

Assessment of Hand Washing Knowledge and Practice among Primary School Children in Noakhali District, Bangladesh

Syeda Saima Alam^{1,*}, Anamul Haque³, Tanzina Akter Shipu⁴,
Susmita Ghosh², Ruhul Kabir Kabir², Md. Nahian Rahman⁵

¹Lecturer, Department of Food Technology and Nutrition Science,
Noakhali Science and Technology University, Noakhali-3814, Bangladesh
²Assistant Professor, Department of Food Technology and Nutrition Science,
Noakhali Science and Technology University, Noakhali-3814, Bangladesh
³MS, Department of Food Technology and Nutrition Science,
Noakhali Science and Technology University, Noakhali-3814, Bangladesh
⁴BSc, Department of Food Technology and Nutrition Science,
Noakhali Science and Technology University, Noakhali-3814, Bangladesh
⁵MSc, Institute of Nutrition and Food Science, University of Dhaka, Bangladesh
*Corresponding author: saima.shoshi@gmail.com

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Abstract The main objective of this study is to identify the prevalence of hand washing knowledge and practice among primary school children in the Noakhali District, Bangladesh. It is a Cross-sectional study in nature. This study was a primary analysis of 400 children who were in primary school. We carried out frequency tabulation, binary and multivariate logistic regression analyses to achieve the study objective. In the study, 89% of students had good knowledge & 71.6% of students had good practice regarding hand washing. The odds of having good knowledge about hand washing were high among the students who were in grade 5 [AOR=2.85; CI 1.418-5.741] and had received hand washing training [AOR=2.58; CI 1.125-5.932]. The odds of having good practice about hand washing were greater among the students who were in grade 5 [AOR=1.8; CI=1.040-3.115], whose fathers were job holder [AOR=3.20; CI 1.267-8.093], whose mothers completed SSC [AOR=3.80; CI 1.786-8.102], HSC & above [AOR=3.99; CI 1.132-14.085] and received hand washing training [AOR=3.93; CI 1.748-8.872]. Though the knowledge about hand washing is quite good, a community-based intervention program needs to be carried out to educate the children about the hand washing practice.

Keywords: Knowledge, Practice, Primary school, Bangladesh

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1. Introduction

The fundamentals of lifelong responsibility for maintaining personal hygiene are laid down in childhood, which is important for a healthy childhood, healthy adulthood, and for the promotion of positive values about health and the utilization of health facilities. Lack of proper hygiene and sanitation facilities raises the burden of communicable diseases among school children in developing countries [1]. Hand washing is the act of washing hands with plain or antimicrobial soap and water and it is the most popular preventive action to reduce the proliferation of contagious diseases [2]. Diarrheal disease and respiratory tract infections are the two biggest killers

of children in the developing world today. Approximately 90% of child mortality due to diarrhea and pneumonia occur in the 5 most populated and poor countries: India, Nigeria, Ethiopia, Pakistan, and the Democratic Republic of Congo [3]. The simple act of hand washing with soap can reduce the risk of diarrhea approximately half, and respiratory tract infection by a third [4]. Proper hand washing with soap is essential for school children's well-being and also important for disease prevention that in turn reduces absenteeism because of illness. Hand washing decreases absenteeism as evidenced by a research carried out around the world e.g.; 40% (Egypt), 35% (Kenya), 54% (China), 27% (Philippines) and 20% in (Colombia) [5]. As hand washing is a learned behavior, it is necessary to learn effective, proper hand washing, preferably as a child, so that it will become a routine habit

throughout life [6]. The practice is especially vital for school-going children, who might experience a more severe burden of diseases related to hygiene compared to adults [1,2,7]. Though the need for hand washing is more important in developing countries, the practices were seen to be poor because of a lack of infrastructure or awareness or a combination of both [8,9,10].

Although there have been number of hand washing researches carried out in Bangladesh, no study on hand washing knowledge and practices among primary school children in Noakhali District has been conducted on large scale.

Considering the importance of hand washing, this paper aims to identify the prevalence of hand hygiene knowledge and extent of its practice among primary school children in Noakhali District. The result from the research will help to explain the factors affecting the hand washing habits in primary school children and to overcome the obstacles in the acquisition of proper knowledge and practice.

2. Methodology:

The cross-sectional study was conducted in January 2019 to July 2019 in Noakhali District. The study was conducted in ten public primary schools in Noakhali District.

These ten schools were selected by simple random technique out of total 1339 primary school in the study area. In these randomly selected ten schools all the students were selected by again simple random sampling method. As hand washing knowledge and practice is known to be difficult to assess, we relied on two sources for collecting the data. A. self-reported hand washing and, B. as a proxy measure; spot-check to observe if the school had a place for hand washing with either water or soap or both. For the interview students were asked a pre-tested questionnaire included socio-demographic characteristics, hand washing knowledge and practices. Hand washing knowledge was valued using 16 questions which included multiple choice and “yes” or “no” questions. Practice was measured using 10 questions. Participants who scored above the mean value for the cumulative score of knowledge questions were labeled as having ‘good knowledge’. Subjects answer above the mean score of practice assessment questions were labeled as having ‘good practice’.

Eligible students were selected using a simple random sampling technique from the existing sampling frame. The sample size was calculated using the formula for the single population proportion.

$$n = \frac{z^2 \times p(1-p)}{E^2} = 384 [11]$$

Where,

Z = Z-score for 95% Confidence Interval (1.96)

P = Population Proportion (50%)

E = Margin of Error (5%)

Finally, adding 5% none response rate, the sample size was determined to be 400.

This study was approved by Ethical Review Board of Noakhali Science and Technology University, Noakhali. The researchers clarified the objective of this research and obtained informed consent from the respondents.

3. Statistical Analysis

The general characteristic of the subjects were identified by descriptive statistics. Bivariate logistic regression analysis was done to identify the factors that affect the participant’s hand washing knowledge and practice. Statistically significant factors from bivariate logistic regression analysis were included in the multivariate regression model to identify the independent predictors that affect the participant’s hand washing knowledge and practice. Data analyses were performed in SPSS version 25.0 and a P-value of less than 0.05 and 95% CI was considered statistically significant for all tests.

4. Result

Table 1 represents the socio-demographic characteristics of the primary school children. Among the 400 respondents 50% were from urban school and other 50% respondents were from rural school. 50% students were in grade 4 and the rest were in grade 5. Regarding the occupation of respondent father, 8% are unemployed, 24.8% are laborer/Farmer, 18% are businessman and 49.3% are job holder. Majority (90.3%) of the mothers were housewife and the rest 9.8% were job holder. Regarding the education level of mother, 14.2% were illiterate, 69.8% had completed SSC level and the rest 16% had completed HSC & below.

Table 1. Socio-demographic characteristics of the respondents:

Variables	Frequency(N=400)	Percentage (%)
Type of school		
Urban	200	50
Rural	200	50
Grade of respondents		
Grade 4	200	50
Grade 5	200	50
Occupation of father		
Unemployed	32	8
Laborer/ Farmer	99	24.8
Businessman	72	18
Job holder	197	49.3
Occupation of mother		
Housewife	361	90.3
Job holder	39	9.8
Level of education of mother		
Illiterate	57	14.2
Up to SSC	279	69.8
HSC & above	64	16.0

4.1. Factors Affecting Hand Washing Knowledge in Primary School Children:

Bivariate logistic regression analyses have identified a significant association between good knowledge and respondent’s grade, education level of mother and training receive. Statistically significant factors from bivariate logistic regression analysis are included in the multivariate regression model to identify the independent predictors that affect the level of hand washing knowledge as well as practice among primary school children. Hence, in Table 2 the grade of the respondents and hand washing training is

significantly associated with the level of good knowledge of the respondents. The students who were in grade 5 had greater odds [AOR=2.85; CI 1.418-5.741] of having good knowledge about hand washing. On the other hand, the students who received hand washing training had greater odds [AOR=2.58; CI 1.125-5.932] of having good knowledge about hand washing.

Table 2. Bivariate and multivariate analysis of factors associated with hand washing knowledge among primary school children:

Variable	COR(95% CI)	AOR(95% CI)
Type of school		
Urban	1	
Rural	0.93(0.432-1.690)	
Grade of the respondents		
Grade 4	1	1
Grade 5	2.63(1.336-5.209) **	2.85(1.418-5.741) **
Occupation of father		
Unemployed	1	
Laborer/Farmer	0.30(0.066-1.371)	
Businessman	2.33(0.314-17.346)	
Job holder	0.53(0.119-2.373)	
Occupation of mother		
Housewife	1	
Jobholder	5.13(0.688-38.386)	
Level of education of mother		
Illiterate	1	1
Up to SSC	2.23(1.035-4.812) *	1.51(0.649-3.527)
HSC & above	2.31(0.795-6.721)	1.38(0.431-4.460)
Received hand washing training		
No	1	1
Yes	2.52(1.215-5.255) *	2.58(1.125-5.932) *

*p value<0.05, **p value<0.01.

Table 3. Bivariate and multivariate analysis of factors associated with hand washing practice among primary school children:

Variable	COR (95% CI)	AOR (95% CI)
Type of school		
Urban	1	1
Rural	0.25(0.161-0.416) **	0.82(0.428-1.604)
Grade of the respondent		
Grade4	1	1
Grade5	1.48(0.958-2.298) *	1.80(1.040-3.115) *
Occupation of father		
Unemployed	1	1
Laborer/Farmer	0.21(0.089-0.513) **	0.60(0.227-1.629)
Businessman	1.17(0.460-2.997)	1.64(0.599-4.531)
Job holder	2.96(1.222-7.172) *	3.20(1.267-8.093) *
Occupation of mother		
Housewife	1	1
Jobholder	5.32(1.607-17.669) **	1.50(0.337-6.716)
Level of education of mother		
Illiterate	1	1
Up to SSC	6.72(3.610-12.520) **	3.80(1.786-8.102) **
HSC & above	17.64(6.733-46.288) **	3.99(1.132-14.085) *
Received hand washing training		
No	1	1
Yes	12.21(6.335-23.540) **	3.93(1.748-8.872) **

*p value<0.05, **p value<0.01.

In Table 3 Bivariate logistic regression analyses have identified a significant association between the good practice level of respondents and school type, grade of the respondents, occupation of father, occupation of mother, education level of mother and hand washing training. Statistically significant factors from bivariate logistic regression analysis were included in the multivariate regression model to identify the independent predictors that affect the hand washing practice among primary school children. The grade of the respondents; occupation of father; level of education of mother and hand washing training were found significantly associated with the level of hand washing practice. The respondents of grade 5 had higher odds of [AOR=1.8; CI 1.040-3.115] practicing hand washing. Respondents whose father are job holder have greater odds of [AOR=3.20; CI 1.267-8.093] practicing hand washing. Respondents whose mothers completed SSC [AOR=3.80; CI 1.786-8.102] and HSC & above had higher odds of [AOR=3.99; CI=1.132-14.085] good hand washing practice. Students who received hand washing training had higher chances of [AOR=3.93; CI 1.748-8.872] good hand washing practice.

5. Discussion

Hand hygiene is a remarkably important element for controlling the infection and schools are considered the appropriate place to initiate this behavior beginning in childhood [12,13]. It was found in a systematic review that hand washing can cut the risk of respiratory tract infection by up to 16% [14]. In this study the knowledge and practices of hand washing among 400 primary school students in grade 4 and 5 was accessed. Among the respondents, 89% had good knowledge 71.6% had good practice regarding hand washing. A study conducted in Karnataka, India found that 51.55% students had good knowledge and 44.19% students had good practice regarding hand washing [15]. Researcher in Ethiopia revealed that, only 22.3% of primary school children practice proper hand washing behavior [16].

In this study it was found that the respondents of grade 5 had higher odds of hand-washing knowledge [OR=2.85; CI=1.418-5.741]. Another study conducted in Southern Ethiopia found that higher grade of student had more likelihood of having good knowledge about hand-washing [AOR=9.099;CI .587-.850] [2]. That is because higher level of education has positive impact on hand washing knowledge. In the current study it was revealed that respondents who had received hand washing training had higher [AOR=2.583; CI 1.125-5.932] odds of hand washing knowledge. A school-based hand washing promotion program research found out that there was a significant rise in the knowledge regarding the importance and technique of hand-washing due to intervention [17]. Another study stated that intervention and training children regarding hand-washing and hygiene increased the students awareness regarding these subjects [18]. The relation between hand washing training and hand washing knowledge occurs as training provides more clear knowledge about hand washing.

In this study it was found that the students who were in grade 5 had higher (1.8) odds of good hand washing

practice compared to those in grade 4. A study in Southern Ethiopia reported that students from second cycle had 8.55 times more odds of good hand-washing practice than those in first cycle [2]. Researchers from Vietnam found that respondents from grade 7 have 7.76 times greater odds of practicing hand washing compared to grade 1 [7]. It may be due to the fact that the students in higher graders have greater exposure to public and school hygiene promotion which increases their hand washing practices.

In this study it was found that, the students whose fathers were jobholder had 3.20 times greater odds of practicing hand washing. Meanwhile, a study conducting in Wuhan, China showed that, the respondents whose fathers are professional and technical personnel (1.49), general employees (1.48) managers of state agencies, enterprises and institutions business and service workers (1.78) had higher chances of good hand hygiene practice compared to temporary workers or laid-off and unemployed fathers [12]. In a study of Andhra province, India found that, the children whose fathers were laborer and not working had 0.80 times lesser odds of practicing hand washing than the children whose fathers were non laborer [19].

This was due to the better child health care seeking decision made by the fathers. When the mother's education level became higher there was higher change of good hand washing behavior among the children. Respondents whose mother completed SSC or above classes had almost four-fold chances of having greater odds of good hand washing practice. Consistent with our findings, previous study revealed an obvious relation between mothers' education and good hand washing practice. It was discovered that respondent's mother who had completed under graduate (1.87) and postgraduate (1.87) had higher odds of good hand washing practice [12]. Concerning the mother's education level, it may be explained as the increased awareness of mothers for their child. As the children spend much time with their mothers they are heavily influenced by their mothers perception about public health measure affecting the behavior of hand washing.

Preferences of hand washing practices also depend on the hand washing training. This study revealed that, the students who had hand washing training had 3.93 times greater odds of good hand washing practices. In a study of Delhi, India it was found that the students who got training had 1.67 times greater odds of hand washing practicing [20]. Training increases hand washing practice as training teaches children how to wash hand properly as well as tell them about the importance and benefits of hand washing in short and long term.

Given widespread population vulnerability to COVID-19 infection, hand washing is regularly emphasized in the whole population by through all possible media. Primary school children's protection is often overlooked so to better understand the current situation of knowledge and practice of hand washing among primary school students, we conducted this study in Noakhali.

This study was not only a complement of hand-washing knowledge in the previous studies but also provided a better understanding of primary school children's practices regarding hand-washing. Nevertheless, it had some limitations. The sample size was large, but it was insufficient as only 10 schools were included. It is

recommended that a second round of survey should conduct including more schools to further improve the representativeness of the sample. Recall bias might be happened in this research. In addition, a cause-effect relationship could not be established because of the inherent nature of cross-sectional design.

6. Conclusion

Proper hand washing knowledge and practices can play an important role in reducing the burden of childhood morbidity and mortality and other communicable diseases like diarrhea, corona and other infectious diseases. The independent predictors of hand washing knowledge were class of respondents, hand washing training in school. Meanwhile, the independent predictors of hand washing practice were class of respondents, occupation of father, education level of mother, hand washing training in school. Parents as well as other members of the family should pay more attention to behavior guidance regarding hand washing. The government can also increase the awareness of students through enlarging medium publicity information dissemination via community health agents, health development army, and mass media to alleviate these problems.

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