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BAHIR DAR UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES,

SCHOOL OF PUBLIC HEALTH,

DEPARTMENT OF ENVIRONMENTAL HEALTH

ASSESSMENT OF FOOD HANDLING PRACTICES AND ASSOCIATED FACTORS AMONG FOOD HANDLERS WORKING IN BAHIR DAR UNIVERSITY CAFETERIAS, NORTHWEST ETHIOPIA

BY: ABOKER ADEM (B.Sc)

A RESEARCH THESIS SUBMITTED TO THE DEPARTMENT OF ENVIRONMENTAL HEALTH, SCHOOL OF PUBLIC HEALTH, COLLEGE OF MEDICINE AND HEALTH SCIENCES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN ENVIRONMENTAL HEALTH

JULY 2023

BAHIRDAR, ETHIOPIA

BAHIR DAR UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES,

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STUDY PERIOD	APRIL 03 TO MAY 03/2023
STUDY AREA	BAHIR DAR UNIVERSITY NORTH WEST ETHIOPIA

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ACKNOWLEDGEMENTS

I would like to thank Bahir Dar University, College of Medicine and Health Sciences School of Public Health, Department of Environmental Health for giving me this golden chance to conduct research and I would like also to thank my advisors Dr Achenef Motbainor and Mr. Amsalu Birara for their unreserved advice, devotion to their expensive time, and meticulous comments in case of how to prepare this research paper.

Special thanks go to the Bahir University cafeteria office and managers of the cafeteria for their support in providing all the necessary data.

I would like also to thank data collectors and participants for their commitment to gaining fruitful data.

Finally, I would like to thank all my family and friends that work at Felege Hiwot Referral Hospital Department of Dialysis staff.

ABSTRACT

Background: Safe and wholesome food is essential to the health and well-being of humans. There are plenty of conditions that affect the health of people across the globe due to food contamination. Information regarding food handling practices and associated factors among food handlers working at Bahir Dar University is not available or not researched. Moreover, repeated diarrheal disease occurred in the student cafeterias, so this study is important to fill the gaps.

Objective: To assess food handling practices and associated factors among food handlers working in Bahir Dar University cafeterias, Northwest Ethiopia, 2023.

Methods: Institution-based cross-sectional study design was conducted among 611 food handlers in the cafeterias of Bahir Dar University from April 03 to May 03, 2023. A simple random sampling technique was used to select study participants. Data was collected through face-to-face interviews using a structured pretested questionnaire. The collected data were checked, cleaned, and entered into Epi data 4.6 and then transferred to SPSS for analysis. Variables that have a p-value < 0.25 during bi-variable logistic regression were included in multivariable binary logistic regression. Variables that have p-value <0.05 were considered significantly associated with food handling practices.

Result: The proportion of good food handling practices among food handlers working in the University's cafeterias was 36.0% (95% CI: 32.2%-40.0%). The majority of participants were female (96.45%). The mean age of the study participants with a standard deviation (mean ± SD) was 28.85±5.06 years. Multivariable binary logistic regression analysis showed that good knowledge (AOR=1.67,95% CI: 1.03-2.53), favorable attitude (AOR= 1.76, 95% CI: 1.01-3.05), cooker job responsibility (AOR=2.03,95% CI: 1.27-3.24), food handlers with a certificate and above educational status (AOR=4.31, 95% CI: 1.90-9.78) and working experience of 1-5 year with (AOR=4.14, 95% CI: 1.65-10.3), were statistically associated with good food handling practice of food handlers (p-value<0.05).

Conclusion: The proportion of safe food handling practices of food handlers was found to be low. Certificate and above educational status, job responsibility, work experience, knowledge, and favorable attitude toward food handling were variables significantly associated with food handling practices of food handlers. Bahir Dar University would employ experienced applicants and delegate food handlers, and create environmental and hygiene awareness sessions.

Keywords: cafeteria, food handlers, food handling practice, University

LIST OF ACRONYMS

AOR	Adjusted Odds Ratio
BDU	Bahir Dar University
CI	Confidence Interval
COR	Crud Odds Ratio
D.A.L.Y	Disability-Adjusted Life Year
FAO	Food and Agricultural Organization
FH	Food Handler
FBD	Food Born Disease
LMIC	Low and middle-income country
PI	Principal Investigator
SD	Standard Deviation
SPSS	Statistical Package Social Sciences
WHO	World Health Organization
WTO	World Trade Organization

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1. INTRODUCTION

1.1 Background

Safe and wholesome food is essential to the health and well-being of humans. Food handling practice is any aspect of the activities performed by food handlers in the preparation, transportation, storage, wrapping, and safe delivery of food to consumers. There are plenty of conditions of food that affect the health of people across the globe due to contamination. Even if the problem is worse in developing nations, it is also common in developed countries. Even modern technological advances could not stop the occurrence of food contamination (1, 2).

According to several studies, food and drink facilities frequently experience microbial food contamination as a result of unhygienic procedures, unclean food contact surfaces, and improper storage temperatures (2). Food prepared in large amounts is vulnerable to contamination and may lead to the occurrence of food-borne outbreaks unless basic sanitary practices are well maintained(3). Therefore, food establishments serving a large number of individuals are responsible for providing safe and wholesome food for their customers (4).

World Health Organization estimates that about 600 million people around the world get sick after consuming contaminated food (5). The World Bank reports that the economic cost of dangerous food consumption is about $ 110 billion in productivity losses and health care costs in less developed countries (6).

Governments all over the world are doing their best to improve the safety of the food supply and food handling practices (7). Building strong and capable national food safety systems, particularly in developing nations, requires a concerted effort across many sectors, and WHO plays a crucial role in assuming global leadership in this area. Training of food handlers in safe food handling has been recognized by the WHO as one of the most important strategies for reducing the burden of foodborne diseases worldwide (5).

Food safety and hygiene practices among food handlers have become a major concern in food service organizations as they can act as a carrier for the transmission of harmful bacteria toward food (8). Globally, more than 50% of the total food poisoning cases were attributed to improper food handling practices (9). The health status and hygienic practices of food handlers are the major determinants of food contamination (10). Food handlers must always properly wash their hands at all stages of food production, before and after eating, after touching contaminated materials, and after using the toilet (11).

1.2. Statements of the problem

Public health issues related to food safety exist in both developed and developing countries. According to WHO global report, contaminated food causes 600 million people to get sick worldwide. Of them, 420, 000 die each year, losing 33 million healthy life years (DALYs). Unsafe food costs low- and middle-income nations US$ 110 billion annually in lost productivity and medical costs (LMIC) (5). According to a joint declaration by the FAO, WHO, and WTO, developing nations lack strong food safety systems that can protect people's health. (12).

Food-borne infections are more frequent in developing countries due to inadequate sanitation, a lack of clean drinking water, contaminated and improper food storage equipment, and a lack of food safety education (13). In addition, in low-income countries, in particular, FBDs outbreak is more serious due to inadequate sanitation, insufficient food safety regulations, weak regulatory structures, unsafe raw food, abused temperature, poor storage infrastructures, inadequate cooking, poor personal hygiene, improper handling methods, and cross contamination of cooked food with uncooked raw food (14, 15).

Potential FBDs in institutions with a high number of people are a public health concern since outbreaks in those places may affect a large number of consumers at once. Food handlers are expected to have excellent hygiene practices to reduce cross-contamination and protect consumers from food-borne diseases(16, 17). Poor personal hygiene frequently contributes to food-borne illness, which indicates that food handlers' knowledge and handling practices need to be improved. Studies on the conditions of food and drink establishments have been scanty in Ethiopia (18, 19).

At Woldia University, 48.8% of food handlers employed good food handling practices (19), followed by Gonder University at 46.7% (27), Arba Minch University at 32.6% (14), and Kotebe Metropolitan University at 70.6% (24).

The study conducted At Gonder and Woldia University shows that work experience, educational status, age, training in food hygiene, less than one year of work experience, poor Knowledge and an unfavorable attitude, and failure to wash hands before beginning to handle food have been statistically associated food hygiene practices (20)

Various studies have been conducted to assess food handling practices and associated factors among food handlers in Africa, including different regions of Ethiopia. However, no research

has been done in the study area that assesses the status of food-handling practices in the cafeteria and other studies focus on student cafeterias but this study applied both staff and student cafeterias including the working department variable.

Moreover, diarrhoeal disease occurred among students at different times, which might be related to the food handling practice of university cafeterias and associated factors. To address these gaps, it is essential to research to assess the status of food handling practices and its associated factors among food handlers at Bahir Dar University cafeterias.

1.3. Significance of the Study

The findings of this study are important to provide crucial information to know the food handlers' status of food handling practices at Bahir Dar University. The university and other organizations can use the findings to work on identified problems in food handling practices.

It will use as baseline information to do further research.

2. LITERATURE REVIEW

2.1 Food Handling Practices

Different studies have been conducted around the world on food handling practices of food handlers in different organizations, including university cafeterias. A study at Jamaican University shows good scores on food safety and hygiene practices are 66.5% (21). Malaysia University shows most of the respondents showed good scores on food safety and hygiene practices, with the amount of highest percentage (97.8%) each contributed by the agreed response from the statement of hand washing practices and keeping clean and short fingernails (22). Studies done in India revealed that the majority of the participants do not frequently wash their hands before and after food preparation. Food handlers who do not practice proper personal hygiene, including hand washing at Appropriate times and using appropriate hand washing methods, majority of the food handlers 96% did not use an apron or hair cover during food handling (23). A study in Nigeria result shows that the prevalence of good food-handling practices is 36.5% (24).

Studies on Ethiopian Universities show different levels of safe food handling practices. In Arba Minch town food handling practice was 32.6% (7), whereas in Kotebe Metropolitan University 70.6% of food handlers had good practice of food safety (25).

A study in Fiche town showed that 66.8% of food handlers used outer garments, 74.5% used clean outer garments, 52.8% of food handlers covered their hair with restraints, and 71.1% had trimmed fingernails, (26).

The study conducted in different areas shows that the magnitude of good food handling practices in Debark town was 40.1% (10), different periods had good food handling practices among food handlers at Gonder city (49.0%) (27) and 37.6 % (28), Gonder University 46.7% of the participants had good practices regarding food (29), Woldia University the Unsatisfactory state of food processing practices and level of good food safety practices was less than half (48.8%) (20), Woldia town revealed that good food handling practice was 46.5% (30) and Bahir Dar shows that 66.5% (31). The observational assessment of food handling practices showed that more than three-fourths (77.1%) did not wear gowns, and 44.4% had poor practices. 253 (87.8%) had not covered their hair during food handling and preparation, while 174 (60.4%) were not short-trimmed and cleaned. Moreover, 140 (48.6%) had worn any jewelry, and about 128 (44.4%) had not used soap/or detergent for washing dishes. More than three-fourths (79.5%) and (92.7%) had used soap

and water and washed their hands before working with food and after visiting a latrine, respectively. Furthermore, More than half, 53.5%, had not washed their utensils using three washing compartments, and they had inadequate food hygienic practices (29).

2.2 Factors Associated with food handling practice

2.2.1 Sociodemographic Factors

Sociodemographic factors associated with food handling practices of food handlers had mentioned from different study settings. of those, the service year, advanced age, and marital status are associated with food handling practice (32). And study in Dangilla education associated factors of food handling practice (33).

At Gonder University, work experience, educational status, age, and sex were associated with the food hygiene practice. Male food handlers were 2.37 times more likely to have better food hygiene practices than females. Primary educational status was 2.54 times more likely to have better food hygiene practices, and secondary educational status was 2.20 times more likely to have better food hygiene practices than those with college and above educational status. Study subjects who had more than two years of work experience were 1.86 times more likely to have better food hygiene practices than those with two years and less than two years of experience (29).

In Woldia University: -the factors of not having received training in food hygiene, less than one year of work experience, poor Knowledge and an unfavorable attitude, not keeping cooked food at a safe temperature, not ensuring the safety of cooking utensils and surfaces, insufficient cleanliness of eating areas, not covering hair while cooking food, and failure to wash hands before beginning to handle food has been statistically associated food hygiene practices (20).

This study confirmed that food processing among food processors was poor. Observational inspection and questionnaire survey indicate that 153 (52.6%) of food handlers did not wash their hands with soap and water after using the toilet; out of a total of 291 food processors, 158 (54.3%) did not respect the safety of kitchen utensils and stoves, and 162 (55.7%) of respondents showed improper storage of equipment used for food processing (20).

2.2.2 Knowledge of Food Handling Practices

Gonder University showed that above three-fifths (61.9%) of the study subjects had good Knowledge, and above half (54.8%) of the respondents had a desirable/good attitude (29).In a study conducted in Debere Markos the majority of food handlers had adequate Knowledge, trained food handlers were two times more likely to have good food safety practices than non-trained food

handlers, Knowledgeable food handlers were more likely to practice good food safety than non-knowledgeable practice (34). Study in Dangilla knowledge associated factors for food handling practice(33). Study on Woldia town, of the total, 182 (63.2%) had adequate knowledge status on food handling practices; more than half, 179 (62.2%), had heard of food-borne diseases, of which 61.1% had good knowledge status. About half, 145 (50.3%) of food handlers had reported that the causes of food-borne diseases are germs, while 110 (38.2%) had mentioned the cause as an unapproved source. The majority, 109 (37.8%) of food handlers, did not know the mode of foodborne disease transmission. Regarding the mentioned reasons for food contamination, 106 (36.8%) had responded to dirt utensils as a reason, whereas 37.5% had mentioned the reason as an unapproved source. Of the total, 205 (71.2%) of them mentioned that good personal hygiene could prevent food-borne diseases. The majority, 66%, and 66.3% had realized that raw milk and raw meat could transmit different diseases, respectively (30).

2.2.3 Organizational factors

Determinants like poor liquid and solid waste management, water supply, and the presence of shower and toilet facilities are found to be associated with the food handlers' food safety practices (33). Study on Woldia the majority, 85.1%, had not taken medical checkups in the past six months, while 52.4% were not inspected by concerned authorities for the last six months (30). Across a sectional study done in Asosa, regular supervision by the concerned body was found to be significantly associated with food handling practices. Those participants who had regular supervision by the concerned body were 7.25 times more likely to practice food handling practice than compared to those who did not have regular Supervision by the concerned body (35). Food handling training was a significant variable in food handling practice. Food handlers who received food hygiene and safe handling training, compared with Handles who did not receive training, were more likely to have good food handling practices (16). The probability of having good food handling practices among participants with a good level of knowledge was 2.39 times higher compared to those with a poor level of Knowledge (28).

A facility-based cross-sectional study conducted in Arba Minch on 383 food handlers having supervision of the food handlers was a significant factor associated with food handling practice (7).

2.2.4 Attitude of food handling practices

A study conducted at Woldia University showed that an unfavorable attitude has been statistically associated with food hygiene practices (20), in addition, a study conducted at Gonder University showed that above half (54.8%) of the respondents had a desirable attitude associated with food hygiene practices (29), Besides this, a study conducted at Debre Markos also shows who had a favorable attitude towards food safety was nearly three folds higher as compared to those food handlers who had an unfavorable attitude (34). A similar study conducted in Gonder found that favorable attitudes were a significant factor for food safety practices among food handlers (36) and Another study conducted in Debark revealed that 289 (69.5%) of respondents were a good attitude towards food handling practices (10).

3. CONCEPTUAL FRAMEWORK

The Conceptual framework shows how dependent and independent variables will be related to each other. The dependent variable is affected by independent variables like socio-demographic conditions of the food handlers like age, marital status, sex, working departments, educational status, and organizational factors like availability of water and soap, toilet facility, medical checkup, shower facility, hand washing facility, food safety, and hygiene training. The attitude and knowledge of the food handlers will be used to predict food handling practices.

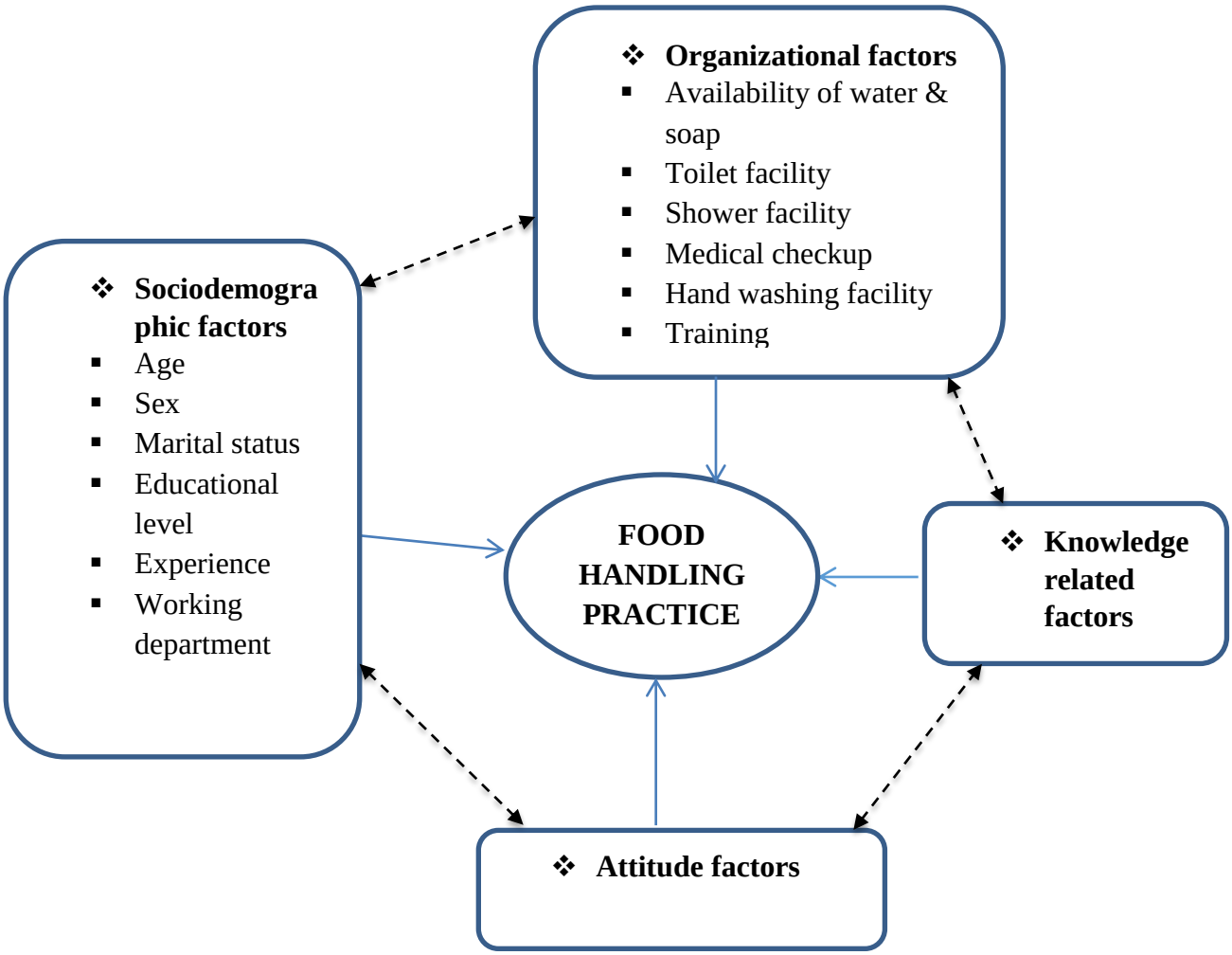


Figure 1: Conceptual Framework adapted from the literature that shows the relationship of dependent and independent variables among food handlers of Bahir Dar University cafeterias, 2023 (20, 29)

4. OBJECTIVES

4.1 General objective

To assess food handling practices and associated factors among food handlers working in Bahir Dar University cafeterias, Ethiopia, 2023.

4.2 Specific objectives

To determine the proportion of good food handling practices of food handlers at Bahir Dar University cafeterias in 2023.

To identify factors associated with good food handling practices among food handlers at Bahir Dar University cafeterias 2023.

5. METHODS AND MATERIALS

5.1 Study Design and Period

The Institutional-based cross-sectional study design was conducted from April 3/2023 – May 3/2023.

5.2. Study area

The study was conducted at Bahir Dar University cafeterias. It is found in Bahir Dar city, which is located to the Northwest and 565 kilometers away from Addis Ababa, the capital city of Ethiopia. It is now among the largest universities in Ethiopia with about 40,000 students enrolled in various modalities, and different levels, and its more than 409 programs are divided into 115 undergraduate programs, 198 masters, and 95 Ph.D. programs, 12 specialties, 3 sub-specialty, and 6 post-graduate certificates. The University has seven campuses with different colleges, institutions, schools, and departments. Food handlers in Bahir Dar University cafeterias were involved in this study, and the total of food handlers in BDU was 1361 in which: the Peda campus had 298, the Faculty of Business campus had 205, the Gish Abay campus had 215, the Zenzelema campus had 200, the Selam campus had 140, Poly campus had 211and medical and Health science campus had 92.

5.3 population

5.3.1 Source Population

All food handlers who are working in the Bahir Dar University cafeterias, regardless of their employment status, either permanent or contract employees within the cafeterias of Bahir Dar University were considered as the source population.

5.3.2 Study Subjects

The Study subjects were food handlers who were selected by a simple random sampling technique from the source population.

5.4 Eligibility Criteria

5.4.1 Inclusion Criteria

All food handlers having contact with foods were included in the study.

5.4.2 Exclusion Criteria

Absent during data collection who at night shift

5.5. Variables

5.5.1 Dependent Variable:

Food handling practice status of food handlers (Good or Poor)

5.5.2 Independent Variables

Sociodemographic factors:-Age, sex, educational level, marital status, occupation, experience, monthly salary, job responsibility, and working department.

Organizational factors: - Availability of water and soap, toilet facility, shower facility, hand washing facility, and medical checkups, training.

Knowledge-related factors: - about food handling practice, information sources, transmission, prevention, and contamination-related foodborne diseases.

Attitude-related factors: - about food handling practice, prevention and contamination related foodborne diseases.

5.6 Operational Definitions

Good food handling practice:- Those who scored greater than or equal to 70% of 18 total questions related to food handling practices was considered to have a good level of food handling practices (17, 20).

Poor food handling practice: Respondents who obtained less than 70% of the total 18 questions related to good food handling practice measuring questions were considered to have a poor level of good food handling practices [18, 21].

Food handler: - Person who contact directly with food, or with any equipment or utensil used in food handling or serving process (19).

Waiter and dishwasher: - In this study, food handlers' work on both responsibilities waiter and dish wash, or the waiter takes additional responsibility for dishwashing.

Food handling practice: - Any aspect of the activities performed by food handlers in the preparation, transportation, storage, wrapping, and safe delivery of food to consumers.

Good knowledge:- Those who scored at least and above 70% on 20 food safety-related questions was considered to have good knowledge(17, 20).

Poor knowledge: - Respondents who scored less than 70% of 20 questions that related to food handling knowledge were categorized as having poor Knowledge. (17, 20).

Favorable attitude:- Respondents who scored greater than or equal to 70% of the total 12 attitude questions related to good food handling practices was considered to have favorable attitude level (17, 20).

Unfavorable attitude:- Respondents who scored less than 70% of 12 total attitude questions related to good food handling practices was considered to have unfavorable attitude level (17, 20).

5.7 Sample Size Determination and Sampling Technique

5.7.1 Sample Size Determination

To determine the required number of study participants for the first objective, the sample size was calculated using a single population proportion formula

$$n = \frac{(Z\alpha/2)^2\, p\,(1-p)}{d^2} \qquad n = \frac{(1.96)^2 * 0.488(0.512)}{(0.05)\,2} = 384$$

Considering the following assumption:

P = Estimated Proportion of level food handling practice (p=48.8%) from the previous study from Woldia University (20).

Z α/2 = Standard normal deviation (1.96) at a 95% confidence interval.

Z = 95% confidence level.

d= 5% margin error and 10%nonresponse rate, the final sample size calculated was 423

n = sample size

For the second objective: sample size was determined using EPI INFO version 7 by taking variables that have a significant association with food handling practice in studies and considering the power of the assumption of 80%, Confidence interval 95%, ratio 1;1.

Table 1:- sample size determination for the second objective by associated factors

Factors of food handling practice	Percent of outcome in un Exposed	Percent of outcomes in Exposed	AOR (95 % CI)	Power	Sample size	Sample size after adding a 10% non-response rate
Attitude level	19.2	29.6	1.19	80%	572	629 (20)
Experience	52.8	31.7	2.54	80%	190	209 (29)
Training in food safety	10.7	38.1	2.111	80%	90	99 (20)

Because the second objective sample size is larger than the first, the second sample size is used as the final sample size of 629 research participants.

5.7.2 Sampling Technique

The estimated total samples were distributed to the seven campuses of the university primordially. Once the proportional allocation is conducted, a simple random sampling technique was used to select the participants by lottery method from each campus. A registration book and cafeteria manager of each campus were used as data sources.

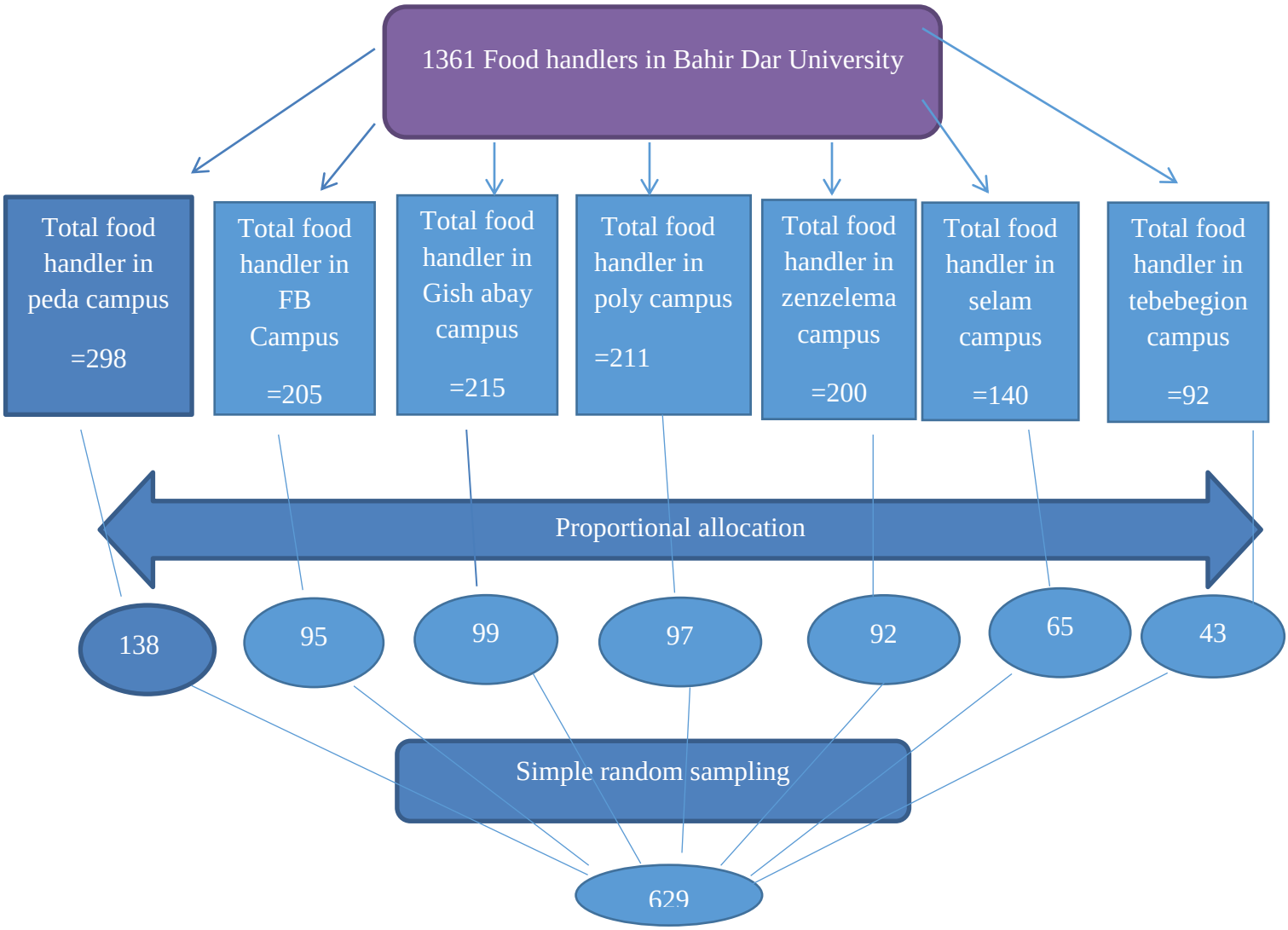


Figure 2: Flow chart for sampling technique for food handlers in Bahir Dar University, Ethiopia, 2023

5.8 Data collection tools and Techniques

Pre-tested structured questionnaires were used to collect data. The questionnaire was first prepared in English and translated into Amharic, and to check whether the translation was consistent with the English version back retranslated to English was done. The Amharic version questionnaires were used to collect the data after pre-testing at Injebara University. Data were collected through face-to-face interviews. Data collectors were MSc in WASH and Health promotion and BSC Nurses who have prior experience in data collection. The data collection tools comprised sociodemographic characteristics, knowledge of food handling Practices, organizational factors, and attitude risk factor variables. The questionnaire was adapted from the World Health Organization food safety checklist and different related literature (29, 37).

5.9 Data Quality Assurance

To ensure the quality of data to be gathered, a range of mechanisms was employed. The one-day training was given for data collectors on the objective and relevance of the study. Prepared the English version questionnaire was translated into Amharic and back-translated to English five percent of the sample size was Pre-tested (31 food handlers) using all research procedures in Injebara University one week before the actual data collection period and the questionnaire was modified and edited.

The principal investigator checked the collected data for completeness, accuracy, clarity, and consistency throughout the data collection period and the necessary corrections were offered to data collectors the next morning before data collection.

5.10 Data Management and Analysis

Data were edited, cleaned, and entered using EPI data version 4.6, and the statistical package for social science (SPSS) version 26 was used for analysis. Descriptive analyses like frequencies, and mean were used to display descriptive data. The bivariate analysis was used to select candidate variables for multivariate analysis variables with $P<0.25$ in a bivariate analysis were considered for multivariate analysis and crude and adjusted odds ratios with 95 % Confidence interval were computed and P-value <0.05 was considered to indicate statistically significant factors associated with food handling practice. The fitness of the model was tested by Hosmer-Leme show's goodness-of-fit test and the p-value was 0.978. Lastly, the result was presented by using tables and figures and described by narration.

5.11 Ethical Considerations

Ethical clearance was obtained from Bahir Dar University Institutional Review Board. An official letter of cooperation from the above organization was written to the Bahir Dar University cafeteria office. The benefits of the study were explained to food handlers before the interview. Before the interview, the interviewer explained the purpose of the study to all eligible individuals and requested written consent for their participation. Participation in this study was voluntary and could leave the study at any time. The participants assured that no harm occurs to them by not participating in the study. Confidentiality was secured by avoiding writing the participant's name and the data was not given to the third person. The interview was conducted in a separate room and the working place takes little distance from others. Moreover, confidentiality was secured during data collecting, analyzing, and reporting.

5.12 Dissemination Plan of Result

The findings will disseminate or presented to the Bahir Dar University School of Public Health Department of Environmental Health. After approval, it will disseminate especially to Bahir Dar University, the regional health bureau, and also it will be published in a scientific journal.

6. RESULT

6.1. Socio-demographic characteristics

A total of 611 food handlers participated out of 629 estimated samples with a response rate of 97.1 %. The mean age of the study participants with a standard deviation (mean ± SD) was 28.85±5.06 years. The majority of participants were female (96.45%) and Orthodox Christian (91.8%). Almost half of the participants (49.3%) were single. One-third of 33.2 % of the participants have Certificate and above education level. Greater than half (56.5%) of participants' job responsible was waiter and dishwasher. around one-third (34.9 %) of the study participants have 1 to 5 years of working experience. around half of the participants (47.8%) have greater than 5 years of working experience, and greater than half (63.8%) of the participants' monthly salary was greater than 2000 ETB, majority of participants 579 (94.8) working department was on student cafe (Table 2).

Table 2:- Sociodemographic characteristics of food handlers in cafeterias at Bahir Dar University Northwest Ethiopia (n: 611).

Variables	Categories	Frequency	Percentage (%)
Age	15 -20 years	20	3.3
	21-25 years	95	15.5
	26-30 years	170	27.8
	31-35 years	242	39.6
	36-40 years	75	12.3
	>40 years	9	1.5
Sex	Male	22	3.6
	Female	589	96.4
Marital status	Single	301	49.3
	Married	255	41.7
	Divorced	36	5.9
	Widowed	19	3.1
Religion	Orthodox	561	91.8
	Muslim	14	2.3
	Protestant	36	5.9
Educational status	Unable to read & write	45	7.4
	Only read & write	101	16.5
	Primary education(1-8)	126	20.6
	Secondary education(9-12)	136	22.3
	Certificate & above	203	33.2
Job responsible	Waiter and dishwasher	345	56.5
	Waiter	26	4.3
	Cooker	240	39.3

Working Experience	<1 year	106	17.3
	1 to 5 years	213	34.9
	>5 years	292	47.8
Monthly salary	<=2000 ETB	221	36.2
	> 2000 ETB	390	63.8
Working department	Student café	579	94.8
	Staff café	32	5.2

6.2 Organizational factors

Regarding the availability of toilets and waste onsite storing material, all (100%) study participants had both. Greater than half of the participants (60.1%) had shower facilities. 56.0% of participants have had medical checkups, with 73.1% having had medical checkups within the last six months. more than half 59.6 % of participants had food hygiene and safety training, and 70.4% had hand washing facilities with 54.4 % having available water and soap (Table 3)**.**

Table3:-organizational factors of food handling practices and associated factors among food handlers in cafeterias of Bahir Dar University North West Ethiopia 2023 (n: 611).

Variables	Categories	Frequency	Percentage (%)
Availability of shower facility to workers in the working area	Yes	367	60.1
	No	244	39.9
You have medical checkups	Yes	342	56.0
	No	269	44.0
Medical check in last 6 months(n=342)	Yes	250	73.1
	No	92	26.9
Medical check how often does (n=342)	Every six months	250	73.1
	Every year	92	26.9
hand washing facility in the working area	Yes	430	70.4
	No	181	29.6
available water and soap n=430	Yes	234	54.4
	No	196	45.6
You have food hygiene and safety training	Yes	364	59.6
	No	247	40.4
Type of Solid waste storage facilities	Basket	190	31.1
	Sack	405	66.3
	Plastic bag	16	2.6
Type of liquid waste storage system	Open space	5	0.8
	Sewage pit	485	79.4
	Septic tank	121	19.8

6.3 Knowledge and attitude of food handling practices

Twenty questions about food handling practices were used to measure knowledge, with each response coded as yes or no. from a total of 342(56.0%) food handlers who have good knowledge of food handling practices.

Twelve questions about food handling practices were used to assess the attitude. About 299 (48.9%) of participants had an unfavorable attitude toward food handling practices, whereas 312 (51.1%) have a favorable attitude toward food handling practices.

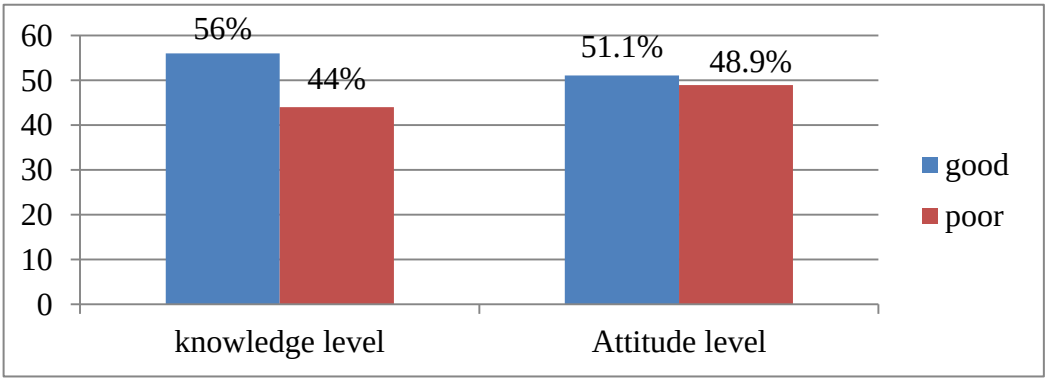


Figure 3:-Food Handlers' Knowledge and attitude level in Bahir Dar University Cafeterias Ethiopia 2023

6.4 Food handling practices of food handlers

Of the entire study participants, the majority (80.5%) study participants have washed their hands before preparing food; whereas only 43.4% were have trimmed their fingernails while handling food. On the other hand, 86.1% of participants had cleaned their workspace before beginning their job. Only 35.7% of participants kept clean utensils in separate locations with proper racks. Half of the 51.4% of participants who became ill or had diarrhea stopped working and sought medical attention, while the remaining 48.6% remained to work. Approximately half of the 53.7% had always washed food utensils right before use. (Table 4)

Table 4: food handling practices of food handlers in Bahir Dar University cafeterias North West Ethiopia 2023 (n: 611).

Variables	Categories	Frequency	Percentage
Do you clean the work area before you start work	Yes	526	86.1
	No	85	13.9
How did you clean the food processing area	Yes/correct way	525	85.9
	No /not correct	86	14.1

	way		
Do you wash your hands before preparing food	Yes	492	80.5
	No	119	19.5
Do you wash your hands after visiting the toilet	Yes	514	84.1
	No	97	15.9
how much frequent of hand washing	Sometimes	365	59.7
	Always	246	40.3
Did you clean/disinfect the chopping board and knife	Yes	406	66.4
	No	205	33.6
When do you wash the chopping table	At the end of each process	143	23.4
	after finishing work	468	76.6
How did you clean/disinfect the chopping board & knife	use hot or cold water with soap	540	88.4
	use cold water only	71	11.6
How do you store cleaned utensils?	Storage Separate place with appropriate rack	218	35.7
	In the same place food preparation area	393	64.3
What do you do as a food handler when your fingernails grow	Trimmed	265	43.4
	Not trimmed	346	56.6
What do you do to keep your hair from contaminating food	Wear hair cover	233	38.1
	Not wear	378	61.9
When coughing or sneezing accidentally during food Preparation what do you do	Cover mouth and nose	565	92.3
	I do nothing	47	7.7
What should you do if you are sick or have diarrhea	stop working & get care	314	51.4
	continued my working	297	48.6
What do you do to keep your cloth from contaminating food?	Wear cover	199	32.6
	Not wear	412	67.4
Cut your hands during preparing food, What do you do?	stop working & get care	380	62.2
	continued my working	231	37.8
Did you wear jewelry (Bracelet, Watch, Ring) During preparing food?	Yes	222	36.3
	No	389	63.7
What do you do, if you have discharged from the nose, eye, ear, and cough during handling food	stops working	179	29.3
	continued my working	432	70.7
Do you always wash food utensils just before use	Yes	328	53.7
	No	283	46.3

Two hundred twenty (36%) of participants have good food handling practices (95% CI 0.32-0.40) and 391(64%) of participants have poor food handling practices (95% CI 0.60 -0.67).

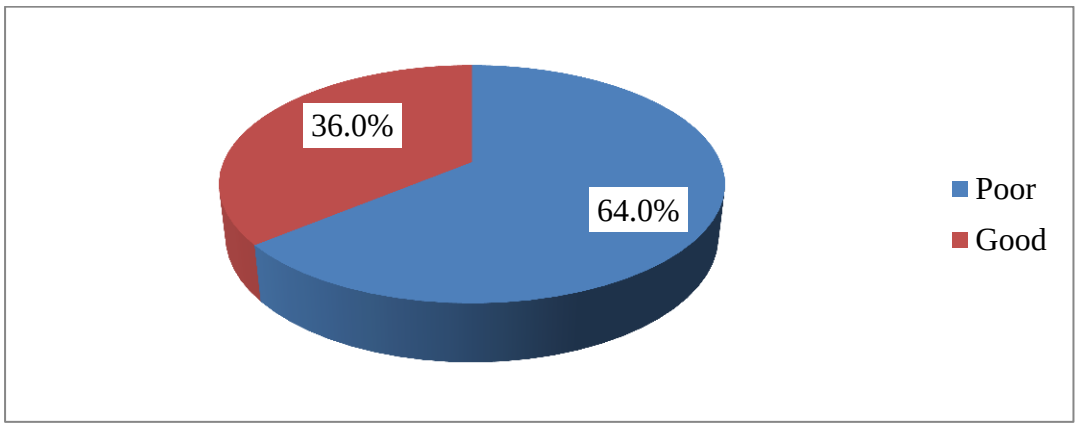


Figure 4:-Food handler's food handling practice level in Bahir Dar University Cafeterias Ethiopia 2023

6.5 Factors associated with food handling practices of food handlers

In the bi-variable binary logistic regression analysis; age, educational status, marital status, job responsibility, monthly salary, working department, working experience, medical checkups, food safety, and hygiene training, knowledge, and attitude were factors associated with good food handling practice at P-value < 0.25. While in the multivariable binary logistic regression analysis knowledge, attitude, educational status, job responsibility, and working experience were statistically significant factors for good food handling practices at P-value <0.05.

The odds of those who had a certificate and above were 4.31 times higher than those who are unable to read and write to performing safe food handling practices (AOR=4.31, 95% CI: 1.90-9.78). Regarding participant educational status those who had primary education 77% (AOR=0.23, 95% CI: 0.09-0.58). were less likely to have good food handling practices as compared to those who were unable to read and write and participants of able to read and write were 86% times less likely to perform good food handling practices compared to those who were unable to read and write (AOR=0.14, 95% CI: 0.05-0.41).

The odds of those who had working experience of 1-5 years were 4.14 times higher than those who are working experience of <1 year to performing safe food handling practices (AOR= 4.14, 95% CI: 1.65-10.3), The odds of those who had working experience > 5 years were 13 times higher than those who are working experience of <1 year to performing safe food handling practices (AOR= 13.0, 95% CI: 5.71-29.9).

The odds of those who had good knowledge of food handling were 1.67 times higher than those who are poor knowledge of food handling (AOR=1.67, 95% CI: 1.03-2.53).

The odds of those who had a cooker were 2.03 times higher than those who are waiters and dishwashers performing safe food handling practices (AOR=2.03, 95% CI: 1.27-3.24).

The finding of this study also showed that the odds of those who had favorable attitudes toward food handling were 1.76 times higher than those who are unfavorable attitudes toward food handling attitudes (AOR= 1.76, 95% CI: 1.01-3.05) (Table 5).

Table5: Bivariable and multi-variable results of food handling practices and associated factors among food handlers in Bahir Dar University North West Ethiopia 2023 (n: 611)

Variables	Category	Food handling practice		COR with 95% CI	AOR with 95% CI	P-value
		Good	Poor			
Age	15-20years	6(30.0%)	14(70.0%)	1	1	
	21-25 years	32(33.7%)	63(66.3%)	1.18(0.41-.37)	1.23(0.31-4.91)	0.764
	26-30 years	75(44.1%)	95(55.9%)	1.84(0.67-.02)	1.12(0.28-.36)	0.868
	31-35years	73(30.2%)	169(69.8)	1.00(0.37-.72)	0.37(0.08-1.5)	0.174
	36-40years	28(37.3%)	47(62.7%)	1.39(0.47-.03)	0.39(0.08-1.81)	0.232
	>40years	6(66.7%)	3(33.3%)	4.66(0.86-5.1)	2.03(1.18-23.0)	0.565
Educational status	Unable to read & write	16(35.6%)	29(64.4%)	1	1	
	Only read & write	8(7.9%)	93(92.1%)	0.15(0.06-.40)	0.14(0.05-0.41)	0.001
	Primary(1-8)	17(13.5%)	109(86.5)	0.28(0.12-.62)	0.23(0.09-0.58)	0.002
	Secondary(9-12)	42(30.9%)	94(69.1%)	0.81(0.39-.64)	0.78(0.33-1.81)	0.566
	Certificate& above	137(67.5%)	66(32.5%)	3.76(1.91-.40)	4.31(1.90-9.78)	0.001
Marital status	Widowed	9(47.4%)	10(52.6%)	1	1	
	Single	114(37.9%)	187(62.1%)	0.67(0.26-.71)	0.74(0.22-2.42)	0.621
	Married	85(33.3%)	170(66.7)	0.55(0.21-.42)	0.42(0.13-1.39)	0.161
	Divorced	12(33.3%)	24(66.7%)	0.55(0.17-.73)	0.34(0.08-1.50)	0.158
Job responsible	Waiter & dishwasher	102(29.6%)	243(70.4)	1	1	
	Waiter	8(30.8%)	18(69.2%)	1.05(0.44-.51)	0.85(0.28-2.55)	0.124
	Cooker	110(45.8%)	130(54.2)	2.01(1.43-2.8)	2.03(1.27-3.24)	0.003
Working experiences	<1 year	9(8.5%)	97(91.5%)	1	1	
	1 to 5 years	67(31.5%)	146(68.5%)	4.94(2.35-10.3)	4.14(1.65-10.3)	0.002
	>5 years	144(49.3%)	148(50.7%)	10.4(5.10-21.5)	13.0(5.71-29.9)	0.001
Monthly salary	<=2000	73(33.0%)	148(67.0%)	1	1	
	>2000ET	147(37.7%)	243(62.3%)	1.22(0.88-.73)	1.20(0.64-2.26)	0.559
Working department	Student café	212(36.6%)	367(63.4%)	1	1	
	Staff café	8(25.0%)	24(75%)	0.57(0.25-.30)	0.35(0.12-1.02)	0.055
Medical checkups	No	82(30.5%)	187(69.5%)	1	1	
	Yes	138(40.4%)	204(59.6%)	1.54(1.10-2.16)	1.48(0.95-2.30)	0.080
Food safety training	No	80(32.4%)	167(67.6%)	1	1	
	Yes	140(38.5%)	224(61.5%)	1.30(0.92-.83)	0.95(0.54-1.67)	0.866
Knowledge	Poor	107(39.8%)	162(60.2%)	1	1	
	Good	113(33.0%)	229(67.0%)	0.74 (0.53-1.03)	1.67(1.03-2.53)	0.036
Attitude	Unfavorable	84(28.1%)	215(71.9%)	1	1	
	Favorable	136(43.6%)	176(56.4%)	1.97(1.41-2.77)	1.76(1.01-3.05)	0.044

7. DISCUSSION

The present study was designed to assess food handling practices and associated factors among food handlers working in Bahir Dar University cafeterias. The proportion of good food handling practices among food handlers working in the Bahir Dar University cafeteria was around one-third of the total participants 36.0% (95%CI 0.32-0.40).

This finding was similar to the study done in Gonder City (37.6%) (36), Arba Minch town (32.6%) (7), Debark town (40.1%) (10), and Nigeria, (36.5%) (24). However, it is lower than a study done at Gonder University (46.7%) (29), Woldia University (48.8%) (37), Gonder City (49.0%) (38), Woldia Town (46.5%) (39), Kotebe Metropolitan University (70.6%) (25) and Jamaican University 66.5% (21), The reasons for lower rates of in food handling practice level might be due to the variations of educational status, knowledge status and monthly food hygiene orientation for food handlers. And also, the findings of this study are greater than the study done in the Bole sub-city (27.4%) (40). The reasons for higher rates in food handling practice level might be due to different level of training, knowledge, and attitude of food handlers.

This study found that educational status, knowledge, working experience, attitude level, and job responsibility were statistically significant factors for food handling practice.

The finding of this study showed that good food handling practices had higher odds among those with the educational status of the certificate and above compared to those who were unable to read and write. This study is supported by the other study done at Debarqe (10) and Gonder City (36). The reason might be their education level progresses food handlers would have improved knowledge and attitude towards good food handling practices.

Knowledge status was a significantly associated factor for food handling practice in this study. this study is supported by a study done by Debre Markos (34), Kotebe Metropolitan University (25), Debarqe (10), Mettu and Beddele(41), and Brazilian (42). The reason might be their knowledge would aid in lowering the chance of food contamination, food poisoning, and consumer health risks.

The finding of this study showed that good food handling practices had higher odds among those who had favorable attitudes compared to those who had unfavorable attitudes. This study is supported by the other studies in Woldia University (37), and Debark 289 (69.5%) good attitude towards food handling practice (10). The possible reason could be that people with positive attitudes are considered to have a strong understanding, which forms the basis for skill and practice.

Working experience was a significantly associated factor for food handling practice in this study. this study is supported by other studies similar working experience significantly associated factors for others studies in Woldia University (43), Gonder University (29), Debre Markos (34), and Debark Town (10), This may be explained by the fact that experience enables food handlers to develop greater skills and knowledge related to food handling practice.

The finding of this study also showed that good food handling practices had higher odds among those who cooked compared to those who were waiters and dishwashers. These factors are not supported by other studies.

8. Limitations of the Study

The cross-sectional designs cannot demonstrate cause-effect relationships because of the inherent limitation of the design and might be liable to social desirability. Parasitic and bacterial laboratory analyses and qualitative research were not considered in the study area.

9. CONCLUSION

Good food handling practices in the study area were found to be low. Variables associated with good food handling practice were certificate and above education level, cooker, who have greater than five years of working experience, good knowledge, and favorable attitude factors significantly associated with food handlers of food handling practice.

10. RECOMMENDATION

Bahir Dar University Human Resource Management Director it is better to employ experience applicants and also delegate each food handler to one responsibility.

The environmental and hygiene office create awareness sessions about food handling practice for food handlers.

The student Service Director monitors and evaluates all cafeterias based on standards.

Researchers may achieve better results from this study if they supported it with qualitative research in the study area and bacterial and parasitological testing in laboratories of food handlers.

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12. ANNEXS

Annex1: Information Sheet

Title of the research: A cross-sectional study on assessment of food handling practice and associated factors among food handlers in the cafeterias of Bahir Dar University Ethiopia.

Name of Principal Investigator: Aboker Adem

Name of the Organization: Bahir Dar University College of Medicine and Health Science School of Public Health Department Environmental Health Sciences.

Purpose of the study: This study aims to determine the status of food handling practices and associated risk factors among food handlers in cafeterias at Bahir Dar University. If you are willing to participate in this study, you are expected to answer some questions.

Procedures: According to the above study, some questions related to the topic. Permission will be processed from Bahir Dar University. Hence, you are expected to give information related to the study.

Risks associated with the study: there is no risk associated with participating in this study. You never waste time except for the time (15 to 20 minutes) required to give some information.

The benefit of the study: By participating in this study and answering our questions, you will help to increase our understanding of food handling practices among food handlers.

Confidentiality of your information: kept confidential and could be only accessed by the researcher and responsible body. There was no personal information to be attached to your data.

Right to Refusal or Withdraw: The participant has the full right to refuse to participate and to withdraw at any step in this research. If you have any questions, you may contact the following individuals.

Based on the above information, I agree to participate in the research

Signature: _____Date:_____

Name of Data collector _____Signature_____

Remember, if you have any questions, you can ask the principal investigator

Aboker Adem Tel +251942851285

Annex 2. Consent form

Dear Sir /Madam, My name is _____I am a postgraduate student at Bahir Dar University & working a research entitled Assessment of food handling practice and Associated Factors among food handlers in Bahir Dar University. I request you to voluntarily participate in this study. The finding of this study will be used as a basis for better planning and the best prevention strategy, which is acceptable and effective for institutional settings. What we expect from you is to answer a few questions regarding food handling and associated factors. Any information that we collect about you during this research will be kept secret. Information about your Identity will be put away after re-coding your file and kept in a secure place. We assure you that the reports will not bear any information about your personality, like name and Identity. Since participation in this study is entirely voluntary, you can refuse to participate in this study at any time. Your refusal to participate will not affect any of your benefits.

Are you willing to participate?

1. If yes, proceed to the next page

2. If No, pass to the next participant.

Name of the Interviewer_____Signature_____

Date of Interview _____time started _____time finished _____

Supervisors name _____ Signature_____

ID_____

Name of institution_____

Annex 3. Questionnaire

English version questionnaire prepared to the assessment of food handling practice and associated factors among food handlers in Bahir Dar University Ethiopia, 2023.

Part 1: Sociodemographic characteristics		
S.no	Questions	Possible Answers
101	Age?	Years……..
102	Sex?	1…Female 2…. Male
103	Religion?	1…Orthodox 3….Protestant 2…Muslim 4…..catholic
104	What is your educational status?	1….Unable to read & write 2….Only read & write, 3….Primary education(1-8) 4…Secondary education(9-12) 5….certificate & above
105	What is your marital status?	1….Single 3….Divorced 2…. Married 4….Widowed
106	What is your job responsibility?	1… Waiter and dishwasher 2…Waiter 3… Cooker
107	Working experience in a year?	Years……..
108	Your monthly salary?	ETB ……..
109	Working department	……

Part 2: Organizational-related factors		
S.no	Questions	Possible answers
201	Is there a latrine facility for the workers in your working area?	1…Yes---If Yes check it 2… No
202	Is there a shower facility for the workers in your working area?	1…Yes----If Yes check it 2….No
203	Do you have periodic medical checkups?	1….Yes 2….No--If no go to 206
204	If yes to Q203, Do you check in the last 6 months?	1….Yes, 2…No
205	If your answer to Q 203 is yes, how often does this?	1….Every three months 2….Every six months 3….Every year
206	Is there a hand-washing facility in your working area?	1…Yes---If Yes, check it 2….No
207	Is there available water and soap?	1…Yes, 2…No, If Yes check it
208	Do you have food hygiene and safety training?	1….Yes…… 2…..No
209	If Yes Q208, Where do you take training?	…….

210	If Yes Q208, How many times have you trained?	…….
211	Are solid waste storage facilities available?	1….Yes 2…..No---If no go to 214
212	If yes what type of facilities?	1…..Basket 2…..Sack 3…..Plastic bag 4….Other
213	Do you have a liquid waste disposal facility?	1…..Yes 2…...No----If no go to 301
214	Type of liquid waste storage system	1….Open space 2…..Sewage pit 3…..Septic tank

Part 3: Knowledge-related questions		
s.no	**Questions**	**Possible answers**
301	Have you ever heard about food handling practices?	1…Yes 2.….No
302	Do you know the techniques of food handling?	1….Yes, 2….No If yes, how to handle specify….
303	Do you know poor food handling practices?	1….Yes 2….No If yes, when to say poor specify….
304	If yes for Q304, What is the cause of poor food handling practices? Specify…….	1…Unhygienic working environment 2…Contaminated food or water 3…Exposed to insects and rats 4…Contact with unhygienic hands 5....Unclean/dirty utensils 6…food handlers 7…others
305	Do you know wearing masks is an important practice to reduce the risk of food contamination?	1….Yes, 2….No
306	Do you know wearing gloves is important to reduce the risk of contamination?	1….Yes, 2….No
307	Do you know proper washing utensils reduce the risk of food contamination?	1….Yes, 2….No
308	How do you say food is contaminated?	1…Change in color 3…unpleasant taste 2…Change in smell 4…I do not know
309	Do you know the correct temperature for cooked foods can be safely stored?	1….Yes, 2….No If Yes, how much ….
310	Do you know the danger zone temperature for potentially hazardous food?	1….yes 2….no If yes, how much ……
311	Do you know that well-cooked foods are free of contamination?	1….Yes, 2….No
312	Storing conditions of food can have possible	1….Yes, 2….No

	effects on food safety.	
313	Raw and cooked foods should be stored separately to reduce the risk of food contamination.	1…..Yes, 2….No
314	It is necessary to check the temperature of refrigerators/freezers periodically to reduce the risk of food contamination.	1……Yes 2….No
315	Long and painted fingernails could contaminate food with food-borne pathogens	1…..Yes, 2….No
316	Do you know food handlers who have abrasions or cuts on their hands should not touch foods without gloves?	1…..Yes, 2….No
317	Do you know the consequences of poor food handling?	1….Yes 2….No If Yes Specify….
318	Can foodborne diseases be preventable?	1…..Yes, 2….No—If no go to 321
319	If your answer is yes for Q19, how food born disease it could be prevented?	1….Personal hygiene 2….Drinking alcohol 3….Environmental Sanitation 4.…Food Hygiene 5….Eating Cooked Food/Vegetable 6….Other/Specify……
320	Do you know infected food handlers transmit pathogens to the consumers?	1….Yes 2….No

Part 4: Food handling practice-related questions		
s.no	**Questions**	**Possible answers**
401	Do you clean the work area before you start work?	1…Yes, 2…..No----If no go to 403
402	How did you clean the food processing area?	1…Clean with a dry rag 2…Clean with a wet rag 3…Clean with detergent and warm water 4…All of the above 5. I do not know
When did you wash your hand? As an introduction		
403	Do you wash your hands before preparing food?	1…Yes 2….No If no go to Q406
404	Do you wash your hands after visiting the toilet?	1…Yes 2…No If no go to Q410
405	If yes for Q 407, how much frequent?	1…Always 2…Sometimes
406	Did you clean/disinfect the chopping board and knife?	1….Yes 2…..No---If no go to 413
407	When do you wash the chopping table? Specify…..	1… at the end of each process 2….after finishing work 3….other specify

408	How did you clean/disinfect the chopping board & knife? Specify…	1…..use hot water with soap 2…..use cold water with detergent 3.....use cold water only
409	How do you store cleaned utensils?	1…Separate storage place with appropriate rack 2…A separate place without a rack 3..In the same place food preparation area 4…I don't know
410	What do you do as a food handler when your fingernails grow?	1…Trimmed 2… keep it as it is 3….Decorate my nails 4.....I don't know
411	What do you do to keep your hair from contaminating food?	1…Wearing hair cover 2....gathering and tying my hair 3…I do nothing
412	When coughing or sneezing accidentally during food Preparation what do you do?	1…Cover my mouth and nose using a towel or tissue paper 2…Cover my mouse and nose using my elbow 3…I do nothing
413	What should you do if you are sick or have diarrhea?	1…I inform the manager and stop working or changing my working area 2…. continued my working
414	What do you do to keep your cloth from contaminating food?	1 ….wearing gown / protective cloth –If say 1 go to 421 2…. I used my regular cloth
415	Cut your hands during preparing food, What do you do?	1…stop preparing and get care 2….continues preparation
416	Did you wear jewelry (Bracelet, Watch, Ring) During preparing food?	1…Yes 2….No, Please check it
417	What do you do, if you have discharge from the nose, eye, ear, and cough during handling food?	1…stop preparing and get care 2….continues preparation
418	Do you always wash food utensils just before use?	1….Yes 2….No

Part 5: Attitude-related factors		**Possible Answers**				
S, no	**Questions**	**Strongly agree=5**	**Agree=4**	**No idea=3**	**Disagree=2**	**Strongly disagree=1**
501	Do you think Well-cooked foods are free of contamination?					

502	Do you think Proper hand hygiene can prevent food contamination?					
503	Do you think Raw and cooked foods should be stored separately to reduce the risk of food contamination?					
504	Do you think It is necessary to check the temperature of refrigerators/freezers periodically to reduce the risk of food contamination?					
505	Do you think Wearing masks is an important practice to reduce the risk of food contamination?					
506	Do you think Wearing gloves is an important practice to reduce the risk of food contamination?					
507	Do you think Safe food handling is an important part of your job responsibilities?					
508	Do you think Long and painted fingernails could contaminate food with foodborne pathogens?					
509	Do you think Food handlers can be a source of foodborne outbreaks?					
510	Do you think Food handlers who have abrasions or cuts on their hands should not touch foods without gloves?					
511	Do you think Food handlers should take leave and should not work on the food premises if suffering from foodborne illness?					
512	Do you think Food hygiene training for handlers is an important issue to reduce the risk of food contamination?					

Annex 5. Amharic Version of Information Sheet Consent Form and Questionnaire

አባሪ 1፡ የመረጃ ቅፅ

የጥናቱ ርዕስ፡- በባህር ዳር ዩንቨርስቲ ኢትዮጵያ፣ በምግብ ቤቶች የምግብ አያያዝ አሰራርን እና ተያያዥ ጉዳዮች ላይ ያጠናል፡፡
የዋናው አጥኝ ስም፡- አቦክር አደም
የተቁሙ ስም፡ባህር ዳር ዩኒቨርሲቲ ህክምና እና ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና ት/ት ክፍል፡፡
የጥናቱ ዓላማ፡- የዚህ ጥናት ዓላማ በባህር ዳር ዩንቨርስቲ ካፍቴሪያ ውስጥ የሚገኙ የምግብ ሰራተኞች የምግብ አያያዝ አሰራርን እና ተያያዥ መንስኤዎች ሁኔታ ለማወቅ ነው፡፡ በዚህ ጥናት ለመሳተፍ ፍቃደኛ ከሆናችሁ አንዳንድ ጥያቄዎችን መመለስ ይጠበቅባችኋል፡፡
ሂደቶች፡- ከላይ ባለው ጥናት መሰረት ከርዕሱ ጋር የተያያዙ አንዳንድ ጥሌያቄዎች ይጠየቃሉ፡፡ ፍቃድ ከባህር ዳር ዩኒቨርሲቲ ይካሄዳል፡፡ ስለዚህ ከጥናቱ ጋር የተያያዘ መረጃ እንዲሰጡ ይጠበቅብዎታል፡፡
ከጥናቱ ጋር ተያይዘው የሚመጡ አደጋዎች፡ በዚህ ጥናት ውስጥ መሳተፍ ምንም አይነት ጉዳት የለውም የተወሰነ መረጃ ለመስጠት ከሚያስፈልገው 15-20 ደቂቃ በስተቀር ሌላ ጊዜ አያባክኑም፡፡
የጥናቱ ጥቅም፡ በዚህ ጥናት ላይ በመሳተፍ እና ጥያቄዎቻችንን በመመለስ በምግብ ቤቶች መካከል የምግብ አያያዝ አሰራርን እና ጉድለት ካለ እንዴት ማስወገድ እንደሚቻል ያለንን ግንዛቤ ለማሳደግ ይረዱናል፡፡
የመረጃዎ ሚስጥራዊነት፡ መረጃወት በሚስጥር የሚያዝ ይሆናል፤ሊደረስበት የሚችለው ተመራማሪው እና የሚመለከተው አካል ብቻ ነው፡፡ ከእርስዎ ጋር የሚያያዝ ምንም የግል መረጃ አይጠቀስም፡፡
እምቢ የማለት ወይም የመውጣት መብት ፤ ተሳታፊው በዚህ ጥናት ውስጥ በማንኛውም ደረጃ ላለመሳተፍ እና የመውጣት ሙሉ መብት አለው፡፡
የመረጃ ሰብሳቢ ስም _____ ፊርማ _____
ያስታውሱ፣ ማንኛቸውም ጥያቄዎች ካሉዎት፣ ዋናውን አጥኝ መጠየቅ ይችላሉ፡፡
አቦክር አደም ስልክ +251942851285

አባሪ 2. ስምምነት መጠየቂያ ቅፅ፡

አቶ / እመቤት; ስሜ _____እባላለሁ በባህር ዳር ዩኒቨርሲቲ የድህረ ምረቃ ተማሪ ነኝ እና በባህር ዳር ዩኒቨርሲቲ በምግብ ቤቶች የምግብ አያያዝ አሰራርን እና ተያያዥ ጉዳዮች ላይ ጥናት እየሰራሁ ነው። በዚህ ጥናት በፈቃደኝነት እንድትሳተፉ እጠይቃለሁ። የዚህ ጥናት ግኝት ለተሻለ እቅድ እና ለተቋም ተቀባይነት ያለው እና ውጤታማ የሆነ የመከላከያ ስትራቴጂ መሰረት ሆኖ ያገለግላል። ከእርስዎ የምንጠብቀው የምግብ አያያዝን እና ተያያዥ ጉዳዮችን በተመለከተ ጥቂት ጥያቄዎችን መመለስ ነው። በዚህ ጥናት ወቅት ስለእርስዎ የምንሰበስበው ማንኛውም መረጃ በሚስጥር ይቀመጣል። ስለእርስዎ ማንነት መረጃ ፋይልዎን ደህንነቱ በተጠበቀ ቦታ ይቀመጣል። መረጃወቹ እንደ ስም እና ማንነት ያሉ ምንም አይነት መረጃ እንደማይይዙ እናረጋግጣለን። በዚህ ጥናት ውስጥ መሳተፍ ሙሉ በሙሉ በፈቃደኝነት ላይ የተመሰረተ ስለሆነ ወይም በዚህ ጥናት ውስጥ በማንኛውም ጊዜ ላለመሳተፍ እምቢ ማለት ይችላሉ፤ለመሳተፍ ፈቃደኛ አለመሆንዎ ማንኛውንም ጥቅማጥቅሞችን አይጎዳውም።

ለመሳተፍ ፈቃደኛ ነህ?

1. አዎ ከሆነ፣ ወደሚቀጥለው ገጽ ይለፉ።

2. አይ ከሆነ፣ ወደሚቀጥለው ተሳታፊ ይለፉ።

የጠያቂው ስም_____ ፊርማ_____

የቃለ መጠይቁ ቀን _____የተጀመረው ሰዓቱ_____የተጠናቀቀበት ሰዓቱ_____

የተቆጣጣሪው ስም_____ፊርማ_____

መታወቂያ ቁጥር_____

የተቋሙ ስም_____

አባሪ 3. መጠይቅ

በባህር ዳር ዩኒቨርሲቲ በምግብ ቤቶች የምግብ አያያዝ አሰራርን እና ተያያዥ ጉዳዮች ላይ ለማጥናት የተዘጋጀ የአማረኛ ቅጅ መጠይቅ።

ክፍል 2: ከድርጅታዊ ጋር የተያያዙ ምክንያቶች

ክፍል 1: የሶሺዮዲሞግራፊ ባህሪያት የሚመለከት መጠይቅ		
ተ.ቁ	**ጥያቄዎች**	**ሊሆኑ የሚችሉ መልሶች**
101	እድሜወ?	ዓመታት……..
102	ጾታ?	1… ሴት 2…. ወንድ
103	ሃይማኖትወ?	1…ኦርቶዶክስ 2…ሙስሊም 3….ፕሮቴስታንት 4….ካቶሊክ
104	የትምህርት ደረጃዎ ስንት ነው?	1… ማንበብ እና መጻፍ አልቸልም 2… ማንበብ እና መጻፍ ብቻ 3….የመጀመሪያ ደረጃ ትምህርት (1-8) 4…ሁለተኛ ደረጃ ትምህርት(9-12) 5… የምስክር ወረቀት እና ከዚያ በላይ
105	የጋብቻ ሁኔታዎ?	1….ያላገባ/ች 2….ያገባ/ች 3….የፈታ/ች 4….ባል/ሚስት የሞተባት/በት
106	የእርስዎ የሥራ ኃላፊነት ምንድን ነው?	1…አስተናጋጅ እና ዕቃዎች ማጠብ 2…አስተናጋጅ 3…አብሳይ
107	የሥራ ልምድ? በዓመት	ዓመታት……..
108	የወር ደሞዝወ?	ኢትዮጵያ ብር ……..
109	የሥራ ክፍልወ?	…….

ተ.ቁ	**ጥያቄዎች**	**ሊሆኑ የሚችሉ መልሶች**
201	የስራ ቦታዎ ለሰራተኞች መጸዳጃ ቤት አለ?	አዎ….1 የለም……2
202	የስራ ቦታዎ ለሰራተኞች ሻወር አለ?	አዎ….1 የለም……2
203	መደበኛ የሕክምና ምርመራዎች አሉዎት?	አዎ…….1 አይ……2
204	ለ ጥያቄ 203 አዎ ከሆነ፣ ባለፉት 6 ወራት ውስጥ ተመርምረዋል?	አዎ….1 አይ……2
205	ለ ጥያቄ 203 መልስዎ አዎ ከሆነ፣ ይህ በየስንት ጊዜ ነው የሚመረመሩት?	በየሶስት ወሩ….1 በየስድስት ወሩ……2 በየዘጠኝ ወሩ….3 በየአመቱ…….4
206	በስራ ቦታዎ የእጅ መታጠቢያ አለ?	አዎ….1 አይደለም……2 አዎ ከሆነ ያረጋግጡ
207	ውሃ እና ሳሙና አለ?	አዎ….1 የለም……2 አዎ ከሆነ ያረጋግጡ
208	የተለያየ አይነት ስልጠና ወስደዋል?	አዎ…1 አይ…2 አዎ ከሆነ

		ይግለጹ…….
209	የምግብ ንጽህና እና የደህንነት አያያዝ ስልጠና ወስደዋል?	አዎ……1፣ አይ…….2
210	ለ ጥያቄ 208 መልስዎ አዎ ከሆነ፣ ስልጠናውን የት ነው የወሰዱት?	…….
211	ለ ጥያቄ 208 መልስዎ አዎ ከሆነ፣ ፣ ስንት ጊዜ ሰልጥነዋል?	…….
212	የደረቅ ቆሻሻ ማስወገጃ አለ?	አዎ…….1 የለም…….2
213	ለ ጥያቄ 211 መልስዎ አዎ ከሆነ ምን ዓይነት መገልገያ ነው?	1…. ቅርጫት 2…. ጆንያ 3. የፕላስቲክ ማጠራቀሚያ 4..ሌላ
214	የፈሳሽ ቆሻሻ ማስወገጃ አለ?	አዎ…….1 የለም…….2
215	ለ ጥያቄ 213 መልስዎ አዎ ከሆነ ምን ዓይነት ማስወገጃ ነው?	1…. ክፍት ቦታ 2…. የፍሳሽ ጉድጓድ 3 …. ሴፕቲክ ታንክ
ክፍል 3፡ ከእውቀት ጋር የተያያዙ ጥያቄዎች		
ተ.ቁ	**ጥያቄዎች**	**ሊሆኑ የሚችሉ መልሶች**
301	ስለ ምግብ ወለድ በሽታዎች ሰምተው ያውቃሉ?	1….አውቃለሁ 2….አላውቅም
302	የምግብ አያያዝ ዘዴዎችን ያውቃሉ?	1….አውቃለሁ 2….አላውቅም አዎ ከሆነ፣ እንዴት እንደሚይዝ ይግለጹ….
303	ጥሩ ያልሆነ የምግብ አያያዝ ልምዶችን ያውቃሉ?	1….አውቃለሁ 2….አላውቅም አዎ ከሆነ፣ ደካማ መቼ ይግለጹ….
304	አዎ ከሆነ ለ ጥ 304፣ ጥሩ ያልሆነ የምግብ አያያዝ ልምዶች መንስኤው ምንድን ነው?	1…ንጽህና የጎደለው የስራ አካባቢ 2…የተበከለ ምግብ ወይም ውሃ 3… ለነፍሳት እና ለአይጦች መጋለጥ 4.ንጽህናከሌላቸው እጆች ጋር መገናኘት 5…. ንጽህና የለላቸው እቃዎች 6… ምግብ ሰራተኞች 7…ሌሎች
305	ጭምብል ማድረግ የምግብ ብክለትን አደጋ ለመቀነስ ጠቃሚ ልምምድ መሆኑን ያውቃሉ?	1….አውቃለሁ 2….አላውቅም
306	የምግብ ብክለት አደጋን ለመቀነስ ጓንት ማድረግ አስፈላጊ መሆኑን ያውቃሉ?	1….አውቃለሁ 2….አላውቅም
307	ዕቃዎች በትክክለኛው የማጠቢያ መንገድ ማጠብ የምግብ መበከል አደጋን እንደሚቀንስ ያውቃሉ?	1….አውቃለሁ 2….አላውቅም
308	የምግብ መበከልን እንዴት ማወቅ ይቻላል?	1…ቀለም መቀየር 2…የመሽተት ለውጥ፣ 3…ደስ የማይል ጣዕም 4…አላውቅም

309	የበሰሉ ምግቦች በትክክለኛው የሙቀት መጠን ደህንነታቸው ተጠብቆ መቀመጥ እንደሚችል ያውቃሉ?	1....አውቃለሁ 2....አላውቅም አውቃለሁ ከሆነ ምን ያህል....
310	በቀላሉ ሊበከሉ የሚችሉ ምግቦች የአደጋ ዞን የሙቀት መጠን ያውቃሉ?	1....አውቃለሁ 2....አላውቅም አዎ ከሆነ ምን ያህል.....
311	በደንብ የበሰሉ ምግቦች ከብክለት ነጻ መሆናቸውን ያውቃሉ?	1....አውቃለሁ 2....አላውቅም
312	የምግብ አቀማመጥ ወይም ማከማቸት በምግብ ደህንነት ላይ ተጽእኖ ሊኖረው ይችላል?	1....አውቃለሁ 2....አላውቅም
313	የምግብ መበከል አደጋን ለመቀነስ ጥሬ እና የበሰለ ምግቦች ለየብቻ መቀመጥ እንዳለባቸው ያውቃሉ?	1....አውቃለሁ 2....አላውቅም
314	የምግብ መበከል አደጋን ለመቀነስ የማቀዝቀዣዎችን ወይም ማቀዝቀዣዎችን የሙቀት መጠን በየጊዜው ማረጋገጥ አስፈላጊ ነው.	1....አውቃለሁ 2....አላውቅም
315	ረጅም እና ቀለም የተቀቡ ጥፍርሮች ምግብን በምግብ ወለድ በሽታ አምጪ ተህዋስያን ሊበክሉ ይችላሉ።	1....አውቃለሁ 2....አላውቅም
316	በእጃቸው ላይ መቧጨር ወይም የተቆረጠ ምግብ ሰራተኞች ያለ ጓንት ምግቦችን መንካት እንደሌለባቸው ያውቃሉ?	1....አውቃለሁ 2....አላውቅም
317	ጥሩ ያልሆነ የምግብ አያያዝ ሊስከትል ሚቸለውን ያውቃሉ?	1....አውቃለሁ 2....አላውቅም ይግለጹ....
318	የምግብ ወለድ በሽታዎችን መከላከል ይቻላል?	አዎ....1 አይ.....2
319	መልስዎ አዎ ከሆነ ለ ጥ 319፣ የምግብ ወለድ በሽታዎችን እንዴት መከላከል ይቻላል?	1...የግል ንፅህና 2... አልኮል መጠጣት 3....የአካባቢ ንፅህና አጠባበቅ 4....የምግብ ንጽህና 5...የበሰለ ምግብ/አትክልት መመገብ 6.....ሌላ/ይግለጹ_____
320	የተበከሉ የምግብ ሰራተኞች በሽታ አምጪ ተህዋስያንን ለተጠቃሚዎች እንደሚያስተላልፉ ያውቃሉ?	አዎ....1 አይ.....2
ክፍል 4፡ ደህንነቱ የተጠበቀ ምግብ አያያዝ ተግባር ጋር የተያያዙ ጥያቄዎች		
ተ.ቁ	**ጥያቄዎች**	**ጥያቄዎች ሊሆኑ የሚችሉ መልሶች**
401	ሥራ ከመጀመርዎ በፊት የሥራ ቦታውን ያጸዳሉ?	አዎ....1 አይ.....2 አይ ከሆነ ወደ Q3 ይሂዱ
402	አዎ ከሆነ፣ የምግብ መስሪያውን እንዴት አጸዱ?	1....በደረቅ ጨርቅ አጸዳ ለሁ 2....በእርጥብ ጨርቅ አጸዳ ለሁ 3....በሳሙና እና በሞቀ ውሃ አጸዳ ለሁ 4....ከላይ ያሉት ሁሉንም 5. አላውቅም

	እንደ መግቢያ፣ እጅዎን መቼ ይታጠባሉ?	
403	ምግብ ከማዘጋጀትዎ በፊት እጅዎን ይታጠባሉ?	1...አዎ 2...አይ አዎ ካልሆነ ወደ Q406 ይሂዱ
404	መጸዳጃ ቤት ከጎበኙ በኋላ እጅዎን ይታጠባሉ?	1.....አዎ 2.....አይ አይ ከሆነ ወደ Q410 ይሂዱ
405	ለ Q 407 አዎ ከሆነ፣ ምን ያህል ተደጋጋሚነት ነው?	1...ሁል ጊዜ 2...አንዳንድ ጊዜ
406	የመቁረጫ ጠረጴዛውን እና ቢላዋውን ያጸዳሉ?	አዎ....1 አይ.....2
407	የመቁረጫ ጠረጴዛውን እና ቢላዋውን መቼ ያጸዳሉ? ይግለጹ.....	1... በእያንዳንዱ ሂደት መጨረሻ ላይ 2... ሥራ ከጨረስሁ በኋላ 3... ሌላ ይግለጹ
408	የመቁረጫ ሰሌዳውን እና ቢላዋውን እንዴት ነው የሚያአጸዱት ወይም ያጸዱት? በምን ይግለጹ...	1....ሙቅ ውሃ በሳሙና መጠቀም 2....ቀዝቃዛ ውሃ በሳሙና መጠቀም 3.....ቀዝቃዛ ውሃ ብቻ መጠቀም
409	የተጸዱ ዕቃዎችን እንዴት ማከማቸት ወይም ማስቀመጥ ይቻላል?	1...የተለየ ማስቀመጫ ወይም መደርደሪያ ቦታ ላይ 2... ያለ መደርደሪያ የተለየ ቦታ 3...በተመሳሳይ ቦታ የምግብ ዝግጅት ቦታ 4... አላውቅም
410	ጥፍርህ ሲያድግ እንደ ምግብ ሰራተኛ ምን ታደርጋለህ?	1...እቆርጠዋለሁ 2...እንዳለ አቆየዋለሁ 3....ጥፍሮቼን አስጌጣለሁ 4.....አላውቅም
411	ፀጉርዎ ምግብ እንዳይበክል ምን ያደርጋሉ?	1....የፀጉር መሸፈኛ ማድረግ 2....ፀጉሬን መሰብሰብ እና ማሰር 3...ምንም አላደርግም
412	በምግብ ስራ ወቅት በድንገት በሚያስሉበት ወይም በሚያስሉበት ጊዜ ዝግጅት ምን ያደርጋሉ?	1...አፌን እና አፍንጫዬን በፎጣ ወይም በቲሹ ወረቀት ይሸፍኑ 2..ክርኔን በመጠቀም አፍንጫዬን ይሸፍኑ 3...ምንም አላደርግም
413	ከታመሙ ወይም ተቅማጥ ካለብዎ ምን ማድረግ አለብዎት?	1...ስራ አስኪያጁን አሳውቄ መስራት አቆማለሁ ወይም የስራ ቦታዬን መቀየር አቆማለሁ 2....ስራ መቀጠል
414	ምግብ በሚያዘጋጁበት ወቅት ልብስወት ምግብ እንዳይበክል ምን ያደርጋሉ?	1...ጋውን መልበስ / መከላከያ ጨርቅ 2....መደበኛ ልብስ ተጠቀምኩ
415	ምግብ በሚዘጋጅበት ጊዜ እጆችዎን ቢቆርጡ ምን ያደርጋሉ?	1... ስራ ማቆም እና ህክምና ማግኘት 2... ስራ መቀጠል
416	ምግብ በሚዘጋጅበት ጊዜ ጌጣጌጥ ይለብሳሉ (አምባር፣ የእጅ ሰዓት፣ ቀለበት)።	አዎ....1 አይ.....2 እባክህ አረጋግጥ
417	በምግብ ዝግጅት ወቅት ከአፍንጫ ፣ ከዓይን ፣	1...መዘጋጀት አቁምና እንክብካቤ ያግኙ

	ከጆሮ እና ከሳል የሚወጣ ፈሳሽ ካለ ምን ያደርጋሉ?	2...ስራ መቀጠል				
418	የምግብ እቃዎችን ከመጠቀምዎ በፊት ሁል ጊዜ ያጥባሉ?	አዎ....1 አይ.....2 እባክህ አረጋግጥ				
ክፍል 5፡ ከአመለካከት ጋር የተያያዙ ጥያቄዎች		**ሊሆኑ የሚችሉ መልሶች**				
ተ.ቁ	**ጥያቄዎች**	በጣም እስማማለሁ =5	እስማማለሁ = 4	ሀሳብ የለኝም =3	አልስማማም= 2	በጣም አልስማማም=1
501	በደንብ የበሰሉ ምግቦች ከብክለት የፀዱ ይመስሎወታል።					
502	ትክክለኛው የእጅ ንጽህና ከምግብ ወለድ በሽታዎች ሊከላከል ይችላል ብለው ያስባሉ?					
503	የምግብ ብክለትን አደጋ ለመቀነስ ጥሬ እና የበሰለ ምግቦች ለየብቻ መቀመጥ አለባቸው ብለው ያስባሉ?					
504	የምግብ መበከል አደጋን ለመቀነስ የማቀዝቀዣዎችን/የማቀዝቀዣዎችን የሙቀት መጠን በየጊዜው መመርመር አስፈላጊ ነው ብለው ያስባሉ?					
505	የምግብ መበከል አደጋን ለመቀነስ ጭምብል ማድረግ ጠቃሚ ተግባር ነው ብለው ያስባሉ?					
506	የምግብ መበከል አደጋን ለመቀነስ ጓንት መልበስ ጠቃሚ ተግባር ነው ብለው ያስባሉ?					
507	ደህንነቱ የተጠበቀ ምግብ አያያዝ የስራ ኃላፊነቶችዎ አስፈላጊ አካል ነው ብለው ያስባሉ?					
508	ረዥም እና ቀለም የተቀቡ ጥፍሮች በምግብ ወለድ በሽታ አምጪ ተህዋስያን ሊበከሉ ይችላሉ ብለው ያስባሉ?					
509	የምግብ ሰራተኞች የምግብ ወለድ ወረርሽኝ ምንጭ ሊሆኑ ይችላሉ ብለው ያስባሉ?					
510	በእጃቸው ላይ መቧጨር ወይም የተቆረጠ ምግብ ት ሰራተኞች ያለ ጓንት ምግቦችን መንካት የለባቸውም ብለው ያስባሉ?					
511	የምግብ ሰራተኞች ፈቃድ መውሰድ ያለባቸው እና በምግብ ወለድ ህመም የሚሰቃዩ ከሆነ በምግብ ግቢ ውስጥ መሥራት የለባቸውም ብለው ያስባሉ?					
512	የምግብ ንፅህና አጠባበቅ ስልጠና የምግብ መበከል አደጋን ለመቀነስ ጠቃሚ ጉዳይ ነው ብለው ያስባሉ?					

በጣም እናመሰግናለን።