



Original Article

Perception and Practice of Hand-washing among Children in Rural Area of Rajshahi

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Abstract

This cross-sectional type of descriptive study was undertaken to assess the awareness and practice of hand-washing among children in three villages of Puthia Upazila, Rajshahi District, Bangladesh. A total of 1152 children aged 5 – 18 years old were purposively selected from the study area. Majority (96%) of them was students of primary or secondary grade. A few were involved in business, farming, service and others. Face to face interview was conducted with the help of a semi structured questionnaire on the variables of interest. Nearly half (49.5%) of the respondents was 11-15 years and the rest >15 years old. Male-female distribution was almost equal. Fathers of the children were service-holder (18.7%), businessman (28.6%), farmer (26.1%) and day-laborer/rickshaw puller (26.5%). Nearly 60% of respondents belonged to poor family having monthly income Taka < 10000. Majority (97.1%) of the respondents was aware of the importance of hand washing and 75% perceived that diseases could be prevented through hand washing. More than 90% of the respondents were used to using soap and water for washing hands and over 80% washed hands regularly. Over three-quarters (77.8%) were accustomed to washing hands in school before tiffin. Most (81.8%) of the respondents used sanitary latrine for defecation. The use of soap-water for washing hands after defecation was significantly higher in older children (> 12 years) than that in younger children (≤ 12 years) ($p = 0.020$).

The use of soap water for washing hands after defecation tends to be associated with children's grade of education with higher tendency being observed in children of secondary and higher secondary school ($p < 0.001$). Children belonging to higher family income were more cautious in using soap/antiseptics ($p < 0.001$). The study concluded that perception and practice of hand-washing is appreciably high among rural children. However, older children, children studying in secondary grade and belonged to families with higher monthly income were more cautious about hand-washing.

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Introduction

A substantial proportion of the world's illness and death is attributable to communicable diseases.¹ Over 60% and 30% of all deaths in Africa and Southeast Asia, respectively, are caused by infectious diseases.² This trend is especially notable in developing countries where intestinal infections and acute respiratory are the primary causes of morbidity and mortality among young children.³ Inadequate sanitary conditions and poor hygiene practices play major roles in the increased burden of communicable disease within these developing countries.

Previous hand hygiene studies have indicated that children with proper hand washing practices are less likely to report gastrointestinal and respiratory symptoms.^{4,5} Hand washing with soap has been reported to reduce diarrheal morbidity by 44% and respiratory infections by 23%.^{2,6} However, globally, the rates at which hands are washed with soap range from only 0-34% of the time.⁷ Lack of resources, namely soap and water, as well as inadequate sanitation facilities may be two of the main reasons why children do not wash their hands.^{8,9} In addition to having proper resources and facilities, hygiene practices are heavily influenced by students' knowledge and attitudes towards hygiene. A study conducted by the United Nations Children's Fund (UNICEF) and the Ethiopian Ministry of Health found that study participants in rural Ethiopia had poor status regarding knowledge, attitudes, and practices (KAP) of hygiene. Approximately 60% of children surveyed did not know about the possible transmission of diseases through human waste.¹⁰ Simple hygienic measures such as washing hands with soap were poorly practiced, especially in rural areas found in a study conducted in Senegal.¹¹

Hygienic behaviors can play an important role in the prevention of diseases related to water and sanitation. An average of 65% of death caused by

diarrheal diseases could be reduced if good hygiene practice accompanies the provision of water and sanitation.¹² Different studies showed that hand washing can decontaminate hands and prevent cross-transmission.^{13,14} Hand washing with soap can also reduce the risk of diarrhea (up to 47%), respiratory and skin infections.^{15,16} Many studies carried out in Bangladesh suggested that hand washing is one of the factors which decreases the incidence of diarrhea in intervention areas.^{17,18} Government of Bangladesh (GoB), as an initiative of reducing the incidence of communicable diseases (particularly diarrhoea, hepatitis, enteric fever, gastroenteritis and other water-borne diseases) has already achieved universal coverage in providing safe drinking water (97.7%) although the achievement in the coverage of provision of sanitary latrine is slow (63.3%) (Health Bulletin, 2015).¹⁹ But the perception and practice of hygiene, particularly hand-washing after defecation and before eating seems to be poor in rural people, particularly in children. That purpose the present study was designed to assess the awareness and practice of hand-washing among children in rural area of Rajshahi District, Bangladesh.

Material and Methods

This cross-sectional study (survey) was carried out on children residing in three villages of Puthia Upazilla of Rajshahi District. Children of 5 – 18 years old were the respondents. A total of 1152 such children were purposively selected from the study area. Majority (96%) of them was students of primary or secondary grade. A few were involved in business, farming, service and others. Face to face interview was conducted with the help of a semi structured questionnaire which contained the variables of interest.

Technique of hand-washing was considered to be correct if they followed the 10-steps of hand-washing as shown in figure below.

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

 Duration of the handwash (steps 2-7): 15-20 seconds

 Duration of the entire procedure: 40-60 seconds

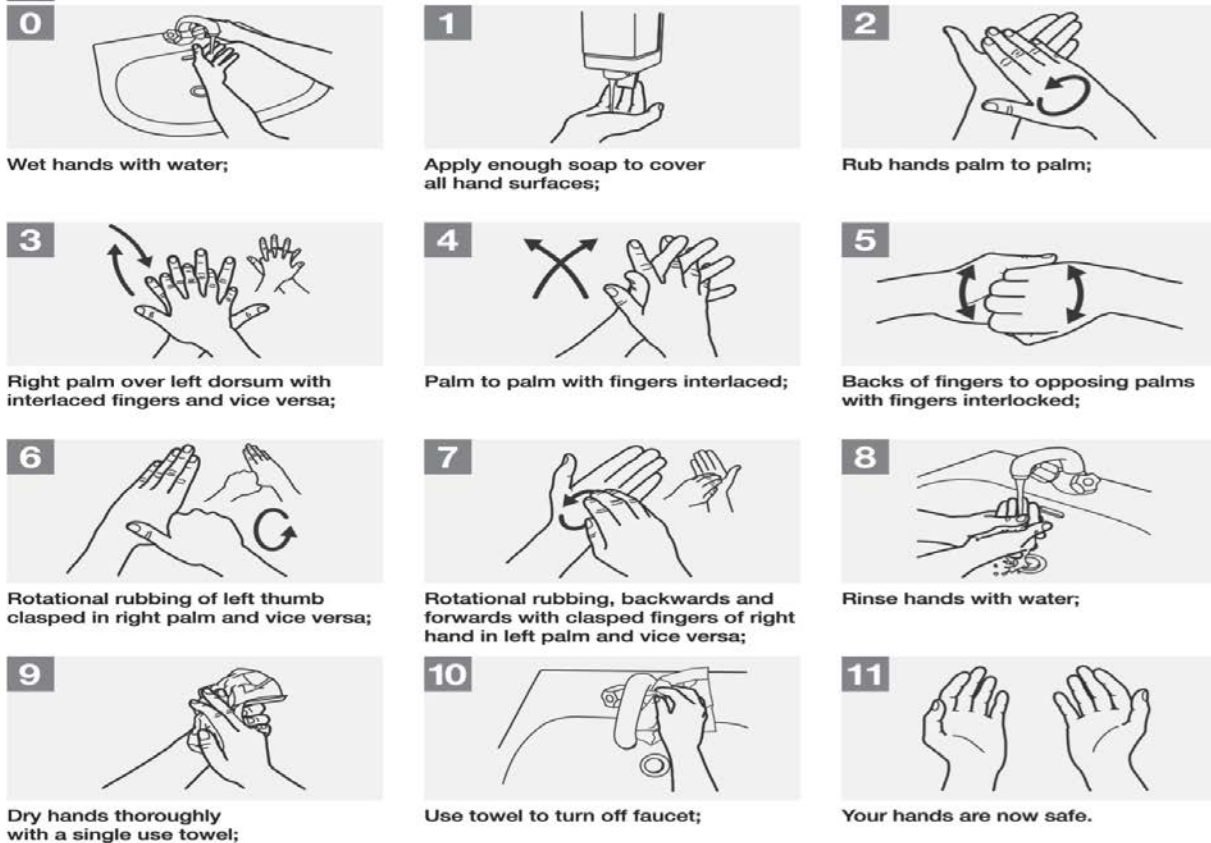


Fig. 1. 10-steps of Hand-washing technique (Source: WHO website)

Collected data were coded and edited and were analyzed using SPSS (Statistical Package for Social Sciences), version 17.0. The test statistics used to analyze the data were descriptive statistics like frequency with corresponding percentage, mean, median, standard deviation and range, while factors influencing perception and practice of hand-washing was analyzed using Chi-square (χ^2) Test. The level of significance was set at 5% and $p < 0.05$ was considered significant.

Results

Nearly half (49.5%) of the respondents was 11-15 years, 38.5% 6-10 years, 10.6% >15 years old. Male-female distribution was almost equal. Majority of the respondents (88.4%) was Muslim. Over half (53.1%) respondents were primary level students, 39.6% secondary level and 3.5% higher secondary level students. In terms of fathers' occupation, 18.7% were service older, 28.6% businessman, 26.1% farmer and 26.5% day-laborer/trickshaw puller. Nearly 60% of respondents' family income was Taka < 10000, 29.3% Taka 10000-20000 and only 11.7% was Taka > 20000 (Table I).

Majority (97.1%) of the respondents was aware of the importance of hand washing and 75% perceived that diseases could be prevented through hand washing. Respondents informed that diseases that could be prevented by hand washing were diarrhoea (38.5%), cholera (5.6%), typhoid (1%), liver pain (2%), stomach diseases (2.4%), multiple other diseases (50.5%) (Table II). Approximately 38% of the respondents were aware of global hand washing day, but only 19.5% of them could exactly mention the date of Global hand-washing Day. In response to a question about hand-washing techniques only 27.6% could mention the correct techniques (Table III). Almost all of the respondents informed that hands should be washed before eating (99.4%), after toilet (98.4%), household works (85.8%), touching animals (76.3%) and coughing or sneezing (54.5%) (Fig.2).

More than 90% of the respondents were used to using soap and water for washing hands, 5.9% used water only and others used antiseptic (1.4%), ash (1.6%) or mud (0.3%). One-third of the respondents spent < 20 sec for washing hands, 21% washed for 21-40 sec, 23% 41-60 sec and 22% > 60 sec. Most (80.2%) of the respondents washed hands regularly, 69% used the same water for hand washing and drinking purpose and 31% used separate source for drinking purposes. Over three-quarters (77.8%) were accustomed to washing hands in school before tiffin (Table IV). Of those children who used separate sources for drinking water, majority (91%) of them used tube-

well water (Fig.3). Most (81.8%) of the respondents used sanitary latrine for defecation and some used non sanitary latrines (16.8%). Practice of defecating open air was rare (0.6%) and so was using hanging latrine (0.8%). The main source of water used in latrine was tube well water (75.9%) or supply water (19%). Some other sources were pond water (2.9%) and water from well (2.3%) (Table V).

The use of soap-water for washing hands after defecation was reported to be significantly higher in older children (> 12 years) (94.2%) than that in younger children (\leq 12 years) (90.4%) ($p = 0.020$). The use of soap water for washing hands after defecation tends to be associated with children's grade of education with higher tendency being observed in children of secondary and higher secondary school ($p < 0.001$). Almost 99% of the respondents having family income Taka > 15000 used soap and antiseptics as compared to 90.4% of those whose family income was TK.15000 or below. Children belonging to higher family income were more cautious in using soap/antiseptics ($p < 0.001$) (table VI).

Discussion

The present study demonstrated that level of awareness among rural children of Rajshahi district about maintenance of personal hygiene and its impact in reducing the incidence of communicable diseases was appreciably high (97% of the respondents was aware of the importance of hand washing and 75% perceived that diseases could be prevented through hand washing). Practice level was also commendable (More than 90% of the respondents were used to using soap and water for washing hands and over 80% washed hands regularly 77.8% were accustomed to washing hands in school before meal and 81.8% used sanitary latrine for defecation). The use of soap-water for washing hands after defecation was significantly higher in older children than that in younger children ($p = 0.020$). The use of soap water for washing hands after defecation was more likely to be associated with children's grade of education with higher inclination being observed in children of secondary and higher secondary school ($p <$

0.001). Children belonging to solvent family were more cautious in using soap/antiseptics ($p < 0.001$). A similar study conducted in rural school children (grades 1-6) of Ethiopia reported that 52% of students were classified as having adequate knowledge of proper hygiene. Most students reported hand washing before meals (99.0%), but only 36.2% reported using soap. Although 76.7% of students reported that washing hands after defecation was important, only 14.8% reported actually following this practice. Students with adequate knowledge of proper hygiene were more likely to have a lower risk of parasitic infection (AOR 0.78, CI 0.56-1.09) although statistical significance was not achieved for the latter.²⁰ The Ethiopian study found a lower level of awareness compared to that found in the present study which might be due to inclusion of children of primary grade whose level of awareness reasonably be lower (because of lower level of exposure to knowledge of hygiene) as is evident from the findings of the present study, where older children (or children of secondary grade) were found to be more cautious to maintain hygiene than their younger counterparts. Overall the findings of the present study are consistent with previous studies that have documented knowledge and practices of hygiene among school children in developing countries.²¹⁻²⁴ However, a study conducted by the Global Public-Private Partnership for Hand Washing (PPPHW) which included several sub-Saharan African countries (i.e. Kenya, Senegal, Tanzania, and Uganda) reported a low prevalence hand-washing (17%) with soap-water after using toilet.²⁵

Notably, the self-reported frequency of hand washing before meals among children in our study is substantially higher than frequencies reported from studies of children in other countries. For instance, studies from the Philippines and Colombia indicated that 75.9% and 46.9% of students, respectively, reported washing hands before meals. The considerably higher frequency of hand washing before meals in our children may be due, in part, to our cultural tradition and religious practice of washing hands before meals or the desire for clean, fresh hands before eating.²⁶

However, 90% of the children using soap-water for hand-washing in our study seems to be staggeringly high as only 36.2% of students in Ethiopian study reported washed their hands using soap,²⁰ 37.7% in Pilipino and 42.4% in Turkish children.^{22,23}

Washing hands after defecation is one of the most effective ways to prevent diarrheal diseases including parasitic infections.^{27,28} But having knowledge is not enough that the children will practice the same unless their attitudes are changed. In our study a well-balance was observed between perception and practice, that there is consistency between the knowledge level and practice level which in many studies was found lacking. While 76.7% of students of rural Ethiopia reported that washing hands after defecation is important, only 14.8% reported actually following this practice. This may be due, in part, to the attitudes of the school children. Although the students know that washing hands after defecation is important, they may be negatively influenced by factors such as laziness, the rush to play with friends, or even the lack of hand washing facilities close to the latrines.²⁹ In contrast, studies conducted in Colombia and India reported that 82.5% and 86.4% of students, respectively, wash their hands after using the toilet.^{21,24}

Soap, water, and latrines are essential for proper hygiene practice in schools,³⁰ but previous studies have cited inadequate resources.^{21,31} A study conducted among Colombian school children reported that only 7% of students reported having clean water and soap regularly available at school.²¹ Those that had water and soap were three times more likely to wash their hands before eating or after using the toilet.²¹ Even if knowledge of hygiene exists, lack of appropriate resources may negatively affect proper hand washing practices. A UNICEF study conducted in Ethiopia found that less than one-third of schools had water points and only 5% had hand washing facilities, none of which had soap.³²

The factors that can influence hand-washing practice among school children are age of the children, grade of education and family income. In

our study it was revealed that older children, children studying in secondary grade and belonged to solvent family were more likely to practice hand-washing. In another study it was observed that low level of parental literacy can adversely influence hygiene practice among school children.²⁰

Several limitations must be considered when interpreting our results. Firstly, students' self-reported behaviors may have resulted in over-reporting of proper hygiene practices. Data from observations are generally consistent with students' self-reported practices. Secondly, children were mostly selected from the schools

and children who were absent due to illness or other circumstances were not included, thus results may not be generalized to all school children. Lastly, the cross-sectional study design makes determining causality impossible.

Conclusion

From the findings of the study it can be concluded that perception and practice of hand-washing is appreciably high among rural children. However, older children, studying in secondary grade belonged to families with higher monthly income were more cautious about hand-washing than the younger children, studying primary grade with poor family income.

Table I: Distribution of respondents by their demographic characteristics (n = 1052)

Demographic characteristics	Frequency	Percentage
Age* (yrs)		
≤ 5	17	1.6
6 – 10	405	38.5
11 – 15	518	49.5
> 15	112	10.6
Sex		
Male	541	51.4
Female	511	48.6
Religion		
Islam	930	88.4
Hinduism	119	11.3
Others	03	0.3
Educational status		
Illiterate	39	3.7
Class I to V	559	53.1
Class VI to X	417	39.6
Class XI to XII	37	3.5
Fathers' Occupation		
Service	197	18.7
Businessman	301	28.6
Farmer	275	26.1
Day laborer/Rickshaw puller	279	26.5
Fathers' Income (Tk)		
< 10000	620	59.0
10000 – 20000	209	29.3
≥ 20000	123	11.7

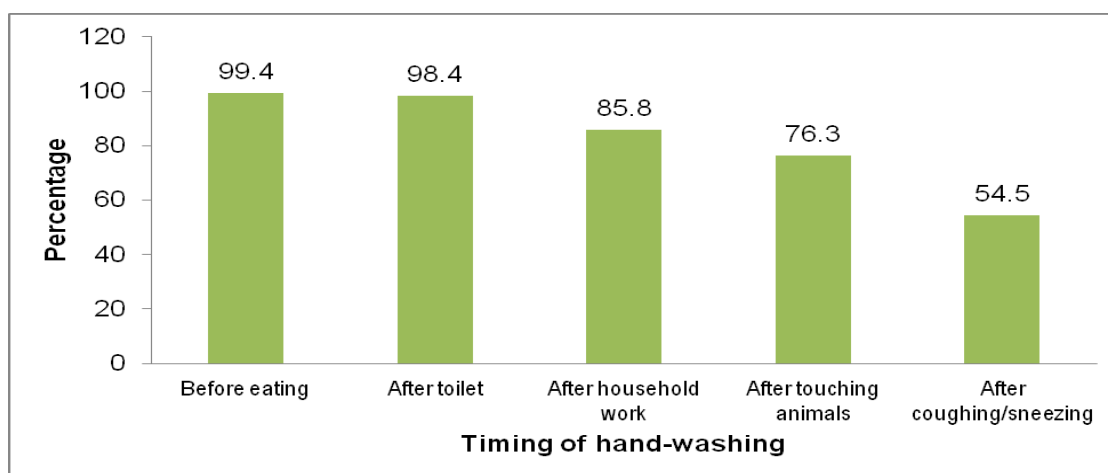
*Mean ± SD = (11.35 ± 3.13) years; range = (5 – 18) years

Table II: Respondents' perception regarding hand washing and related diseases (n = 1052)

Perception about	Frequency	Percentage
Importance of hand washing	1021	97.1
Diseases prevented by hand washing	790	75.1
Disease to be prevented by hand washing		
Diarrhoea	304	38.5
Cholera	44	5.6
Typhoid	08	1.0
Liver pain	16	2.0
Stomach disease	19	2.4
Other diseases	399	50.5

Table III: Respondents' knowledge about hand-washing Day and techniques (n = 1052)

Aware about	Frequency	Percentage
Global hand washing day	399	37.9
Date of global hand washing day	78	19.5
Hand washing techniques		
Correct	290	27.6
Incorrect	604	57.4
Did not know	158	15.0

**Fig. 2: Distribution of patients by timing of hand-washing (n = 1052)****Table IV: Respondents' practice related to hand washing (n = 1052)**

Practice related variables	Frequency	Percentage
Materials used in hand-washing		
Water only	62	5.9
Soap water	955	90.8
Antiseptic	15	1.4
Ash	17	1.6

Mud/Others	3	0.3
Time spend on hand washing (sec)		
< 20	350	33.3
21 – 40	222	21.1
41 – 60	242	23.0
> 60	238	22.0
Wash hands regularly	844	80.2
Source of water for drinking and hand-washing		
Use same water for drinking and hand-washing	726	69.0
Use separate source for drinking water	326	31.0
Wash hands in school before tiffin	820	77.9

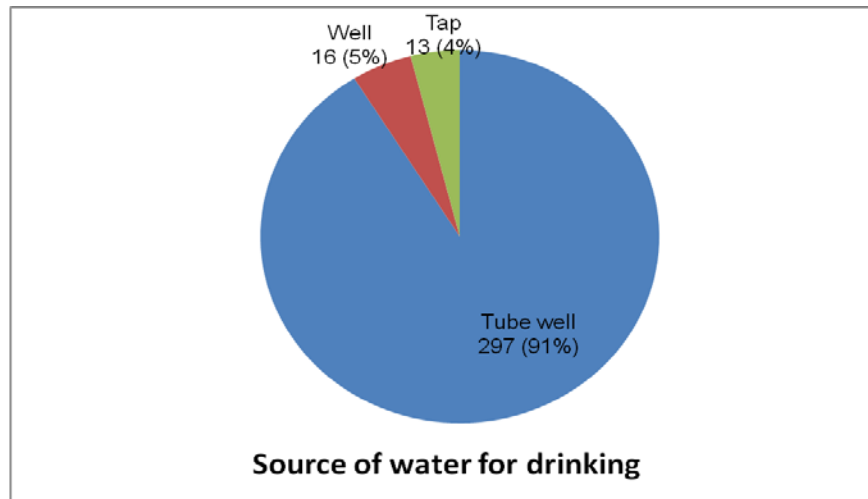


Fig. 3: Distribution of respondents by source of water for drinking (n = 326)

Table V: Distribution of respondents by type latrine and source of water used (n = 1052)

Type of latrine and source of water used in latrine	Frequency	Percentage
Types of latrine used for defecation		
Sanitary latrine	861	81.8
Non sanitary latrine	177	16.8
Open air defecation	06	0.6
Hanging	08	0.8
Source of water used in latrine		
Supply water	200	19.0
Store water from well	24	2.3
Pond water	30	2.9
Tube well water	798	75.9

Table VI: Association of demographic characteristic with materials used in hand-washing

Demographic characteristics	Materials used		P-value
	Soap & antiseptics	Others	
Age of respondents (years)			
> 12 yrs (n = 502)	473(94.2)	29 (5.8)	0.020
≤ 12 years (n = 550)	497(90.4)	53 (9.6)	
Grade of education			
Illiterate and primary (n = 598)	531(88.8)	67(11.2)	< 0.001
Secondary and higher (n = 454)	439(96.7)	15(3.3)	
Family income (Taka)			
≤ 15000 (n = 819)	740 (90.4)	79 (9.6)	< 0.001
> 15000 (n = 233)	230 (98.7)	3 (1.3)	

Figures in the parentheses denote corresponding **percentage** (row percentage was used)

Data were analyzed using **Chi-square (χ^2) Test**.

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