

## Knowledge Attitude and Practices Regarding Personal Hygiene among the Male Primary School Children in Abha, Kingdom of Saudi Arabia: A Cross-Sectional Study

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### Abstract

**Background:** Lack of knowledge about personal hygiene and poor hygienic practices increases the burden of communicable diseases. Maintaining a good personal hygiene among children helps to improve the quality of life and also longevity. Therefore the objective of the current study is to assess the knowledge attitude and practices of personal hygiene and also to evaluate the relationship between knowledge attitude and practices. **Methodology:** This is a cross-sectional study conducted in selected schools in Abha City between December 2016-May 2017. Students from fourth, fifth and sixth classes were included in the study. A structured questionnaire was used to collect the data about knowledge attitude and practices of personal hygiene. **Results:** The study included 508 primary school children. More than 95% of the students were aware that the disease can spread from one person to another person. More than 90% of the students wash their hands with soap before and after eating and also after toilet. Only 71.7% of students brush their teeth twice daily. There was a positive linear correlation between the knowledge score with practice score and also attitude score with practice score. **Conclusion:** knowledge attitude and practices concerning personal hygiene among primary school children was satisfactory but still lacking in some aspects.

**Keywords:** Attitude, Hygiene, Knowledge, Practice, Primary School Children

### Introduction

Most of the health problems affecting school students are preventable by promoting proper hygiene practices through family and adopting good health education. Hygiene is defined as the usual practices that are very much interrelated and required for maintaining the health and healthy living (1). The hygienic practices includes taking bath, washing hands, brushing teeth, using soap, brush, cutting nails and caring for gums (2). Hygiene is the discipline which deals about maintaining the health and it is a personal determinant of health which varies according one's moral and practices. Personal hygiene is also influenced by various factors such as society, family and individual

awareness and attitudes concerning hygiene (3). The burden of communicable diseases has been increased because of poor personal hygienic practices and it is considered to be one of the major public health concerns in developing countries (4). School children are more vulnerable because of lack of awareness and as a result of it tremendous increase in the incidence of communicable diseases (5, 6). School health is an important intervention which has a major effect on children's health (7) and teachers play a dynamic role in teaching the children about the primordial prevention which changes their attitude and behavior towards personal hygiene. The school becomes the vital place for health promotion activities for children because of its supportive environment and also it is a place where the infectious diseases are likely to spread from one to another (8, 9). World health organization report says that 1.7 million deaths occur every year across the world due to lack of personal hygiene (10).

In developing countries acute respiratory infections and intestinal infections are the major reason for the childhood morbidity and mortality whereas diarrheal disease accounts for 12% of the deaths among under 5 year children in Egypt (11-13). Despite Saudi Arabia being a high income country the prevalence of parasitic infections and intestinal infections are quite high (14, 15). The study done in Saudi Arabia by Hamdan Ibrahim Al-Mohammed et al among the primary school children relieved that the prevalence of parasitic infection was 27.2% among the rural students and the logistic regression analysis found a positive correlation with poor personal hygienic practices (16). Several studies have demonstrated the connection between absence of diseases and good personal hygiene among primary school children and it also reduces the childhood morbidity and mortality due to infectious diseases (17, 18). Some other studies also reports that school children with good knowledge and practices are less likely to be absent in schools and more likely to succeed with higher grades (5, 19).

Therefore the current study aimed at assessing the knowledge, attitude and practices of the personal hygiene among the male primary school children in Abha, Saudi Arabia.

## Materials & Methods

**Study Design:** This is a cross-sectional study.

**Study Setting:** This study was conducted in the Abha City, Asser Region from December 2016 to May 2017.

**Participants:** The sample size was calculated by the Epi Info statistical program. The hypothesized frequency of outcome factor in the population is 50% at a significance level of 0.05, a design effect of 1 and confidence interval of 95% ending with a minimum sample size equal 384. Five hundred and eight children were chosen by multistage probability sample technique. The permission was obtained from ministry of education for conducting this research in the primary schools in the Abha city. There are forty primary schools in the Abha city and list of schools with the current location were collected from the ministry of education. First Abha city was divided into east, west, north and south administrations and schools were listed based on these four administrative directions. Two schools from each administrative direction were selected by using a simple random sampling technique. In each school students from class four, five and six were randomly included in the study.

**Ethical Permission:** Ethical permission was obtained from the research ethics committee, college of medicine, King Khalid University, Abha, Kingdom of Saudi Arabia.

**Inclusion Criteria:** Primary school children who are studying fourth, fifth and sixth class from the selected schools are included in the study.

**Exclusion Criteria:** Children who are mentally and physically challenged from the selected schools were excluded.

**Tools for Data Collection:** Each student was interviewed using a structured questionnaire.

**Knowledge Questions:** 6 questions about personal hygiene which includes disease spread, boiling water, covering food items, waste disposal, pesticide spray and stagnant water mosquito breeding.

**Practice Questions:** 16 questions about drinking water, hand washing, covering mouth during sneezing and coughing, taking bath, use soap, sharing food while sick, brush teeth, using tooth brush, wear sandals, cut nails and waste disposal.

**Attitude Questions:** 3 questions about environmental cleanliness and willingness to share and improve the knowledge about personal hygiene. The questionnaire was framed in English, translated in Arabic (local language) and back translated in English to check the translation.

**Reliability:** Test-retest reliability was done by Alpha (Cronbach's) test reliability for internal consistency and it was equal to 0.72. Test reliability was applied on a pilot of 50 primary school children before the study.

**Data Analysis:** The data analysis was carried out by using SPSS (Version 17.0, SPSS Inc. Chicago, IL, USA). Frequency tables were used to describe the knowledge, attitude and practices of personal hygiene among the primary school children. Qualitative data were summarized in percentages and non-parametric tests of significance (Chi square test) were applied for nominal scale. Pearson Correlation between two variables was applied. The p-value was two-tailed and statistical significance was set at  $<0.05$ .

## Scoring System for Knowledge, Attitude and Practices:

### Knowledge

There are six questions scored (1 & 0) for yes and no answers and (1 & 0) for true and false answers. The total score ranged from 0 to 6. The score was divided into three categories good poor knowledge ( $<3$ ), average knowledge (3 to 4) and good knowledge (5 to 6).

### Practice

There are sixteen questions scored (1 & 0) for yes and no answers. The total score ranged from 0 to 16. The score was divided into three categories poor practice ( $<9$ ), average practice (9-12) and good practice (13-16).

### Attitude

There are three questions, (1 & 0) for true and false answers, (1 & 0) for agree and disagree answers and scored (1 & 0) for yes and no answers. The total score ranged from 0 to 3. The score was divided into three categories poor attitude (1), average attitude (2) and good attitude (3).

## Results

The study included 508 children studying fourth, fifth and sixth class from eight schools in Abha city. Table 1 shows frequency distribution of the study subjects according to their Knowledge towards personal hygiene; 96.1% of the students know that the disease spread from one person to another. 23.2 % of the students were not aware that germs are killed by boiling the water. Around 30% of students were not having any knowledge about waste disposal. More than 30% of the students were not known about stagnant water, mosquito breeding and spraying pesticides.

Table 2 shows frequency distribution of the study subjects according to their attitude towards personal hygiene; Around 97 % of students are having a good attitude towards personal hygiene and environmental cleanliness. More than 84% of

students are willing to share their knowledge about personal hygiene. Around 90% of the students are willing to upgrade their knowledge about personal hygiene. Table 3 shows frequency distribution of the study subjects according to their Practice of personal hygiene; only 72% of the students drink mineral water. On an average 93-97% of the students wash their hands with soap before and after eating and also after defecating. Only 36% of the students share their food during illness and only 44.7% of the students take bath every day. Around 90% of students use tooth brush whereas only 71.7% of the students brush their teeth twice daily. Around 85% of the students cut their nails regularly and more than 90% of students dispose their waste through municipal waste collectors. Table 4 shows distribution of students according to knowledge, practice and attitude of personal hygiene; only about 50-56% of the students have good knowledge and practices about personal hygiene whereas around 75% of students have good attitude towards personal hygiene.

#### Correlation between Knowledge Attitude and Practices

Pearson correlation revealed a significant positive linear correlation between knowledge-practice ( $r = 0.106$ ,  $p = 0.017$ ), attitude-practice ( $r = 0.367$ ,  $p < 0.001$ ). This result confirms the positive relationship between knowledge attitude and practices of personal hygiene as show in the Table 5. The significant association was found between the knowledge score and practices in terms of Drinking tap water ( $p = 0.018$ ), Drink mineral water ( $p = 0.013$ ), wash hands after meal ( $p = 0.003$ ) after toilet ( $p < 0.001$ ) after sneezing and coughing ( $p < 0.001$ ), cover mouth during coughing and sneezing ( $p = 0.002$ ), share food while sick ( $p = 0.001$ ), take bath daily ( $p = 0.001$ ), use soap ( $p = 0.014$ ), use tooth brush ( $p = 0.010$ ) and dispose waste ( $p < 0.001$ ) as shown in the Table 6. Table 7 shows a significant association between the attitude score and knowledge concerning disease spread ( $p = 0.049$ ) and covering food and water ( $p = 0.033$ ). There was a significant positive correlation between the attitude score and practices regarding Drink tap water ( $p = 0.027$ ), wash hands before meal ( $p < 0.001$ ) after meal ( $p = 0.030$ ) after toilet ( $p < 0.001$ ) after coughing and sneezing ( $p < 0.001$ ) and use soap ( $p < 0.001$ ), cover mouth during coughing and sneezing ( $p = 0.015$ ), wear sandal ( $p < 0.001$ ), use tooth brush ( $p < 0.001$ ), brush twice daily ( $p < 0.001$ ), cut nails ( $p < 0.001$ ) and dispose waste ( $p < 0.001$ ). [Table 8]

**Table 1: Frequency Distribution of the Study Subjects According to their Knowledge towards Personal Hygiene (n=508)**

Questions Asked	Answer Level	Total(Percentage)
Q1. Do you know that diseases can spread from one person to another?	a) Yes	N= 488 (96.1%)
	b) No	N= 20 (3.9 %)
Q.2 Does boiling water kill germs?	a) Yes	N= 390 (76.8%)
	b) No	N= 118 (23.2 %)
Q.3 Water and food needs covering	a) Yes	N= 449 (88.4 %)
	b) No	N= 59 (11.6 %)
Q.4 Waste items should not be thrown around the house or in open areas	a) True	N= 354 (69.7%)
	b) False	N= 154 (30.3 %)
Q.5 Spraying pesticides will help control the spread of diseases	a) True	N= 282 (55.5%)
	b) False	N= 226 (44.5 %)
Q.6 Stagnant water and dumping areas are home for mosquitoes	a) True	N= 349 (68.7%)
	b) False	N= 159 (31.3 %)

**Table 2: Frequency Distribution of the Study Subjects According to their Attitude towards Personal Hygiene (n=508)**

Questions Asked	Answer Level	Total(Percentage)
Q.23 Personal hygiene and clean surroundings are important for healthy living	a) True	N= 494 (97.2%)
	b) False	N= 14 (2.8 %)
Q.24 Sharing knowledge about healthy practices will lead to a disease free society?	a) Agree	N= 431 (84.8%)
	b) Disagree	N= 77 (15.2 %)
Q.25 I am interested in increasing my knowledge about hygiene measures	a) Yes	N= 458 (90.2%)
	b) No	N= 50 (9.8%)

**Table 3: Frequency Distribution of the Study Subjects According to their Practice of Personal Hygiene (n=508)**

Questions Asked	Answer Level	Total(Percentage)
Q.7 Do you drink tap water?	a) Yes	N= 120 (23.6%)
	b) No	N= 388 (76.4 %)
Q.8 Do you drink mineral water?	a) Yes	N= 369 (72.6%)
	b) No	N= 139 (27.4 %)
Q.9 Do you wash hands before meal?	a) Yes	N= 493 (97%)
	b) No	N= 15 (3.0%)
Q.10 Do you wash hands after every meal?	a) Yes	N= 488 (96.1%)
	b) No	N= 20 (3.9%)
Q.11 Do you wash hands after going to the toilet?	a) Yes	N= 475 (93.5%)
	b) No	N= 33 (6.5%)
Q.12 Do you cover your mouth and nose during coughing and sneezing?	a) Yes	N= 410 (80.7%)
	b) No	N= 98 (19.3%)
Q.13 Do you wash hands after coughing and sneezing?	a) Yes	N= 355 (69.9%)
	b) No	N= 153 (30.1%)
Q.14 Do you use soap for washing hands?	a) Yes	N= 477 (93.9%)
	b) No	N= 31 (6.1%)
Q.15 Do you share your food and drinks even if you are sick?	a) Yes	N= 184 (36.2%)
	b) No	N= 324 (63.8%)
Q.16 Do you wear sandals all the time?	a) Yes	N= 441 (86.8%)
	b) No	N= 67 (13.2%)
Q.17 Do you take bath every day?	a) Yes	N= 227 (44.7%)
	b) No	N= 281 (55.3%)
Q.18 Do you use soap while bathing?	a) Yes	N= 469 (92.3%)
	b) No	N= 39 (7.7%)
Q.19 Do you brush twice, daily?	a) Yes	N= 364 (71.7%)
	b) No	N= 144 (28.3%)

Q.20 Do you use tooth brush and paste while brushing?	a) Yes	N= 454 (89.4%)
	b) No	N= 54 (10.6%)
Q.21 Do you cut your nails regularly?	a) Yes	N= 436 (85.8%)
	b) No	N= 72 (14.2%)
Q.22 Do you dispose waste to municipal waste collectors?	a) Yes	N= 464 (91.3%)
	b) No	N= 44 (8.7%)

**Table 4: Distribution of Students According to Knowledge, Practice and Attitude of Personal Hygiene (n = 508)**

Personal Hygiene	Total (Percentage)
<b>Knowledge Score</b>	
Poor (<3)	22 (4.3%)
Average (3-4)	200 (39.4%)
Good (5-6)	286 (56.3%)
<b>Practice Score</b>	
Poor (<9)	24 (4.7%)
Average (9-12)	224 (44.1%)
Good (13-16)	260 (51.2%)
<b>Attitude Score</b>	
Poor (1)	13 (2.6%)
Average (2)	115 (22.6%)
Good (3)	380 (74.8%)

**Table 5: Correlation between Knowledge, Attitude and Practice Scores**

Variables	Correlation Coefficient	p-value*
Knowledge-Practice	0.106	0.017*
Knowledge-Attitude	0.071	0.112
Attitude-Practice	0.367	<0.001*

\*P&lt;0.05, Statistically Significant

**Discussion**

The current study was conducted in selected primary schools in Abha City and 508 students from fourth, fifth and sixth class were assessed about knowledge,

attitude and practices of personal hygiene. In the current study more than 95% of the students were aware about the requirements of personal hygiene and this was slightly higher than the study conducted by Hala M Elsabagh et al in Egypt among the primary school children (20) and the result was

almost similar in another study carried out in Erbil city in 2012 in primary school children (21). Only 76% of the students in this study were known about boiling water kill germs and around 88% of the students were knowledgeable about covering food and water

**Table 6: Correlation Between the Knowledge Score and Practice (n = 508)**

Questions Asked	Answer Levels	Knowledge Score			Total (Percent)	P Value
		Poor	Average	Good		
Q.7	A.	07 (1.38%)	60 (11.81%)	53 (10.43%)	120 (23.62%)	0.018*
	B.	15 (2.95%)	140 (27.56%)	233 (45.87%)	388 (76.38%)	
Q.8	A.	9 (1.77%)	148 (29.13%)	212 (41.73%)	369 (72.63%)	0.013*
	B.	13 (2.56 %)	52 (10.24 %)	74 (14.57%)	139 (27.37%)	
Q.9	A.	22 (4.33%)	194 (38.19%)	277 (54.53%)	493(97.05%)	0.869
	B.	0(0.00%)	06 (1.18%)	09 (1.77%)	15(2.95%)	
Q.10	A.	20 (3.94%)	188 (37.01%)	280 (55.12%)	488 (96.07%)	0.003*
	B.	02 (0.39%)	12 (2.36%)	06 (1.18%)	20 (3.93%)	
Q.11	A.	20 (3.94%)	179 (35.24%)	276 (54.33%)	475 (93.51%)	<0.001*
	B.	02 (0.39%)	21(4.13%)	10 (1.97%)	33 (6.49%)	
Q.12	A.	12 (2.36%)	153 (30.12%)	245 (48.23%)	410 (80.71%)	0.002*
	B.	10 (1.97%)	47 (9.25%)	41 (8.07%)	98 (19.29%)	
Q.13	A.	13 (2.56%)	131 (25.79%)	211(41.54%)	355 (69.88%)	<0.001*
	B.	09 (1.77%)	69 (13.58%)	75 (14.76%)	153 (30.12%)	
Q.14	A.	22 (4.33%)	190 (37.40%)	265 (52.17%)	477 (93.90%)	0.090
	B.	0 (0.00%)	10 (1.97%)	21(4.13%)	31 (6.10%)	
Q.15	A.	17 (3.35%)	72 (14.17%)	95 (18.70%)	184 (36.22%)	0.001*
	B.	05 (0.98%)	128 (25.20%)	191(37.60%)	324 (63.78%)	
Q.16	A.	18 (3.54%)	175 (34.45%)	248 (48.82%)	441 (86.81%)	0.187
	B.	04 (0.79%)	25 (4.92%)	38 (7.48%)	67 (13.19%)	
Q.17	A.	04 (0.79%)	94 (18.50%)	129 (25.39%)	227 (44.69%)	0.001*
	B.	18 (3.54%)	106 (20.87%)	157 (30.91%)	281 (55.31%)	
Q.18	A.	20 (3.94%)	184 (36.22%)	265 (52.17%)	469 (92.32%)	0.014*
	B.	02 (0.39%)	16 (3.15%)	21(4.13%)	39 (7.68%)	
Q.19	A.	13 (2.56%)	139 (27.36%)	212 (41.73%)	364 (71.65%)	0.596
	B.	09 (1.77%)	61 (12.01%)	74 (14.57%)	144 (28.35%)	
Q.20	A.	17 (3.35%)	171 (33.66%)	266 (52.36%)	454 (89.37%)	0.010*
	B.	05 (0.98%)	29 (5.71%)	20 (3.94%)	54 (10.63%)	
Q.21	A.	18 (3.54%)	177 (34.84%)	241 (47.44%)	436 (85.83%)	0.243
	B.	04 (0.79%)	23 (4.53%)	45 (8.86%)	72 (14.17%)	
Q.22	A.	14 (2.76%)	181 (52.95%)	269 (52.95%)	464 (91.34%)	<0.001*
	B.	08 (1.57%)	19 (3.35%)	17 (3.35%)	44 (8.66%)	

\*P<0.05, Statistically Significant

**Table 7: Correlation Between the Attitude Score and Practice (n = 508)**

Questions Asked	Answer Levels	Knowledge Score			Total (Percent)	P Value
		Poor	Average	Good		
Q.7	A.	07 (1.38%)	29 (5.71%)	84 (16.54%)	120 (23.62%)	0.027*
	B.	06 (1.18%)	86 (16.93%)	296 (58.27%)	388 (76.38%)	
Q.8	A.	11 (2.17%)	81 (15.94%)	277 (54.53%)	369 (72.64%)	0.540
	B.	02 (0.39%)	34 (6.69%)	103 (20.28%)	139 (27.36%)	
Q.9	A.	07 (1.38%)	108 (21.26%)	378 (74.41%)	493 (97.05%)	<0.001*
	B.	06 (1.18%)	07 (1.38%)	02 (0.39%)	15 (2.95%)	
Q.10	A.	11 (2.17%)	108 (21.26%)	369 (72.64%)	488 (96.06%)	0.030*
	B.	02 (0.39%)	07 (1.38%)	11 (2.17%)	20 (3.94%)	
Q.11	A.	08 (1.57%)	106 (20.87%)	361 (71.06%)	475 (93.50%)	<0.001*
	B.	05 (0.98%)	09 (1.77%)	19 (3.74%)	33 (6.50%)	
Q.12	A.	11 (2.17%)	82 (16.14%)	317 (62.40%)	410 (80.71%)	0.015*
	B.	02 (0.39%)	33 (6.50%)	63 (12.40%)	98 (19.29%)	
Q.13	A.	04 (0.79%)	71 (13.98%)	280 (55.12%)	355 (69.88%)	<0.001*
	B.	09 (1.77%)	44 (8.66%)	100 (19.69%)	153 (30.12%)	
Q.14	A.	09 (1.77%)	96 (18.90%)	372 (73.23%)	477 (93.90%)	<0.001*
	B.	04 (0.79%)	19 (3.74%)	08 (1.57%)	31 (6.10%)	
Q.15	A.	06 (1.18%)	44 (8.66%)	134 (26.38%)	184 (36.22%)	0.633
	B.	07 (1.38%)	71 (13.98%)	246 (48.43%)	324 (63.78%)	
Q.16	A.	08 (1.57%)	89 (17.52%)	344 (67.72%)	441 (86.81%)	<0.001*
	B.	05 (0.98%)	26 (5.12%)	36 (7.09%)	67 (13.19%)	
Q.17	A.	06 (1.18%)	44 (8.66%)	177 (34.84%)	227 (44.69%)	0.289
	B.	07 (1.38%)	71 (13.98%)	203 (39.96%)	281 (55.31%)	
Q.18	A.	11 (2.17%)	101 (19.88%)	357 (70.28%)	469 (92.32%)	0.055
	B.	02 (0.39%)	14 (2.76%)	23 (4.53%)	39 (7.68%)	
Q.19	A.	04 (0.79%)	59 (11.61%)	301 (59.25%)	364 (71.65%)	<0.001*
	B.	09 (1.77%)	56 (11.02%)	79 (15.55%)	144 (28.35%)	
Q.20	A.	07 (1.38%)	98 (19.29%)	349 (68.70%)	454 (89.37%)	<0.001*
	B.	06 (1.18%)	17 (3.35%)	31 (6.10%)	54 (10.63%)	
Q.21	A.	06 (1.18%)	85 (16.73%)	345 (67.91%)	436 (85.83%)	<0.001*
	B.	07 (1.38%)	30 (5.91%)	35 (6.89%)	72 (14.17%)	
Q.22	A.	05 (0.98%)	99 (19.49%)	360 (70.87%)	464 (91.34%)	<0.001*
	B.	08 (1.57%)	16 (3.15%)	20 (3.94%)	44 (8.66%)	

\*P<0.05, Statistically Significant

**Table 8: Correlation Between the Attitude Score and Knowledge (n = 508)**

Questions Asked	Answer Levels	Knowledge Score			Total (Percent)	P Value
		Poor	Average	Good		
Q.1	A.	11 (2.17%)	113 (22.24%)	364 (71.65%)	488 (96.06%)	0.049*
	B.	02 (0.39%)	02 (0.39%)	16 (3.15%)	20 (3.94%)	
Q.2	A.	07 (1.38%)	94 (18.50%)	289 (56.89%)	390 (76.77%)	0.063
	B.	06 (1.18%)	21 (4.13%)	91 (17.91%)	118 (23.23%)	
Q.3	A.	11(2.17%)	94 (18.50%)	344 (67.72%)	449 (88.39%)	0.033*
	B.	02 (0.39%)	21 (4.13%)	36 (7.09%)	59 (11.61%)	
Q.4	A.	10 (1.97%)	78 (15.35%)	266 (52.36%)	354 (69.69%)	0.768
	B.	03 (0.59%)	37 (7.28%)	114 (22.44)	154 (30.31%)	
Q.5	A.	08 (1.57%)	57 (11.22%)	217 (42.72%)	282 (55.51%)	0.328
	B.	05 (0.98%)	58 (11.42%)	163 (32.09%)	226 (44.49%)	
Q.6	A.	07 (1.38%)	77 (15.16%)	265 (52.17%)	349 (68.70%)	0.430
	B.	06 (7.48%)	38 (7.48%)	115 (22.64%)	159 (31.30%)	

\*P<0.05, Statistically Significant

These results were slightly higher than the study conducted by Vivas et al in 2010 among the Ethiopian primary school children (5). Hand washing practices among the students in the current study is extraordinary; more than 90% of the students wash their hands before and after meals and also after defecating and this is higher than the study aimed at assessing the factors influencing the hygiene behavior among school children in Ethiopia by Assefa M et al in 2014 (22). In terms of hand washing practices our study results were higher than other studies conducted in Ghana, Colombia and Kenya (23-25). The current study reports more than 90% of the children use soap for hand washing and bathing and this was in agreement with previous published studies (21, 26). However use of soap by the primary school students for washing hands and bathing was higher than the study conducted in India (85.4%) and another one in turkey (46.9%) respectively (27, 28). This study shows only 44% of the primary school children take bath daily which is lesser than the other reported studies in India <sup>20</sup>and Egypt (26). In this study around 90% of the students used tooth brush and paste whereas only 71% of them brush their teeth twice daily. A study conducted by Kenneth et al in 2008 among the school children found that more than 75% of the children in Switzerland, Sweden, Netherland, Germany, Denmark and Norway brushed their teeth twice daily. However this was higher than our study results (29).

Another study by Peterson et al revealed that less than 46% of children in Finland, Romania, Greece, Lithuania, Turkey and Malta brush their teeth more than once (30). About 85% of the students cut their nails regularly which were very much higher when compared to a study conducted in India which showed only 30% of the students routinely cut their nails (31). This study found that only 50-56% of the students had good knowledge and good practices of personal hygiene which was higher than the study conducted in Egypt by Hala M Elsabagh et al (20). Around 75% of the students were with good attitude

towards personal hygiene which was in concurrence with the study carried out in United Arab Emirates (32). The correlation revealed significant positive linear correlations between knowledge-practice ( $r = 0.106$ ,  $p = 0.017$ ), attitude-practice ( $r = 0.367$ ,  $p < 0.001$ ). The positive linear correlation confirms that better knowledge and good attitude can lead to good practices. This will help in prevention of communicable diseases. This study finding are in agreement with another study conducted by Smith et al which reported students with strong knowledge showed better attitude and practices (33). This main finding of the study was also supported by other study done in India by Pragya Pandey Wahengbam et al which also found a positive linear correlation between knowledge attitude and practices (34).

### Conclusion

Primary school children knowledge attitude and practices towards personal hygiene was satisfactory but still deficient in some aspects. The study result shows a positive linear correlation between knowledge attitude and practices so there is a need for health education regarding personal hygiene for the school students for better awareness and developing a good attitude and behavior. Though this type of research has a limitation such as self-reported data and information bias; the findings of this study encourages addition research for creating awareness concerning personal hygiene. The study also provides a baseline data for future research.

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