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Knowledge, Attitude, and Practice of Handwashing Among Primary-Level School Children of Fulbari, Pokhara

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ABSTRACT

Introduction: Regular handwashing (HW) with soap and water is crucial for preventing the spread of germs and diseases. This study assesses HW practices among primary school children in Fulbari Pokhara.

Methods: The descriptive cross-sectional study involved 520 students from Grades 3 to 5 across six schools. Participants were interviewed face-to-face using a translated questionnaire in Nepali. Data analysis was performed using SPSS version 25, including univariate and bivariate analyses with a significance level set at $P < 0.05$.

Results: Among the 520 children, 77.5% had good knowledge of HW, but only 72.3% demonstrated good practice, with just 68.5% washing hands with soap and water. Additionally, 94.6% displayed a positive attitude toward HW. Gender differences revealed that male children were likelier to follow HW practices than females. Notably, none of the schools had visual reminders about HW importance near handwashing areas.

Conclusion: While a significant number of children possess good knowledge of HW, fewer demonstrate effective practices. Both schools and families play a vital role in cultivating good hygiene habits in children. Overall, the study suggests that while knowledge is present, ongoing initiatives are necessary to enhance and sustain HW practices.

Keywords: *attitude; handwashing; knowledge; practice; school children.*

INTRODUCTION

Handwashing (HW) is a simple yet crucial intervention for preventing communicable diseases, including COVID-19.[1] Access to clean water and soap is vital, yet routine HW remains challenging in resource-limited settings.[2] First emphasized by Ignaz Semmelweis, HW can save more lives than vaccines, preventing diseases like diarrhea and pneumonia, which cause 1.7 million child deaths annually.[3,4,5]

Regular HW reduces child mortality from diarrhea by over 40%, and soap can lower cases by up to 50%.[6] Despite this, many developing countries exhibit low HW practices, with unsafe water and sanitation being major contributors to the disease burden.[7] Inadequate hand hygiene causes nearly 300,000 annual deaths, mostly in children under five. Schools play a key role in promoting HW habits.[8]

This study assessed HW knowledge, attitudes, and practices among primary school children in the Fulbari area of Pokhara, Nepal, and its association with factors affecting hygiene and disease prevention in communities.

METHODS

This descriptive cross-sectional study was conducted among primary school children from Grades 3 to 5 in the Fulbari area of Pokhara, Nepal, between December 2019

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and December 2020.

In our study, written informed consent was obtained from the parents or guardians of all participating children prior to their inclusion in the study. This was done by providing them with an information sheet detailing the study objectives, procedures, potential benefits, and risks, ensuring they had a clear understanding before granting permission. Additionally, verbal assent was obtained from the children themselves before data collection. The study team explained the purpose and procedures in simple, age-appropriate language, emphasizing that participation was entirely voluntary and that they could withdraw at any time without any consequences.The inclusion criteria for this study comprised children currently enrolled in Grades 3 to 5, who provided consent, and were present during data collection. Conversely, the exclusion criteria included children in grades below 3 or above 5, those who declined to participate, and those who were absent during the data collection period. These criteria ensured a focused participant pool relevant to the study objectives.A total of 520 children participated in the study, as this was the entire population of students in the specified grades across the selected schools.

The sample size was calculated based on the prevalence of handwashing practices, estimated at 24.9%. The formula used for sample size calculation was:

$N = (z^2pq) / (d)^2$

Where:

z = 1.96 (for a 95% confidence level)

p = 24.9%[9]

q = 100% - p = 75.1%

d = 15% of p

This calculation yielded a sample size of approximately 514, but all 520 children were included due to the population size.

Data were collected using a self-administered, structured questionnaire designed to assess knowledge, attitudes, and practices related to handwashing. The questionnaire was pre-tested and translated into Nepali for better comprehension. It included sections for demographic information and specific questions regarding handwashing practices. Data collection occurred during break times to minimize disruption to regular classes.

Data were analyzed using SPSS software, Version 25.In SPSS, responses were coded as 0 (incorrect/negative) and 1 (correct/positive). Total scores for knowledge, attitude, and practice were computed using the Compute Variable function. Categorized levels were then created using the Recode into Different Variables command based on predefined score ranges. These variables were used for further statistical analysis to explore associations and distributions within the study population. Descriptive statistics were employed to summarize the data, and the Pearson chi-square test was used for inferential analysis, with a significance level set at ($P < 0.05$).

Ethical approval was obtained from the Institutional Review Committee of Manipal College of Medical Sciences (IRC Ref No. 1296). Informed consent was secured from participants and their guardians, ensuring confidentiality and the right to withdraw from the study at any time.

In our study, the levels of knowledge, attitude, and practice regarding handwashing among primary school children were assessed using structured questions. Knowledge was measured using 10 questions that evaluated the children's awareness of germ transmission, the importance of handwashing at critical moments (before meals, after using the toilet, playing, coughing/sneezing), the necessity of using soap, the minimum recommended duration for effective handwashing, and proper drying methods. Attitude was assessed through 6 questions exploring their interest in learning about handwashing, perceptions of it as a good habit, the regularity of their practice, as well as any feelings of frustration or concerns about potential skin damage due to frequent handwashing. Practice was evaluated using 10 questions that examined actual handwashing behavior, including how often children washed their hands before eating, after using the toilet, after returning home, after coughing/sneezing, and after playing. Additionally, questions assessed whether they used soap, how they dried their hands, and their overall adherence to proper hand hygiene steps. These variables were carefully designed to comprehensively capture the children's understanding, perceptions, and actual hand hygiene behaviors.Knowledge, attitude, and practice levels were assessed through multiple-choice questions, with correct answers scored as one point and incorrect answers as zero. The scoring criteria were as follows:

Knowledge: 0-3 (Poor), 4-6 (Average), 7-10 (Good)

Attitude: 0-3 (Negative), 4-6 (Positive)

Practice: 0-4 (Poor), 5-10 (Good)

This methodology ensured a comprehensive evaluation of handwashing practices among primary school children in the Fulbari area, contributing valuable insights into hygiene behaviors in this demographic.

RESULTS

Table 1 illustrates the levels of knowledge, attitude, and practice regarding handwashing (HW) among school children in Fulbari, Pokhara. A significant majority (77.5%) demonstrated good knowledge, while 17.5% had average knowledge, and only 5% had poor

knowledge of handwashing.

Regarding attitude, most participants (94.6%) exhibited a positive attitude toward handwashing, whereas 5.4% had a negative attitude.

In terms of practice, 72.3% of children reported good handwashing practices, while 27.7% had poor practice.

These findings highlight that while knowledge and attitude toward handwashing were generally high, there was a notable gap in actual handwashing practice among school children.

Table l. Level of Knowledge, Attitude, and Practice on Handwashing among school children (N=520)

Knowledge	N (%)
Good	403 (77.5)
Average	91 (17.5)
Poor	26 (5)
Attitude	
Positive	492(94.6)
Negative	28(5.4)
Practice	
Good	376 (72.3)
Poor	144 (27.7)

Figure 1 illustrates the distribution of handwashing practices among school children in Fulbari, Pokhara. The data reveal that only 68.5% of participants reported washing their hands with soap and water, with a gender breakdown showing that 40.2% of males and 28.3% of females adhered to this practice. In contrast, 31.5% of the children indicated that they washed their hands using only water.

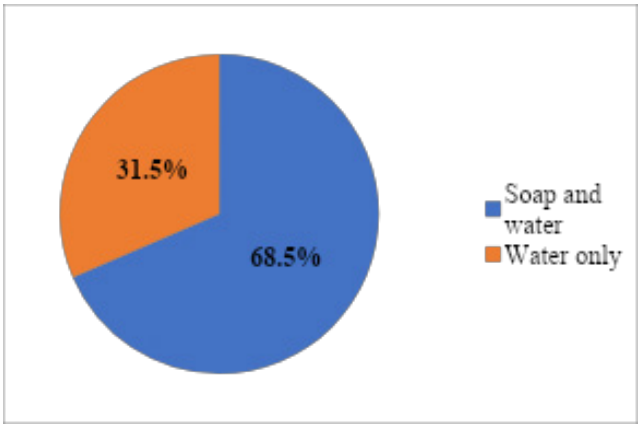

Figure 1: Distribution of children according to handwashing Practices

Table 2 presents the association between gender and handwashing practices among school children in Fulbari, Pokhara. The results indicate that 36.7% of male participants exhibited good handwashing practices, while 35.6% of female participants did the same. The statistical analysis reveals a highly significant association between gender and handwashing practices, with a p-value of 0.000 ($p < 0.01$), indicating that gender plays a crucial role in the adherence to handwashing practices among children.

Table 2. Association between Gender of children and Handwashing Practices (N=520)

	Practice			
Gender	Good N (%)	Poor N (%)	Total N (%)	P-value*
Male	191(36.7)	122(23.5)	313(60.2)	0.000
Female	185(35.6)	22(4.2)	207(39.8)	
Total	376(72.3)	144(27.7)	520(100)	

$X^{2=}50.011$ df=1 P-value=0.000(<0.01, *HS at CI 95%)

The survey included a question regarding the presence of posters or boards highlighting the importance of handwashing in schools. (Table 3) The results indicate that none of the 520 participants reported the existence of such educational materials, as 100% of respondents answered "No" to the question.

Table 3. Visual reminders about the importance of hand washing near the handwashing area (N=520)

Availability of posters/boards showing handwashing importance in the school	N (%)
Yes	0 (0)
No	520 (100)

The study included 520 participants, with 60.2% male (n=313) and 39.8% female (n=207). Most (57.7%) were aged 8-10 years, 40.6% were 11-13 years, and 1.7% were above 13 years. Participants were nearly evenly distributed across grades: 32.9% in Grade 3, 34.2% in Grade 4, and 32.9% in Grade 5. Regarding family structure, 49.04% belonged to nuclear families, 39.03% to joint families, and 11.93% to three-generation families. Detailed sociodemographic characteristics are presented in Table 4.

Table 4. The sociodemographic pattern of the study participants (N=520)

Characteristics	N (%)
Age (yrs)	
8 to 10	300 (57.7)
11 to 13	211 (40.6)
More than 13	9 (1.7)
Gender	
Male	313 (60.2)
Female	207 (39.8)
Grade	
Grade 3	171 (32.9)

Characteristics	N (%)
Grade 4	178 (34.2)
Grade 5	171 (32.9)
Family type	
Nuclear	255 (49.04)
Joint	203 (39.03)
Three Generation	62 (11.93)

DISCUSSION

The prevalence of HW practices among primary school children in Fulbari, Pokhara, was found to be 68.5%, which aligns with findings from Rajbhandari's study in Bhaktapur, where 79.9% of students reported consistent handwashing with soap and water.[10] Similar results were observed in studies conducted in Bangladesh and Ethiopia, indicating a regional consistency in HW practices.[11,12]

Our study also established a significant association between HW knowledge and socio-demographic variables such as age, gender, and maternal education, consistent with previous research.[13,14]

Gender differences were notable, with 60.2% male and 39.8% female participants. Among those with good knowledge of HW, 43.1% were male and 34.4% were female, reflecting a strong positive association between gender and knowledge. This finding corroborates studies from Pakistan, where male children exhibited better knowledge, attitudes, and practices than their female counterparts.[15] However, this contrasts with findings from Ethiopia, where gender did not significantly influence HW knowledge.[12]

Younger children in our study demonstrated better compliance with HW practices, aligning with findings from South Ethiopia, where younger age groups were more likely to practice proper handwashing.[14] This suggests that younger children may be more receptive to adopting healthful habits, although the association between age and HW practice was not statistically significant in our study.

Critical handwashing occasions, such as before meals and after using the toilet, were recognized by 83.1% and 91.7% of participants, respectively. This is consistent with studies in Bhaktapur and Bardiya, where similar proportions of children acknowledged the importance of handwashing during these critical times.[16,17] However, contrasting findings from other regions indicated lower awareness levels, highlighting the need for targeted educational interventions.[12]

Overall, 77.5% of children in our study exhibited good knowledge of HW, comparable to findings from Ethiopia.[14] The high levels of knowledge may be attributed to increased access to information through mass media and parental education. In terms of attitude, 94.6% of children displayed a positive attitude towards HW, which is consistent with findings from Southern Ethiopia.[14]

Despite the positive knowledge and attitude, only 72.3% of children reported good HW practices. This discrepancy highlights a knowledge-practice gap, like findings in other studies where a significant proportion of children had poor HW practices despite adequate knowledge.[12] The absence of visual reminders, such as posters or boards promoting HW, in schools further exacerbates this gap, as visual cues are crucial for reinforcing positive behaviors.[18]

While the study indicates a good level of knowledge and positive attitudes toward handwashing among children, the actual practice remains suboptimal. This underscores the necessity for comprehensive educational programs and the implementation of visual reminders in schools to enhance handwashing practices among primary school children.

The study's cross-sectional design limits generalizability, as it was conducted in a specific area with self-reported handwashing practices, which may be subject to recall bias and overestimation compared to observed behaviors.

CONCLUSIONS

Our analysis reveals a significant knowledge-practice gap in handwashing among children, with many demonstrating good knowledge and attitudes but low actual practice. This gap underscores the critical importance of regular handwashing in preventing infections, particularly as gender differences indicate that male children are more likely to comply than female children. Creating supportive environments for handwashing at home and school is essential, aligning with Sustainable Development Goal 6, which emphasizes community participation in water, sanitation, and hygiene (WASH) management. The findings highlight the need for collaboration between schools and families to enhance handwashing education and instill healthy habits, as effective measures and sustained motivation are crucial for improving handwashing practices among students.

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CONFLICT OF INTEREST

None

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