Hand Hygiene Knowledge, Perception and Practices among Women of ‘Kirkos’ Locality in Addis Ababa, Ethiopia

Abreham Iyasu¹, Moges Ayele¹ and Bayisa Abdissa²*

¹School of Psychology, College of Education and Behavioral Studies, Addis Ababa University, Addis Ababa, Ethiopia
²Department of Public Health, College of Medicine and Health Sciences, Jigjiga University, Jigjiga, Somali, Ethiopia

Corresponding author: Bayisa Abdissa, Department of Public Health, College of Medicine and Health Sciences, Jigjiga University, Jigjiga, Somali, Ethiopia, Tel: +251-913-39-56-33; E-mail: bayoabdi@gmail.com

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Abstract

Background: The concept of hand hygiene is defined differently by different bodies. Among all, the definition given by Center for Disease Control was found appropriate and relevant to this study. Accordingly, hygiene is the practice of keeping personal and environmental hygiene or cleanliness with the intention of preventing disease and illness. Hand hygiene is not a recent practice; rather it is as old as a man.

Objectives: To assess hand hygiene knowledge, perception and practice among women of “Kirkos” locality in Addis Ababa and to identify the factors associated with the existing hand hygiene practice.

Methods: A community based cross-sectional study was set out to conduct household survey. Three hundred eighty five women were selected using a multi-stage random sampling technique, which involved the selection of woreda, kebele and finally the households. Fully structured questionnaire was used to collect information on participants’ knowledge, perception and practice of hand washing.

Results: Overall, majority (66.8%) of the respondents had lower level of knowledge of hand washing. Regarding, the hand washing practice, majority (61.3%) of the participants don’t frequently wash their hands at critical times. Likewise, participants don’t have the habit of drying hands, in which case majority (more than 70%) of the respondents were identified not to dry their hands at all. Education, perceived motivation and perceived beliefs were identified to be strongly associated with hand hygiene practice (AOR=2.47621, 95% CI; 3062, 4.6939), (AOR=0.2056, 95% CI; 1.2648, 3.3244), and (AOR=1.7916, 95% CI; 1.0553, 3.0415).

Conclusion: Smaller proportion of the women practiced proper hand washing. Furthermore, a smaller proportion of women were identified to have knowledge of proper hand washing.

Keywords: Hand hygiene; Microorganisms; Acquired infection

Introduction

Hand hygiene is not a recent practice; rather it is as old as a man. The Jews used to practice hand washing before eating. Hands could be properly washed through brief rubbing together of all surfaces of lathered hands and rinsing under running water. Through hand washing microorganisms are suspended and mechanically removed by rising with water. Thus, the vital principle of hand washing is removal, not killing [1]. Hand hygiene has also been considered for several years as the single most effective and cost-effective means of preventing hospital acquired infection, as well as an effective means of preventing illness in the community that may lead to hospitalization [2].

The importance of hand hygiene is also associated with the use of our hands in many of our daily activities, including handling objects, food handling, food preparation, cleaning objects, etc., all of which could lead to contamination of our hands. Preparing and eating food with contaminated hands exposes for the transmission of contaminants (germs) into the body through food, which in turn causes ill-health. Despite its importance to prevent diarrheal diseases people have misunderstandings about hand washing and its time of practice.

There are critical times when hands should be properly washed. According to Center for Disease Control, the critical times for hand washing include, after using the toilet, changing diapers, attending to a sick person, handling raw meat, fish or poultry, after handling garbage [3].

According to World Health Organization, washing hands with soap and water at critical times, like before meals and...
after using toilet have been found to prevent hepatitis A virus infection. Thus, it is appropriate for programs focusing on reduction of morbidity and mortality to include hand washing intervention. We couldn’t find a specific figure about hand washing Practice in Ethiopia from the previous studies.

There is huge burden of hygiene and sanitation related diseases in Ethiopia, particularly among children. Besides, it was reported that hand washing is a crucial means for preventing hygiene and sanitation related diseases. In this regard, regular and proper hand washing by mothers of children was reported to have a crucial importance in reducing the prevalence of infectious diseases, hospital admissions, and mortality and morbidity in under-five children [4].

Objectives

To assess women’s knowledge about hand washing in practice.

3. To identify the existing hand hygiene practice among women of “Kirkos” sub city in Addis Ababa and to find out the factors associated with the prevalence of infectious diseases, hospital admissions, and mortality and morbidity in under-five children [4].

Methods

Study period and area

“Kirkos” locality is an area located in Kirkos Sub city, which is among the ten sub cities of the capital Addis Ababa. The locality is almost located at the center of the city. It is among the most slum areas of the city. Recently, majority of such slum areas in the city have been developed to have a new and modern city image, furnished with new and modern residential apartments and commercial buildings. But, Kirkos locality has not yet get this chance and is still the most slum area of the city, where poor street drainages, highly congested and poorly constructed houses, and insufficient number of public and private sanitary facilities are typical images of the locality. The study was conducted from June to August 2016.

Study design and sampling

A community based cross sectional study was conducted from June to August 2016. Multi stage sampling was employed to select the study subjects when a total of four stages were considered. Stage 1 selecting kirkos sub city, stage 2 selecting woredas (districts in kirkos sub city), stage 3 selecting kebeles (the smallest admimivrite unit), stage 4 selecting households. The sample size was calculated using a single population proportion formula. Kirkos sub city was randomly selected from all sub cities in Addis Ababa and allkebeles in the selected woreda (district) were considered to randomly select 2 kebeles namely kebele 1 and 4. There are a total of ten kebeles in kirkos sub city. Because of the constrains of resource including time only two kebeles were randomly selected. Sample size was proportionally allotted for the selected kebeles depending up on the number of Eligible women in the randomly selected kebeles. A systematic sampling was applied to identify the required households from the selected kebeles. One eligible woman was expected from each household. One woman was randomly selected in the event where a household had two or more eligible women.

Data collection method and tools

The questionnaire was translated from English to Amharic language for the sake of convenience for data collectors to easily conduct their interviews, as Amharic is their mother tongue language. An interview administered was used to collect data using structured questionnaire.

Data management and analysis

After completion of the data collection, data cleaning was undertaken before data entry was commenced. After data cleaning, data were entered into Epi-Info version 3.5.3, for the sake of analysis. Descriptive analysis using frequencies was made for analyzing the demographic characteristics, knowledge, perception and hand washing practices. However, before analyzing the association between hand washing practice (outcome variable) and other exposure variables, including; demographic characteristics, knowledge, and perception, after doing this, logistic regression analysis was employed to identify factors influencing hand hygiene practice via crude and adjusted odds ratios, since this model provides a flexible means of analyzing the association between a binary outcome and a number of exposure variables.

Operational definitions

1. Kebele the smallest admimivrite unit in the country.
2. Cognitive is the dimension that represents the process of knowing.
3. Knowledge is factual information.
4. Perception is the individual’s interpretation of reality. A perception is not necessarily based on truth.
5. Behavior is anything that an individual does that involves action and responses to stimulation from the internal and/or external environment.
6. Hand hygiene practices (behavioral domain) are the usual mode, method, or pattern of performance.

Ethical consideration

The study was approved by Institute of Review Board of Addis Ababa University. Official letter was obtained from Addis Ababa University, School of Psychology and delivered to Kirkos
Sub city to further be directed to the concerned lower level government administrative bodies till the research team gets legal permission to work in the intended locality.

Information about the study was given for the participants, including purpose and procedures, potential risk and benefits so that encourage provision of accurate and honest responses. Study subject was told participation is their volunteer and there was no interpretation of a single response (fully confidential). An informed consent was obtained from the study subjects and they will be told that they have a full right to refuse to response either partly or completely. But, participant was also informed that their genuine responses are vital importance for the study.

Results

Sociodemographic characteristics of the respondents June 2016

Three hundred Eighty-five women were participated in the survey making a response rate of 100% (Table 1).

The analysis of the data indicated that 78.4% of the respondents were married, while only 2.3% of them were single. Regarding the age of respondents, majority of them were in the age range of 36 to 45 years (34.8%) and 46 to 55 years (33.8%), while only 0.3% of them are aged in the range of 18 to 24 years. The result also indicated that, majority of the respondents didn’t attend higher level of education. In this regard, about 25.5% didn’t attend any formal education and 55.1% of them have attended only primary education. However, only 0.8%, 4.2% and 0.3% have attended preparatory school, college diploma, and first degree and above respectively. It was also observed that majority (76.6%) of the participants were orthodox Christians, while few of them were identified to be followers of protestant, Muslim and catholic religions. Besides, it was found out that majority of the respondents (85.7%) were found to be primarily responsible for the preparation of food in their households, while only few of them were found to have maids and other household members to take the responsibility of food preparation in their household.

Hand hygiene knowledge among women in the study area June 2016

As indicated in table above, majority (62.1%) of the respondents were identified to have insufficient awareness about causes of food poisoning. Likewise, majority (70.9%) of the respondents were identified to have insufficient awareness about critical times for hand washing (Table 2).

Table 2 Proportion of women’s knowledge for food poisoning and critical times for hand washing.

| Level of awareness                | Number | Percentage |
|-----------------------------------|--------|------------|
| Awareness about Causes of food poisoning |        |            |
| Sufficient awareness               | 146    | 37.9       |
| Insufficient awareness             | 239    | 62.1       |
| Awareness about critical times for hand washing |        |            |
| Sufficient awareness               | 273    | 70.9       |
| Insufficient awareness             | 112    | 29.1       |

The result shows that majority (>90%) of the participants were reported to have knowledge about eating undercooked vegetable and not washing hands before handling food could cause food poisoning. However, almost half of the respondents were identified to lack knowledge with regard to the rest of the items in causing food poisoning. Likewise, majority (>75%) of the respondents were reported to have knowledge about all the items related to critical times for hand washing.

It was identified that majority (62.1%) of the respondent lack knowledge about causes of food poisoning. However, majority (70.9%) of the respondents were identified to have knowledge about critical times for hand washing. However, still a considerable proportion (29.1%) of the respondent lack to have knowledge about critical times for hand washing.
Majority (66.8%) of the respondents were classified as those who lack awareness about hand hygiene (Tables 3 and 4).

Table 3 Majority (66.8%) of the respondents were identified to have insufficient hand hygiene knowledge.

| Level of awareness     | Number | Percentage |
|------------------------|--------|------------|
| Sufficient awareness   | 128    | 33.2       |
| Insufficient awareness | 257    | 66.8       |

As indicated in table above, majority (66.8%) of the respondents were identified to have insufficient hand hygiene knowledge.

As indicated in table above, majority (76.9%) of the respondents were identified to have negative perception of susceptibility to foodborne diseases. Likewise, significant proportion of the respondents were identified to have positive perception of motivation to hand hygiene. Still, a considerable number (41.8%), (28.1%) and (27.5%) of the respondents were identified to have low perception towards seriousness of foodborne diseases, benefits of hand hygiene, and barriers to hand hygiene respectively.

**Hand hygiene practices among the respondents June 2016**

The result for each hand hygiene practice is summarized in subsequent tables and details following that (Tables 5 and 6).

**Use of hand sanitizer at specific hand washing events**

The frequency distribution for use of hand sanitizer at specific hand washing events. The result has shown that almost all (99% and more) of the respondents were found not to use hand sanitizer at any of the critical times for hand washing.

**Method of drying hands after washing hands at specific hand washing events**

Majority (>70%) of the respondents were identified that they do not dry their hands at all after washing their hands in any of the critical times for hand washing. However, a considerable number (25%) of the respondents were found to dry their hands with cloth towel.

**Duration of hand washing at specific hand washing events**

Significant proportion of the respondents (>70%) of the respondents were identified to wash their hands for more than 20 seconds in any of the critical times for hand washing. However, about (25%) of them were found out that they do not clearly know the length of time that they wash their hands.

**Temperature of water used at specific hand washing events**

The study showed the frequency score for respondents with regard to temperature of water used by respondents at different events of hand washing. It was reported that majority (>79%) of the respondents were identified to use cold water to wash their hands in any of the hand washing events. However, a considerable number (19.7%) and (13%) of the respondents were reported to use warm water after using toilet and after cleaning children respectively.

The result has shown that almost all (99% and more) of the respondents were found not to use hand sanitizer at any of the events of hand washing. Majority (75%) of the respondents were reported that they do not at all dry their hands at any of the indicated events. However, a considerable number (25%) of the respondents were found to dry their hands with cloth towel. Majority (71%) of the respondents were reported to wash their hands for more than 20 seconds. However, about (25%) of them were found that they do not clearly know the length of time they wash their hands.

**Association between respondent’s hand washing frequency and demographic characteristics, hand hygiene knowledge, and perception**

Firstly, bivariate association was used to identify variables, which could significantly associate with the frequency of hand washing. These variables were used to further develop logistic regression model so that variables, which have strong association with hand washing frequency were identified via crude and adjusted odds ratio (Table 7).

**Table 4 Proportion of women’s hand hygiene perception.**

| Perception                        | Have positive perception | Have negative perception |
|-----------------------------------|--------------------------|--------------------------|
|                                    | Number | %  | Number | %          |
| Susceptibility to foodborne diseases | 89     | 23.1| 296    | 76.9       |
| Seriousness of Foodborne diseases  | 224    | 58.2| 161    | 41.8       |
| Benefits of hand hygiene           | 277    | 71.9| 108    | 28.1       |
| Barriers to hand hygiene           | 279    | 72.5| 106    | 27.5       |
| Importance of hand hygiene         | 347    | 90.1| 38     | 9.9        |
| Motivation to wash hands           | 125    | 32.5| 260    | 67.5       |

Bivariate association using chi-square test indicated that there is a significant (p=0.0377) association between frequency of hand washing and age. This shows that (46.8%) of women of age 35 and less wash their hands more frequently than those of older age (35.6%). Likewise, there is a significant association (p=0.00039) between hand washing frequency and level of education of respondents. This shows that
respondents at high school or higher level of education (56.0%) wash their hands more frequently as compared to those with at lower level of education (34.5%). The result is indicated in Table 7 below.

Table 5 Frequency of hand washing practice.

| Hand washing events | Always | Most of the time | Often | Occasionally | Never |
|---------------------|--------|------------------|-------|--------------|-------|
|                     | Number | Percent | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| After using the toilet | 344 | 89.4 | 39 | 10.1 | 2 | 0.5 | 0 | 0 | 0 | 0 |
| After handling garbage | 74 | 19.2 | 130 | 33.8 | 114 | 29.6 | 63 | 16.4 | 4 | 1 |
| Before eating | 284 | 73.8 | 95 | 24.7 | 5 | 1.3 | 1 | 0.3 | 0 | 0 |
| Before preparing food | 74 | 19.2 | 180 | 46.8 | 80 | 20.8 | 49 | 12.7 | 2 | 0.5 |
| Before handling food | 73 | 19 | 171 | 44.4 | 84 | 21.8 | 56 | 14.5 | 1 | 0.3 |
| After cleaning children | 253 | 65.7 | 102 | 26.5 | 28 | 7.3 | 2 | 0.5 | 0 | 0 |

Table 6 Hand washing practice after specific events.

| Hand washing events | Yes | No |
|---------------------|-----|----|
|                     | Number | Percent | Number | Percent |
| After using the toilet | 4 | 1 | 381 | 99 |
| After handling garbage | 4 | 1 | 381 | 99 |
| Before eating | 4 | 1 | 381 | 99 |
| Before preparing food | 3 | 0.8 | 382 | 99.2 |
| Before handling food | 3 | 0.8 | 382 | 99.2 |
| After cleaning children | 3 | 0.8 | 382 | 99.2 |

Table 7 Distribution of frequency of hand washing practice by demographic characteristics, hand hygiene knowledge and perception among respondents Kirkos, Ethiopia.

| Demographic, knowledge and perception items | Frequency of hand hygiene N (%) | Statistical indices |
|---------------------------------------------|--------------------------------|---------------------|
|                                             | Regular | Irregular | χ² | df | p     |
| Age-group (years)                           |         |           |    |    |       |
| 35 and less                                 | 37 (46.8) | 42 (53.2) | 2.79 | 1 | 0.0377 |
| Greater than 35                             | 94 (35.6) | 170 (64.4) |      |   |       |
| Educational status                          |         |           |    |    |       |
| Less than secondary                        | 107 (34.5) | 203 (65.5) | 10.86 | 1 |       |
benefit (95% CI; 3.0415) is likely to have 1.79 times frequent hand washing as compared to those who have negative perception. Furthermore, women who have the motive towards hand hygiene (AOR=2.0506, 95% CI; 3.3244) is likely to practice hand washing 2.05 times more frequently than those who lack the motive.

Table 8 Crude and adjusted odds ratio and 95% CI for respondent’s June 2016.

| Factors | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
|---------|------------------------|----------------------|
| Age     | 1.5932 (0.9580, 2.6496) | 0.8886 (0.4712, 1.6755)NS |
| Education | 2.4146 (1.4463, 4.0313) | 2.4762 (1.3062, 4.6939) |
| Knowledge on food poisoning | 1.6338 (1.0858, 2.4739) | 1.3540 (0.8073, 2.2709)NS |
| Knowledge on critical times for hand washing | 1.5774 (0.9894, 2.5146) | 0.9302 (0.5308, 1.6298)NS |
| Perceived benefits to hand hygiene | 1.9582 (1.2074, 3.1761) | 1.7916 (1.0553, 3.0415) |
| Perceived motivation to hand hygiene | 2.3855 (1.5404, 3.6943) | 2.0508 (1.2648, 3.3244) |

Reference group, *p<0.05, **p<0.01 and NS= Not statistically significant

Discussion

There is a significant (p=0.012) association between hand washing frequency and awareness for causes of food poisoning. This implies that respondents who have better awareness (45.9%) wash their hands more frequently as compared to those with less awareness (34.3%). Similarly, it was observed that there is a significant (p=0.027) association between the frequency of hand washing and awareness about critical times for hand washing. In this regard, respondents who aware more (41.8%) about critical times for hand washing, wash their hands more frequently than those with lesser awareness (31.3%).

In this regard, it was identified that there is a significant (p=0.0028) association between frequency of hand washing and perceived benefits of hand washing. This shows that respondents who have positive perception towards the benefits of hand hygiene (43.0%) wash their hands more frequently than those who have negative perceptions (27.8%). Similarly, there is a significant (p=00005) association between frequency of hand washing and perceived motivation to hand hygiene. As a result, respondents who have the motive for hand hygiene (52.8%) wash their hands more frequently than those who lack the motive for hand hygiene (31.9%) (Table 8).

On multivariate logistic regression education, perceived benefit to hand hygiene and perceived motivation to hand hygiene were found to be significantly associated with frequency of hand washing.

The women with higher level of education (AOR=2.47621, 95% CI; 3.062, 4.6939) is 2.47 times more likely to wash hands frequently as compared to those in lower level of education, while women who have positive perception towards the benefit of hand hygiene (AOR=1.7916, 95% CI; 1.0553, 3.0415) is likely to have 1.79 times frequent hand washing as compared to those who have negative perception. Furthermore, women who have the motive towards hand hygiene (AOR=2.0506, 95% CI; 1.2648, 3.3244) is likely to practice hand washing 2.05 times more frequently than those who lack the motive.

This study documents the association between frequency of hand washing practice and demographic characteristics, knowledge and perception in “Kirkos” locality. Results from this study revealed that majority (89.4%) of women was found to always wash their hands, which is similar to the finding of the research conducted in Nigeria in which majority (88.7%) of the women was found to always wash their hands. With reference to the same research the overall proportion of hand washing practice, which is lower in this finding (38.7%) is lower.
supported with the finding with the research in Nigeria, where the proportion of good hand washing practice is low (21.7%). However, the finding from this research in Nigeria is in contrary to the finding here with regard to, hand washing after cleaning garbage and before food preparation. In this regard, majority of the respondents (79.0%) and (62.3%) respectively were identified to always wash their hands after cleaning garbage and before preparation of food. But, the finding in this research shows that lower proportion (19.2%) of the women participants were identified to always practice hand washing after cleaning garbage and before preparation of food [13-15].

Knowledge and awareness are some of the measures which are thought to be on the causal pathway to behavior. According to the present study, the overall hand hygiene knowledge was found to be low, where majority (66.8%) of them were identified that they don’t have proper hand washing knowledge. Besides, specific to awareness about critical times for hand washing, still large proportion (70.9%) of the respondents lack hand washing knowledge. However, this result is in contrary to the finding of the research conducted on mothers of under-five children in Nigeria, where majority of the respondents were knowledgeable on critical times for hand washing. However, result from logistic regression analysis revealed, the association between frequency of hand washing and awareness about critical times for hand washing was not significant (AOR=0.9302, CI; 0.5308, 1.6298). Thus, this finding is in contrary to the study conducted in India Chitungwiza, and Cameroon which indicated with improvement in knowledge level, respondent’s exhibit better hygiene practices. For that reason, factors other than awareness should be looked at in hygiene interventions to reinforce people’s hand washing behavior [16-19].

The assessment of hand hygiene among women in ‘Kirkos’ locality was determined by measuring knowledge (cognitive domain), general practices (behavioral domain), and six perceptions (susceptibility to foodborne disease, seriousness of foodborne disease, benefits of hand hygiene, barriers to hand hygiene, importance of hand hygiene, motivation to hand hygiene). The six hand hygiene perceptions were developed with the help of Health Belief Model [20].

The finding of this research reveals that only two of the six perception items have shown to have a significant association with hand washing frequency. As a result, perceived benefits to food borne diseases (AOR=1.7916, 95% CI; 1.0553, 3.0415) and perceived motivation to food bone diseases (AOR=2.0506, 95% CI; 1.2648, 3.3244) were identified to have a significant association with hand washing practice [21-23].

From demographic subjects, only education was found to have a significant (AOR=2.47621, 95% CI; 3062, 4.6939) association with hand washing practice. This finding was similar to the finding of the research conducted in Kenya and other similar study in which mothers with higher socio-demographic status and higher education status were reported to have better hand washing practices [24-26].

Conclusion
Finding of this study demonstrated that a smaller proportion of the women practiced proper hand washing. Furthermore, a smaller proportion of women were identified to have knowledge of proper hand washing.

Competing Interests
The authors declare that they have no competing of interests.

Authors’ Contributions
Alis involved in conceived the original idea, proposal writing, designed the study, got funding for the study, participate in data collection, participated in all implementation stages of the study. MA involved in the critical review of the proposal and research work. BA involved drafting manuscript, finalization of the Manuscript and critically reviewing research work. All authors read and approved the final manuscript.

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