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## Knowledge and practice of personal hygiene among secondary school students of grade nine and ten

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### Abstract

**Introductions:** Personal hygiene deficiency have been found to be a serious public health problem and people often affected are school children. These have been attributed to inadequate knowledge of personal hygiene and its practices. This study was designed to explore the existing knowledge and practices of personal hygiene among the students studying at secondary level schools in Bhaktapur district, Nepal.

**Methods:** This study was a cross-sectional study to investigate personal hygiene knowledge and practices of secondary level, grades nine and ten school children, Bhaktapur district, Kathmandu valley, Nepal. Pre-tested, self-administered questionnaire were used. Data were collated and analyzed descriptively.

**Results:** The result showed that the secondary school students who participated in the study were evenly distributed by gender (50.4% males and 49.6% females), most of the respondents (78.8%) were in the 15-16 year age bracket. Majority of the respondents (88.5%) had good knowledge level on personal hygiene. Female students were found having more knowledge level than male students. Conversely, majority of them were noted with moderate to poor level of hygiene practices.

**Conclusion:** Secondary school students of Bhaktapur have good knowledge on personal hygiene while lot more improvement is required in terms of practices. Integrated approach by parents, school and social media to enhance hygiene practices could be useful.

**Keywords:** knowledge, personal hygiene; practices, students

## Introductions

Personal hygiene is the science of healthy livings and embraces all those day to day activities that contribute to health and wellbeing of an individual.<sup>1</sup> The diseases that arise due to deficiency of personal hygiene remain one of the major public health concern, particularly in developing countries.<sup>2-5</sup> While everybody is susceptible, younger children are predominantly more prone than older counterparts.<sup>6,7</sup> School children with better knowledge and practices of personal hygiene have fewer sick days and absenteeism in school and achieve higher grades.<sup>8</sup>

There are limited published studies (Google scholar, PubMed) on personal hygiene focusing youth population locally. Thus, this study was aimed to assess the existing knowledge and practices of personal hygiene among the school going students in Bhaktapur district of Kathmandu valley in Nepal.

The information and knowledge generated from this study is expected to be useful for strategic planning and interventions in future.

## Methods

This cross-sectional study was conducted in May-June 2018. Four schools located in Bhaktapur district of Kathmandu valley in Nepal were included in this research. Schools were purposively selected using convenient sampling method and the students studying in grade nine and ten were considered as sampling units for this school-based study. Among 36 schools in Bhaktapur, four (around 10%) were included in the study.

The sample size was calculated using Kish Leslie's formula for descriptive studies  $n = p(1-p) z^2/d^2$  where 'n' is the minimum number of respondents needed; 'p' is the estimated proportion of personal hygiene knowledge among students from a previous study; 'z' is the standard variation corresponding to

confidence level; and, 'd' is the level of error that can be tolerated.

A pre-tested, self-administered anonymous questionnaire was used to collect information from the respondents. The questionnaire was pre-tested among 10% of the sample size in the local setting. The questionnaire contained three sections, I on demographic characteristics, II on knowledge on personal hygiene, III on practice of personal hygiene.

In total, 13 questions with total score of 0 to 13 (1 for agree and 0 for disagree/don't know response) was used to assess the existing level of knowledge.<sup>9</sup> The score was divided into three categories; poor knowledge with a score less than 50%, moderate knowledge from 50-75% and good knowledge more than 75%.

The completed questionnaires were collated, entered in SPSS 16.0, and analyzed using descriptive statistics. The Pearson chi-square test was used for comparison,  $P < 0.05$ . was considered significant.

Institutional ethical clearance was obtained from research and development committee of Asian College for Advance Studies, Purbanchal University, Nepal. Necessary permission was taken from school authorities before conducting the study. The respondents were elucidated about the research objectives beforehand and confidentiality of personal identity were assured.

## Results

Total of 346 students in class nine and ten in the schools were included in this study. Out of which, seven students were absent on the day of data collection. Thus, we were able to interview 339 (97.9%) of the sampled population. Out of 339 students participants, 171 (50.4%) were boys and 168 (49.6%) were girls, age ranging from 13 to 18 years (mean  $15.38 \pm 0.863$ ), (Table 1).

Total 80.2% of student had knowledge that showering everyday helps in maintaining cleanliness, washing hand with soap is a healthy behavior, maintaining hand hygiene prevents infection transmission, brushing teeth regularly helps avoid dental problems. Nearly half of the numbers of studies surveyed had knowledge of fluoride containing toothpaste helps in strengthening teeth, consuming raw vegetable could adversely affect their health, (Table 2).

Good knowledge of personal hygiene was found in 300 (88.5%) students. Overall good level of knowledge in 157 (93.4%) girls was higher than boys 143 (83.7%). Two hundred and fifty-seven (75.8%) students acknowledged their family were primary source of information on personal hygiene, followed by teacher, (Table 3).

Study noted that 39 (11.5%) respondents bathed every day, 75 (22.1%) on every alternate day and remaining 225 (66.4%) bathed at least once per week.

Nearly all, 338 (99.7%) followed hand washing after using toilet, 326 (96.2%) practiced hand washing before meal and 275 (81.2%) after playing. One-hundred and twenty-nine (38.1%) students brushed teeth before going to bed. Majority 332 (97.9%) claimed that they wash fruits and vegetables before consuming, (Table 4).

The hygiene practices of the girls on hand washing after playing or brushing teeth before bed were found higher than that of boys, (Table 5).

One hundred twenty-six (37.2%) students visited dentist at least once a year for general checkup, 157 (53.7%) when they had problem, remaining 31 (9.2%) had never been to dentist.

In spite of most of the respondents with good knowledge score when it comes to practices of those hygiene, it was also noticed that 203 (59.9%) and 108 (31.8%) had moderate and poor practicing level respectively, (Table 6).

**Table 1. Demographic characteristics of secondary school grade nine and ten students (n=339)**

Socio-Demographic Characteristics		N	%
Age (Completed Year)	13	5	1.5
	14	41	12.1
	15	141	41.6
	16	126	37.2
	17	24	7.1
	18	2	0.6
	<b>Total</b>	<b>339</b>	<b>100</b>
Sex	Male	171	50.4
	Female	168	49.6
	<b>Total</b>	<b>339</b>	<b>100</b>
Education Level	Grade Nine	133	39.2
	Grade Ten	206	60.8
	<b>Total</b>	<b>339</b>	<b>100</b>

**Table 2. Knowledge on personal hygiene among secondary school grade nine and ten students (n=339)**

Statement	Agree N (%)	Disagree N (%)	Don't know N (%)
Neatness helps in keeping us healthy	332 (97.9)	2 (0.6)	5 (1.5)
Showering everyday keeps us clean	272 (80.2)	50 (14.8)	17 (5.0)
Washing hand with soap is a healthy behavior	333 (98.2)	4 (1.2)	2 (0.6)
Biting nail is an unhealthy behavior	300 (88.5)	26 (7.7)	13 (3.8)
Maintaining proper hand hygiene prevents infection	330 (97.3)	9 (2.7)	0 (0.0)
Brushing teeth regularly prevents teeth problems	310 (91.5)	16 (4.7)	13 (3.8)
Regular dental check up is important	333 (98.2)	1 (0.3)	5 (1.5)
Sweets and soft drinks could affects teeth	305 (90.0)	20 (5.9)	14 (4.1)
Microbes causes food poisoning	314 (92.6)	9 (2.7)	16 (4.7)
Consuming raw meat affects health	278 (82.0)	18 (5.3)	43 (12.7)
Consuming raw vegetable affects health	207 (61.1)	75 (22.1)	57 (16.8)
Flies could contaminate food	330 (97.3)	2 (0.6)	7 (2.1)
Leftover food should be reheated before consuming	186 (54.9)	113 (33.3)	40 (11.8)

**Table 3. Sex-wise level of knowledge of personal hygiene among secondary school grade nine and ten students (n=339)**

Variables	Male 171 N (%)	Female 168 N (%)	Total 339 N (%)	P
<b>Existing knowledge level</b>				
Good	143 (83.7)	157 (93.4)	300 (88.5)	0.017
Moderate	24 (14.0)	10(6.0)	34 (10.0)	
Poor	4 (2.3)	1 (0.6)	5 (1.5)	
<b>Primary source of information</b>				
Family	116 (67.8)	141 (83.9)	257 (75.8)	0.007
Teacher	24 (14.0)	19 (11.3)	43 (12.7)	
Book, Television, Newspaper, Social media, internet	31(18.2)	8 (4.8)	39 (11.5)	

**Table 4. Practices of personal hygiene among secondary school grade nine and ten students (n=339)**

Statement	Always N (%)	Sometimes N (%)	Never N (%)
I wash my hands before having meal	326 (96.2)	11 (3.2)	2 (0.6)
I wash my hands after using toilet	338 (99.7)	0 (0.0)	1 (0.3)
I wash my hands after playing	275 (81.2)	52 (15.3)	12 (3.5)
I use soap for washing hands	271 (79.9)	64 (18.9)	4 (1.2)
I brush my teeth after waking up	253 (74.6)	41 (12.1)	45 (13.3)
I brush my teeth before going to bed	129 (38.1)	97 (28.6)	113 (33.3)
I brush my teeth after having sweets	63 (18.6)	138 (40.7)	138 (40.7)
I wash fruits vegetables before eating	332 (97.9)	0 (0.0)	7 (2.1)
I wash my hand with soap after handling raw meat	289 (85.3)	0 (0.0)	50 (14.7)
I taste food by finger while cooking	65 (19.2)	0 (0.0)	274 (80.8)
I eat half cooked eggs	83 (24.5)	0 (0.0)	256 (75.5)
I drink raw milk	40 (11.8)	0 (0.0)	299 (88.2)

**Table 5. Sex-wise practices of personal hygiene among secondary school grade nine and ten students (n=339)**

Variables	Male 171 N (%)	Female 168 N (%)	Total 339 N (%)	p
<b>Washing hand after playing</b>				
Always	134 (78.4)	141 (83.9)	275 (81.1)	0.177
Sometimes	28 (16.4)	24 (14.3)	52 (15.3)	
Never	9 (5.3)	3 (1.8)	12 (3.5)	
<b>Brushing teeth after wake-up</b>				
Always	120 (70.2)	133 (79.2)	253 (74.6)	0.139
Sometimes	23 (13.5)	18 (10.7)	41 (12.1)	
Never	28 (16.4)	17 (10.1)	45 (13.3)	
<b>Brushing teeth before going to bed</b>				
Always	58 (33.9)	71 (42.3)	129 (38.1)	0.066
Sometimes	46 (26.9)	51 (30.4)	97 (28.6)	
Never	67 (39.2)	46 (27.4)	113 (33.3)	
<b>Brushing teeth after having sweets</b>				
Always	22 (12.9)	41 (24.4)	63 (18.6)	0.002
Sometimes	65 (38.0)	73 (43.5)	138 (40.7)	
Never	84 (49.1)	54 (32.1)	138 (40.7)	

**Table 6. Distribution of students according to knowledge and practices of personal hygiene among secondary school grade nine and ten students (n=339)**

knowledge level	Practices N (%)			Total 339 N (%)	p
	Poor	Moderate	Good		
Poor	3 (60.0)	2 (40.0)	0 (0.0)	5 (1.5)	0.014
Moderate	19 (55.9)	13 (38.2)	2 (5.9)	34 (10.0)	
Good	86 (28.7)	188 (62.7)	26 (8.7)	300 (88.5)	
Total	108 (31.8)	203 (59.9)	28 (8.3)	339 (100.0)	

## Discussions

Our study revealed 88.5% of grade 9-10 of secondary schools students had good level of knowledge on personal hygiene. This was very encouraging finding, similar to the study which reports good knowledge level among 52% in Angolela, Ethiopia.<sup>11</sup> Notably higher findings in this study could be due to greater integration of personal hygiene component in school curriculum and school health program, plus the urban setting of schools, as Bhaktapur is one of three districts in Kathmandu valley, capital of Nepal.

In the study female students obtained significantly higher average knowledge score (93.4%) than the male (83.7%) regarding the

knowledge of personal hygiene. This finding correlate with the studies from UAE<sup>8</sup> and India<sup>11</sup>, but in disagreement with the findings from Egypt<sup>8</sup>. This discrepancy in knowledge score could be due to variation in family orientation, socio-cultural differences and physiologically higher need for cleanliness among adolescent female.

In the current study, the main sources of information regarding basic personal hygiene were family followed by school teachers, similar to the findings from Jordan and Columbia.<sup>12,13</sup> These observations clearly demonstrated that the parents and school teacher plays instrumental role in imparting the knowledge and practices of personal hygiene early in the child's life. They could be a crucial role model because clean parents

and teachers tend to transmit their attitude and practices.<sup>1,3,6</sup>

When it comes to hand hygiene practices, the self-reported frequency of hand washing before meals among children in our study is notably higher (96.2%) compared to other studies. For instance, studies from the Bangladesh,<sup>1</sup> Philippine<sup>14</sup> and Colombia<sup>13</sup> indicated that 91%, 75.9% and 46.9% of students, reported washing hands before meals. This can be explained by cultural practices, the types of food and use of hands or utensils while eating food. In Nepal, most of the meals are eaten with hands thus, greater emphasis is on washing hands before meals.

More than half (60.9%) of the students who reported no regular hand washing after playing, said that they often forget to wash, and one-fourth (29.7%) students mentioned that they do not have time to wash hands and only few (9.4%) thought it was not really required.

Our study also noted that 99.7% practiced hand wash after using toilet. This finding was in harmony reported studies which showed 99.2%<sup>1</sup>, 98%<sup>15</sup> and 91.6%<sup>17</sup> respectively. However, one study reports only 18.1%,<sup>18</sup> possibly due to different study design.

In our study, 79.9 % of students who washed their hands reported using soap. This is substantially greater than Philippines<sup>14</sup> and Turkey studies<sup>18</sup> where an average of 37.7% and 42.2% of children, respectively, washed their hand with soap. Again, this may be because in Nepal, culturally we use hands for eating.

A total of 74.6% were regularly brushed teeth early in the morning, while only 38.1% brushed before going to bed. In addition, female children tendency to brush before bed was higher (42.3%) than males (33.9%). This study finding is similar to Bangladesh study.<sup>19</sup> In our study, 37.1% students were found visiting dentist at least once a year for regular dental checkup. This finding is slightly lower

than the study in Nigeria where 46% responded they often see their dentist in a year in the absence of illness.<sup>20</sup>

Several limitations must be considered while interpreting findings of this study. First, the study is based on self-reported information and thus is subject to over-reporting of their actual hygiene practices (self-report bias). Second, as data collection was based on self-administer questionnaire, the study was limited to students enrolled in grade nine and ten only assuming that they could respond to the research tool independently. Thirdly, the findings may not generalizable to other secondary school students because our sample was from urban setting, as Bhaktapur is one of three districts in Kathmandu valley, capital of Nepal.

Even with good knowledge, majority of students exhibited moderate to poor level of personal hygiene practices and there is need for appropriate educational methods to motivate these adolescents to improve personal hygiene practices.

## Conclusions

The current study shows that majority of secondary level school going children of Bhaktapur districts in Kathmandu valley Nepal had good level of knowledge on personal hygiene. Female students appear to be more knowledgeable than the male students. However, in the practice dimension, majority of them exhibited moderate to poor level of personal hygiene.

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