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Study on Knowledge& Practice of WASH among Under 5 Children's Mother in Rural Community of Bangladesh

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Abstract**—** *Water, sanitation and hygiene is still a burning issue in the context of developing countries like Bangladesh as many diseases related to it and causing significant child's death. The study helps to assess the knowledge & practice of mothers having under 5 children in Sylhet district of Bangladesh.A cross sectional observational study was undertaken in 10 villages of Sylhet Sadar, Golapganj and Kanaighat Upazila of Sylhet district in Bangladesh during September to December'2019. Total 100 mothers and their 100 under 5 children was taken for conducting the study. Purposive random sampling procedure with pretested semi structured questionnaire following interview technique was used to collect information. Collected data was coded, entered and analyzed in SPSS 20 for univariate and multivariate analysis. Out of 100 mothers, majority of participants (71%) had appropriate knowledge on water, sanitation & hygiene and one third (29%) had poor knowledge. Regarding practice, about two third (67%) participants did good practice and one third (33%) did poor practice. Almost 97% of the respondents used tube well as a source of drinking water and 68% used sanitary latrine for defecation. Concerning hand washing almost 100% respondent washed hand with soap & water after defecation of child & own self and any family business but 37% before preparing meal and 44% before feeding. Regarding homestead hygiene environment 72% was kept poultry in residence & only 28% in separate place. And concerning homestead waste management 50% & 39% respondents throw liquid & solid waste haphazardly in their homestead respectively. However 100% participants had positive attitude about water, sanitation and hygiene and believed every household should have good WASH facilities. The educational level & mother age found significant relationship with knowledge of WASH among mother having under 5 children at $p<0.05$ level. However, the educational level & household income also found significant relationship with practice of WASH among mothers having under 5 children at $p<0.05$ level. Present study shows that knowledge level of safe water, sanitation & hygiene among mothers affected by their educational & age level but practice level affected by their education & household income. So its need to spread information about the importance of proper practice of water, sanitation & hygiene in rural areas through available evidences based BCC strategies and multiple dissemination channels through IEC (information education & communication) activities towards awareness and practice of WASH among mothers having under 5 children.*

Keywords**— Water, Sanitation, Hygiene, Knowledge & Practice, Household environment.**

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I. INTRODUCTION

Water, sanitation and hygiene is still a burning issue in the context of developing countries like Bangladesh as many diseases related to it are causing the maximum number of child's death. In many countries there exists a high prevalence of water and sanitation related diseases, causing many people, children in particular, to fall ill or even die. According to National Sanitation Foundation of the USA; "Sanitation is a way of life. It is the quality of living that is expressed in clean home, clean firm, clean business, and clean community. Sanitation covers the whole field of controlling the environment with a view to prevent disease and promote health" (Park K., 2013). An estimated 663 million people worldwide do not have access to an improved drinking-water source (WHO/UNICEF, 2015) and an estimated 1.9 billion people rely on drinking-water that is faecally contaminated (Bain et al., 2014). Improved water sources that are not operated or maintained properly may deliver water that is microbiologically contaminated (WHO/UNICEF, 2015). In addition, microbial recontamination often occurs during collection of water at the source, transport and storage within the home Wright et al (2004). An estimated 2.4 billion people or one third of the world's population, lack access to an improved sanitation facility, and 13% practice open defecation. Among the world's regions, sub-Saharan Africa and South Asia continue to have the lowest sanitation coverage (WHO/UNICEF, 2015). Freeman et al (2014) stated in a recent systematic review of 42 studies of observed hand washing with soap in 19 countries, it was estimated that only 19% of people worldwide wash their hands after potential contact with excreta.In context of Bangladesh, sanitation coverage is just 39% (Water Aid, 2008) which results in widespread diseases the majority of people does not have a latrine and have to defecate in the open. Water-related diseases are very common in Bangladesh but for the majority of the population the causes of ill health are shrouded in superstition. Diarrheal morbidity rates are increasing. The only way to sustainably reduce this massive burden of disease is through the use of safe drinking water, sanitation and improved hygiene practices, in particular hand washing with soap.

Worldwide, more than 125 million under-five children live in households without access to improved drinking water. Contaminated drinking water is a major health hazardin developing countries, and water-related diseases are a significant contributor to the global burden of illness. There has been significant progress in the Water, Sanitation and Hygiene (WASH) sector since 1990, the MDG baseline year. However, 748 million people still rely on unimproved sources of drinking water, almost a quarter of which rely on untreated surface water, and 2.5 billion people lack access to improved sanitation including one billion who practice open defecation. In 2014, 159 million children around the world were stunted and 50 million were wasted. The World Health Organization (WHO) estimates that 50% of undernutrition is associated with infections caused by unsafe water, inadequate sanitation or insufficient hygiene.The disease burden from unsafe water, sanitation and hygiene (WASH) is estimated at the global level taking into account various disease outcomes, principally diarrheal diseases. The risk factor defined as including multiple factors, namely the ingestion of unsafe water, lack of water linked to inadequate hygiene, contact with unsafe water, poor personal and domestic hygiene and the disease burden from unsafe water, sanitation and hygiene (WASH) is estimated at the global level taking into account various disease outcomes, principally diarrheal diseases.(Glass Report, 2009).

An average child in Bangladesh suffers 3-4 episodes of diarrhoeal diseases every year. Much of this is thought to be preventable with improvements in sanitation, water quality and hygiene practices (BBS, 2007). Diarrheal disease, encompassing a broad range of bacterial, viral and protozoal enteric infections, and largely preventable with improved WASH, was ranked as the fourth leading cause of disability globally in 2010, after ischemic heart disease, lower respiratory heart infections and strokes (Murray et al. 2013). Gautam et al (2010) conducted a study targeting to the mother groups of under-5 years of age children because the diseases associated with water, sanitation and hygiene are the leading cause of under-5 mortality and morbidity and the mothers are directly linked with the child's health as they are the one who take care of their children

A significant number of poor household of Sylhet district in different Upazila are taking water from pond because they have limited access to safe water. The sanitation facilities are not so good usually they are using latrine without water seal that linked with adjacent ponds or water bodies. There is tradition in that area to keep poultry bird and goats & sheep's insight the house because that create unhygienic situation for the family members especially for the under five children. Usually children excreta and other household wastage are throwing around the kitchen that also create worst environmental situation for under five children. Hence, they are playing and moving around the homestead. Personal hygiene condition is also very poor that beyond imagining. In that situation the under-five age children are usually suffer with different type of disease

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and they are living with malnutrition. Limited access to safe drinking water and poor sanitation can lead to under nutrition, water borne diseases, gastroenteropathy along with diarrhea and dysentery. These problems are predominant among preschool children in the developing countries.Improved hygiene practices are essential if transmission routes of water and sanitation related diseases are to be cut. Whereas appropriate hygiene education can bring about the intention to change hygiene behavior, for most hygiene behaviors appropriate water and sanitation facilities are needed to allow people to transform intention to change into real change.

In that situation the research was conducted to assess the knowledge & practice of mothers having under five children in different Upazila under Sylhet district of Bangladesh. Therefore, the study helps to take initiative programme on WASH to reduce disease prevalence as well as improve nutrition condition of under five children of rural community of Bangladesh. Moreover, that the study assists GO and NGO to design and implement WASH programme to raise awareness of the people living in rural setting of Bangladesh.

II. METHODOLOGY

2.1 Study area & population: This observational cross-sectional study was undertaken in 10 rural communities of Sylhet Sadar, Golapganj and Kanaighat Upazila under Sylhet district of Bangladesh during September to December'2019. Total 100 Mother of under-5 children and 100 children of 6-59 months ageselected purposively for the study.

2.2 Data collection techniques and tool:Data was collected by-self using a semi- structured pre-tested questionnaire through household survey. Mothers of children under five years were informed about utility of the survey and written consent was attained at each instance. The mothers were taken as a unit for study purpose andin case of more than one under-five child in same house; older one was considered as unit. Information on socio-demographic characteristics of mother and their knowledge, attitude &practice regarding water, sanitation &hygienewere collected. Tube well water was considered as the source of water for drinking and other family usages. Sanitary latrine and homestead hygiene environment was considered as sanitation and hand washing practice by mothers was assessed after any family business, defecation of child &owns self and before preparing meal and feeding the child.

2.3 Scoring System: One mark awarded for every correct answer, no (0) mark was awarded for each wrong answer. The scores were added and the mean score calculated. Respondents that scored below the mean value were categorized as having poor knowledge, negative attitude and poor practice while those that scored above the mean value were categorized as having good knowledge, positive attitude and good practice.

2.4 Statistical Analysis: Collected data were verified and coded prior to computerized data entry. Data entry was done using SPSS 20.0 version and was verified for any error. Statistical analysis was done using Chi square test and level of significance was set on value of $p<0.05$.

III. RESULT

3.1 Socio-demographic information of respondents

Among 100 mothers interviewed, more than half (66%) respondents were of age group 21-35 years and the mean age was 29 years. Maximum respondents (86%) were literate and only 14% were illiterate.Most of the respondents were housewife and their family income was recorded within BDT. 10000 and mean income BDT. 9285.Regarding number of under-five child years 71% of the respondents had one child and 21% had two children. (Table 1)

Table 1: Socio-demographic information of the respondents

Variable	Frequency(n = 100)	Percentage (%)
Age (years)		
≤ 30	69	69
> 30	31	31
Religion		
Muslim	70	70
Hindu	30	30

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Education		
Illiterate	14	14
P Incomplete	23	23
PEC Complete	53	53
Income (BDT)		
≤ 10000	73	73
10001-15000	10	10
≥ 15001	17	17
Under 5 Children		
One Child	71	71
Two Children	29	29

Table 2: Knowledge & Attitude to water, sanitation and hygiene among under 5 children mothers

Variable	Frequency(n = 100)	Percentage (%)
Safe water meaning		
Tub well water	61	61
Boiled water	10	10
Pond water	29	29
Water can be purified		
Boiling	50	50
Filtering	15	15
By medicine	6	6
Not required	29	29
Should use and manage Safe water		
Yes	100	100
No	0	0
Meaning of sanitary latrine		
Pacca with water seal	71	71
Only Pacca	27	27
Kacha	2	2
Why use sandal during latrine		
Protect warm	65	65
Protect disease	6	6
Not need	29	29
Poultry shelter with residence		
Create disease	71	71
Not harmful	29	29
Homestead waste harmful for		

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Create disease	71	71
Not harmful	29	29
Should use sanitary latrine and manage waste		
Yes	100	100
No	0	0
Hand wash required for		
To keep clean	2	2
Protect from diseases	69	69
Not need	29	29
Should wash hand with soap & water		
Yes	100	100
No	0	0

3.2 Knowledge& Attitude of Mothers Regarding Water, Sanitation and Hygiene:For assessing knowledge regarding water, sanitation and hygiene each participants were asked question related meaning of safe water & treatment method; sanitary latrine use, poultry keeping place & waste management, and why should hand wash & washing habit in 5 crucial time respectively. About safe drinking water, 89% participant respond was good and 11 % responds was poor. Regarding sanitary latrine use, poultry keeping place &waste management 71% was good and rest 29% was poor knowledge. And similar result trend 71 % found good knowledge and 29% found poor knowledge about hand washing. However, all respondents found positive attitude to water, sanitation and hand washing for themselves and their children health.

Table 3: Practice of water, sanitation and hygiene among under 5 children mothers

Variable	Frequency(n = 100)	Percentage (%)
Source of drinking water		
Tube well water	98	98
Pond water	02	02
Water purified be use		
Purified	15	15
Not purified	75	75
Type of sanitary latrine		
Kacha	32	32
Sanitary without water seal	20	20
Sanitary with water seal	48	48
Not need	03	03
Sandal use during defecation		
Yes	96	96
No	04	04
Child use sandal during		

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defecation	87	87
Yes	13	87
No		
Stool place < 5 yr children		
Khal	30	30
Open place	20	20
Pit	43	43
Dustbin	07	07
Poultry shelter		
In residence	22	22
In Kitchen	50	50
Separate room	28	28
Liquid waste management		
Use as manure	15	15
Use as fodder	05	05
Throw haphazardly	50	50
Others	30	30
Solid waste management		
Use as manure	29	29
Use as fodder	10	10
Throw haphazardly	40	40
Others	21	21
Hand washing before preparing meal	63	63
Only water	37	37
Water with soap		
Hand washing before feeding child	56	56
Only water	44	44
Water with soap		
Hand washing after defecation of child and own self		
Only water	00	00
Water with soap	100	100
Hand washing after any family business		
Only water	00	00
Water with soap	100	100

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3.3 Practice of Mothers Regarding Water, Sanitation and Hygiene:Mothers' practice was assessed by asking question related to source of drinking water & water treatment; poultry keeping place, waste management, disposing of young children stool and 5 crucial timeof hand washing practice i.e. before preparing meal & feeding meal and after defecation of child and own self & any family business. Study shows that majority (97%) of participants used tube well as source of drinking water and only 15% purified water due to removal of iron. In case of defecation68% participants used sanitary latrine among them 20% have water seal but 96% participants and 83% of their children used sandal during defecation. About half (50%) respondents put their child stool in khal&open place, 43% in pit and 7% in dustbin. Regarding poultry rearing 72% keep poultry in residence & only 28% in separate place. Concerning homestead liquid waste management one fifth (20%) used anyproductive purpose(i.e. manure, fodderetc.), one third (30%) for other purposes and rest (50%) throw haphazardly. And in case of solid waste management39% respondents used for productive purpose (i.e. manure, fodder etc.), 21% for other purpose and 40% throw haphazardly. Regarding hand washing 37% before preparing meal, 44% before feeding meal and almost 100% after any family business & defecation of child & own self washed their hand with soap& water respectively.

3.4 Association between socio-demographic characteristics and WASH knowledge & practices among under 5 children's mother: From the study there was found a significant difference with knowledge of mothers towards WASH according to their education level and age at $p<0.05$ respectively while no significant difference was found with income, under 5 child number and religion. (Table 4) According to the result of Table 5 we found also significant difference between mother's education &household income and practice of WASH at $p<0.05$ level. But no significant difference was found with age, number of under 5 child and religion respect to their level of practice towards WASH.

Table 4: Association between socio-demographic characteristics and knowledge level of mothers towards water, sanitation and hygiene

Variable	Category	Knowledge level N (%)		Total N (%)	Chi-square	p-value
		Good (n =71)	Poor (n= 29)			
Age	≤ 30	54 (54)	15 (15)	69 (69)	5.699	0.017*
	>30	17 (17)	14 (14)	31 (31)		
Education	Read & Write	66 (66)	20 (20)	86 (86)	9.844	0.002*
	Only Sign	05(05)	09 (09)	14 (14)		
Income	Up to 10000	54 (54)	19 (19)	73 (73)	1.160	NS
	Above 10000	17 (17)	10 (10)	27 (27)		
Religion	Muslim	59 (59)	26 (26)	85 (85)	0.694	NS
	Hindu	12 (12)	03 (03)	15 (15)		
Number of under 5 child	One	44 (44)	16 (16)	60(60)	0.397	NS
	More than one	27 (27)	13 (13)	40 (40)		

Table 5 Association between socio-demographic characteristics and practice of mothers towards water, sanitation and hygiene

Variable	Category	Practice level N (%)		Total N (%)	Chi-square	p-value
		Good (n =67)	Poor (n= 33)			
Age	≤ 30	49 (49)	20 (20)	69 (69)	1.622	NS
	>30	18 (18)	13 (13)	31 (31)		
Education	Read & write	63(63)	23 (23)	86 (86)	10.873	0.001*

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	Only Sign	04(04)	10 (10)	14 (14)		
Income	Up to 10000	54 (54)	19 (19)	73 (73)	5.945	0.015*
	Above 10000	13 (13)	14 (14)	27 (27)		
Religion	Muslim	56 (56)	29 (29)	85 (85)	0.320	NS
	Hindu	11 (11)	04 (04)	15 (15)		
Number of under 5 child	One	40 (40)	20 (20)	60 (60)	0.008	NS
	More than one	27 (27)	13 (13)	40 (40)		

IV. DISCUSSION

Overall 71% of mothers had good knowledge but 100% of mothers had positive attitude and 67% of mothers had good practice on WASH.Although all of the mother have not knowledge about WASH but 100% mother believed good WASH facilities required for their children's and family members. A similar study conducted in rural households of Saptari District, Nepal and found 85% mother had good knowledge on WASH, 57.14% of mothers had positive attitude and 60% of mothers had good practice (Rima et al., 2017).From the study a positive and significant association was found between mothers educational level , age & household income with WASH knowledge & practices at $p<0.05$ level respectively but no significant difference was recorded with religion, family size and number of under 5 child. Mothers who can read and write properly among them 66% of mothers had good knowledge on WASH. Mother who have completed primary level &more and they were more knowledgeable than who can read & write properly. These findings proven that access to information from institute &other sources motivated &convinced to learn &practice more in their practical life compare to others who have deprived getting the opportunity. Besides that Sylhet is conservative area than in other part of the Bangladesh so women movement is more restrict. Rima et al (2017) also found significant association education with WASH knowledge & practices from the study conducted in rural households of Saptari District, Nepal.

Regarding knowledge about safe water 61% mentioned tube well water, 10% boiled water and 29% pond water. About water purification method half (50%) marked traditional method(boiling), 21% modern method (filtering, medicine) and rest 29% had no knowledge. From the study of Mubashir (2014) and Kalayn et al (2007) in India & Pakistan found that 14.5% responded boiled water and 14.35% responded boiled the water respectively. In response to meaning of sanitary latrine 71% mothers respond was pacca with water seal, 21% only pacca latrine and 2% respond was kacha latrine. About the knowledge of sanitation 71% mother found good knowledge and respond was create warm, diarrhea and other disease and 29% mother had poor knowledge about homestead waste &wear sandal during defecation. Another study of Mubashir (2014) in Pakistan showed that 46.5% had knowledge on diarrhea. In relation to the importance of hand washing, 69% informed proper hand washing prevent from disease, 2% mentioned to keep clean and rest 29% not enough acquired about hand washing. As compared to another study from Kenya and India, hand washing is important for preventing from communicable diseases 88% and 83.41% respectively.Most of the respondents had positive attitude 100% towards hand washing and all of them are believe that regular hand washing with soap & water can prevent from disease and every household should have hand washing facilities in convenient place.

About source of drinking water, 98% respondent used tube well water and only 2% used pond water. From the study of Sah et al., 2013 in Jhapa district in Nepal found only 40% used tube well water for drinking. In terms of water purification method only 15% filtered water for removal of iron and 75% not filtered water for drinking.According study of Pathak et al. (2015) found that pipe/tap was the major source of drinking water (87.9%), one third of the respondents (32.5%) had to spend more than 15 minutes to fetch the drinking water daily, majority of the respondents (82%) did not purify water before drinking however among the respondents who were purifying water, 73% were adopting filtration method. High proportions of respondents (71.8%) were using direct tap water to dilute baby's food.

Concerning sanitation related to defecation place, sandal use during defecation, poultry shelter and homestead waste management found 67% mothers found in good practice and 37% poor. In case of defecation 68% participants used

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sanitary latrine among them 20% had water seal and 96% participants &83% of their children used sandal during defecation. From the study of Kuberan et al., 2015 found that about 79% of the participants had access to septic tank type of toilets.

About half (50%) respondents put their child stool in khal& open place, 43% in pit and 7% in dustbin. Regarding poultry rearing 72% keep poultry with residence & only 28% in separate place. Housing environment is an important crucial issue for child disease prevalence as well as malnutrition. In house poultry rearing is one of the causes to create environmental enteric dysfunction situation that blunting of the villi, reduced epithelial surface area and absorptive capacity, altered gut mucosal barrier integrity and immuno-inflammatory changes. In terms of homestead waste management about (20-30) % managed for productive purpose and about (39-50)% throw haphazardly in homestead. Regarding to homestead liquid waste management one fifth (20%) used any productive purpose (i.e. manure, fodder etc.), one third (30%) for other purposes and rest (50%) throw haphazardly. And in case of solid waste management 39% respondents used for productive purpose (i.e. manure, fodder etc.), 21% for other purpose and 40% throw haphazardly. From the study of Kuberan et al., 2015 found that 47% of the participants reported that they discharge their waste in open drainage. Factors such as unhygienic handling and storage of complementary foods, poor hand washing practices and disposal of child feces, open defecation, lack of safe water sources for domestic use by the majority as well as poor solid and liquid waste disposal continue to be major health threats among under-five children (Cairncross, 2010; Gautam, 2017).

Regarding various critical times for hand washing , 37% before preparing meal, 44% before feeding meal and almost 100% after any family business & defecation of child & own self washed their hand with soap& water. Similar study from Asekun (2014) in Nigeria showed that 62.3% respondent wash hands before cooking, 88% after defecation and 56.3% after urination. It shows hand washing practices of the respondent is better. As for hand washing, soap is the best material in rural area.According to the Bangladesh National Baseline Hygiene Survey 2014, although more than two-thirds of the households had a location near the toilet for post defecation hand washing, only 40 percent had water and soap available. During hand washing demonstrations, only 13 percent of children aged three to five years of age and 57 percent of mothers/female caregivers washed both hands with soap.

V. CONCLUSION

As the study of 100 mothers having under 5 years children, majority of participants (71%) had applicable knowledge on water, sanitation and hygiene but one third (29%) had poor knowledge. Regarding practice of WASH, 67% participants did good practice and 33% did poor practice. Most of the participants (97%) used tube well as a source of drinking water and 68% used sanitary latrine for defecation. Concerning hand washing almost 100% respondent washed hand with soap & water after defecation of child & own self and any family business but 37% before preparing meal, 44% before feeding. Regarding homestead hygiene environment 72.22% keep poultry with residence & only 27.78% in separate place and concerning homestead waste management 50% & 39% respondents throw liquid & solid waste haphazardly in their homestead respectively. However 100% participants had positive attitude on water, sanitation and hygiene. About the association of socio-demographic characters with WASH knowledge & practice found that educational level & age of mother was significant relationship with knowledge of WASH and mothers educational level & household income was significant relationship with practice of WASH of mothers having under 5 children at $p<0.05$ level. A determination of the level of knowledge and practices on WASH among under-five children's mother led to the conclusion that mothers in the study area have sufficient knowledge about WASH. However, this cannot be relied on because we cannot tell whether this good knowledge was being transformed into practice since this was self-reported knowledge. Most of the children's mothers believed& motivated that proper WASH management facilities should available in every household. So, to ensure the inner force in practice it is require to abundance awareness sources like print & electronic media, health workers and different NGO parents.

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