

(RESEARCH ARTICLE)



## Utilization status and associated factors of hand washing facility in food and drinking establishments in Nekemte town, Oromia, Ethiopia, 2021

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### Abstract

**Background** – Hand washing, also known as hand hygiene, is the act of cleaning one's hands with soap and water to remove viruses/bacteria/microorganisms, dirt, grease, or other harmful and unwanted substances stuck to the hands.

**Objectives**- To assess the utilization status and associated factors of hand washing facility in food and drinking establishments in Nekemte town, Ethiopia, 2021

**Methods**- a Cross-sectional study design was conducted in January 1 -14, 2021. Sample size was determined by using single population proportion formula. Data were collected from 277 food handlers of food and drinking establishments by using systematic random sampling and stratified sampling technique to get samples from different establishments. Quantitative data collection tools including interview questionnaires, observation check lists were used to collect a data to assess the utilization status of hand washing facility in food and drinking establishments which are found in Nekemte town. Descriptive analysis like percentage was done for each variable. For statistical significance crude odds ratio (COR) with 95% CI was estimated for each independent variable against the dependent variable. Candidate Variables having a significant association in COR and variables that were considered as important predictors having a p-value less than 0.25 were selected for multiple logistic regression. Finally, Significance level was declared at P-value < 0.05 to identify significant variable.

**Results:** The availability of hand washing facility is 93.9%. 78% of the facility had washing with soap where 22% has no soap. Proper utilization of status of hand washing facility in food and drinking establishments in Nekemte is 53.4% In the multivariate regression model, availability of regular inspection (AOR =6.610; 95%CI: 1.892, 23.087) at P value 0.003. Educational status (AOR= 6.107; 95% CI: 1.735, 21.495) at p value 0.005 Concerning availability of hand washing facility adjacent latrine (AOR =9.2287; 95% CI: 3.291, 26.209) at p value 0.00. Those who always wash their (AOR=3.903; 95% CI: 1.499, 10.16) at P value 0.005.

**Conclusion and Recommendations:** This study reveal that availability of hand washing facility in food and drinking establishments in Nekemte town is good where type hand washing basin need improvements to fixed type which were movable. Availability of soap is also good whereas use of soap is less and need improvement. Generally proper utilization of hand washing facility in food and drinking establishments in Nekemte town is medium which need great improvements and should be emphasized by concerned bodies and establishments' owners as well as by consumers

**Keywords:** Utilization status; Hand washing; Hand hygiene; Food and drinking establishments

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## 1. Introduction

Hand washing, also known as hand hygiene, is the act of cleaning one's hands with soap and water to remove viruses/bacteria/microorganisms, dirt, grease, or other harmful and unwanted substances stuck to the hands(1).

To properly wash the hands, use soap and water, and rub every surface of the fingers and hands for at least 20 seconds.(2)

Proper hand washing procedures: Wet hands and forearms with warm, running water at least 100 °F and apply soap, Scrub lathered hands and forearms, under fingernails, and between fingers for at least 10-15 seconds, Rinse thoroughly under warm running water for 5-10 seconds, Dry hands and forearms thoroughly with single-use paper towels; Turn off water using paper towels, Use paper towel to open door when exiting the restroom(3)

Hand hygiene has been neglected too often, despite the benefits of hand hygiene being well known for more than 150 years(4). Insufficient hand washing is an important causative factor to food borne disease outbreaks in retail food establishments(5).

Hand washing facilities may be fixed or mobile, and include a sink with tap water, buckets with taps, tippy-taps, and jugs or basins designated for hand washing. Soap includes bar soap, liquid soap, powder detergent, and soapy water, but does not include ash, soil, sand or other hand washing agents. Hand hygiene is the primary measure to reduce infections(4,6).

Human hands are one of the main vehicles for transmitting infections especially diarrheal and respiratory diseases which are the leading causes of infant and under-five mortalities in developing countries. Hand washing interferes the transmission of disease agents which can significantly reduce diarrheal, respiratory, skin infections and trachoma(7).

Keeping hands hygienic is one of the most important ladders we can take to avoid getting sick and distribution germs to others. Many illnesses and circumstances are spread by not washing hands with soap and clean, running water (8).

Hand washing with soap works by eliminating bacteria and viruses before they can enter the body or spread to other people. Cleaning hands with soap, particularly before eating or preparing food, and after contact with fecal material from using the toilet or cleaning a child's bottom, is one of the most effective ways to prevent disease(5).

Studies have shown that hand washing with soap reduces the incidence of skin diseases and eye infections like trachoma. Research also shows that hand washing with soap reduces the incidence of intestinal worms, particularly ascariasis and trichuriasis. Hand washing with soap is the most effective way to prevent pinworm infections (9,10).

Numerous diseases start when hands become dirtied with disease-causing bacteria and viruses. This can happen after using the toilet, contact with a child's excreta, coughing, sneezing, touching other people's hands, and touching other contaminated surfaces. Hand washing with soap prevents many common and life-threatening infections. For example, proper hand washing with soap can remove the germs that cause Ebola Virus Disease, Corona Virus disease or other hemorrhagic infections(9,11).

Food and drinking establishments are places where an individual and large number of users get food in the form of breakfast, lunch, dinner or snacks, accompanied by some form of drink. Unsanitary performs in food and drinking establishments affect the health of the clients. Formal food and drinking establishments are authorized to practice this service after being licensed by the local authorities. There also exist a number of informal food and drinking establishments that provide a service without much interference from the local government. Food and drinking establishments have an accountability to afford harmless food and drink to the consumers. Also should be very attractive in terms of its cleanliness and need to offer sanitary facilities, which means hand washing facilities, latrines and urinals. The hand washing facility must have soap; a liquid soap is appropriate if this is available Public Health Practitioners have the responsibility of safeguarding the health of the public by ensuring safe hygienic practice in food and drink establishments. Sanitary inspection is a means of identifying or monitoring unsafe practices of food handling(12).

## 2. Material and methods

### 2.1. Study area

The study was conducted in Nekemte Town, which is located in East wollega Zone, west of Oromia, Ethiopia. It is located from Addis Ababa at 331 Km to the west having altitude about 2005 above sea level and longitude 9°5'N 36°33'E 9°83'36.550°E and an elevation of 2088m and has total surface area of 4,623 hectares.

A Cross sectional study design was carried out in January 1 -14, 2021. All food handlers of food and drinking establishments found in Nekemte Town. The study populations were sampled food handlers of food and drinking establishments found in Nekemte Town. Sample size was determined using single population proportion formula with 58.8% prevalence of poor sanitary condition study done in Addis Ababa in 2017 (21), at 95% confidence interval, margin of error 5% and 5% none response rate. Considering 5% non-response rate, total sample size were 277 food handlers of establishments, which were involved in this study.

The sampling technique was both systematic random sampling technique and stratified sampling technique. To select number of establishments from five establishments the sampling technique was both systematic and stratified sampling applied. A sampling frame was formed for all food and drinking establishments and one food handler was selected using lottery method from food preparing or serving area of the each establishment. Food handlers working in preparation and service areas of food and drinking establishments regardless of their sex and employment status were included.

Dependent variables was Utilization status of hand washing facilities where as Independent variables were Socio demographic factor, License, Education status, Income, Marital status, Religion, Ethnicity, Ownership of establishment, Access to information about hand wash, Radio, Television, Existence of regular inspection, Knowledge about hand washing, Environmental health factor, Availability of water, Availability of soap, Type of hand washing Facility, Existence of inspection

Quantitative data collection tools' including interview questionnaires, observation check lists were used to collect a data to assess the utilization of status and associated factors of hand washing facility in food and drinking establishments which are found in Nekemte town.

Quantitative data were entered; cleaned, complied and analyzed by using SPSS version 23, edited and cleaned to check for completeness and missing values. Then respective analysis were performed for continuous and categorical variables.

Tables, charts, pi-charts and graphs were used to summarize the results. Logistic regression were performed after checking data normality to relate the findings, and P-value was evaluated for statistical significance. For qualitative data analysis recorded data were transcribed and narrated in addition to notes taken during the observation.

### 2.2. Ethical consideration

Formal permission was obtained from Wollega University, Institute of public health to undergo the study. Before the actual study, Permission was requested from the town (Nekemte town Mayor, culture and tourism office, health office), two weeks prior to the actual study.

The data collectors were also explained to each establishment's respondents about the objectives and its importance briefly and about the study before start filling out the questionnaire. Informed consent from the respondents was obtained during the field study and participation was voluntary. Strict confidentiality of the information was assured for the subjects to remove psychological strain regarding the data they furnish.

### 2.3. Operational definitions

#### 2.3.1 Food and drink establishments

establishments engaged in the work of providing food and drink services to virtually large groups of customers in the form of breakfast, lunch, dinner or drinks. These establishments are hotels, restaurants, cafeterias, snack houses and juice houses(15)

### 2.3.2 Hand washing

also known as hand hygiene, is the act of cleaning one's hands with soap and water to remove viruses/bacteria/microorganisms, dirt, grease, or other harmful and unwanted substances stuck to the hands(1)

### 2.3.3 Proper hand washing

To properly wash the hands, use soap and water, and rub every surface of the fingers and hands for at least 20 seconds.(2)

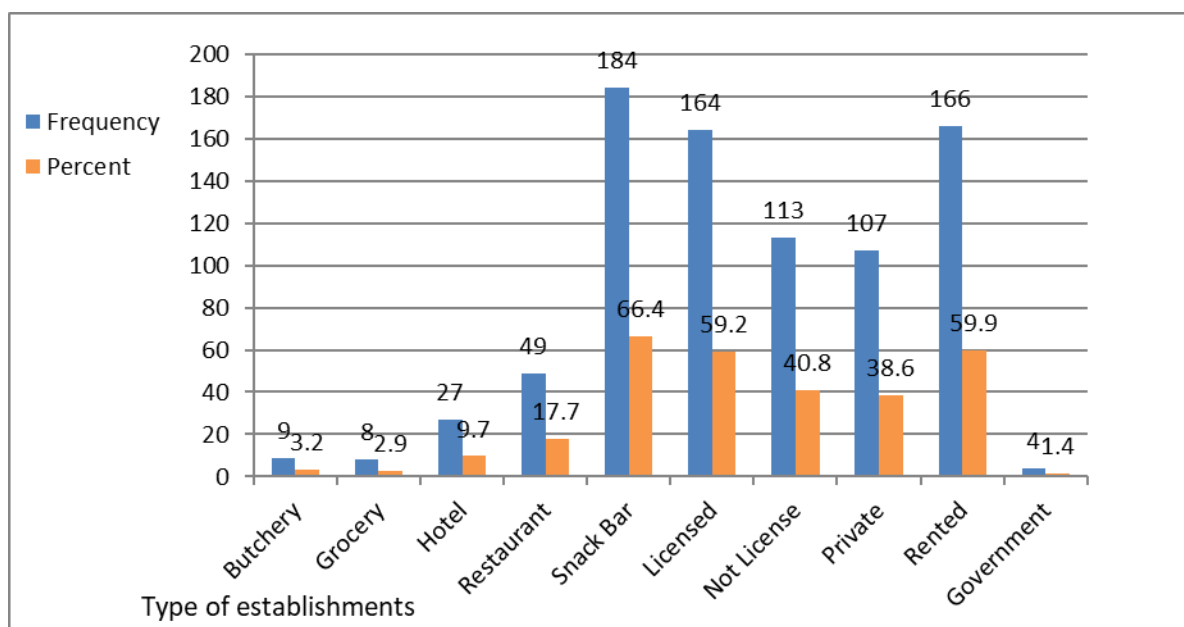
Proper utilization of hand washing facility: if the facility had hand washing basin, soap, water and they were implementing it.

## 3. Results

### 3.1. Socio-demographic characteristics of respondents

A total of 277 food and drinking establishments were selected for the sample. From each establishment one food handler selected. All of them were surveyed yielding a response rate of 100 percent, among these 184 (66.4%) snack bars, 49 (17.7%) restaurant, 27 (9.7%) hotels, 9(3.2%) butchery, 8 (2.9%) grocery. More than half of facilities, 164 (59.2%) were licensed whereas 113(40.8%) of them not licensed. Cornering owner ship of establishments 166(59.9%) were rented, 107 (38.6%) private ad 4 (1.4%) were government. Among the type of establishments all of butcheries 9 (6.1%) and hotels 27 (18.2%).116(78.4%) concerning owner ship of the establishments 59(39.9%) of private, 85(57.4%) of rented.

More than half of food handlers 184 (66.4%) educational status were college and /or university (+) followed by 62 (22.4%) of them secondary school (9-12).191(69.0%) male and 86(31.0%) female of food handlers participated on the study. Concerning marital status of respondent's 174 (62.8%) of them married and 92 (33.2%) were single followed by 7(2.5%) of them are widowed. Regarding ethnicity two hundred thirty (83%) of respondents were Oromo, followed by Guraghe 24 (8.7%). Regarding religion status of respondents, protestant was the largest religion, making up 153 (55.2%), followed by orthodox 90 (32.5 %). Less than half of the respondents 121(43.7%) have income of 1000-5000 ETB per month (Figure 1 and Table 1)



**Figure 1** Socio-demographic characteristics of food handlers in food and drinking establishments in Nekemte town, January 1-14, 2021. (n=277)

**Table 1** Socio-demographic characteristics of food handlers in food and drinking establishments in Nekemte town, January 1-14, 2021

| Variables                           |  | Frequency(n=277) | Percent |
|-------------------------------------|--|------------------|---------|
| Educational status of food handlers | Illiterate Unable to read and/or write | 4                | 1.4     |
|                                     | Able only to read and/or write         | 8                | 2.9     |
|                                     | Primary school (1-4)                   | 4                | 1.4     |
|                                     | primary and secondary cycle (5-8)      | 15               | 5.4     |
|                                     | Secondary school (9-12)                | 62               | 22.4    |
|                                     | College and /or university (+)         | 184              | 66.4    |
| Sex of food handlers                | male                                   | 191              | 69.0    |
|                                     | female                                 | 86               | 31.0    |
| Marital Status of food handlers     | Single                                 | 92               | 33.2    |
|                                     | Married                                | 174              | 62.8    |
|                                     | Separated                              | 2                | 0.7     |
|                                     | Divorced                               | 2                | 0.7     |
|                                     | Widowed                                | 7                | 2.5     |
| Ethnicity Status of food handlers   | Oromo                                  | 230              | 83.0    |
|                                     | Amhara                                 | 13               | 4.7     |
|                                     | Tigre                                  | 10               | 3.6     |
|                                     | Guraghe                                | 24               | 8.7     |
| Religion Status of food handlers    | Muslim                                 | 14               | 5.1     |
|                                     | Orthodox                               | 90               | 32.5    |
|                                     | Catholic                               | 2                | 0.7     |
|                                     | Protestant                             | 153              | 55.2    |
|                                     | Wakefata                               | 18               | 6.5     |
| Income per month                    | <1000                                  | 84               | 30.3    |
|                                     | 1000 -5000                             | 121              | 43.7    |
|                                     | 6000-10000                             | 61               | 22.0    |
|                                     | > 10000                                | 11               | 4.0     |

### 3.2. Information about hand washing facility

Almost all of the respondents 271(97.8%) heard about hand washing and their source of information were television 160 (57.8%), radio 82(29.6%), regular inspection 21(7.6%) and health worker 8(2.9%). Among all of the respondents 269 (97.1 %) knew the advantage of hand washing and whereas 8 (2.9%) of them don't know the advantage of hand washing. From those who know the advantage of hand washing 100 (36.1%) of them said that hand washing helps to prevent communicable disease, 62(22.4%) said that hand washing helps to prevent disease. Most of the respondents said that hand washing helps to prevent communicable disease 36.1%. From total respondents 175 (63.2%) regular inspection arrived.

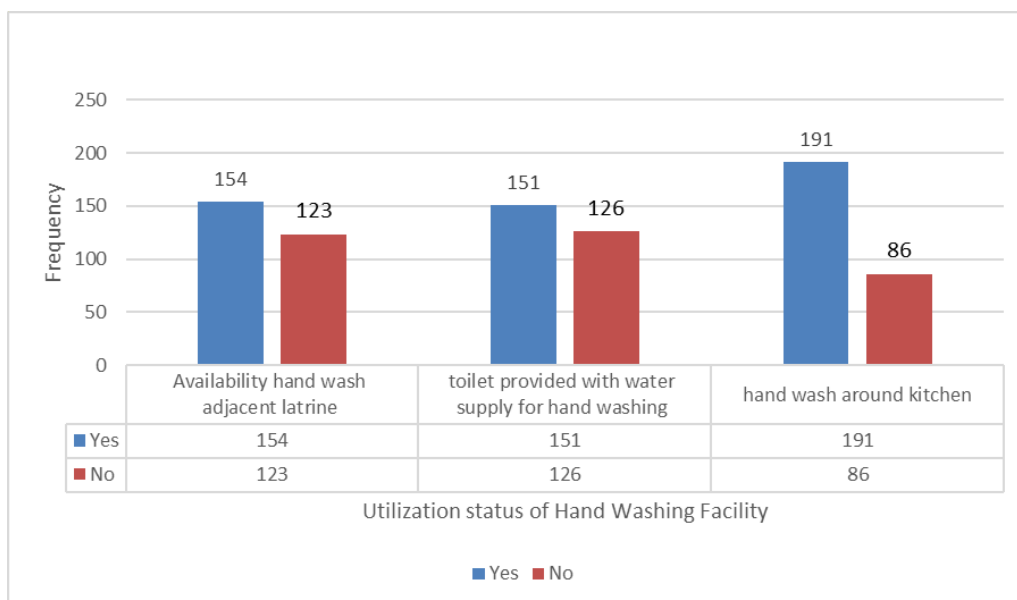
From the total facility 263 (93.90) has different types of hand washing basin. Among those establishments 152(54.9%) of them has tapped barrel type of hand washing facility and 74 (26.7%) wash through cemented. Among the respondents 216 (78%) of their facility had hand washing with soap where 61(22%) has no soap (Table 2)

**Table 2** Information about hand washing facility in food and drink establishments in Nekemte town, Ethiopia, January 1-14, 2021(n=277)

| Variable   |   | Frequency | Percent |
|--|---|-----------|---------|
| Having information about hand washing              | Yes   | 271       | 97.8    |
|  | No  | 6         | 2.2     |
| source of information                              | Radio   | 82        | 29.6    |
|  | Television                                    | 160       | 57.8    |
|  | regular inspection                            | 21        | 7.6     |
|  | Health Worker                                 | 8         | 2.9     |
| Knowing advantage of hand washing                  | Yes   | 269       | 97.1    |
|  | No  | 8         | 2.9     |
| Advantage of hand washing responded (N=269)        | To prevent communicable disease               | 100       | 36.1    |
|  | To Prevent disease caused by lack of hygiene  | 6         | 2.2     |
|  | To Prevent disease                            | 62        | 22.4    |
|  | To Prevent Microorganisms                     | 12        | 4.3     |
|  | To keep personal hygiene                      | 37        | 13.4    |
|  | Good for our health                           | 25        | 9.0     |
|  | To Prevent disease , To keep personal hygiene | 4         | 1.4     |
|  | To prevent covid 19                           | 21        | 7.6     |
|  | Aesthetic                                     | 2         | .7      |
| Presence of regular inspection                     | Yes   | 175       | 63.2    |
|  | No  | 102       | 36.8    |
| Presence of Hand Washing basin                     | Yes   | 260       | 93.9    |
|  | No  | 17        | 6.1     |
| Type of hand Washing basin                         | Standard ceramic, fixed                       | 23        | 8.3     |
|  | Wash through cemented, fixed                  | 85        | 30.7    |
|  | Tapped barrel                                 | 152       | 54.9    |
| Availability of soap with in hand washing facility | Yes   | 216       | 78.0    |
|  | No  | 61        | 22.0    |

### 3.3. Utilization status of hand washing facility

From the total facilities 154 (55.6%) had hand washing basin adjacent latrine whereas 123(44.4%) facilities had no hand washing adjacent latrine. 151 (54.5%) had water supply around latrine for hand washing. More than half of the establishments 191 (69%) had hand washing around kitchen and 115(41%) respondents feel that cleanliness of their hand is good whereas half of the respondent one hundred thirty nine (50.2%) feel that cleanliness of their hand is good. Among the respondents 197 (71.1%) think that their hand which seems clean has disease causing microorganisms (Figure 2)



**Figure 2** Utilization status of hand washing facility in food and drink establishments in Nekemte town, Ethiopia, January 1-14, 2021

This study reveal that almost all of the respondents of the establishments 237 (85.6%) always wash their hands before eating food. Whereas 41.5 % after using the toilet wash their hands. While 8 (2.9%) never wash their hands before eating food. Less than half 115(41.5%) respondents always wash their hands after using the toilet and 156 (56.5%) always wash their hands before preparing food. While 4 (1.4%) never wash their hands before preparing food. As well as one hundred fifty eight (57%) always wash their hands before handling food whereas eighty two (29.6%) always wash their hands before touching unpacked foods.

From the study subjects majority 170 (61.4%) always wash their hands before serving foods. Also 100 (36.1) of respondents frequently wash their hands before changing tasks from raw meat. As well as ear to half 162 (58.5%) sometimes wash their hands after touching any parts of the body. Another is 113 (40.8%) of respondents sometimes wash their hands after coughing, sneezing. almost all of 226 (81%) of respondents always wash their after eating or drinking. The study respondents less than half, one hundred eighteen (42.6%) always wash their hands after touching unclean equipment whereas 153(55.2%) of them sometimes wash their hands after touching working clothes. Proper utilization of hand washing facility is 148(53.4%).

After eating foods 39(14.1%) of respondents get sick by communicable disease. Among these diarrhea accounts 51%. More than half of the respondents 149(53.8%) never wash their hands after handling cash (Table 3)

**Table 3** Utilization status of hand washing facility in food and drinking establishments in Nekemte town, Ethiopia, January 1-14, 2021

| Variables                                     |            | Frequency | Percent |
|---|------------|-----------|---------|
| Frequency of use of soap to wash hands        | Always     | 129       | 46.6    |
|   | Frequently | 68        | 24.5    |
| Time of wash hand                             | Frequently | 106       | 38.3    |
|   | Sometimes  | 36        | 13.0    |
|   | Never      | 6         | 2.2     |
| Frequency of washing hands before eating food | Always     | 237       | 85.6    |
|   | Frequently | 8         | 2.9     |
|   | Sometimes  | 24        | 8.7     |

|  |                |     |      |
|--|----------------|-----|------|
|  | Never          | 8   | 2.9  |
| Frequency of washing hands after using the toilet                        | Always         | 115 | 41.5 |
|  | Frequently     | 58  | 20.9 |
|  | Sometimes      | 102 | 36.8 |
|  | Never          | 2   | 0.7  |
| Frequency of washing hands Before preparing food                         | Always         | 156 | 56.3 |
|  | Frequently     | 65  | 23.5 |
|  | Sometimes      | 52  | 18.8 |
|  | Never          | 4   | 1.4  |
| Frequency of washing hands Before handling food                          | Always         | 158 | 57.0 |
|  | Frequently     | 32  | 11.6 |
|  | Sometimes      | 80  | 28.9 |
|  | Never          | 7   | 2.5  |
| Frequency of washing hands Before touching unpacked foods                | Always         | 82  | 29.6 |
|  | Frequently     | 82  | 29.6 |
|  | Sometimes      | 106 | 38.3 |
|  | Never          | 7   | 2.5  |
| Frequency of washing hands Before serving the foods                      | Always         | 170 | 61.4 |
|  | Frequently     | 79  | 28.5 |
|  | Sometimes      | 23  | 8.3  |
|  | Never          | 5   | 1.8  |
| Hand Washing Status Before changing tasks from raw meat                  | Always         | 81  | 29.2 |
|  | Frequently     | 100 | 36.1 |
|  | Sometimes      | 96  | 34.7 |
| Frequency of washing hands touching any part of the body                 | Always         | 41  | 14.8 |
|  | Frequently     | 62  | 22.4 |
|  | Sometimes      | 162 | 58.5 |
|  | Never          | 12  | 4.3  |
| Frequency of washing hands After coughing sneezing or using              | Always         | 80  | 28.9 |
|  | Frequently     | 82  | 29.6 |
|  | Sometimes      | 113 | 40.8 |
|  | Never          | 2   | 0.7  |
| After eating foods status of getting sick by communicable disease(N=277) | Yes            | 39  | 14.1 |
|  | No             | 238 | 85.9 |
| If your answer is yes describe type of disease(N=39)                     | Diarrhea       | 20  | 51.2 |
|  | Abdominal Pain | 9   | 23   |
|  | Gastritis      | 2   | 5    |
|  | Typhoid        | 6   | 15.3 |



|  |        |   |   |
|--|--------|---|---|
|  | Amoeba | 2 | 5 |
|--|--------|---|---|

### 3.4. Washing compartments

Majority of the facility 243(87.7%) had dish washing compartments. From these 203(73.3%) had only one compartments which is not recommended (Table 4)

**Table 4** Washing compartments in food and drinking establishments' facility in Nekemte town, Ethiopia, January 1-14, 2021

| Variables   |       | Frequency | Percent |
|---|-------|-----------|---------|
| Availability of dish washing compartment                            | Yes   | 243       | 87.7    |
|   | No    | 34        | 12.3    |
| Number of dish washing compartment (N=243)                          | One   | 203       | 83.5    |
|   | two   | 38        | 15.6    |
|   | three | 2         | 0.8     |
| Availability of glass washing compartment                           | Yes   | 241       | 87.0    |
|   | No    | 36        | 13.0    |
| Number of glass washing compartment(N=241)                          | One   | 203       | 84.2    |
|   | two   | 34        | 14.1    |
|   | three | 4         | 1.7     |
| Availability of drying rack   | Yes   | 184       | 66.4    |
|   | No    | 93        | 33.6    |
| Availability of proper storage for sanitized equipment and utensils | Yes   | 200       | 72.2    |
|   | No    | 77        | 27.8    |

### 3.5. Observational result

The observational result implies that majority of facilities had hand washing basin which is similar to interviewed result. Type of hand washing basin, availability of soap, use of soap, availability of hand washing adjacent latrine, availability of hand washing around kitchen and utilization of hand washing also confirms interview result. This means majority of them had barrel type hand washing basin which were movable. The observational result reveals that hand washing is not properly utilized because of lack of knowledge, lack of water and sometimes ignorance. Food handlers raised that regular inspection is not continues despite it foster the utilization of hand washing. Generally the qualitative results reflects the quantitative result of the study.

### 3.6. Associated factors of hand washing

In this study bivariate logistic regression analysis shows that license, type of establishments, educational status of food handlers, income, regular inspection , type of hand washing basin , availability of hand washing around kitchen , availability of soap, availability of hand washing adjacent latrine had significant association with utilization of hand washing(Table 5).

In this study multi logistic regression reports that the odds of availability of regular inspection is (AOR =6.610; 95%CI: 1.892, 23.087) at P value 0.003. That means facilities those have regular inspection utilizing hand washing in proper manner 6 times greater than those not have. The odds of educational status is (AOR= 6.107 ; 95% CI: 1.735,21.495) at p value 0.005 that means high school and above educational level were 6 times more utilizing in proper manner than primary and below. Concerning availability of hand washing facility adjacent latrine (AOR =9.2287; 95% CI: 3.291, 26.209) at p value 0.00. Those who always wash their (AOR=3.903; 95% CI: 1.499, 10.16) at P value 0.005. This means those who always wash their hand utilizing hand washing in proper manner 3 times than who wash some times (Table 5).

**Table 5** Bivariate and Multivariable logistic regressing analyses of Utilization status of hand washing facilities in food and drink establishments in Nekemte town, Ethiopia, January 1-14, 2021

| Variables                                  |                          | Utilization status of hand washing facilities |                       | 95% CI COR            | P Value | 95% CI AOR           | P value |
|--|--------------------------|---|-----------------------|-----------------------|---------|----------------------|---------|
|  |                          | Proper utilization                            | Un proper utilization |                       |         |                      |         |
| License                                    | Licensed                 | 116   | 32                    | 1                     |         | 1                    |         |
|  | Not Licensed             | 48  | 81                    | 6.1(3.602,10.30)      | 0.00*   | .425(.138, 1.314)    | 0.138   |
| Type of Establishment                      | Hotel & Restaurant       | 81  | 12                    | 1                     |         | 1                    |         |
|  | Snack Bars               | 67  | 117                   | 11.787(5.99,23.2)     | 0.00*   | 1.413(.393, 5.074)   | 0.596   |
| Educational Status                         | High school and above    | 138   | 108                   | 1                     |         | 1                    |         |
|  | Primary School and below | 10  | 21                    | 2.683(1.213,5.94)     | 0.015*  | 6.107(1.735, 21.495) | 0.005** |
| Income                                     | >6000                    | 44  | 28                    | 1                     |         | 1                    | 0.482   |
|  | 1000-5000                | 67  | 54                    | 1.26(0.69,2.29)       | 0.4     | 1.051(.348, 3.172)   | 0.930   |
|  | <1000                    | 37  | 47                    | 1.96(1.05,3.78)       | 0.03*   | .574(.195, 1.689)    | 0.314   |
| Regular inspection                         | Available                | 138   | 10                    | 1                     |         | 1                    |         |
|  | Not available            | 37  | 92                    | 34.314(16.26,72.4)    | 0.00*   | 6.610(1.892, 23.087) | 0.003** |
| Type of Hand Washing Basin                 | Ceramic fixed and Mixed  | 17  | 20                    | 1                     |         | 1                    | 0.010   |
|  | Cemented                 | 64  | 10                    | 0.1(0.05,0.3)         | 0.00*   | .331(.060, 1.823)    | 0.204   |
|  | Barrel                   | 67  | 85                    | 1.07(0.5,2.2)         | 0.8     | 3.232(.624, 16.745)  | 0.162   |
| Feeling of the clean lines of hand         | Very Good                | 92  | 23                    | 1                     |         | 1                    | 0.031   |
|  | Good                     | 54  | 85                    | 6.296(3.56,11.136)    | 0.00*   | .140(.015, 1.303)    | 0.084   |
|  | Bad                      | 2   | 21                    | 42(9.18,192.162)      | 0.00*   | .500(.066, 3.781)    | 0.502   |
| Availability of soap                       | Available                | 133   | 78                    |                       |         | 1                    |         |
|  | Not available            | 15  | 51                    | 5.797(3.057,10.994)   | 0.00*   | 2.083(.462, 9.390)   | 0.340   |
| Availability of hand wash adjacent latrine | Available                | 126   | 22                    | 1                     |         | 1                    |         |
|  | Not available            | 29  | 100                   | 19.749(10.749,36.463) | 0.00*   | 9.287(3.291, 26.209) | 0.000** |
| Availability hand wash around kitchen      | Available                | 133   | 15                    | 1                     |         | 1                    |         |
|  | Not available            | 41  | 88                    | 19.031(9.936,36.45)   | 0.00*   | .315(.044, 2.236)    | 0.248   |

|                           |           |    |    |            |       |                    |         |
|---------------------------|-----------|----|----|------------|-------|--------------------|---------|
| Frequency of hand washing | Always    | 95 | 53 |            |       | 1                  |         |
|                           | sometimes | 34 | 95 | 5(2.9,8.3) | 0.00* | 3.903(1.50, 10.16) | 0.005** |

Note: Reference, \*Candidate Variables at P value <0.25, Reference category for dependent variable is: proper utilization and \*\*Significant at P value < 0.05 Reference category for dependent variable is: proper utilization

#### 4. Discussion

The aim of the study was to assess utilization status of hand washing facilities at food and drinking establishment, accordingly, the utilization status of hand washing at food and drinking establishment was 78%, However Study done in Hossanna shows 71.97% of the respondents utilizing hand washing (23). whereas the study done in Enderta district, Tigray Ethiopia shows utilization of hand washing is 42.4% (9). So this study showed that improvement of utilization of hand washing. Proper utilization of hand washing is 53.4% which means use soap and water, and rub every surface of the fingers and hands for at least 20 seconds

In study 97.8% of the respondents heard about hand washing whereas Study done in Hossanna shows 66.1% had information on hand washing. From those who know the advantage of hand washing 100 (36.1%) of them knew that as hand washing helps to prevent communicable disease whereas Study done in Hossanna shows 34.7% knew advantage of hand washing(23).

In this study 93.9% of food and drinking establishments had hand washing facility where Study done in northern Ethiopia, Woldia town reveals that 85.1% of the establishments had washing facilities and only 14.7% of those establishments were equipped with fixed-type water taps for washing drinking cups (15). According to this study hand washing after toilet is 41.5% whereas estimated global rates of hand washing after using the toilet are only 19%. (16).

This study reveal that almost all of the respondents of the establishments 85.6% always wash their hands before eating food.. While 2.9% never wash their hands before eating food which will be source of communicable disease. 56.5% always wash their hands before preparing food. While 1.4% never wash their hands before preparing food. As well as one hundred fifty eight (57%) always wash their hands before handling food whereas 29.6% always wash their hands before touching unpacked foods.

From the study subjects' majority 61.4% always wash their hands before serving foods. Also 36.1% of respondents frequently wash their hands before changing tasks from raw meat. As well as ear to half 58.5% sometimes wash their hands after touching any parts of the body. Another is 40.8% of respondents sometimes wash their hands after coughing, sneezing, this also may be source of communicable disease such Covid 19. Almost all of 81% of respondents always wash their after eating or drinking. The study respondents less than half, one hundred eighteen 42.6% always wash their hands after touching unclean equipment whereas 55.2% of them sometimes wash their hands after touching working clothes. In this shows that the availability of dish washing compartments 87.7% and 69% had hand wash around their kitchen whereas study done Mekele town shows 98.1% had some kind of dishwashing facility and 28.5% were with hand washing facility (20).

Bivariate logistic regression analysis shows that license, type of establishments, educational status of food handlers, income, regular inspection, type of hand washing basin, availability of hand washing around kitchen, availability of soap, availability of hand washing adjacent latrine had significant association with utilization of hand washing. Whereas study done in different places indicate that ownership of the establishment, use of detergent, educational status of the food handler (20), adequate soap, water for hand hygiene knowledgeable of hand hygiene (34), information hand washing (23), food handler marital status, monthly income, knowledge (35) Inspection, the presence of license, service year of the establishment were factors that significantly associated with the utilization status of hand washing of food establishments(36).

Multi logistic regression reports that educational status has significant association with utilization of hand washing at the 0.005. The adjusted Odds ratio of educational status for cohort of proper utilization of hand washing is 95% (AOR= 6.107; 95% CI: 1.735, 21.495) at p value 0.005. That means high school and above educational level were 6 times more utilizing in proper manner than primary and below. Regular Inspection has significant association with utilization of hand washing at p value 0.003. The Odds ratio of regular inspection for cohort of good utilization of hand washing is (AOR =6.610; 95%CI: 1.892, 23.087).

Generally, educational status, regular inspection, frequency of hand washing and availability of hand washing adjacent latrine had significant association with proper utilization of hand washing.

The observational result implies that utilization of hand washing also confirms interview result. It reveals that hand washing is not properly utilized because of lack of knowledge, lack of water and sometimes ignorance. Generally the qualitative results reflects the quantitative result of the study.

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## 5. Conclusion

This study reveal that availability of hand washing facility in food and drinking establishments in Nekemte town is good where type hand washing basin need improvements to fixed type which were movable. Availability of soap is also good whereas use of soap is less and need improvement. Generally proper utilization of hand washing facility in food and drinking establishments in Nekemte town is medium which need great improvements. Because without proper utilization of hand washing facility we cannot prevent communicable disease. The results from multivariate logistic regression analysis confirmed the strong significant the association between: regular inspection and educational status. Proper hand washing is more utilized where there was regular inspection and higher educational status.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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