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BARRIERS TO AND MOTIVATORS OF HAND WASHING BEHAVIOR AMONG MOTHERS AND CAREGIVERS OF INFANTS IN ABA-SHAWL SUB-ZONE, ASMARA, ERITREA FROM JULY TO DECEMBER 2019

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ABSTRACT

Background: To design a maternal handwashing intervention for the infantile period, this qualitative study explored drivers of handwashing among mothers and caregivers of infants in Aba-shawl sub zone. **Objective:** The objective of this study is to assess the drivers of hand washing behavior among mothers and caregivers of infants in Aba-shawl subzone, Asmara, Eritrea. **Methodology:** This qualitative study was conducted from July to December 2019 in Aba-shawl sub-zone, Asmara. All participants in this study were selected using chain referral sampling. In-depth interviews were conducted with 20 mothers and caregivers of infants. One focus group discussion was done in Edaga-hamus Communiy Hospital with 8 mothers of infants from Aba-shawl subzone and two key informants were interviewed; one health professional in Edaga-hamus IMNCI unit and one administrator of Aba-shawl subzone. In addition to that the researchers observed the general conditions of the community including cleanliness, availability and accessibility of water, toilet and other cleaning facilities. **Results:** The barriers to hand washing behavior of mothers and caregivers of infants identified in this society include; new responsibilities of nurturing an infant, increased workload when nurturing an infant in addition to rearing other children, lack of affordability of hand washing materials for frequent use, lack of hand washing materials in the locations where mothers and caregivers and infants spend most of their time, elders' fear of excessive exposure to water and thereby opposing frequent hand washing behavior of mothers and caregivers of infants. Motivators of hand washing behavior of mothers and care givers of infants identified in this society include; mothers' and caregivers' perceptions of good motherhood, perception that soap is necessary to clean hands particularly for visual dirt and improving the smell of hands, support from husbands and other family members, availability of soap and close proximity of water and hand washing station and other hand washing facilities, perceived benefit of hand washing for prevention of childhood illnesses primarily diarrhea and other stomach problems, verbal cues from close ones regarding hand washing before and after breastfeeding and environmental factors like the overall conditions of the study site. **Conclusion:** The study findings from the mother and caregiver component suggest that there are sizable opportunities to improve hand washing behavior among mothers and caregivers of infants in Aba-shawl. This study is expected to attract the attention of responsible authorities to address their efforts of improving hand washing behavior of mothers and health of infants by focusing their attentions to the specific barriers and motivators prevailing in this study area.

KEYWORDS

Hand washing, Mothers and Infants.

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INTRODUCTION

World Health Organization defines hand washing, as washing of hands with soap and water thoroughly following the five critical moments i.e. after defecation, after cleaning child's defecated bottom,

before cooking, eating and feeding children¹. Hand washing breaks the transmission of disease agents and significantly reduce diarrhea and respiratory infections, as well as skin infections and trachoma². Washing hands merely with water is significantly less effective than washing hand with soap in terms of removing germs because using soap in hand washing breaks down grease and dirt that carry most germs, using soap also means additional time elapsed during massaging, rubbing and to eliminate them from fingertips and between the fingers. Effective HWWS takes 8-15 seconds, followed by thorough rinsing of hands with running water³.

Based on Ethiopian demographic health survey (EDHS) 2016, it was depicted that the prevalence of diarrhea is slightly higher for children in households with unimproved sanitation than for children in households with improved sanitation including hand washing practice. Soap and water, the essential hand washing agents, were observed in only 28% of urban households and 7% of rural households⁴.

Based on hand washing practices reported by United Nations International Children's Emergency Fund, the difference is often substantial between what people know to do and what is actually done. The Baseline Survey of Awareness of 'Facts for Life' reported that two-thirds of the people interviewed, for example, aware that after defecation hands should be washed with water and soap. Unfortunately, in reality, only about 9% actually practiced⁵.

Previous studies in Bangladesh have largely focused on the hand washing behaviors of mothers of children under the age of 5. Some of these studies have showed infrequent hand washing among mothers and other caregivers of young children at times of possible pathogen transmission, including after contact with fecal matter, typically the most frequently reported time that required hands to be washed^{6,7}. The perceptions, beliefs and practices related to maternal handwashing behavior in the neonatal period differs from mothers with older children, as observed by Greenland and colleagues in Indonesia⁸. Such detailed understanding of behavioral drivers is crucial for developing a maternal handwashing intervention to reduce the risk

of infant morbidity and mortality attributed to hygiene-preventable causes. Nested in a larger experimental study whether perinatal handwashing promotion results in reduced neonatal and infant morbidity, we sought to explore current handwashing practices and the context of barriers and motivators to maternal and caregiver hand hygiene that could aid in designing target maternal handwashing intervention in Aba-shawl subzone specific to the infantile period.

METHODS

Study design

This study is a cross sectional qualitative study to identify the barriers and motivators of hand washing behavior among mothers and caregivers of infants in Aba-shawl sub zone, Asmara, Eritrea.

Study Site

This study was conducted in Aba-shawl sub zone, Asmara, Eritrea from July until December 2019.

Sampling method

The chain referral technique was used to select the participants for the in-depth interview which included two caregivers and 18 mothers. The participants in the focus group discussion were selected by visiting the Expanded Program of Immunization Unit of EHCH for two days and selecting 8 mothers having infants less than one year and greater than 28 days and whose address was Aba-shawl. Two key informants; one health care provider from the Integrated Management of Neonatal and Childhood Illnesses Unit of the EHCH and the administrator of Aba-shawl sub-zone were interviewed in their offices.

Data collection instruments and techniques

We developed a questionnaire, subsequently translated to the local language (Tigrinya), from an extensive review of the literature. Open-ended questions were used to identify the barriers and motivators of hand washing behavior. For better comprehension of the barriers and motivators, this study used triangulation by conducting in-depth interviews, focus group discussions and key informants. The research team conducted face to face mobile-recorded, in-depth interviews which took 45-60 min on average, focus group discussions

for about 80 min each and key informant interviews for 15 minutes. Each FGD session was accompanied by one moderator, one note taker and a recorder.

Data analysis procedures

Interviewer-related bias was addressed by continuously discussing and negotiating the content of key words, broader concepts and units of meanings. Then, the researchers discussed and clarified the content of each mobile recorded interview. The notes enabled the researchers to read about each of the participants that were interviewed and quoted in the document. Next, the verbatim of each interview and discussions in the focus group discussions were translated and transcribed. A list of all themes was prepared and written next to appropriate segments of the transcripts. Transcribed data was manually analyzed by using thematic framework procedures which involved four main stages: familiarization, identifying thematic framework, coding and interpretation. The data was summarized in the analysis document that all of the research team commented. The results were presented to the research team to ensure that the experiences of the study participants were accurately captured and reflected.

Ethical considerations

According to research protocol set by the National Commission for Higher Education of Eritrea, the proposal was approved at the Asmara College of Health Sciences by the Research Ethical Committee. A formal letter was written from the School of Public Health and was used as a request for cooperation to the administration of Aba-shawl sub zone and EHCH. After a brief explanation of the purposes of the study those who were volunteers to participate were taken as study participants for the study. Confidentiality was kept by leaving their names and addresses out of every copy of this research paper.

RESULTS AND DISCUSSION

A total of 30 participants were successfully interviewed, of which 2 were males and 28 females. The mean age of the mothers was 28 years (range 21 to 40 years) (Table No.1). From the content analysis, four themes and twenty two subthemes were

developed. The four themes were comprehensive knowledge and perception about hand washing, cues for action, normative beliefs and subjective norms and Practice of hand washing.

Knowledge and Perception

In this study, the respondents lacked general knowledge and perception regarding HW behavior. The knowledge of the respondents varied though they all claimed that they had heard of hand washing importance through mass Medias, ANC providing clinics, EPI providing health facilities, hospitals and schools which partly influenced their perception.

Perceived self-efficacy

Majority of them said that, they have had a person who could provide them the necessary facilities, in the times they had needed help like during night time. While some others mentioned they had no one to take care of them during these times.

One mother said

"I do not need assistance from any person, I move by myself to do the necessary things."

A mother of a four months old infant stated,

"It is my responsibility to maintain the health of my family especially my child, thus motherhood was a changing point in my hand washing behavior because when I was alone I only thought of myself but when I got a baby I started to do it for the benefit of both of us."

Perceived positive and negative consequences

When asked what the negative consequences of HWWS were, some mothers responded as follows.

"HWWS does not have any negative results only that it takes some time."

Another one said,

"It does not have any harm to health, but sometimes when I need to prepare injera (traditional food), I do not want it to smell soapy so I use liquid detergent instead."

All the mothers stated that hand washing has many advantages mainly being prevention of diseases but also took cleanliness (neatness), comfort and luxury into account. One mother of 1 year old male infant said,

"It has many uses, it may prevent them (the infants) from contracting tonsillitis, vomiting or having

diarrhea. Generally by washing hands we can prevent various diseases that occur due to dirtiness" Besides, mothers gave their ideas about the usage of only water as a hand washing material. Mother of 1 year old male infant stated,

"It is not enough when a mother washes her hands using water only, because there is no complete cleanliness compared to soap."

Perceived social norms

Mothers of infants are usually advised not to go outside, keeping their baby alone in the room until 40 days. One mother said,

"When I first gave birth [during the first 40days] when there was no one available in the room, I could not get down from this bed even for a hand wash . . . people said that keeping a newborn alone in the room is bad during this time."

"In our society, uvulectomy (by traditional practitioners) is supported because swelling of the uvula is believed to cause difficulty of sucking breast and diarrhea to the baby ", said a mother of 1 year old male infant.

Norms regarding good motherhood

Mothers generally said that a good mother always takes care of and loves her baby. One mother said,

"A good mother is always supposed to keep her baby clean, warm and cozy and gives her baby's health priority."

Perceived risk and cause of infantile diseases

Regarding the main common dangerous child diseases that are avoidable using proper HWWS such as pneumonia, common cold, diarrhea and fever, perception was quite deficient about the ways they are caused by. One father/caregiver claimed,

"Pneumonia, bronchitis, common cold, diarrhea and vomiting are the dangerous illnesses that can affect an infant"

Elder care givers seem to lack some understanding about the causes of child illnesses. One grandmother of an infant when asked how it would affect the child's health if her grandmother's hands were dirty, she said,

"Not at all, I am like her mother, what about me, could possibly hurt her? I even some times give her my breast to soothe her when she cries and her mother is not around."

When respondents were asked when is the period that an infant is most vulnerable to diseases, One mother said,

"Infants are susceptible to diseases after they start taking additional food that is beyond 6 months of age, however as I have heard it from a doctor even if you do not give sufficient care, a one month old kid can also be susceptible."

A mother of two children said,

"An infant is more susceptible to diseases before the age of 6 months because after 6 months he can get immunity from the additional food given to him."

The multiparous mothers who washed their hands at the critical times observed improved health status of their families and children compared to their first child's. Besides the incidence of diseases observed before was reduced.

"Mothers HW behavior has a big impact on her child. If the HW practice is poor, her child may get sick because mother's cleanliness means families cleanliness. Plus the mother's positive behavior is determinant for the child's health status" indicated mother of a 4 months old male child.

One care giver of a 10 months female infant said,

"It is a mess now that she started crawling she just picks up whatever she finds on the floor and puts it in her mouth. I guess that is why she gets diarrhea more now than when she was younger."

Some mothers also linked seasonal variations and illnesses. One mother said,

"There is a seasonal pattern to illnesses; some illnesses are more common in one season and other illnesses more common in another season. In cold seasons flu is common."

Most of the respondents pointed out that they did not know what causes fever. But one mother said,

"Fever is a result or cause of an illness."

One mother described,

"During the first 40 days after I gave birth, my contact with water was limited since I do not leave the bed that much, besides my mother used to tell me that touching cold water repeatedly will only make the child catch cold."

One care giver also reported.

"My granddaughter has pneumonia. Her mother takes her to hospital frequently. I told her not to

wash clothes and hold water when she first gave birth but she would not listen to me, I told her bathing the baby repeatedly would not do her any good but look at what she has done to the poor baby now. Nothing kills a baby except hunger.”

One mother of a 10 months old female baby stated, “She(referring to the baby) got diarrhea when she started growing milk teeth, she used to scrub her gums with anything on her hand because it is itchy when they grow teeth.”

When asked about what causes fever for an infant, one mother stated,

“When I stay in the sun for long hours with my baby, he gets feverish but gets better when we get home and I cool him by loosening his clothes.”

Another mother of a 6 months child said,

“A baby could get fever when he/she is fed too much in excess of his usual amount.”

One mother described,

“When a person with an itching disease or with dirty hands holds the baby he would get skin diseases.”

Perceived positive and negative consequences

As one mother said,

“Hand washing with soap has of course positive consequences on my health and my baby’s health too. Besides being healthy I would also feel good and clean after washing my hands.”

Cues for action

Access

The respondents all outlined that no matter how much the soap costs they buy it because it is a necessity. One mother said,

“I have never been without soap, even if I have to stay without food, I have to buy soap no matter what.”

Another respondent said,

“I have never been without soap and my neighbors call me ‘Senay Laundry’ because I use soap excessively.”

Mothers emphasized the fact that shortage of water limits their behavior towards good hand washing practice. A mother said,

“I usually have to conserve water until the next time the water truck comes, I use the water to wash the babies napkins and the bed mattress, so little is left

for me to wash my hands every time before I hold the child or every time I breastfeed him.”

According to one mother,

“Soap is something I have to buy at all costs even if I have to reduce the groceries I buy. I cannot be without soap when I have a baby that defecates a couple of times a day. So it is not a matter of affordability, we buy it because we have to.”

During the in-depth interview one respondent described,

“There are days when I completely run out of soaps; even now I do not have soap. I use the neighbors’ soap to wash and since it is not mine I cannot use it as I please, so except for the times when my hand is extremely dirty, I just wash with water only.”

“Getting soap from shops is of no problem but to get water from nearby areas is tiring and hard. Moreover the water that we bring is either brackish or non-potable,” said mother of infant.

One mother also stated that,

“The water we get is too expensive it is hard to afford it, but we are forced to buy even though it is out of our capability. We buy water from carts which is 100-150 Nakfa. Besides one barrel does not last for even a week so we go to Edagahamus (nearby area) to bring water for washing but we buy bottled water(10 liters) for drinking purposes.”

Reminders

One mother said,

“My husband is very supportive, even when I am in a hectic situation he reminds me to wash my hands before I breastfeed the baby, he also holds the baby till I finish.”

A 30 years old female mother of a 9 months female infant described,

“When she was being exclusively breastfed her stool did not smell that bad so I used to change her diapers and just rinse my hands with only water. But now that she started to eat other foods her stool is harder and smellier than it was, so to remove the smell and to feel less disgusted I wash my hands with soap and water.”

Environmental factors

In addition to the almost constant shortage of water and the relatively high prices of soap, some environmental factors also seemed to play a role in

the hand washing behavior of these mothers and caregivers of infants. One mother claimed,

"Watching how dirty our environment is makes me worry about the health of my baby and my family, so I wash my hands with soap so many times after any activity."

One mother of 5 children when asked about how hard it was for her to remind the other children to wash their hands with soap and water before touching the infant, she answered,

"Living in this area itself is enough to remind us to wash our hands before doing anything let alone touching the baby. Our kids spend a lot of their time outdoors playing and I am almost constantly worried they might hold any sharp objects like blades or disposed condoms. Therefore I am always cautious about reminding them to wash their hands with soap and water."

Benefits and Threats

The respondents clearly mentioned that HWWS would promote health by preventing diseases both to the mother or caregiver, the child and the family in general. One respondent said,

"Washing my hands with soap and water ensures my health and my family's health by removing the disease causing bacteria and dirt in my hands."

Normative beliefs and subjective norms

Nurturing child and maternal intent to improve hand washing

In some instances, the social construction of a woman's role being a wife and a mother of one or more children (multiparous) often impacted her hand washing behavior. One primiparous mother said,

"After I became a mother, the frequency of my HWWS behavior increased because of my increased responsibility to care for my child's health."

On the other hand another mother said,
"Being a mother of five children is sometimes hard to remember to wash my hands with soap and water as required because I do not have the time to do so because of the house chores and the responsibility to look over all the children."

Affiliation

A mother described,

"If I am dirty and do not take care of my baby, people would think bad of me and I would feel

ashamed of myself. In addition to the health benefits cleanliness increases my self-esteem."

Religion

There was link of religion to hand hygiene in the Islamic religion. One mother of Islamic religion said,
"In our religion it is a must to wash your hands, face and feet with water or with soap after using the toilet and before praying."

Social factors

Most elderly people do not actually believe that HWWS is a necessity to the health of the child and they stress out that feeding and nurturing the baby is quite enough for the health of the baby. One 65 years old woman caregiver whose educational level was 5th grade said,

"We have raised lots of children in our long life experience and you just need to feed them any food well and nothing would affect them."

Another mother claimed,

"My mother-in-law lives with us and every time she watches me washing my hands and other things with soap, she criticizes and tells me not to spend much time with water."

One respondent mother said,

"It is so hard to tell people to wash their hands before touching(hugging) the baby even though I myself sometimes think that they are clean. But it would be better if they restrain themselves from holding the baby with dirty hands."

Practice

Hand washing behaviors Habit, motivated or planned

When asked if hand washing was part of their plan, habit or they do it because something motivated them; three mothers gave the following responses.

"I wash my hands because it is in my habit. I always wash my hands before I eat and use the toilet to the very least with water only."

"When I am doing activities that would make my hands dirty I am motivated to wash them with soap and water before holding or feeding the baby."

Another mother who works as a waitress said,
"After I come from work, I always wash my hands before holding the baby I am not sure about the other times but after coming from work, it is in my plan to wash my hands."

Commitment with the five critical times

When asked whether they washed their hands with soap at all important moments, mothers replied as follows.

"It is hard to always remember to wash your hands for example sometimes at night when I change her diapers, I immediately breastfeed her."

"There are times when I come from outside and hold the baby before washing my hands.

Hand washing before breast feeding or feeding the baby

Some of the mothers stated:

"If dirt remains in my hands or if my breasts are dirty, the dirt will enter the baby's stomach through the milk and cause him stomach illness"

The respondents also mentioned that it was necessary to wash hands with soap before feeding the baby with bare hands in the post-weaning stage because the dirt, bad odor and germs on their mothers or caregivers hands may be ingested by the infant and cause him/her illnesses like diarrhea

After visiting the toilet/defecation

One mother of a 4 months infant said,

"I always remember to wash my hands after visiting the toilet because my baby will get sick if I breastfeed him with my dirty hands that would carry germs."

Before eating

One mother said,

"I always wash my hands before eating at least with water. I use soap depending on what I was doing before eating. If I was doing activities that would dirt my hands, I wash with soap and water before eating."

Before preparing and serving foods

One mother stated,

"During food preparation, I wash my hands together with the ingredients like onion and after I finish cooking, I use soap to wash my hands because I have to remove the garlic or hot peppers before holding my baby."

After cleaning the child's bottom/ changing diapers of the baby

A mother of three months male infant said.

"I usually do not change his diapers at night because I normally do so before we go to sleep, but

if he cries because of the discomfort, I just change his diapers and go back to sleep. At that time I am just too lazy to get out of bed and wash my hands with soap and water."

One mother mentioned,

"Just the sight of the dirt or feces of the baby makes me want to wash my hands with soap."

Perceived behavioral control

One mother of twins and 4 older children explained, *"It is not about knowing how important hand washing with soap is; you have got to have the time and suitable conditions to do the correct things. When one of the twins cries the other one follows. At such times I do not even remember about washing my hands, it is just too hectic to think about anything else but calming the twins first."*

Perceived barriers of hand washing

Lack of importance

One mother described,

"I am a house wife and do not go out that much. Especially when I first gave birth I barely went out of the house at such times, I donot need to wash my hands with soap every now and then because my hands do not get that dirty."

Workload and new role of motherhood

A mother of an infant said,

"When sneezing/coughing while her child is in her lap, she cannot go outside for a hand wash; but before childbirth she could wash hands."

Lack of attendant support

As one of the mothers of an infant said:

"Sometimes I can wash, sometimes I cannot. The child cries a lot. I cannot give him to anyone [attendant] even for going to toilet because it takes a long time in the toilet. Then if he continues crying more, I hurry and come from the toilet without washing my hands. "

Responsibility for multiple children

One mother explained,

"I want to remind the elder children to wash their hands before holding the infant but do not have that opportunity because I am busy with other work". This is a very common scenario in almost all the mothers.

Opposition from elder family members

One mother of a 10 months old infant said.

"My mother hated it when I washed clothes or did the chores when I gave birth because she was afraid that I was going to make the child sick."

Availability of handwashing materials

One mother also said,

"It would have been better to have a hand washing station here or near the public toilets. We travel a distance to use the toilet and by the time we are back home, it is already too late to remember to wash our hands with soap and water."

Avoiding soap smell in food

Some mothers said,

"It is good to wash with soaps frequently but some times when I have to prepare injera for lunch or dinner especially when we have guests over the house, because I am afraid that the injera would smell like soap I just wash my hands with water only."

Perceived motivators of hand washing

Hand washing for removing visible dirt and as habit

One mother said,

"Despite the fact that I know I should wash my hands with soap at the critical times, I cannot help but feel like washing when my hands are visibly dirty, and do not remember washing when they look clean."

Information as a motivator

One mother particularly mentioned,

"I learned from television that handwashing could reduce illnesses. They teach us in the clinics when we go for checkups too."

Attendant support

One mother stated,

"My mother lives with me, so I have time to do hygienic practices when I feel necessary."

Another mother also said,

"When I first gave birth, my husband used to bring me soap and water to the bed, so I was never troubled to get up and wash."

Materials for hand washing

One mother of infant said,

"During the night time I prepare a wet clothe near my bed. So, when I change my child's diaper at night, I only wipe my hand using the wet cloth."

Discussion

Knowledge and Perception

Mothers and caregivers in this study area had a general idea about the importance of HWWS although their level of knowledge and perception and the sources for the information differed.

In Aba-shawl sub-zone their main sources of information were health education in health care facilities, mass Medias and from schools. But in a quantitative study done in Zambia reported that their main sources of information included health centers, places of worship, social clubs, radio, schools, cell phones health educators /promoters and village leaders⁹.

In this study all participants said that they visited ANC clinics during all their pregnancies and they received health educations about hand washing. But in a study conducted in both Korogocho and Bondo (Kenya) showed that, new mothers did not attend the recommended four ANC visits during pregnancy, which contributed to their limited knowledge about hand washing, and hygiene standards required to prevent the infant from infections¹⁰. Moreover; this study mothers said they received education about HW, neither of them mentioned the right ways to do it, nor of them knew how after hand washing is practiced; similarly the study done in korogocho and Bondo also reported that during the ANC visit at the facility, majority of the women were not shown how to wash their hands before handling an infant.

Normative beliefs and subjective norms

The HW behavior of the mothers is greatly influenced by the organizational norms, social norms followed by the society and need to be obedient to the norms of the social network they live, so as to be respected by the people and have good connection with the society and other close ones would force them to follow the rules accepted by the people. This study depicts that the study participants need for affiliation greatly affect the hand washing behavior of mothers and caregivers of infants like if they do not generally look clean, their close ones (the society in which they live in) feel disgusted to get in touch with them would isolate them which may act as a motivator to their hand washing behavior. Similarly to this finding, in a study which was conducted in

Kenya, also reported that the motivators for hand washing were: Disgust, dirt, contamination, smells-the things people find revolting, horrible, unappealing, and so on; Purity Cleanliness, spiritual purity, feeling untarnished; Comfort How you feel and how your hands feel when they're clean; Status moving up in the world, being admired and respected; Attracting future partners, being attractive to your current partner. Looking good; Nurture Doing the best for my children, putting them first-rewarding them, teaching them, helping them develop; Fitting In Being part of the society, being seen to fit in, belonging, doing what others do. These factors which commonly belong to the need for affiliation being part of the normative and subjective norms were the findings can act as motivators to the hand washing behavior of mothers and care givers of infants¹⁰.

Religion is a strong belief held strictly by the mothers and caregivers of infants which guides and affects their hand washing behavior. In this study, majority of the respondents were of Christian religion but few of them were Muslim. The religion difference seems to have quite an impact on the hand washing behavior of the mothers or caregivers of infants. Regarding those respondents whose religion was Christian, it just guides them generally to be clean and no specific timing for washing hands at particular times. On the other hand, in Muslim religion, there are specific timings which are five times a day done before each prayer in which they must wash their hands but not that it must be with soap, they can just wash it only with water. But this may not have much effectiveness in the degree of cleanliness as the Muslim respondents mentioned that they usually do it with water only which is very much less effective in removing the pathogens and in preventing diseases.

Likewise in a study conducted in Nepal reported similar findings that if hand washing occurs, it is mostly with plain water. Soap is not commonly used. This is because of the fact that they do not perceive soap as a crucial and more effective than water and believed that they can maintain their hand cleanliness by washing their hands only with water¹¹.

Hand washing behavior

In this study, participants emphasized the fact that knowing about HW is not sufficient to carry out the recommended hand hygiene practices at the recommended times, but the presence of suitable situations, facilities and support is also equally important. Similarly a study conducted in Kenya revealed that non-significant relationship between knowledge and practice of hand washing among the study group, which commented that other factors besides knowledge were more essential in determining adherence to the practice of hand washing¹⁰.

Table No.1: Data collection tools and study participants

S.No	Data collection tools	Type of participant	Number of participants
1	In-depth interview	Mothers	18
		Care givers	2
2	Focus group discussion	Mothers	8
3	Key-informant interview	Health care provider	1
		Administrator	1

Table No.2: Characteristics of mothers N=26

S.No	Characteristics	Category	Number of Mothers
1	Marital status	Married	23
		Unmarried/single	1
		Divorced	1
		Widowed	1
2	Religion	Muslim	6
		Christian	20
3	Sex of the child	Male	11
		Female	18
4	Parity of the mother	Primipara	3
		Multipara	23
5	Delivery place of mother	Home	2
		Hospital	24
6	Educational status	<=5 th grade	1
		6 th -8 th grade	9
		9 th -12 th grade	16
7	Occupational status of the mother	Employed	5
		Unemployed	21

Table No.3: Median age of mothers and infants, household median income

S.No	Characteristics	Category	
1	Age of mother	Median age	28 years (21-40) years
2	Age of infant	Median age	8 months (1-11) months
3	Monthly household income	Median income	650 Nakfa (500-2500) Nakfa

Table No.4.Characteristics of care givers N=2

S.No	Characteristics		
1	Age	Average	55
2	Sex	Male	1
		Female	1
3	Educational status	Less5	1
		9-12	1
4	Occupation	employed	1
		unemployed	1
5	Income	Average	850
6	Relation with the infant	Father	1
		Relative	1(grandmother)

Table No.5: Characteristics of key-informants N=2

S.No	Characteristics	Health care provider(nurse)	Administrator
1	Age	38	50
2	Sex	Male	Female
3	Educational status	Bachelor's degree	12

CONCLUSION

This qualitative study identified several important barriers to and motivators of hand washing among mothers and other family caregivers in Aba-shawl sub zone. In order to improve infantile health, it is important to consider enhancing the motivators and tackling the barriers in order to motivate hand washing among those most likely to impact the health and well-being of infants. This study sought to understand what caretakers are doing at the critical junctures where HWWS would take place, and to explore the barriers and facilitators to HWWS in Aba-shawl sub zone. In particular, knowledge and perception, cues for action, normative beliefs and subjective norms, and practice were explored.

RECOMMENDATION

Minimizing or narrowing the gap between knowledge and practice through provision of supplies and facilities needed to practice proper hand washing. Train service providers (other than doctors) on the hand washing communication methods and proper counseling of mothers during ANC and at delivery. The education given to the mothers and caregivers should be based on specific barriers and motivators relevant to their prevailing conditions followed by effective demonstration on how to and when to wash hands. Sensitize communities, in particular women, on the importance of HWWS and the need for other family members especially elders to adopt the recommended hygiene practices in households with infants. The coverage of hand hygiene related educations given through mass Medias should increase.

ABBREVIATIONS

ACHS: Asmara College of Health Sciences; ANC: Antenatal Care; EHCH: Edaga Hamus Community Hospital; EDHS: Ethiopian Demographic Health Survey; EPI: Expanded Program on Immunization; FGD: Focus Group Discussion; HW: Hand Washing; HWWS: Hand Washing with Soap; IMNCI: Integrated Management of Neonatal and Child Illnesses; MoH: Ministry of Health; UNICEF: United Nations International Children's Emergency Fund; WHO: World Health Organization

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CONFLICT OF INTEREST

None declared

AUTHORS' CONTRIBUTION

All authors participated in all phases of the study including topic selection, design, data collection, data analysis and interpretation. Samuel contributes to write this manuscript.

AVAILABILITY OF DATA AND MATERIALS

The complete data set supporting the conclusions of this article is available from the corresponding author and can be accessed up on reasonable request.

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