



## Original Article



## Perceived Level of Knowledge and Hand Hygiene Practices among Primary School Children in Shakari Mangalore, Swat, Pakistan

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### ABSTRACT

Hand washing is particularly vital among children, as improper hand hygiene can lead to increased mortality rates from diseases like diarrhea and pneumonia, especially in low- and middle-income countries. **Objective:** To evaluate the level of knowledge and hand hygiene practices among primary school children aged 8–14 years in Shakari Mangalore, Swat, Pakistan. **Methods:** A cross-sectional study was conducted with 50 students from a government primary school. A structured questionnaire, adapted from previous studies, was used to gather demographic data and hand hygiene-related responses. The data were analyzed using SPSS version 25.0 to calculate frequencies and percentages. **Results:** The findings showed that 88% of participants recognized the importance of hand washing during school, and 100% acknowledged the significance of washing hands to remove germs and dirt. However, the use of soap and hand washing in school settings was notably lower, with only 10% using soap regularly. **Conclusions:** While awareness of hand hygiene was high, adherence to proper hand-washing practices was inconsistent. The study highlights the need for better education, particularly regarding soap usage and consistent hand-washing behaviors, to improve hygiene practices in schools and prevent the spread of infectious diseases.

### INTRODUCTION

Hand washing could significantly lower the incidence of respiratory infections and diarrhea. The majority of child fatalities worldwide occur as a result of incorrect hand washing, which is a necessary condition for a child's survival. However, in low- and middle-income nations, school-age children typically do not wash their hands at crucial moments, like after using the restroom, before eating, and before preparing meals [1, 2]. Furthermore, half of all child fatalities each year are caused by respiratory and diarrhoeal infections in children, which are mostly caused by poor and inadequate hand-washing practices [3]. In addition, the number of respiratory and gastrointestinal infections, including influenza, severe acute respiratory

syndrome (SARS), and coronavirus disease 2019 (COVID-19), can be spread by dirty hands. Serious consequences may arise from certain infectious disorders, particularly in those with weakened immune systems. For example, among children under five, diarrhea and pneumonia rank as the two most common causes of death, accounting for around 1.8 million deaths annually [4]. The risks of a variety of illnesses that are directly linked to hand washing generally rise over time. These include food and waterborne illnesses, infectious diseases, severe acute respiratory syndrome (SARS), H1N1 influenza A, norovirus, cholera, malaria, dysentery, meningitis, shigellosis, and multi-resistant *Staphylococcus aureus* [5]. The



development of children is harmed by a high incidence of infectious illnesses brought on by poor personal cleanliness [6]. The success of these activities, which are primarily focused on changing behavior, will rely on a detailed mapping of present hand hygiene habits as well as data on attitudes, hand hygiene barriers, and hand hygiene enablers. In order to create and implement successful interventions, this information will be useful in identifying the weaknesses in the current approaches as well as areas for improvement. Since young people are the "silent carriers" who unwittingly contribute significantly to the spread of infections in the community, it is especially crucial to investigate their hand hygiene habits, even though studying population hand hygiene practices is interesting in and of itself [7, 8]. Moreover, an efficient technique for cleaning and disinfecting the hands' surface is hand washing with water and soap [9]. Furthermore, to stop the spread of illnesses, the most basic and important infection control preventative strategy is hand hygiene [10]. Additionally, maintaining good hand hygiene is essential to prevent the spread of other infectious diseases, as well as during the COVID-19 pandemic [11, 12]. However, schools are among the most crucial venues for advancing health services and education. Students can acquire healthy behaviors, knowledge, and abilities related to hand washing and several other hygiene activities [5]. It has been demonstrated that hand washing lowers the prevalence of upper respiratory infections by 24% and reduces diarrhea morbidity and life-threatening diarrhea by 42% to 48% [3]. In addition, teaching proper hand hygiene is a top priority for schools. Parents and other caregivers must make sure their child with special needs washes their hands on a frequent basis [13, 14]. Hand hygiene is still not a widespread worldwide health behavior, even though it is a regular public health practice to stop the spread of infectious diseases [15]. Before interventions on hand washing practices can be carried out with confidence to prevent the transmission of illness, such as in the case of SARS-CoV-2, the levels of hand washing practices by nation must be appropriately educated through public health awareness programs [16, 17]. In this regard, a Pakistani study shows that handwashing following feces (30.6%), before cooking (54.1%), before eating (28.2%), and before child nursing (21.2%) [18]. Another study claimed that there is not enough information available about hand wash cleanliness in Pakistani schools to draw any firm conclusions [3].

Despite global recognition of hand hygiene as a cost-effective strategy to prevent infectious diseases, there is limited evidence regarding the actual knowledge and practices of primary school children in rural areas of Pakistan, particularly in Swat. Existing studies primarily focus on urban populations or healthcare settings, leaving

a gap in understanding school-based hygiene behaviors in under-researched rural communities. Moreover, discrepancies between awareness and actual handwashing practices remain insufficiently explored. Therefore, localized data are necessary to identify behavioral gaps and inform targeted school-based interventions. This study aimed to evaluate the level of knowledge and hand hygiene practices among primary school children aged 8–14 years in Shakari Mangalore, Swat, Pakistan.

## METHODS

This cross-sectional study was conducted among 50 participants in the government primary school Khyber Pakhtunkhwa Shakari Mangalore Swat, Pakistan. Shakari Mangalore is a rural locality in the Swat District of Khyber Pakhtunkhwa province in Pakistan, where sanitation practices are under-researched. Moreover, a convenient sampling technique was used to gather data from the participants. A sample size of 50 was selected based on resource constraints and feasibility. This study was conducted from May 2025 to July 2025. The study participants were the students in class 4, both male and female, from ages 8 to 14 years, who were part of this study. The inclusion criteria were voluntary participation and age 8–14 years. All students were within this age range, and no one below 8 years was included. Students with developmental or cognitive disabilities were excluded from the study. The structured questionnaire was used in this study. The questionnaire was adopted from the previous study. Using SPSS version 25.0, Cronbach's alpha test was used to assess the questionnaire's reliability; the results showed that it was 0.608 [19]. The tool consists of two sections. The 1st section was demographic data, which includes 2 questions. The 2nd was about hand hygiene, which consisted of 16 questions. Ethical approval was obtained from the higher authority of the school with reference number 148/DCNS/25. After that, researchers visited the class and introduced themselves, and after that, questionnaires in hard copy were distributed among the students. Before the distribution, the study's purpose and objective were explained to the study participants. Official permission has been taken from the higher authority of the school. Due to the absence of parents or guardians at the time of data collection, informed consent was obtained from the class teacher, who served as the responsible authority for the students during school hours. In addition, verbal assent was obtained from each participating child. The consent process and study purpose were explained to the children in their native Pashto language to ensure clear understanding and voluntary participation. Moreover, confidentiality was maintained for each participant. For the data analysis, the study used the SPSS version 25.0 to analyze the response of each participant, and it was

measured through frequency and percentage.

## RESULTS

This study shows the demographic data of the participants. The data shows that males make up 60% of the population and females 40%. Regarding age, 100% were aged 8 to 14 (Table 1).

**Table 1:** Demographic Data of the Participants (n=50)

Variables	Frequency (%)
<b>Gender</b>	
Male	30 (60%)
Female	20 (40%)
<b>Age</b>	
8-14	50 (100%)

Participants' answers about their awareness of hand hygiene are shown. Nearly all students (98-100%) understood the function that hand washing plays in maintaining personal cleanliness, preventing disease, and eliminating germs. The majority of students (88%) recognized the significance of hand washing during school hours. Most people (84%) cleansed their hands before eating, and 90% after using the restroom, even though 62% said they had received hand-washing training. Though 70% of people washed their hands after playing with friends, just 72% did so after handling rubbish. Remarkably, only 26% of people cleaned their hands after blowing their nose or coughing. Just 54% of students washed their hands at school, and only 10% used soap. 94% of respondents nevertheless thought that drying hands after washing is essential (Table 2).

**Table 2:** Perceived Level of Knowledge and Practices on Hand Hygiene

Sr. No.	Statements	Yes, n (%)	No, n (%)
1	Is it necessary to use soap to wash your hands at school?	44 (88.0%)	6 (12.0%)
2	Is hand washing with water essential for preventing illness?	49 (98.0%)	1 (2.0%)
3	Does using soap to wash your hands help avoid illness?	50 (100.0%)	0 (0.0%)
4	Does washing your hands help get rid of germs?	50 (100.0%)	0 (0.0%)
5	Is hand washing necessary to get rid of dirt?	49 (98.0%)	1 (2.0%)
6	Is hand washing a necessary part of personal hygiene?	49 (98.0%)	1 (2.0%)
7	Have you ever received instructions on hand-washing techniques?	31 (62.0%)	19 (38.0%)
8	Before and after eating, do you wash your hands?	42 (84.0%)	8 (16.0%)
9	When you handle trash or garbage, do you wash your hands?	36 (72.0%)	14 (28.0%)
10	Have you washed your hands before cooking?	41 (82.0%)	9 (18.0%)
11	Every time you use the bathroom, do you wash your hands?	45 (90.0%)	5 (10.0%)

12	After playing with colleagues, do you wash your hands?	35 (70.0%)	15 (30.0%)
13	After blowing your nose or coughing, do you wash your hands?	13 (26.0%)	37 (74.0%)
14	In school, did you wash your hands?	27 (54.0%)	23 (46.0%)
15	Did you use soap to wash your hands at school?	5 (10.0%)	45 (90.0%)
16	After washing your hands, is it necessary to dry them?	47 (94.0%)	3 (6.0%)

## DISCUSSION

The current findings show that 60% were male and were female 40%. In contrast, another study shows the result of gender distribution, male were 34.5% and female were 65.5% [19]. The current study shows the importance of hand washing during school time 88% of the participants said yes, and 12% said no. According to a different study, hand washing with soap at school, 12.2% of participants replied no, while 87.1% said yes. Additionally, it is essential to wash your hands with water to avoid getting sick. 2% of participants replied no, while 98% said yes. Similarly, another survey reveals that just 44.6% of individuals agreed that washing their hands with water can prevent infections. Additionally, washing your hands with soap is crucial to avoiding getting sick. All participants (100%) replied "yes." However, according to a different survey, just 45.8% of individuals said "yes. However, to remove grime, hand cleaning is required. Yes, according to 98% of participants. However, according to another finding, only 39.9% of participants said "yes". Hand washing is a necessary part of personal hygiene; 98% of participants said yes. Another study found almost the same result with 82.7%. Additionally, just 38% of respondents claimed they had never received hand-washing instruction. It was 8.5% in another study. Before preparing food, do you wash your hands? Participants agreed in 82% of cases. Additional results reveal that 83.4% of participants concurred. According to the current study, 90% of respondents replied "yes" when asked if they washed their hands after using the bathroom 90% of respondents replied "yes." A different study reveals that just 52.0% of participants concurred [19]. Regarding this, another study found that just 1.4% of respondents said they rarely or never wash their hands after using a bathroom [20]. Additionally, do you wash your hands when playing with friends? 30% of the participants replied no, whereas 70% of them said yes. According to a different study, 68.3% of individuals agreed. Additionally, do you wash your hands after coughing or blowing your nose? 74% of those who took part said no. Nearly the same outcome was obtained in another investigation. Yes, according to 68.3% of participants. During school time did you wash your hands 54% said yes, and 44% of participants said no. In contrast, 84.9% said yes and 14.8% said no.

Furthermore, during school time, did you use soap to wash your hands? 10% said yes, and 90% said no. Current findings showed that 52.8% said yes, and 46.9% said no [19].

This study has certain limitations, including a small sample size and the use of convenience sampling from a single school, which may limit the generalizability of the findings. Additionally, self-reported responses may be subject to recall or social desirability bias. Future studies should include larger, multi-school samples and incorporate observational methods to assess actual hand hygiene behaviors. Intervention-based research focusing on soap availability, structured hygiene education programs, and behavioral change strategies is recommended to strengthen hand hygiene practices among school children.

## CONCLUSIONS

The results show that students are highly aware of the significance of hand hygiene, especially in preventing illness and preserving cleanliness. Although the majority of students reported washing their hands after eating and using the restroom, fewer followed proper practices after coughing or handling trash, and very few consistently used soap. The findings highlight the need for school-based education programs that reinforce both knowledge and everyday hand hygiene practices, with special focus on soap use and consistent hand-washing behaviors.

## Authors' Contribution

Conceptualization: ZA, AB, DSK

Methodology: ZA, AB, DSK

Formal analysis: ZA, AB, DSK

Writing and Drafting: ZA, AB, DSK, MJ, SR, AK

Review and Editing: ZA, AB, DSK, MJ, SR, AK

All authors approved the final manuscript and take responsibility for the integrity of the work.

## Conflicts of Interest

All the authors declare no conflict of interest.

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