



Original Article

Hand Washing Practice among Secondary School Students in a Rural Area of Bangladesh

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Abstract

Background: Human hands play a significant role in the spread of diseases, especially respiratory and diarrheal diseases, which continue to be the leading cause of morbidity and mortality among children worldwide. Hand washing is the most widely used preventive measure to lessen the spread of infectious diseases. It involves washing hands with ordinary or antimicrobial soap and water. This is especially important for school-age children, since they may be more susceptible to diseases associated with poor hygiene than adults' age. There is evidence linking the promotion of hand washing habits through health education to a lower incidence of communicable diseases in school-age children. **Objectives:** To determine the socio-demographic characteristics of the respondents and to find out the practice of hand washing among the secondary school children. **Materials and Methods:** A cross sectional study was conducted on 340 school students from 1st June 2022 to 30th November 2022 in Alekjan Memorial High School and College, Durgapur, Adarsha Sadar, Cumilla. Purposive sampling was used to gather all pertinent data using a structured questionnaire. **Results:** In schools, 69.7% of the respondents washed their hands properly. 96.7% of them used soap to wash their hands. About 98.2%, 95%, 86.8%, 82.9% and 80.3% of school children reported that they wash their hands before eating, after using the restroom, after eating, after playing and after working. **Conclusion:** According to the study, having access to soap and water is necessary for good hand washing technique as the majority of the students used soap during hand washing. By installing hand washing stations in schools, the regional government, that is, the education and health bureaus-should enhance the hand washing practices in schools. It is important for parents and other family members to focus more on behavior guidance related to hand washing.

Keywords: Hand Washing Practice, Secondary School Students.

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Introduction

Human hands play a significant role in the spread of diseases, especially respiratory and diarrheal diseases, which continue to be the leading cause of morbidity and mortality among children worldwide¹. Many infections, including those caused by the water and food borne viruses, severe acute respiratory syndrome (SARS), the H1N1 influenza, Corona virus, cholera, malaria, dysentery, meningitis, and shigellosis, start when the hands become contaminated with disease-causing agents².

Hand washing (HW) is the most widely used preventive measure to lessen the spread of infectious diseases. It involves washing hands with ordinary or antimicrobial soap as well as water³. Hand washing with soap can markedly reduce the risk of respiratory tract infections by one-third and diarrhea by about half⁴. It is advised as a vital preventative

step against the new pandemic corona virus illness (COVID-19)^{5,6}.

The community, parents and schools all have a similar concern for the health of school-age children. A child needs to be healthy in order to study and school is a crucial setting where they learn to be healthy in addition to their homes⁷. There are connections between health and education as development tools. Because they serve as gathering spaces for people between the ages of five and seventeen, schools are especially significant⁸. This is especially important for school-age children, since they may be more susceptible to diseases associated with poor hygiene than adults ages^{9,10}.

There is evidence linking the promotion of hand washing habits through health education to a lower

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incidence of communicable diseases in school-age children¹¹. Because HW reduces school absenteeism and the loss of caregivers' workdays, it also has a substantial social and economic impact on the family, society, and children¹²⁻¹⁵. Water-related infections cause over 443 million school days to be missed annually, making it a major contributor to school absenteeism in developing nations¹⁶. Despite the social and physiological advantages, HW practice is still rather uncommon worldwide. The most common symptoms of the practice in the population are HW during two crucial times, namely, right before eating and right after using restroom¹⁷. Typically, school-age children in developing countries do not wash their hands at crucial moments, as right before or after using the restroom, eating, or preparing food^{18,19}. Additionally, there is a significant chance of infectious illness transmission because of the tight quarters between kids at daycare centers and schools. Still, less than 5% of people in developing nations wash their hands²⁰. However, due to inadequate hand washing techniques, 400 million children worldwide are worm-infected²¹.

There are very few studies assessing the hand-washing practices of school students. This study aimed to collect information on the hand washing habits of a sample of rural secondary school students in Bangladesh. Policymakers can find this useful in planning and creating curricula to carry out student hand washing intervention initiatives.

Materials and Methods

Type of study: Descriptive cross-sectional study.

Study period: 1st June 2022 to 30th November 2022.

Place of Study: Alekjan Memorial High School and College, Durgapur, Adarsha Sadar; Cumilla. **Ethical aspect:** Proper ethical approval for the study was received from the respective IERB. **Sample size:** 340 school students of both male and female.

Sampling technique: Purposive sampling.

Research instruments: A structured questionnaire was used for data collection. **Data collection method:** Face to face interview using the questionnaire. **Data analysis:** Data analysis was done by using SPSS v23 and Microsoft excel. **Data presentation:** Data was presented with appropriate tables, graphs and standard writing style.

Inclusion and exclusion criteria: Students of secondary classes in selected school who were registered and attending class during data collection were included in the study. Students with speech and hearing impairments, learning disabilities and those taking night classes were excluded from the study.

Operational definition of overall practice level: Children who scored $\geq 65\%$ overall on practice-indicator items were categorized as "good practices

of hand washing" and those who failed to score on at least 65% of the items were categorized as "poor practices of hand washing."

Results

The socio demographic traits of the school children are displayed in Table-I. Out of 340 students 64.12% were female and 35.88% were male. On the other hand, the majority (54.1%) were between the ages of 15 and 17, 42.4% were between the ages of 12 and 14 and 3.5% were between the ages of 18 and 19 years.

Table-I: Socio-demographic characteristics of the school students (n=340)

Variables	Sub-variables	Frequency (n)	Percentage (%)
Gender	Male	122	35.88
	Female	218	64.12
Age group	12-14 years	144	42.4
	15-17 years	184	54.1
	18-19 years	12	3.5

Table-II: Practices of hand washing among Secondary School Students (n=340)

Questions	Responses	Frequency (n)	Percentage (%)
Washed hand in last 12 hrs	Yes	335	98.5
	No	05	1.5
Usual hand washing time	Before meal	334	98.2
	After meal	295	86.8
	After work	273	80.0
	After play	282	82.9
	After toilet	323	95.0
Duration of hand washing	<20 second	163	47.9
	20 seconds to 1 minute	149	43.8
	Don't know	28	8.2
Washing hands before meals	Regularly	242	71.2
	Frequently	06	1.8
	Often	51	15.0
	Sometimes	41	12.1
Washing hands after toilet	Regularly	329	96.8
	Frequently	05	1.5
	Often	02	0.6
	Sometimes	04	1.2
Overall practice level	Good	237	69.7
	Poor	103	30.3

Table-II describes the practices of hand washing among Secondary school students. 5 students (1.5%) did not wash their hands during the last 12 hours, while the majority of pupils, 335 (98.5%), reported washing their hands. Out of all the pupils, 334 (98.2%), 323 (95%), 295 (86.8%), 282 (82.9%) and 273 (80.3%) said they washed their hands with soap before eating, after using the toilet, after meal, after playing and after working.

Regarding how long it takes to wash their hands, 163 (48%) of the pupils in the class reported that it takes them less than 20 seconds. While 28 (8.2%) pupils do not know how long they wash their hands at a time, 149 (43.8%) students used 20 seconds to 1 minute. Besides, 242 (71.2%) said they wash their hands before eating, while 15% said they wash their hands frequently before eating.

Of the students, 329 (96.8%) said they wash their hands after using the toilet on a regular basis, while 5 (1.5%) said they wash their hands after using the restroom on a frequent basis and 4 (1.2%) said they wash their hands after using the restroom occasionally. In all, 237 pupils (69.7%) practiced good hand washing, while 103 students (30.3%) practiced bad hand washing.

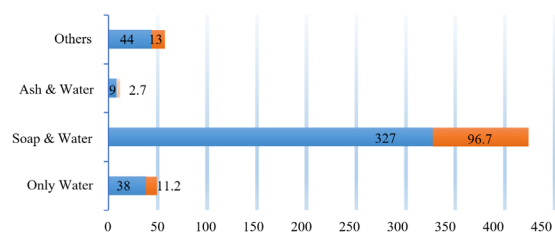


Figure-1: Bar graph showing the number of Items used for hand wash

Fig-1 shows the items that are used for hand wash by the school children. Most students 327 (96.7%) washed their hands using soap and water; however, 44 (13%), 38 (11.2%) and 9 (2.7%) students used alternative materials, simply water and ash and water, respectively.

Discussion

Hand washing is incredibly important for preventing illnesses and schools are thought to be the best location to inculcate this habit in childhood. Most students in this study (64.12%) were female, the majority of students in another study of the same sort (56.9%) were female²². The survey found that 69.7% of schoolchildren practiced good hand washing. This was less than the 71.97% of pupils from southern Ethiopia that were recorded in³.

However, the results were better than those of research conducted in Yirgalem Town, Southern

Ethiopia, which found that just 39.1% of schoolchildren practiced good hand washing²³.

Current study said that 96.7% of schoolchildren wash their hands with soap and water. Similar percentages of school children cleansed their hands with soap: 91.5% in Mumbai²⁴, 94.5% in Duwakot²⁵ and 88.2% in Yirgalem Town, Southern Ethiopia³. Several studies have found that school children report decreased rates of hand washing with soap: 9.9% in public schools in Kintampo municipality, Ghana²⁶; 21.3% in schools in Bangalore and Kolkata, India²⁷ and 40% in rural schools in Nalgonda and Andhra Pradesh²⁸.

Furthermore, 11.2% of schoolchildren just used water to wash their hands. The results were at odds with those of multiple Indian studies: 41.2% in Nalgonda, Andhra Pradesh²⁸; 47.3% in Bangalore and Kolkata²⁷. The differences might result from children's varying degrees of awareness about the advantages of cleaning their hands with soap.

According to the current study, 98.2% and 95% of school children cleaned their hands after using the toilet and before meals, respectively. The survey's conclusions exceeded those of a study carried out in Yirgalem Town, Southern Ethiopia, which found that children there washed their hands before meals and after using the toilet, respectively, 56.6% and 24% of the time³. Another study conducted in north Ethiopia revealed 99% and 76.9% of respondents washed their hands before meals and after toilet, respectively²³.

Conclusion

According to the study, having access to soap and water is necessary for good hand washing technique as most of the students used soap during hand washing. By installing hand washing stations in schools, the regional government, that is, the education and health bureaus - should enhance the hand washing practices in schools. It is important for parents and other family members to focus more on behavior guidance related to hand washing. To address these issues, the government can also raise student knowledge by expanding the channels through which public health information is disseminated - via community health agents, the Health Development Army, and the mainstream media.

Conflict of interest

The authors declared that they have no conflict of interest.

References

1. Dagne H, Bogale L, Borchha M, Tesfaye A, Dagne B. Hand washing practice at critical times and its associated factors among mothers of under five children in Debark town,

- northwest Ethiopia, 2018. *Ital J Pediatr.* 2019; 45 (1): 120. doi: 10.1186/s13052-019-0713-z.
2. Almoslem MM, Alshehri TA, Althumairi AA, Aljassim MT, Hassan ME, Berekaa MM. Handwashing Knowledge, Attitudes, and Practices among Students in Eastern Province Schools, Saudi Arabia. *J Environ Public Health.* 2021; 2021 (1): 6638443. doi: 10.1155/2021/6638443.
 3. Buda AS, Mekengo DE, Lodebo TM, Sadore AA, Mekonnen B. Knowledge, attitude and practice on hand washing and associated factors among public primary schools' children in Hosanna town, Southern Ethiopia. *J Public Health Epidemio.* 2018; 10 (6): 205-14. doi: 10.5897/JPHE2017.0987.
 4. Jennifer S, Param I. The handwashing handbook. Available at: https://esa.un.org/iys/docs/san_lib_docs/Handwashing_handbookpdf.2014. [Accessed on August 4, 2022]
 5. Mushi V, Shao M. Tailoring of the ongoing water, sanitation and hygiene interventions for prevention and control of COVID-19. *Trop Med Health.* 2020; 48 (1): 47. doi: 10.1186/s41182-020-00236-5.
 6. World Health Organization. COVID-19 pandemic heightens the importance of handwashing with soap. World Health Organization-Africa 2020. Available at: <https://www.afro.who.int/news/covid-19-pandemic-heightens-importance-handwashing-soap>. [Accessed on August 4, 2022]
 7. Bhuiyan AI, Jhinu ZN, ailuzzaman J, Mukutmon M. Personal Hygiene Practices and Socio-Economic Conditions As Influential Factors For Intestinal Parasitic Infection In Dhaka City Dwellers. *Bangladesh J Zool.* 2019; 47 (1): 129-36.
 8. Vivas AP, Gelaye B, Aboset N, Kumie A, Berhane Y, Williams MA. Knowledge, attitudes and practices (KAP) of hygiene among school children in Angolela, Ethiopia. *J Prev Med Hyg.* 2010; 51 (2): 73-9.
 9. Sekhon H, Minhas SA. School based survey on hygiene in a rural area of Northern India. *Int J Pharma Res Health Sci.* (2014) 2:179-84.
 10. Randle J, Metcalfe J, Webb H, Luckett JC, Nerlich B, Vaughan N, et al. Impact of an educational intervention upon the hand hygiene compliance of children. *J Hosp Infect.* 2013; 85 (3): 220-5. doi: 10.1016/j.jhin.2013.07.013.
 11. Pal BY. Hygiene and Public Health. In: SM Marwah, Editor. *A Handbook of Hygiene and Public Health*, 13th ed. Anand Publishers; 1977. pp 563.
 12. Azor-Martínez E, Gonzalez-Jimenez Y, Seijas-Vazquez ML, Cobos-Carrascosa E, Santisteban-Martínez J, Martínez-López JM, et al. The impact of common infections on school absenteeism during an academic year. *Am J Infect Control.* 2014; 42 (6): 632-7. doi: 10.1016/j.ajic.2014.02.017.
 13. Bharat D, Briones H, Lahiri S, Ishbaljir B, Hubert J, Takuya K, et al. *Mongolia-Manual on Promotion of Hygiene and Sanitation in Ger Areas.* Ulaanbaatar, Mongolia: The World Bank; 2006. Available at: http://siteresources.worldbank.org/INTMONGOLIA/Resources/H&S_Situation_Report.Jan06.pdf [Accessed on August 4, 2022]
 14. Nwajiuba CA, Ogunji CV, Uwakwe RC, David EI. Handwashing practices among children in public schools in Imo state, Nigeria. *Glob J Health Sci.* 2019; 11 (14): 15. doi: 10.5539/gjhs.v11n14p15.
 15. Umwangange ML. The effectiveness of handwashing health education session on raising school children's knowledge and skills of proper handwashing technique. A pre-test posttest design. *Texila int j public health.* 2016; 4 (4): 527-44. doi: 10.21522/tijph.2013.04.04.art045.
 16. Water, Sanitation and Hygiene (WASH) in Schools. UNICEF. United Nations International Children's Emergency Fund, 2012. Available at: https://www.unicef.org/timorleste/media/506/file/WinS_Guidelines_Final_English_version.pdf.pdf. [Accessed on August 4, 2022]
 17. WHO and UNICEF. "Core questions and indicators for monitoring WASH in Schools in the Sustainable Development Goals," 2016. Available at: <https://washdata.org/report/jmp-core-questions-monitoring-wash-schools-2018>. [Accessed on August 4, 2022]
 18. Dhiraj B, Sanjaykr S, Aparajita D, Preeti PS, Amitavakumar DS. Quantification of perception status of hand washing practice among school children in a rural area of west bengal. *Appl Med Sci.* 2015; 3: 1683-7.
 19. Eshuchi R. Promoting handwashing with soap behaviour in Kenyan schools: learning from puppetry trials among primary school children in Kenya. Doctoral dissertation, Queensland University of Technology, 2013.
 20. Yallew WW, Terefe MW, Herchline TE, Sharma HR, Bitew BD, Kifle MW, et al. Assessment of water, sanitation, and hygiene practice and associated factors among people living with HIV/AIDS home based care services in Gondar city, Ethiopia. *BMC Public Health.* 2012; 12: 1057. doi: 10.1186/1471-2458-12-1057.
 21. Nandrup-Bus I. Mandatory handwashing in elementary schools reduces absenteeism due to infectious illness among pupils: a pilot intervention study. *Am J Infect Control.* 2009; 37 (10): 820-6. doi: 10.1016/j.ajic.2009.06.012.
 22. Berhanu A, Mengistu DA, Temesgen LM, Mulat S, Dirirsa G, Alemu FK, et al. Hand

- washing practice among public primary school children and associated factors in Harar town, eastern Ethiopia: An institution-based cross-sectional study. *Front Public Health*. 2022; 10: 975507. doi: 10.3389/fpubh.2022.975507.
23. Eshetu D, Kifle T, Hirigo AT. Knowledge, Attitudes, and Practices of Hand Washing among Aderash Primary Schoolchildren in Yirgalem Town, Southern Ethiopia. *J Multidiscip Healthc*. 2020; 13: 759-68. doi: 10.2147/JMDH.S257034.
 24. Gawai PP, Sachin A, Ameeta S, Thakur HP. A cross-sectional descriptive study of hand washing knowledge and practices among primary school children in Mumbai, Maharashtra, India. *Int J Community Med Public Health*. 2016; 3 (10): 2958-66. doi: 10.18203/2394-6040.ijcmph20163391.
 25. Manandhar P, Chandyo RK. Hand washing knowledge and practice among school going children in Duwakot, Bhaktapur: A cross sectional study. *J Kathmandu Med Coll*. 2017; 6 (21): 110-5. doi: 10.3126/jkmc.v6i3.19827.
 26. Dajaan DS, Addo HO, Ojo L, Amegah KE, Loveland F, Bechala BD, et al. Hand washing knowledge and practices among public primary schools in the Kintampo Municipality of Ghana. *Int J Community Med Public Health*. 2018; 5 (6): 2205-16. doi: <http://dx.doi.org/10.18203/2394-6040.ijcmph20182146>.
 27. Ray SK, Amarchand R, Srikanth J, Majumdar KK. A study on prevalence of bacteria in the hands of children and their perception on hand washing in two schools of Bangalore and Kolkata. *Indian J Public Health*. 2011; 55 (4): 293-7. doi: 10.4103/0019-557X.92408.
 28. Takalkar AA, Nirgude AS, Nagaraj K, Naik PR, Prasad VG, Rashmi SS. Hand hygiene perception and practices of school going children from rural Government schools of Nalgonda, Andhra Pradesh. *Int J Med Health Sci*. 2013; 2 (2): 154-60.

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