡ በ 2011 ዓ/ም በምስራቅ ኢትዮጲያ ሀረር ከተማ ንግድ ፍቃድ ባላቸው ምግብና መጠጥ ተቃሚ ውስጥ በሚሰሩ የምግብ አዘጋጆች ማከከል ስለ የምግብ አዘገጃጀት ተግባራት የስርጭት እና የተሰባሰቡ ጎጂ ምክንያቶች ጥናት ይሰኛል::

2 የጥናቱዓላማ ከዚህ ጥናት የሚኘው ዉጤት ለሌሎች አጥኝዎች እነደ ማሻሻ በመሆን እንደሀም ለህግ አወጪዎች በትግበራ ስዓት የሚጋጥሙ ማነክሎች እና ተግዳሮቶች እንዲሟለከቱ ዉይንም እንዲለዩ ይረዳል፡ ፡

4 የጥናቱ ሂደትና ግዜ ፡ በርስዎ ደርጅት የምግብ አዘጋጆችን ቃለመጠቅ ስለሚደርግላቸው እና ለጥናቱ የሚገለግለበተደራጀ ሜልኩ ሚጃ ሰማብሰብ የሚስችሉ 58 ጥያቄዎች ተዘጋጅተዋል እነዚህ ጥያቄዎች አራት ክፍሎች ያሏቸው ሲሆኑ ጥያቄዎቹን ለመመለስ በግምት ከ 30-40 ደቂቃ ይፈጃል ስለሀም ጥናቱን በጅርድጅዎ ከሰራተኞቹ ጋር እንዳካሂድ እንዲፈቅዱልኝ በትህትና እጠይቅዎታለሁ ፡

5 ጉዳትና ጥቅም ፡ በዚህ ጥናት በማተፍዎ ከሚሰጠደው ጊዜ በስተቀር የሚደርስቦት ጉዳት በጭም አነስተኛ ነው ፡ ፡ በዚህ ጥናት በማተፍዎ የሚገኙት ቀጥተኛ ጥቅም የለም ነገርግን ከጥናቱ የተገኙት ጠቃሚ ሚጃዎች ለቀበሌ ማስተዳደር ጤና ተቋማት፣ ለክልሉ ጤና ጥበቃ ቢሮ እና ለሌሎች ማኅበሰታዊና ማኅስታዊ ላልሆኑ ጤና ተቋም ዉዘተ ይጠቅማቸዋል፡ ፡

6 ምስጢር አጠባበቅ ፡ የሚሰጠዉ ሚጃ ሁሉ ምስጢራዊነቱ የተጠበቀ ነው፡ ለዚህም እርስዎን የሚለዩ ምንም ነገር የለም፡ ለምሳሌ የእርስዎ ስም ማስይቁ ላይ አይፃፍም ፡ የእርስዎን ተሳታፊነት የሚመለከቱ ምንም አይነት ዉጤት አይገለፅም ፡ ፡

7 የተሳታፊው ማሽት ፡ በዚህ ጥናት ለማተፍ ሙሉ ፈቃደኝነትያስፈልጋል፡ ፡ በዚህ ጥናት የማተፍ ዉይም ያለማተፍ ሙሉ ማሽ አለዎት፡ ፡ ላለማተፍ ከፈለጉ ደግሞ በማንኛውም ጊዜ በመል ራስዎን ከጥናቱ ማገለል (ማቋረጥ) ይችላሉ፡ ፡ ካቋረጡኝ ጥቅም ይነልብኛል ብለው አያስቡ፡ መመለስ የሚፈልጉትን ማንኛውም ጥያቄ አለመመለስ ማሽዎ ነው ፡ ፡

8 አድራሻ፡ ስለጥናቱ አካሄድ ወይም ስለ ጥናቱ ማከያቅ ወይም ደግሞ ጥናቱን በተመለከተ ማንኛውም ጥያቄ ካለዎት የሚከተሉትን አድራሻ ይጠቀሙ፡

ዘላለም ግዛው ሞባይል-0915757185 ፤ኢሜል፡ zelalemgizaw2098@gmail.com፤ ተቋማዊ የጤና ምርምር ስነ-ምግባር ግምገማ ኮሚቴ፡ ስልክ-(+251)-025-466-20-11፣ ፖ.ሳ.ቁ-235 ሀረር ማክሬቅ ኢትዮጵያ

9 በፈቃደኝነት ላይ የተመሰረተ የስምምነት ሚረጋገጫ የተሳታፊውን ሚጃ ፎርም አንብቤዋለሁ ወይም ተነቦልኛል፡ ፡የጥናቱዓላማ፤ያለውን ጉዳትና ጥቅም ምክርር አጠቃበቅ የመሳተፍ እና ያለመሳተፍ መብት እንዲሁም ችግር ካለ ከማን ጋር ማኛኘት እንዳለብኝ ሁሉ ተገልጾልኛል ጥያቄ ካለኝ ደግሞ እንደጠይቅ እድል ተሰጥቶኝ በመወል ደግሞ ጥናቱን ለመቅም ከፈለኩኝ በማንኛውም ጊዜ ከጥናቱ/ከተሳታፊነት/ መውጣትእንደምችል በሜጨሸም መመለስ የሚፈልገውን ጥያቄ አለመመለስ መብቱ እንዳለኝ ከተረዳሁኝ በኋላ በስሜ በሙሉ ፈቃደኝነት በዚህ ጥናት ለመሳተፍ የወሰንኩኝ መሆኔን ከዚህ በታች በተቀመጠው ፊርሜ አረጋግጣለሁ ፡

የድርጅቱ ባለቤት/ስራ አስኪያጅ ስም……..……ፊርማ…….ቀን……

የጥናቱ አጥኝ ስም……..ፊርማ …….ቀን…….

Appendix III: Participants Information Sheet and Informed Voluntary Consent

Good morning; my name is ---------- I am working as a date collector for the study being conducted in this school by Ms. Zelalem Gizaw who is studying for his master's degree at Haramaya University, the college of health and medical sciences. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

The study/project title: magnitude and associated factors affecting licensed food handling practices among food handlers in licensed food and drinking establishments of Harar town, eastern Ethiopia, 2019.

Purpose of the study: First the aim of this study is to write a thesis as a partial requirement for the fulfillment of a Master's program in the General Public Health. The finding of this study can be of a paramount importance for the administrative woredas health staffs ,Harari regional health bureau, trade and tourism bureau to plan intervention on factors that affecting food handling practices among food handlers in licensed food and drinking establishments, there by possible remedies were done to improve food handling practices among food handlers.

Procedure and duration: I was interviewing you using a structured questionnaire which having 58 numbers of questions .So I kindly request you to spare me this time. This is a study to examine whether you are good food handling practice or not. Every client selected for the study was invited to interview and all the information obtained depends on what you are willing to answer**.** The expected time that this discussion take was vary but expected time was 20-30 minutes, in some cases based on the situation we can arrange more time based on your willingness.

Risk and Benefit: The risk of being participating in this study is very minimal, but only taking a few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local planners.

Confidentiality: The information that was provided was kept confidential. There was no information that was identify you in particular. The finding of the study was general for the study community and was not reflect anything particular of individual persons. The questionnaire was

be coded to exclude showing names. No reference was made in oral or written reports that could link participants to the research.

Rights: Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time and this was not label you for any loss of benefits which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Contact address: If there are any questions or enquires any time about the study or procedure, please contact in this address. Principal investigator: Zelalem Gizaw, Phone number:-0915757185 / 0921249433,E-mail:zelalemgizaw2098@gmail.com

Institutional Health Research Ethics Review Committee (IHRERC): Office phone 254662011or P.O.Box 235, Harar, Ethiopia.

Declaration of consent: I have read/was read to me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that participants have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my initial (signature).

Name and Signature of participant: ……..... Date: ----------/----------/--------

Name and Signature of Data Collector: ……..... Date: ----------/----------/--------

N.B

- This is signed face to face in the presence of the data collector.
- Please provide copy of this signed consent to the participant.
- If the participant is a lay person and cannot sign initials, can put his/her thumb print in front of a competent witness; and the witness has to sign alongside (with his/her name and address)

Thank you for your cooperation!!!!!!

Appendix IV: Information Sheet and Informed voluntary Consent Form Amharic Version for study Participant

ሚጃ ዉረቀት እና ፍቃደኝነት ስምማት ፎርም ለምክብ አዘጋጆች ----------

ስሜ _____እባላለሁ፡ አሁን እየሰራሁኝ ያለሁት በዚህ ድርጅት ለሚረገው ጥናት ሚጃ ሰብስቢሆኜ ለዘላለም ግዛው በሐረማያ ዩኒቨርሲቲ በህብረተሰብ ጤና አጠበበቅ በማስተርስ ደረጃ ለመሚቅያ የሚሆን ጥናት ለማሔደነው፡ ስለዚህ እንዴት ተሳታፊ ሞሆን እንደቻሉና ስለጥናቱ በተመለከተ ማበራሪያ እንደሰጥዎት የተዉሰነ ጊዜ እንዲሰጠኝ በአክብሮት እጠይቃለሁ፡

1 የጥናቱ ርዕስ ፡ በ 2011 ዓ/ም በምስራቅ ኢትዮጲያ ሀረር ከተማ ንግድ ፍቃድ ባላቸው ምግብ ማዘጋጃ ተቋማት ዉስጥ በሚሩ የምግብ አዘጋጆች ማስከል ስለ የምግብ አዘገጃጀት ተግባራት ስርጭት እና ተሰባሰበ ጎጂ ምክንያቶች ጥናት ይሰኛል::

2 የጥናቱዓላማ ከዚህ ጥናት የሚኘው ዉጤት ለሌሎች አጥኝዎች እነደ ማሻሻ በሞሆን እንደሀም ለህግ አዉጭዎች በትግበራ ስዓት የሚጋጥሙ ማስናክሉኙ እና ተግዳሮቶች እንዲማለከቱ ዉይንም እንዲለዩ ይረዳል፡፡

4 የጥናቱ ሂደትና ግዜ ፡ለጥናቱ የሚገለግሉና በተደራጀሜልኩ በሚጃሰብስቢዉ ሊሰበሰቡ የሚችሉ 58 ጥያቄዎች ተዘጋጅተዋል እነዚህ ጥያቄዎች አራት ክፍሎች ያሏቸዉሲሆኑጥያቄዎቹን ለመሞለስ በግምት ከ 30-40 ደቂቃ ይፈጃል፡፡ስለህ የጥናቱ ተሳታፊ እንዲሆኑ በትህትና እጠይቅዎታለሁ፡

5 ጉዳትና ጥቅም ፡ በዚህ ጥናት በማተፍዎ ከሚደስደዉ ጊዜ በስተቀር የሚርስቦት ጉዳት በጭም አነስተኛ ነዉ ፡፡በዚህጥናት በማተፍዎ የሚገኙት ቀጥተኛ ጥቅም የለም ነገርግን ከጥናቱ የተገኙት ጠቃሚ ሚጃዎች ለቀበሌ ማስተዳደር ጤና ተቋማት፣ለክልሉ ጤና ጥበቃ ቢሮ እና ለሌሎች ማግሰታዊና ማግስታዊ ላልሆኑ ጤና ተቋም ዉዘተ ይጠቅማቸዋል፡፡

6 ምስጠር አጠበበቅ ፡ የሚሰጡ ሚጃ ሁሉ ምስጠራዊነቱ የተጠበቀ ነዉ፡ ለዚህም እርስዎን የሚለዩ ምንም ነገር የለም፡ለምሳሌ የእርስዎ ስም ማስይቁ ላይ አይፃፍም::የእርስዎን ተሳታፊነት የሚመክስ ምንም አይነት ዉጤት አይገለፅም፡፡

7 የተሳታፊው ማዉጡ ፡ በዚህ ጥናት ለማተፍ ሙሉ ፈቃደኝነትያስፈልጋል፡፡በዚህ ጥናት የማተፍ ዉይም ያለማተፍ ሙሉ ማዉጡ አለዎት፡፡ላለማተፍ ከፈለጉ ደግሞ በማኛዉም ጊዜ በሞል ራስዎን ከጥናቱ ማገለል (ማቋረጥ) ይችላሉ፡፡ካቋረጡኝ ጥቅም ይነልብኛል ብለዉ አያስቡ፡ መመለስ የማፈልጉትን ማኛዉም ጥያቄ አለመመለስ ማዉጡዎ ነዉ፡፡

8 አድራሻ፡ ስለጥናቱ አካሄድ ዉይም ስለ ጥናቱ ማስይቅ ዉይም ደግሞ ጥናቱን በተመለከተ ማኛዉም ጥያቄ ካለዎት የሚተሉትን አድራሻ ይጠቀሙ፡

ዘላለም ግዛው ሞባይል-0915757185 ፣ ፤ኢሜል፡ zelalemgizaw2098@gmail.com፤ ተቋሚዊ የጤና ምርምር ስነ-ምግባር ግምገማ ኮሚቴ፡ ስልክ-(+251)-025-466-20-11፣ ፖ.ሳ.ቁ-235 ሀረር

9 በፈቃደኝነት ላይ የተመሰረተ የስምምነት ሚረጋገጫ የተሳታፊውን ሚረጃ ፎርም አንብቤዋለሁ ወይም ተነቦልኛል፡፡የጥናቱዓላማ ያለውን ጉዳትና ጥቅም ምስጢር አጠባበቅ የመሳተፍ እና ያለመሳተፍ መብት እንዲሁም ችግር ካለ ከማን ጋር ማገናኘት እንዳለብኝ ሁሉ ተገልጾልኛል ጥያቄ ካለኝ ደግሞ እንድጠይቅ እድል ተሰጥቶኛል በመሀል ደግሞ ጥናቱን ለማቆም ከፈለኩኝ በማንኛውም ጊዜ ከጥናቱ/ከተሳታፊነት/ መውጣትእንደምችል በሚፈሻም መመለስ የማልፈልገውን ጥያቄ አለመመለስ መብቱ እንዳለኝ ከተረዳሁኝ በኋላ በስሜ በሙሉ ፈቃደኝነት በዚህ ጥናት ለመሳተፍ የወሰንኩኝ መሆኔን ከዚህ በታች በተቀመጠው ፊርማዬ አረጋግጣለሁ ፡፡

የተሳታፊ ስም እናፊርማ .... ቀን.................................. . .

የ ሚረጃ ሰብሳቢ ስም እና ፊርማ .... ቀን ....

Appendix V: Questionnaires English Version

Questionnaire for Magnitude and associated factors affecting food handling Practices among food handlers in licensed food and drinking Establishments of Harar town, Eastern Ethiopia, 2018/2019.

Questionnaire No: ---------- Type of licensed food and drinking establishment: ----------

Name of the woreda: ---------- kebeles: ----------

Name of data collector: ----------signature: ------Date of data collection (dd/mm/yy):---/---/---

Start time: ----------: end time: ---------- Food handlers work category: ----------

Name of supervisor: ----------signature: ------- Checked on, date of data collection----/----/----

Part 1: Socio-demographic characteristics of respondent

101. Age by years	**102. Sex**(Make this mark √)under		**103. Current Marital Status**(Make this mark √) under				
	Male	Female	Married	Unmarried	Divorced	Widowed	Other

104. Religion(Make this mark √) under				**105. Ethnic group(Make this mark √) under**			
Orthodox	Protestants	Muslims	Others, specify	Amhara	Oromo	Harari	Others ,specify

106. Current educational Status (Make this mark √) under				
No read and Write	Reading and Writing	Primary school	Secondary school	Collage/University

107. Current employment pattern (Make this mark √)		**108. Work category** (Make this mark √)				
Temporary	Permanent	Chef	Dishwasher	Cutter	Server	Other ,specify

109. Work experience	**110. Average household Income per month (Make this mark √) under**		
	< 500 Birr	501 -1000 Birr	>1000Birr

Part 2. Knowledge and practice of respondents regarding to hygiene
Remember:- (more than one answer can be marked for answer of 201)

It is knowledge part questions for 201 and 202.	**If the respondent answer any of them Make this mark √**	**It is observed Practice of food handlers food handling practice part during data collection**	**Yes**	**No**
201. When do you wash your hands? **(Remember : the respondent may answer one or two or all answers out of the nine)**		(Make this mark √)		
1.Before meals and preparing a meal		**203**. Is food handler wash hands before eating and preparing meal?		
2.After touching or handling raw food		**204**. Is food handler wash hands after touching and handling raw foods?		
3.After touching my body parts		**205**. Is food handler wash hands after touching body parts?		
4.After visiting the toilet		**206**. Is food handler wash hands after touching any materials?		
5.After contact with a pet		**207**. Is food handler use soap and water to wash hands?		
6.After contact with a sick person				
7.After blowing my nose				
8. After touching wastes				
9.After touching any material				
202. What do you use to wash your hands? **(Remember : the respondent may answer one or two or all answers out of the two)**	**If the respondent answer only choice 1 or 2 or both Make this mark √**			
1.Soap and water				
2.Other detergents and water				
3.Other ,specify				

Part 3: Food handlers' knowledge and practices.
Remember:- (question 301 asses the Knowledge of food handlers about food handling practice and it has one or ***more answer's can be answered) ,but from questions 302 to 312; answer by choosing either yes or No***

It is knowledge part questions for 301.	(Make this mark √)	**It is an observed Practice of food handlers food handling practice part during data collection** **(Mark this √)**	Yes	No
301. What are the practices of food handlers?		**302**. Is food handler wearing white Gown/Apron?		
1.wearing white Apron/Gown		**303**. Is food handler's gown/Apron Clean?		
2.wearing cleaning Apron/Gown		**304**. Is food handler's hair covered with cap?		
3.coverrin hair with Cap		**305**. Is food handler finger nails cut short or trimmed?		
4.Not wearing finger ornaments during food Preparation		**306**. Is food handler check expiry date of ingredients?		
5.Cut short or trimmed, clean, and not Nails polish finger nails		**307**. Has food handler taken training regarding food handling practice with evidence?(like certified		

		certificate or other evidence)		
6.Check expiry date of ingredients		**308**. Is food handler touch their head or other body part?		
7. Taking training regarding food handlers practice, food preparation and Handling or other related.		**309**. Is food handler Covering foods and utensils?		
8. Not scratching or rubbing the head or other body parts		**310**. Is food handler Preventing cross-contamination of food?		
9. Not touching the nose or other body parts		**311**. Is food handler Using disposable gloves?		
10. Shortening the hair/beards		**312**. Has food handler certified medical check-up certificate on hand?		
11. Not picking pimples, boils				
12. Not licking fingers when tasting food and the like				
13. Covering foods and utensils				
14. Wearing mask while food handling				
15. Preventing cross-contamination of food				
16. Using disposable gloves				
17. Dressing and covering Cuts and wounds				
18. Not use deodorant and overpowering perfumes during food preparation				
19. Not handle food if suffering from infectious disease				
20.Making regular Medical check-up				

Part4: Personal habits or behaviours of food handlers and practices

Remember:-First observe the practise of food handlers from questions 402 to 407, then ask question 401.

Question 401 has more than one answer and can be answer one or more than one answer by making this mark (√)

401. What are bad habits or behavioural practices?	(Make this mark √)	**Observed Practice** (make this mark √)	Yes	No
1. Smoking cigarette in working area		**402**. Is food handler smoke cigarette in working area?		
2. Blowing nose in working area		**403**. Is food handler blow nose in working area?		
3.Chewing pan in working area		**404**. Is food handler chew pan in working area?		
4.Spitting in working area		**405**. Is food handler spit in working area?		
5.Drinking alcohol in working area		**406**. Is food handler drinking alcohol in working area?		
6.chewing Chate /Kate in working area		**407**. Is food handler chewing Chate /Kate in working area?		

Appendix VI: Amharic Questionnaire (የ አ ሚ ኛ ማኪይቅ ትር ጉ ም)

በ 2011 ዓ/ም በምክራቅ ኢትዮጲያ ሀረር ከተማ ንግድ ፍቃድ ባላቸው ምግብና ማከጥ ተቃማት ውስጥ በሚሰሩ የምግብ አዘጋጆች ማካከል ስለ የምግብ አዘገጃጀት ተግባራት ጎጂ ምክንያቶች ለማጥናት የተዘጋጀ ማኪይቅ ፡፡

የ ማኪይቁ ተራ ቁጥር: -----የ ስራ ፈቃድ ያለው የ ምግብና ማከጡ ተቃም አ ይነ ት: ---

የ ወረዳው ስ ም: ---------- የ ቀበሌው ስ ም: ----------

የ ሚ ጃ ሰ ብሳ ቢ ስ ም:----------ፊ ር ማ: ------የ ሚ ጃው የ ተ ሰ በ ሰ በ በ ት

ቀ ን (ቀ ን /ወ ር /ዓ /ም) :---/----/--

የ ተ ጀ ሚ በ ት ሰ ዐ ት: ----------: የ ተ ጠ ና ቀ ቀ በ ት ሰ ዐ ት: ----------

የ ምግብ አ ዘ ጋ ጆች የ ስ ራ ድ ር ሻ: ----------

የ ተ ቆ ጣ ጣ ሪ ው ስ ም : ----------ፊ ር ማ: ------- የ ተ ሞ ላ ው ሚ ጃ ት ክ ክ ል

ስ ለ ሚ ሆ ኑ የ ተ ረ ጋ ገ ጠ በ ት ቀ ን ----/----/----

ክፍል 1፡ የተሳታፊዎች ማህበራዊ ሁኔታ							
101. **እድሜ**	102.**ፆታ**(ለሚጠቅ ሜልስ ይንን ምልክት ይጠቀሙ√)		103.በአሁኑ ሰዐት**የጋብቻ ሁኔታ**(ለሚጠቅ ሜልስ ይንን ምልክት ይጠቀሙ√)				
	ወንድ	ሴት	ያገባ/ች	ያላገባ/ች	በፍች የተለያየ/ች	ሚስቱ የሞተችበት /ባል የሞተባት	ሌላ ካለ ይግለፁ

104.የ ሀ ይማ ኖ ት ሁ ኔ ታ (ለ ሚ ጠ ቅ ይ ንን ም ል ክ ት ይ ጠ ቀ ሙ√)				105.**ብሔር** (ለ ሚ ጠ ቅ ሜ ል ስ ይ ንን ም ል ክ ት ይ ጠ ቀ ሙ√)			
ኦ ረ ቶ ዶ ክ ስ	ፕ ሮ ተ ስ ታ ነ ት	ሙ ስ ሊ ም	ሌ ላ ካ ለ ይ ግ ለ ፁ	አ ማ ራ	ኦ ሮ ሞ	ሀ ረ ሪ	ሌ ላ ካ ለ ይ ግ ለ ፁ

106. የ ት ም ህ ር ት ደ ረ ጃ ሁ ኔ ታ (ለ ሚ ጠ ቅ ሜ ል ስ ይ ንን ም ል ክ ት ይ ጠ ቀ ሙ√)				
ማ ን በ ብ እ ና ማ ፍ የ ሚ ይ ች ሉ	ማ ን በ ብ ና ማ ፍ የ ሚ ች ሉ	የ መ ጀ መ ሪ ያ ደ ረ ጃ ት/ም (ከ 1-8 ኛ ክ ፍ ል)የ ተ ማ ሩ	ዩ ሁ ለ ተ ኛ ደ ረ ጃ ት/ም (ከ 9-12ኛ ክ ፍ ል) የ ተ ማ ሩ	ሌ ጅ/ዩ ኒ ቭ ር ሲ ቲ ተ ማ ሩ

107.**የ ቅ ጥ ር ሁ ኔ ታ ዎ** (ለ ሚ ጠ ቅ ሜ ል ስ ይ ንን ም ል ክ ት ይ ጠ ቀ ሙ√)		108. **የ ሰ ራ ህ/ሽ ዘ ር ፍ** (ለ ሚ ጠ ቅ ሜ ል ስ ይ ንን ም ል ክ ት ይ ጠ ቀ ሙ √)				
በ ግ ዜ ያ ዊ	በ ቃ ሚ ት	ሼ ፍ	እ ቃ ማ ኩ በ	ስ ጋ ወ ዘ ተ ሙ ቋ ረ ጥ /ማ ከ ተ ፍ	ማ ከ ተ ን ግ ዶ	ሌ ላ ካ ለ ይ ግ ለ ፁ

109.	110. **አ ማ ካ ኝ የ ቤ ተ ሰ ብ የ ወ ር ገ ቢ** (ለ ሚ ጠ ቅ

የስራ ልምድ	ሜልስ ይንን ምልክት ይጠቀሙ√)		
	< 500 ብር	501 -1000 ብር	>1000 ብር

ክፍል2፡ አጠቃላ የግል ንፅህናን ስሜክቶ የተሳታፊዎችን እወቀትና ተግባር መሣኛ ጥያቄ ያስተወሉ፡ -(ለጥያቄ 201 ከቀረቡት አሜራጮች ወስጥ ከአንድ በላይ ሜልስ አደርገው ማሚጥ ወይም መሣለስ ይችላሉ				
ጥያቄ 201 እና 202 የግል ንፅህና አስሜክቶ ተሳታፊውን በማከየቅ እወቀታቸውን መሣኛ ጥያቄዎች ናቸው	(ለሚጡት ሜልስ ይንን ምልክት ይጠቀሙ √)	***ጥያቄ 203 እስከ 207 የግል ንፅህና አስሜክቶ በተሳታፊው የስራው ስፍራ በማኘት እና በሞት የሜሣ የተግባር መሣኛ ጥያቄ ዎች ናቸው***	**አዎ**	**አይ**
201. እጅህን/ሽን ሜቼ ትታጡበለህ/ሽ? ***(አስተወሉ፡ ከቀረቡት አሜራጮች ወስጥ ከአንድ በላይ ሜልስ አደርገው ማሚጥ ወይም መሣለስ ይችላሉ***		(አዎ ወይም አይ ለሚሉት አሜራጮች ይንን ምልክት ይጠቀሙ√)		
1.ምግብ ከማዘጋጀት እና ከመማብ በፊት		**203.**ምግብ ከማዘጋጀት እና ከመማብ በፊት እጁን ታጥባል/እጃን ታጥባለች?		
2.ያልበሰሉ ወይም ጥሬ ምግቦችን ከነካሁ ወይም ካዘጋጀሁ በሓላ		**204.**ያልበሰሉ ወይም ጥሬ ምግቦችን ከነካ/ከነካች ወይም ካዘጋጀ/ካዘጋጀች በሓላ እጁን ታጥባል/እጃን ታጥባለች?		
3.የትኛውንም የሰውነት ክፍሎቼን ከነካሁ በሓላ		**205.**የትኛውንም የሰውነት ክፍሎቹን ከነካ/ክፍሎቻን ከነካች በሓላ እጁን ታጥባል/እጃን ታጥባለች?		
4.ከማፀዳጃ ቤት ሜልስ		**206.**የትኛውንም አይነት ቁሳቁስ ከነካ በሓላ እጁን ታጥባል/ከነካች በሓላ እጃን ታጥባለች?		
5.የቤት እንስሶችን ከነካሁ በሓላ		**207.** እጁን ሲታጡብ//እጃን ስትታጡብ ሳሞና ውሀ ተጠቅሜል/ተጠቅሚላች?		
6.የታመመ ሰው ከነካሁ በሓላ				
7.ከተናፈጥኩ በሓላ				
8. ቁሻሻ ከነካሁ በሓላ				
9.የትኛውንም አይነት ቁሳቁስ ከነካሁ በሓላ				
202. እጅህን/ሽን ለሞታጡብ ምን	ምልክቱን			

ትጠቀማለህ/ትጠቀሚያለሽ? (አስተወሉ፡ ከቀረቡት አማራጮች ውስጥ አንዱን ወይም ሁለቱንም ሜዘስ አድርገው ማምረጥ ወይም መማለስ ይችላሉ	ይጠቀሙ √)			
1.ሳሙና ንፁህ ውሀ				
2.ሌሎች ኬሚካሎች እና ንፁህ ውሀ				
ሌላ ሜዘስ ካለዎት ይግለፁ				

ክፍል3፡ አጠቃላ የጥናቱ ተሳታፊ ስለምግብ አዘገጃጀች ተግባራት ያላቸውን እውቀት እና ተግባር መማኛ ጥያቄዎች ናቸው

ያስተወሉ፡ -(ጥያቄ 301 የጥናቱ ተሳታፊ ስለምግብ አዘገጃጀች ተግባራት ያላቸውን እውቀት ብቻ መማኛ ጥያቄ ሲሆን ለጥያቄው ሜዘስ የሚሆን ከ አንድ በላይ ሜዘስ መምረጥ ይቻላል ፡፡ ነገር ግን ከጥያቄ 302 እስከ 312 ላሉት ሜዘሶች አዎ ን ወይምአይን ብቻ ይሚጣሉ

ጥያቄ 301 የጥናቱ ተሳታፊ ስለምግብ አዘገጃጀች ተግባራት ያላቸውን እውቀት ብቻ ለመማን የተዘገጀ ጥያቄ ነው	ምልክቱን ይጠቀሙ √)	***ከጥያቄ 302 እስከ 312 ስለ ምግብ አዘገጃጀች ተግባራት አስሜክቶ ሲሆን ፤በጥናቱ ተሳታፊ የስራ ስፍራ በማኘት እና ተግባራቱን በሞት የሚሞላ የተግባር መማኛ ጥያቄ ዎች ናቸው*** (ሜዘሱ አዎ ወይም አይ ከሆነ ይንን ምልክት ይጠቀሙ√)	አዎ	አይ
301.*የምግብ አዘገጃጀች ሚጸዳም የሚ ባቸው ተግባራትምንምን ናቸው*		**302.** ምግብ አዘጋጁ /አዘጋጃ ንፁህ እና ነጭ የስራ ልብስ ጋውን ወይም ሽርጥ ልብሳል /ለብሳለች?		
1.ንፁህ እና ነጭየስራ ልብስ ጋውን ወይም ሽርጥ ሜልበስ		**303.** ምግብ አዘጋጁ /አዘጋጃ ንፁህ የስራ ልብስ ጋውን ወይም ሽርጥ ልብሳል /ለብሳለች?		
1.ንፁህ የስራ ልብስ ጋውን ወይም ሽርጥ ሜልበስ		**304.** የምግብ አዘጋጁ /አዘጋጃ ፀጉሩን/ፀጉራን በኮፍያ ወይም በሻሽ ሸፍናል /ሸፍናለች ወይም አስራል /አስራለች ?		
3. ፀጉርን በሻሽ ወይም በኮፍያ ማሰር ወይም ሞሸፈን		**305.** በምግብ ዝግጅት ወቅት የምግብ አዘጋጁ /አዘጋጃ የጣት ጥፍሮች አሳጥሮአል/አሳጥራለች?		
4.በምግብ ዝግጅት ወቅት የእጅ ጌጣጌጦችን አለሜልበስ		**306.** በምግብ ዝግጅት ወቅት የምግብ አዘጋጁ /አዘጋጃ የምግብ ግብአቶችን የማከቀሚያ ግዜ አይቷል/አይታለች? ልብ ይበሉ ለሚጋገጥ ለምግብ ዝግጅት ከተቀማጩ ግብአቶች መካከል የማከቀሚያ ግዜ የተፃፈባቸውን አንድ ሁለቱን ይሜልከቱ እና ያረጋግጡ ፡		
5.የጣት ጥፍሮችን ማሳጠር ፣ሜፅዳትና የጥፍር ቀለም በምግብ ዝግጀት ወቅት አለሞቀባት		**307.** የምግብ አዘጋጁ /አዘጋጃ ስለምግብ አዘጋጆች ተግባራት ፣ስለምግብ አዘገጃጀት እና አያያዝ እንዲሁም ሌሎች ተያያዥ ስልጠናዎችን ስለሞሰዳቸው የሚረጋግጥ ሰርተፍኬት ወይም ሌላ ማስረጃ በስራ ቦታቸው አለ?		
6.የምግብ ግብአቶችን የማከቀሚያ ግዜ ሞት ወይም ሚጋገጥ		**308.** በምግብ ዝግጅት ወቅት የምግብ አዘጋጁ /አዘጋጃ ራሳቸውን /ጭፅ ቅላታቸውን እና ሌሎች የሰውነት ክፍሎቻቸውን ይነካሉ?		
7. ስለምግብ አዘጋጆች ተግባራት ፣ስለምግብ አዘገጃጀት እና አያያዝ እንዲሁም ሌሎች ተያያዥ		**309.** በምግብ ዝግጅት ወቅት የምግብ አዘጋጁ /አዘጋጃ ምቦችን ፣የማበሰያና የማቅረቢያ ወዘተ እቃዎችን በንፁህ ጨርቅ ወዘተ		

ስልጠናዎችን ማውሰድ		ሽፍነ ዋል?		
8. ራስን /ጭንቅላትን እና ሌሎች የሰውነት ክፍሎችን አለማከክ ወይም አለማሸት		**310.** በምግብ ዝግጅት ወቅት የምግብ አዘጋጁ /አዘጋጃ የበሰሉ ምግቦችን ካልበሰሉ ምግቦች ለይተው አስቀምጠዋል?		
9. አፍንጫ እና ሌሎች የሰውነት ክፍሎችን አለመነካት		**311.** በምግብ ዝግጅት ወቅት የምግብ አዘጋጁ /አዘጋጃ ለአንድ የምግብ አይነት እና የምግብ ዝግጅት ብቻ የሚውል፤ እጅ እና ምግብ እንዳይነካካ የሚያስችል የእጅ ጋንት ለብሰዋል?		
10. ፀጉርን /ፂምን ማሳጠር		**312.** የምግብ አዘጋጁ /አዘጋጃ የህክምና ምርመራ ስለ ሚድረጋቸው የሚያሳይ የህክምና ሰርተፍኬት ማረጋገጫ በስራ ቦታቸው አለ?		
11. ቡግር ወይም ቁስልን አለመነካት				
12. የምግቦችን ጣእም ለማወቅ/ለመቅመስ ጣትን አለማጠቀም				
13. ምግቦችን፣ የማብሰያና የመቅረቢያ ወዘተ እቃዎችን በንፁህ ጨርቅ ወዘተ መሸፈን				
14. አፍን በማስክ መሸፈን				
15. የበሰሉ ምግቦች ካልበሰሉ ምግቦች እንዳይነካኩ መከላከል				
16. ለአንድ የምግብ አይነትና የምግብ ዝግጅት ብቻ የሚውል፤ እጅ እና ምግብ እንዳይነካካ የሚያስችል የእጅ ጋንት መልበስ				
17. የተቆረጡና የቆሰለን እጅ ሙታከም እና የተቆረጠውንና የቆሰለውን እጅ በህክምና ፕላስተር መሸፈን				
18. በምግብ ዝግጅት ወቅት ከፍተኛ የመሸት ማጠን ያላቸውን መጥፎ ጠረን ማስወገጃ ዲኦደራንት እና ሽቶ አለመቀባት				
19. በተላላፊ በሽታ የተያዝኩ ከሆነ ምግብ አለማዘጋጀት				
20.መደበኛ የህክምና ምርመራ መድረግ				

ክፍል4፡ የጥናቱ ተሳታፊ ስለ ግል ባህሪያት ያለው እውቀት እና የግል ባህሪ ተግባር መማዘኛ ጥያቄዎች ናቸው

ያስተውሉ፡ -(መጀመሪያ የጥናቱ ተሳታፊዎች ስለ ግል ባህሪያት የእውቀት ደረጃ የሚማዝነውን ጥያቄ 401 ን ከማነየቃችሁ በፊት ፤ ከ402 እስከ 407 ድረስ ያሉትን ጥያቄዎች ፤ የጥናቱ ተሳታፊዎች በስራ ቦታቸው ላይ የተገበራቸውን ባህሪያቶች ይመከቱ ወይም በቅፁ ይማኑ ::
ለጥያቄ 401 ከ አንድ በላይ መልስ መምረጥ ይቻላል :: ነገር ግን ከጥያቄ 402 እስከ 407 ላሉት መልሶች አዎ ን ወይም አይን ብቻ ይሚጣሉ

401. በስራ ቦታ ማኅፎ የግል ልሞድ ወይም ማኅፎ ባህሪያዊ ተግባራት ምንድን ናቸው?	ይንን ምልክት ለሚጠቅሙ ሜልስ ይጠቀሙ√)	***የጥናቱ ተሳታፊዎች በስራ ቦታቸው ላይ የተገበራቸው ማኅፎ የግል ልሞድ ወይም ማኅፎ ባህሪያዊ ተግባራት የሚማዛኑ ጥያቄዎች*** (ሜልሱ አዎ ወይም አይ ከሆነ ይንን ምልክት ይጠቀሙ√)	አዎ	አይ
1. በስራ ቦታ ሲጋራ ሜጨስ		402. የምጣብ አዘጋጁ /አዘጋጃ በስራ ቦታ ሲጋራ ያጨሰሉ/አጭሰዋል?		
2. በስራ ቦታ ሞፈጥ ሞትፋት		403. የምጣብ አዘጋጁ /አዘጋጃ በስራ ቦታ ይናፈጣሉ/ተናፍተዋል?		
3.በስራ ቦታ ጭት ሞቃም		404. የምጣብ አዘጋጁ /አዘጋጃ በስራ ቦታቸው ሲጋራያጨሰሉ?		
4. በስራ ቦታ ሀክታ ሞትፋት		405. የምጣብ አዘጋጁ /አዘጋጃ በስራ ቦታ ሀክታ ይተፋሉ/ተፍተዋል?		
5.በስራ ቦታ አልኮል ማከጦችን ማከጣት		406. የምጣብ አዘጋጁ /አዘጋጃ በስራ ቦታ አልኮል ማከጦችን ይጠታሉ/ጠትተዋል?		
6.በስራ ቦታ ጭት ሞቃም		407. የምጣብ አዘጋጁ /አዘጋጃ በስራ ቦታ ጭት ይቅሜሉ/ቅሞዋል?		

Appendix VII: Curriculum Vitae

1. Personal Information

Name ……..Zelalem Gizaw Sahle
Sex ……..Male
Place of birth……....Harar
Date of Birth……..…May1991E.C
Marital status …….....Single
Nationality ……...…Ethiopian
Address……..…Harar, Mobile number ….0915757185/0921249433

2. Educational Back Ground And Qualification

Level	Year	School/university name	Awarded
1-6	1976-1981	Harar 1st model	Certificate
7-8	1982-1983	Harar SOS	Certificate
9-12	1985-1989	HSSS	Certificate
Dipl	1990-1991	Haramaya University	Diploma in Environmental Health Science
//	1992-1995	//	Diploma in Accounting
//	1996	Neejat computer service plc	Diploma in basic computer skill
Degree	1998-2002	Haramaya University	BSc. Degree in Env.Health Science
//	2009-2011	//	4 th year BSc. Degree in Civil Engineering

3. Language Skill

S.n	Languages	Speaking and Listening	Writing	Reading
1	Amharic	Excellent	Excellent	Excellent
2	English	V. Good	Excellent	Excellent

4. Work Experience

S.n	Name of organization	Year	Position
1	Harari prison commission	March 1, 1992-May 30, 1997EC	Health supervisor
2	Harar Shenkor woreda	June 1,1997-2010EC	1.Hygiene expert ,2.Food &Drinking Safety Control Officer and 3.UHEP supervisor&4.HMIS focal
3	Hobbies	Always learning New things, Playing chess, and Taekwondo sports and trying to events new software.	

5. Reference : Tenaye Gezachew 0912456999