

A Cross-sectional Study to Determine the Oral Hygiene Behavior Prevalence and its Determinants among School Children

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Abstract

Background: The present study was done to assess the prevalence of oral hygiene behavior and its determinants among school going children. **Materials and Methods:** A cross-sectional survey was conducted among 1692 school children to evaluate their oral hygiene behavior and determinant factors. Factors associated with oral hygiene behavior were identified using linear regression. Prior collection of sociodemographic information was done in addition to information on oral health behavior by personal interview. **Results:** A total of 1628 students participated in the study. Mean age was 17 (standard deviation ± 1.4) and the mean OHB was 7.69 ± 3.23 . Only 9.1%, 21.3%, and 5.5% were brushing their teeth at least twice a day, cleaning their tongue, and flossing at least once a day, respectively. Fathers' educational status (able to read and write [β : 1.93, 95% confidence interval (CI): 0.46, 3.44], completed secondary school [β : 1.64, 95% CI: 0.09, 3.26], and diploma and higher [β : 1.87, 95% CI: 0.36, 3.38], oral hygiene knowledge [β : 0.25, 95% CI: 0.07, 0.38]), and attitude toward OHB (β : 0.15, 95% CI: 0.09, 0.17) were significant factors associated with students OHB. **Conclusion:** Oral hygiene behavior level among preparatory school students was very low. Father's educational status, students' oral hygiene knowledge, and attitude were found to be significant factors affecting students oral hygiene behavior. These results suggest that emphasis should be given to scientific monitoring, effective implementation and evaluation of school-based oral health promotion and preventive programs to increase the dental awareness and oral hygiene practices.

Keywords: Behavior, Brushing, Hygiene, Oral, Students.

INTRODUCTION

A healthy mouth is an exclusive and invaluable treasure, and since, oral health is related to our overall health, maintaining good oral health is usually regarded as a fundamental human right.^[1] Since mouth is the primary gateway into the body, poor oral hygiene can have negative consequences for the entire body.^[2] Poor oral health can cause life-threatening conditions including cardiovascular diseases, dementia, respiratory infections, stillbirth and low birth weight, infertility, sexual dysfunction, cancer, rheumatoid arthritis, and kidney disease unless are prevented/treated early.^[3] In addition to this, poor oral hygiene affects one's social life and productivity.^[2]

Untreated caries in the permanent teeth are the most prevalent oral condition affecting 2.5 billion people worldwide and it

affects 60–90% of school children.^[4] OHBs such as regular tooth brushing has a huge contribution to the prevention of oral health disorders like dental caries and periodontal diseases.^[5] Despite its importance, the prevalence of tooth brushing is unsatisfactory in the world particularly, it is disproportionately very low in middle- and low-income countries.^[6] With the absence of strategic preventive measures, poor integration of oral health services into the healthcare system and a rapid

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increase in the incidence of risky health behaviors, oral health disorders are increasing alarmingly.^[7]

Hence, the main purpose of this study was to assess oral hygiene behavior, and its determinants among preparatory school students.

MATERIALS AND METHODS

A cross-sectional study was conducted to assess the prevalence of oral hygiene behavior, and its determinants among school going children. Ethical clearance was obtained from the ethical committee to conduct the study (ES19199). A simple random sampling procedure was adopted for the study. The study was carried out on 1628 schoolchildren equally derived from government and private institutions. Children of both sexes were examined. The time and date of respective visits to the selected schools were scheduled with school authorities prior to the survey. Children who agreed to participate in the study were examined at their respective schools in predetermined time schedule, as arranged by the school authorities. Information letter for the parents along with consent from parents were distributed 1 day before examination and collected before survey. The consent of parents was obtained explaining the aim and importance of the study and asking for their child's participation.

Standard infection control guidelines were applied. In the daylight away from direct sunlight, all the children were made to sit on ordinary chair and recordings were carried out. A sufficient number of mouth mirrors, probes, tweezers, instrument trays, gloves, masks, and gauze were packed and sterilized for each day of work. To avoid inter-examiner variability, investigation was done by only one examiner.

Oral hygiene behavior was the outcome variable of this study. Age, sex, education, living arrangement, parental education, parental occupation, oral hygiene knowledge, and attitude were independent variables. OHB was measured by asking students to report about their oral hygiene behavior in the past 1 month before the survey using 8 items adapted from the study done by Buunk-Werkhoven.^[8] OHB score was computed by adding the score of each item which ranged from 0 to 16. A higher score indicated better oral hygiene behavior, ($\alpha = 0.74$).

Oral hygiene knowledge was assessed by asking participants about oral hygiene behaviors and their importance using 11 items having true, false and don't know response categories which were prepared based on the earlier Buunk-Werkhoven's study.^[8] Finally, the total score of OHK was computed by adding each item's score. The sum score ranged from 0 to 11 and the higher score indicated better oral hygiene knowledge, ($\alpha = 0.65$).

Attitude toward OHB was assessed using nine worded statements in a semantic differential format on a 7-point. A sum score for participants' attitudes was constructed by adding the items (ranged from 9 to 63). Higher sum scores indicated a more positive attitude toward an optimal OHB.

The statistical analysis was done using STATA version 14 statistical software after the data was entered into EpiData version 4.6.

RESULTS

A total of 1628 students participated in the study. The mean age of the participants was 17 ± 1.4 with age range of 15–23. Females participated more actively than males (55.1%) (Table 1).

Table 2 shows that the mean OHK score of the respondents was found to be 7.58 (95% Confidence Interval, 7.39, 7.77). More than half (57.7%) of the study participants had a knowledge score at or above the mean knowledge score. Females had higher oral hygiene knowledge scores than males with a mean score of 7.82 ± 1.54 and 7.29 ± 2.34 respectively, at $P < 0.05$.

Table 3 shows that only 9.4% of the participant brushed their teeth at least twice a day in the last month. About 21.4% and 5.7% of the respondents cleaned their tongues and between their teeth, respectively. 68.8% participants used toothpaste while brushing. Besides, the mean OHB score was about 7.89 ± 3.43 . More than half (57.3%) of the participants scored above the oral hygiene behavior mean score. Females had higher oral hygiene behavior scores than males with a mean score of 8.48 ± 2.87 and 7.17 ± 6.61 , respectively.

Table 4 shows that students who belonged to a father with educational status of able to read and write, completed secondary school, and diploma and higher had 1.93, 1.64, and 1.87 times better OHB compared to those who belonged to an illiterate father, respectively. Keeping other variables constant, a unit increase in knowledge of OHB increases the OHB score by 0.23, indicated that oral hygiene knowledge has a positive association with oral hygiene behavior. Moreover, a unit increases in attitude score increases OHB score by 0.12 provided that other variables kept constant, indicated that oral

Table 1: Socio-demographic characteristics of the participants by gender

Variable	Response Category	Male (%)	Female (%)	Total (%)
Age	15–19	672 (91.3)	876 (98.2)	1548 (95.1)
	20–23	64 (8.7)	16 (1.8)	80 (4.9)
Mother occupation	Housewife	432 (58.7)	456 (51.1)	888 (54.5)
	Government employee	184 (25.0)	252 (28.2)	436 (26.8)
	Merchant	72 (9.8)	112 (12.6)	184 (11.3)
	Private employee	28 (3.8)	40 (4.5)	68 (4.2)
	Other	20 (2.7)	32 (3.6)	52 (3.2)
Father occupation	Government employee	224 (30.4)	360 (40.4)	584 (35.8)
	Private employee	156 (21.2)	120 (13.4)	276 (16.9)
	Merchant	208 (28.3)	260 (29.2)	468 (28.8)
	Farmer	108 (4.7)	112 (12.6)	220 (13.5)
	Other	40 (5.4)	40 (4.5)	80 (4.9)

Table 2: Oral hygiene knowledge of the participants by gender

Items	Answer	Male (%)	Female (%)	Total (%)
Sugary food intake frequency	Wrong	10	5	7
	Correct	90	95	93
Brushing twice a day to prevent caries	Wrong	28	19	23
	Correct	72	81	77
Bleeding gum sign of periodontal disease	Wrong	34	30	32
	Correct	66	70	68
Gum disease cause bad breath	Wrong	156	136	36
	Correct	244	264	64
Interdental cleaning prevent gum inflammation	Wrong	32	19	25
	Correct	68	81	75
Gum inflammation disappear itself	Wrong	36	33	34
	Correct	64	67	66

Table 3: Oral hygiene behavior of participants and value each item

Items	Response category	Weight	Frequency	Percent
Toothbrush frequency	Once	1	616	37.8
	Twice	2	152	9.4
	Occasionally	0	860	52.8
Toothbrush replacement	Once or twice a year	0	680	41.8
	Every 6 months	1	288	17.7
	Every 3 months	2	660	40.5
Interdental cleaning	Never	0	208	25.0
	Sometimes	1	1128	69.3
	Once a day	2	92	5.7
Tongue Cleaning	Never	0	492	30.2
	Sometimes	1	788	48.4
	Everyday	2	348	21.4
Toothpaste utilization	Never	0	236	14.5
	Sometimes	1	272	16.7
	Always	2	1120	68.8

Table 4: Factors associated with oral hygiene behavior among students

Variable	Response Category	Unstandardized β	95% CI for β
Age		-0.06	-0.32, 0.20
Father's education	Unable to read and write		
	Able to read and write	1.93	0.46, 3.44
	Primary school	1.50	-0.18, 3.17
	Secondary school	1.64	0.09, 3.26
	Diploma and higher	1.87	0.36, 3.38
Knowledge		0.25	0.07, 0.38
Attitude		0.15	0.09, 0.17

CI: Confidence interval

hygiene attitude had a positive association with oral hygiene behavior.

DISCUSSION

The present study was done to assess the oral hygiene behavior, and its associated factors among school going children. Oral hygiene behavior was not found to be satisfactory among this group of the population. Father's educational status (able to read and write, completed secondary school and diploma and higher), knowledge about OHB and attitude toward OHB were factors associated with OHB of students.

In the present study, OHB was very low as only 9.4%, 21.4% and 5.7% were brushing their teeth at least twice a day, cleaning their tongue, and flossing at least once a day, respectively. The results of the present study were found to be very low when compared with the study conducted by Sahni *et al.*^[5] where 55.2% of the total participants have brushed their teeth twice a day. However, it is higher than the result reported by the study conducted by Melo *et al.*^[9] where only 3.8% of students were reported to brush their teeth at least twice a day. In the present study, interdental cleaning practice of the study participants was very poor. Similar results were found in the study conducted by Abate *et al.*^[10] However, 45% of adults in the United Arab Emirates flossed their teeth once a day.^[11] The differences may be due to sociodemographic differences among the study participants. Moreover, this may be due to the absence of adequate oral health promotion programs in schools and the country at large. Moreover, these figures signify that oral hygiene behavior change interventions are highly required in schools to promote student's oral hygiene behavior.^[12]

In the present study, father's education was independently socio-associated with oral hygiene behavior. Contrasting results were seen in the study conducted by Viegas *et al.*^[13] which reported that adolescent's oral hygiene behavior (brushing teeth twice or more times a day) had no statistically significant differences by the educational status of the parents. However, similar results were seen in the study conducted by Saldunaite *et al.*^[14] where parental education has an impact on their children's oral hygiene behavior. This may be because parents are the main sources of oral health-related information for the students. In addition to this, it might be because those parents with higher education may probably have better oral health literacy. Better oral health literacy of the parents in turn is positively associated with good oral hygiene behavior of children.^[15] Parents are key for setting a daily routine and making their children understand the importance of oral hygiene. In this point of view, improving parents' oral health literacy may have a greater role in enhancing children's oral hygiene behavior.^[16]

In the present study, higher knowledge of OHB was associated with a better OHB. A unit increase in knowledge results in a 0.23 times increment in OHB. Similar results were seen in the study conducted by Fukai *et al.*^[17] This might be due to that adequate knowledge may enable the students to retain their oral hygiene. On the other hand, poor oral hygiene behavior

could reflect a lack of knowledge and limited access to oral health-related sources of information.^[18]

The present study revealed that students who have good oral health knowledge and a favorable attitude are more likely to adopt oral hygiene behavior. Besides, the attitude of the students not only affects their oral hygiene behavior but also influences the oral hygiene behavior of their family members at large. Therefore, an action increasing favorable attitude is needed to allow the change in the OHB of the students.^[19]

CONCLUSION

Oral hygiene behavior level among preparatory school students was very low. Father's educational status, students' oral hygiene knowledge, and attitude were found to be significant factors affecting students oral hygiene behavior. These results suggest that emphasis should be given to scientific monitoring, effective implementation and evaluation of school-based oral health promotion and preventive programs to increase the dental awareness and oral hygiene practices.

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