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Awareness, perception and practices regarding oral health among school-going adolescents in Ahmedabad City, India

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ABSTRACT

Objective. The study aimed to assess the awareness, perception, and practices regarding oral health among school-going adolescents in Ahmedabad City, Gujarat, India.

Materials and methods. A total of 600 school-attending adolescents with a mean age of 14.2 ± 1.19 years were enrolled. Ten schools (five public and five private schools) were selected randomly. They were interviewed by using a face-to-face questionnaire which comprised 13 items. Out of 13 questions four questions were related to awareness, four questions were related to attitude, and five questions were related to the practice of oral health. The statistical association between the two genders, age groups, and between public and private schools was determined using the Chi-square test.

Results. Most of the participants were aware of the number of permanent teeth present; however they were unaware of the number of primary teeth, and the effect of sugar and tobacco consumption on oral health. Male and private school-going students had better knowledge compared to females and government school students... A total of 73% of the participants brushed their teeth twice daily. Tooth pain was the most common reason (49.7%) for visiting a dentist. 44.7% of them visit the dentist only when needed while 23.5% visit the dentist every 6 months for regular check-ups.

Conclusion. The findings of the study conclude that oral health-related awareness, perception, and practices of adolescent students were not satisfactory. Hence, there is a need for regular oral health education for adolescents, as well as their parents and school teachers, which could impart a better and long-lasting understanding of oral health awareness, which in turn will reflect better oral health-related practices.

Keywords: adolescent, school, oral health, awareness, perception, practice

INTRODUCTION

Oral health is defined as the state of the mouth, teeth, and oro-facial structures that enable individuals to perform essential functions, such as eating, breathing, speaking, and encompasses psychosocial dimensions, such as self-confidence, well-being, and the ability to socialize and work without pain, discomfort, and embarrassment [1]. Oral diseases are a major public health problem affecting populations worldwide. Globally, 3.5 billion individuals are suffering from oral diseases having the highest burdens of dental decay in primary and permanent teeth, periodontitis, tooth loss, and oral cancer [1]. There is a well-established link between oral health and non-communicable diseases like cardiovascular disease, diabetes, and cancer. Oral health-promoting activities influenced the change in behavio-

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ral patterns and attitudes [2], which ultimately increased oral health knowledge and improved the oral health of the individual [3].

Dental caries have been significantly prevalent in developing countries in recent years as a result of modernization, urban migration, and lifestyle changes [4]. Lifestyle factors such as nutritional status, tobacco smoking, alcohol, poor oral hygiene, stress, and systemic conditions linked to oral diseases [5]. Adolescence is the most vulnerable phase in human development where there is a rapid shift in behavioral changes toward oral health. The transitional phase from childhood to adolescence is quite a remarkable duration, in human development when oral health care practices and food habits are developed among themselves. A high prevalence of dental diseases has been observed among adolescents residing in developing countries, which can in turn hamper their quality of life [6,7]. There is evidence showing school-aged adolescents who are suffering from poor oral health found compromised oral health-related quality of life, loss of school days, social integration, and chewing food [8,9]. It has been reported that appropriate oral health education can help to cultivate healthy oral health practices [10]. Children are the future of the country. Hence, to enhance the oral health of school-age years, school children are one of the important cluster groups. The school environment is an ideal condition that serves as a long-lasting catalyst to form and adapt students' healthy habits and health-related behavior [11]. In schools, students can be molded to choose, differentiate, and adopt healthy lifestyle patterns. The systemic use of questionnaires in school will help in identifying oral health knowledge, attitude attitudes, and practices. Through this one can frame the strategies to educate the students in making the behavioral changes needed to improve oral health [12].

Studies have been conducted to evaluate oral health awareness, attitudes, and practice among school-going adolescents in different cities of India [13-15]. After thoroughly reviewing the literature we failed to find such type of study, no such study was conducted in the city of Ahmedabad. Hence, the present study was conducted with the aim of assessing the awareness, perception, and practices regarding oral health among school-going adolescents in Ahmedabad City, Gujarat, India. The findings of this study will help to frame the strategies for changing the healthy attitude and practice toward the improvement of oral health among adolescents.

MATERIALS AND METHODS

Study design and ethical approval

A cross-sectional descriptive study was conducted among the school-going adolescents of Ahmedabad City, India. The study protocol was submitted before the commencement of the study, and a certificate of approval (No: ADC/Res/Approval/ 154/2022, dated 5th May 2022) to conduct the study was sought from the ethics committee of XXDental College and Hospital. The study was conducted per the Declaration of Helsinki. The permission to conduct the survey was obtained from the authority of the school or the Principal of the school. The students were approached by the classroom teacher to create interest among them. Those students who showed interest were explained the purpose study. A detailed sheet about participants was distributed among all participating students, explaining all aspects of the study. Students who were willing to participate in the study signed the assent forms.

Sampling Methodology

The list of schools was obtained from the educational department of the state. The sample for the study was drawn in three steps by using a multistage random sampling technique. In the first stage, five different zones (North, West, East, South, and Central) were identified in the city. Ten schools (two schools from each zone: one public school and one private school) were selected in the second stage to ensure the sample was more representative. In the third and final step, the school children were selected randomly by using the lottery method. The sample was calculated by using the prevalence formula: $n = Z\alpha^2 * p * (1-p)/L^2$. Considering the awareness level of 50% with 4% precision of error and 95% confidence interval the estimated sample size was 597. Hence, a total of 600 students (300 students each from public school and private school) were enrolled in the present study. Those students who were not responding and not willing to participate were excluded. Questionnaires, which were not properly and completely filled were not included in the statistical analysis.

Implementation of the survey and Survey form

The survey was scheduled to spread over four months (July-October 2022). Before executing the study, a schedule to implement a survey was made. Some modifications were made in this schedule as and when required due to different reasons such as holidays, unavailability of students, logistic problems, etc. Data were collected for two days in a week. The study was allotted a minimum of two days a week.

Data Collection

The data were collected by using a pre-tested self-designed questionnaire. The structured ques-

tionnaire was developed in English and Gujarati language. The questionnaire consisted of 13 items related to awareness, perception, and practice for students regarding oral health. Out of 13 questions, four questions were related to awareness, five questions were related to oral hygiene practices, and four questions were related to perception of oral health. The questionnaire was administered to the participants, and a face-to-face interview was conducted by the principal investigator (SN).

Statistical Analysis

The collected data were coded, compiled, and tabulated using Microsoft Excel 2019. Statistical Package for Social Science (SPSS version 23 Armonk, NY: IBM Corp) was used for the descriptive and inferential analysis of study data. The chi-square test was applied to check for any significant association between the variables. The level of significance was set at 5%.

RESULTS

The age and gender-wise distribution of the students is shown in Table 1. The school adolescents were was 14.2 ± 1.19 years with the age range from 12-17 years. More than half, 54.3% (n=326) belong to 14-15 years. Out of 600 subjects, the total number of male and female adolescents was 270 (45.00%) and 330 (55.00%) respectively.

TABLE 1. Age and gender-wise distributions of the study participants

Age groups (in years)	Gender		Total n (%)
	Male n (%)	Female n (%)	
12-13	64 (10.67)	124 (20.67)	188 (31.33)
14-15	158 (26.33)	168 (28.00)	326 (54.33)
16-17	48 (8.00)	38 (6.33)	86 (14.33)
Total n (%)	270 (45.00)	330 (55.00)	600 (100)

Table 2 shows the responses of the students related to their awareness regarding their oral health. Only 33.5% (n=201) of students knew the correct answer (20 primary teeth) when they were asked how many primary teeth one has. The male students gave a correct answer as compared to their female counterparts which was highly significant statistically (P<0.001) similarly the private school students gave correct answers as compared to public school students showing highly significant statistically (P<0.001). However, there was no significant difference (P>0.05) when the age groups were compared – Table 3. The majority of students n=520 (86.7%) gave the correct answer (32 permanent teeth) when they were asked how many permanent teeth one has. The response to the wrong answer was less in elder students as compared to younger students having a highly significant result (P<0.001). The students of public schools responded with more wrong answers than private school students showing statistically high significance (P<0.001). There was no significant difference (P>0.05) when the comparison was made in gender Table 3. 55% (n=330) students know that sugar intake has an adverse effect on the teeth. Younger students significantly (P<0.001) believe that consumption of sugar can lead to caries (Table 3). 53.5% of students believe that tobacco consumption leads to oral cancer; however, 31.5% of students do not know the adverse effects of tobacco on health. The students of private schools were significantly more aware of the adverse effects of tobacco consumption than students of public schools (Table 3).

TABLE 2. Responses of the participants regarding their awareness of oral health

	Question	Frequency n (%)
1.	How many milk teeth?	
	a. Correct answer	201 (33.50)
	b. Wrong answer	399 (66.50)
2.	How many permanent teeth?	
	a. Correct answer	520 (86.67)
	b. Wrong answer	80 (13.33)
3.	Do sweets affect the teeth adversely?	
	a. Yes	330 (55.00)
	b. No	270 (45.00)
4.	Do you know what the consequences of adverse habits are?	
	a. Oral Cancer	321 (53.50)
	b. Tooth decay	32 (5.33)
	c. Lung cancer	45 (7.50)
	d. Other	13 (2.17)
	e. No	189 (31.50)

Table 4 shows the responses of the students to their oral health practices. A total of 438 (73%) students brush their teeth twice daily both in the morning and at bedtime. Almost 50% of students brush their teeth for 2-5 minutes. 291 (48.5%) use tongue scrappers to clean their tongue. 28.5% of students use mouthwash along with toothbrushes while only 1.7% use dental floss. Almost 50% of students visit their dentists only when they suffer from dental pain.

Table 5 shows the responses of the school children regarding their perception of oral health. A total of 546 (91%) students responded that their parents take care of their brushing habits. 582 (97%) students have no adverse habits in any form. The majority of students 78.2% had a good experience on their first visit to their dentist for dental treatment.

TABLE 3. Comparisons of variables among participants regarding their awareness of oral health

Questions	Sex n (%)		Age groups (in years) n (%)			School n (%)	
	Male	Female	12-13	14-15	16-17	Public	Private
How many milk teeth?							
Correct answer	115 (19.17)	86 (14.33)	64 (10.67)	116 (19.33)	21 (3.50)	42 (7.00)	159 (26.50)
Wrong answer	155 (25.83)	244 (40.67)	124 (20.67)	210 (35.00)	65 (10.83)	258 (43.00)	141 (23.50)
χ^2 (P value)	18.22 (<0.001)**		3.84 (0.15)			102.41 (<0.001)**	
How many permanent teeth?							
Correct answer	240 (40.00)	280 (46.67)	148 (24.67)	292 (48.67)	80 (13.33)	241 (40.17)	279 (46.50)
Wrong answer	30 (5.00)	50 (8.33)	40 (6.67)	34 (5.67)	6 (1.00)	59 (9.83)	21 (3.50)
χ^2 (P value)	2.09 (0.15)		15.65 (<0.001)**			20.83 (<0.001)**	
Do sweets affect the teeth adversely?							
Yes	144 (24.00)	187 (31.17)	124 (20.67)	162 (27.00)	45 (7.50)	177 (29.50)	154 (25.67)
No	126 (21.00)	143 (23.83)	64 (10.67)	164 (27.33)	41 (6.83)	123 (20.50)	146 (24.33)
χ^2 (P value)	0.66 (0.41)		13.08 (0.001)*			3.57 (0.06)	
Do you know what the consequences of adverse habits are?							
Yes	194 (32.33)	217 (36.17)	124 (20.67)	228 (38.00)	59 (9.83)	177 (29.50)	234 (39.00)
No	76(12.67)	113 (18.83)	64 (10.67)	98 (16.33)	27 (4.50)	123 (20.50)	66 (11.00)
χ^2 (P value)	2.55 (0.11)		0.88 (0.65)			25.09 (0.001)**	

Proportions were compared by using the Chi-square test; *P<0.05 significant

TABLE 4. Responses of the participants regarding their oral health practice

	Question	Frequency n (%)
1.	How often do you brush your teeth?	
	a. Never	0
	b. Once daily	438 (73.00)
	c. Twice daily	159 (26.50)
	d. Occasionally	3 (0.50)
2.	When do you brush your teeth?	
	a. In morning	438 (73.00)
	b. At night	3 (0.50)
	c. Both times	159 (26.50)
3.	For how long do you brush your teeth?	
	a. About 1 min	42 (7.00)
	b. About 2 min	271 (45.17)
	c. About 5 min	287 (47.83)
4.	Do you use any of the other dental aids besides a toothbrush?	
	a. Mouthwash	171 (28.50)
	b. Tongue scrapper	291 (48.50)
	c. Dental floss	10 (1.67)
	d. None	128 (21.33)
5.	Which is the most common reason for visiting a dentist?	
	a. Tooth pain	298 (49.67)
	b. Tooth decay	49 (8.17)
	c. Bleeding gums	7 (1.17)
	d. Cleansing of stained teeth	29 (4.83)
	e. Foul smell	7 (1.17)
	f. Other reasons	210 (35.00)

TABLE 5. Responses of the participants regarding their perception of oral health

	Question	Frequency n (%)
1.	Do your parents care about your teeth?	
	a. Yes	546 (91.00)
	b. No	54 (9.00)
2.	Do you have any adverse habits?	
	a. Tobacco chewing	2 (0.33)
	b. Betel-nut chewing	5 (0.83)
	c. Paan-chewing	9 (1.50)
	d. Smoking	2 (0.33)
	e. All of the above	0
	f. None	582 (97.00)
3.	How often do you visit your dentist?	
	a. Only when needed	268 (44.67)
	b. Every 6 months	141 (23.50)
	c. Once in a year	75 (12.50)
	d. Never	116 (19.33)
4.	How was your experience during the first dental visit?	
	a. Good	466 (77.67)
	b. Bad	18 (3.00)
	c. Not applicable	116 (19.33)

DISCUSSION

The concept of primary health care has been evolved and implemented in India to render basic and essential health care services including oral health care services, to promote health among communities, and to emphasize the role of preventive care. This is a small-scale single descriptive cross-sectional questionnaire study with 600 respondents selected through a multistage random sample technique,

Results of the present study showed that 86.7% of participating adolescents answered correctly when they were asked regarding the number of perma-

nent teeth in an individual? However, awareness regarding the number of primary teeth, the effect of sugar on teeth, and the effect of adverse habits were still limited. This limited awareness of oral health indicates a lack of dental health education in the school curriculum. Males and females had a significant difference in terms of oral health awareness. This result was in contrast with the previous studies [3,16]. The significant difference in oral health awareness between male and female adolescent students may be because oral health promotional activities are injudiciously, and poorly implemented in the school environment [16]. Females particularly at the age of adolescence are more conscious about their appearance, and hence, have more positive dental health attitudes which are reflected in their behavior [17] The students of private schools were statistically more aware as compared to public schools. This result might be due to the private schools offering more favorable conditions at the educational level, socioeconomic conditions, and family environment as compared to public schools [18]. Results showed that the younger adolescents were more aware of dental health behaviors. This might be due to the possible reason that students in their early adolescence are more curious and eager to grasp new knowledge and facts could be the answer to the same. This result was in accordance with the study conducted by Lawal FB et al [7]. This might be because the study was conducted in disparate samples of age groups, in which the 12- to 15-year-old range represented 62.30% of the sample considered, unlike this study in which age groups were equal representing 54.30%. However, these results differ from those found by Wahengbam PP et al [14], Allen-Revoredo C et al [18], and Silwal S et al [19].

There was a constant finding related to the awareness of whether oral cancer can be caused by cigarette smoking. Similar findings were also reported in previous studies conducted in Malaysia [3], Kuwait [17], and India [20]. Exposure to media and social platforms has a greater and deep-rooted impact on knowledge adolescents and may be the reason for making them aware of the harmful effects of tobacco and smoking habits. As the diseases associated with these habits are preventable, emphasis must be given to intercepting them at a younger age. It was also found that only 73% brushed their teeth once a day only in the morning. This was in line with the results obtained by Vishwanathaiah S [13], Gualie YT et al [21], and Kakkad DN et al [22]. Evidence that brushing teeth once per day is sufficient to prevent oral diseases. However, many individuals have poor oral hygiene hence, dental professionals usually recommend tooth brushing twice a day for effective plaque control [23]. In the present study, 21.3% of adolescents were not using any form of oral hygiene aids; and The use of other oral hygiene aids such as dental floss was found to be rare (only 1.70%). A similar result was also observed in previous studies [20,24]. The reason for this might be because lack of oral health care awareness, expensive oral hygiene aids, and the popularity regarding the usage of dental hygiene aids among the population. The results of this study agreed with those described in previous studies, which documented that toothache was the main driving factor for participants to visit the dentist [3,25,26]. A total of 19.3% of adolescents never visited their dentist, and this might maybe due to fear of dental setup [27], absence of toothache, or lack of parental encouragement [28]. The lack of regular attendance by parents for dental checkups might manifest in the dental attitude of their wards. The behavior displayed by parents might also be the cause of the lack of attendance regarding visits to the dentist [13]. Around one-fourth of the total participants, visited the dentist twice a year. The thrust behind this may be implementing School Oral Health Programme (SOHP) programs which mandate regular dental check-ups by a professional [16]. Most of the students (77.7%) had a good experience during their first dental visit in this study. This result was in contrast with previous studies by Humagain M [29] and Joshi N et al [30]. The result of these two studies states that most students experienced fear during their first dental visit. School Oral Health Programme (SOHP) and comprehensive oral health education significantly impact a child's behavior and attitude towards dental anxiety fostering a positive influence on regular dental visits [31].

While discussing and concluding the findings of this study, it should be kept in mind that data recorded in the present study was obtained subjectively (self-reported data). Despite of simple and direct questioning method involved in the pilot study conduction, there remains the possibility of biases influencing the findings, including misreporting due to misinterpretation of questions, memory bias, and other potential factors. A high response rate in gathering data on Knowledge, Attitudes, and Practices (KAP) for oral health was achieved by utilizing a community-based approach in administering the questionnaire. However, it is crucial to acknowledge the potential limitations in the chosen data collection method, particularly the possibility of over-reporting in the areas regarding dental knowledge and oral hygiene habits. Furthermore, as this study was cross-sectional and non-experimental in design, a casual relationship between attributes cannot be established and justified. To improve the knowledge and behavior of students for their oral health, the following points are recommended:

1. and excluding the development of a School Oral Health Programme (SOHP) with close

continuous supervision to enhance the overall effectiveness.

2. making of toothbrushes and fluoride toothpaste, accessible to a broader population at an affordable rate is crucial, as well as the promotion of fluoride toothpaste through mass media channels should be prioritized.
3. promoted by SOHP should try to create additional activities additional activities, including oral health examinations, application of pit and fissure sealants, and basic dental treatments for school children.
4. SOHP should have community participation. All students, parents, school directors, government authorities, private companies, and oral health staff should be involved in this program.

CONCLUSION

The findings of the present study indicate that oral health-related awareness, attitudes, and practice of school-going adolescent students were not satisfactory and hence it needs to be improved. Systematic community-oriented SOHPs are required to upgrade the perception of adolescents towards their oral health. There is a need to include and properly implement oral health promotional activities in the curriculum, which in turn could enhance students' oral health awareness and subsequently shape their oral health-related behavior.

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