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Oral Health Knowledge, Attitudes and Practices among Secondary School Students in Sana'a City, Yemen

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Abstract: This study was designed to assess oral health knowledge, attitudes and practices among secondary schools students in Sana'a city, Yemen. A cross-sectional questionnaire-based study was conducted on (1000) of secondary school students, (500) male students and (500) female students with an age ranged from 16-19 years. A self-administered structured questionnaire consisting of 24 questions on socio-demographic data, oral health knowledge, attitudes and practices was distributed and collected data was subjected to statistical analysis. The mean knowledge scores for the secondary school students was 72.27 with a statistically significant difference between males and females (P = 0.001). Nearly 75.5% of them reported that regular visits to the dentist are necessary. In contrast, nearly (60.3%) of them visited the dentist when they felt pain and toothache was the most leading reason provided for visiting the dentist (62.1%). Moreover, nearly 42.9% of them reported that fear of needles and drilling was the major reason for their fearing of visiting the dentist. The use of toothbrush and paste was the most oral hygiene method used (78.6%). About 44.6% of them brushed their teeth once per day and 36.8% of them spent one minute for brushing their teeth. Nearly 44.3% of them reported that the time of tooth brushing was before going to bed only. Finally, most of them (74.1%) reported that their parents advised them about the importance of oral hygiene without their watching and did not supervise them. It showed that the students had good oral health knowledge. However, their oral health knowledge, attitudes and practices were bitter in female students than male students.

Keywords: Oral health, knowledge, Attitudes, Practices, Secondary School Students.

INTRODUCTION

Oral health is an essential component of general health and overall well-being of an individual. Oral cavity and its surrounding structures that are free of any diseases is indicative of good oral health. This not only makes a person look and feel good, it is equally relevant in maintaining oral functions [1-3].

It is important to review the knowledge, attitude and practice of the oral health of adolescent, even through they are educated, with the objectives of inculcating healthy lifestyles practices to last for a lifetime. Individuals who hold favorable oral health related beliefs over time have better oral health in their later years than those who do not. This implies that changing beliefs should result in changes in behaviors [4, 5]. The change to healthy attitude and practice can be occurred by given adequate information, motivation and practice of the measures to the subjects [6]. In order to create such health education, the assessment of knowledge, attitude and practice is essential [7, 8].

Several studies have been conducted on perceived oral health, but have mostly concentrated on the period of adolescence when many habits that continue throughout life are initiated. Adolescence has been identified as a time when personal oral health behaviors may be internalized and become habits. Oral care during adolescence is important for several reasons, including the eruption of permanent dentition which increases the number of tooth surfaces that may decay and also results in increased early periodontal disease. Thus, adolescents may be at greater risk for dental diseases during a developmental period when they are establishing oral care habits [5, 9, 10].

Very few studies have been done to assess the level of oral health-related knowledge, attitude and practice among secondary school students from developing counties in comparison with those from developed countries.[11, 12]Therefore, the present study aimed to assess the level of oral health knowledge, attitudes and practices among secondary school students in Sana'a city, Yemen.

MATERIALS AND METHODS

A cross-sectional questionnaire-based study was conducted on (1000) of secondary school students, (500) male students and (500) female students with an age ranged from 16 to 19 years. It was conducted at secondary schools (male school and female school were selected from each region according to a recent geographical map of Sana'a city in Republic of Yemen) through the period from February to May 2016.

Prior to the study, ethical approval to carry out this study was granted from the ethical committee, University of Science & Technology, Sana'a, Yemen. Official permission was obtained from the respective secondary schools principals and consent was taken from each student. The students were assessed using a self-administered structured questionnaire which was modified from those used in previous studies [7, 8, 11, 12]. It consists of four parts with 24 questions. The first part contains three questions about socio-demographic data. The second part contains eight questions covered students' knowledge regarding dental appearance, gingival bleeding and flossing; a score of one was given fro each correct answer and zero for wrong and don't knew answers. Based on the total score, the mean knowledge was divided into the following categories: very poor (≤ 50 points), poor (50-69), good (70-79) and very good (>80). The third part contains eight questions covered the students' attitudes towards oral care including feelings and experience during the dental visits and their perceptions regarding oral care. The fourth and final part contains five questions covered the students' practices regarding daily oral hygiene, frequency, duration and families' role in the supervision of their oral hygiene.

A pilot study was conducted on 50 secondary school students to assess the validity of the questionnaire and they were not included in the actual study. Questions were explained whenever necessary, and the participants were given assurance regarding confidentiality of their responses and were requested to mark their answers and complete it individually. This procedure was carried out by an assistant group of dental students in the final level of Bachelor in Dental Surgery, College of Dentistry, University of Science & Technology, under the supervision of the researchers. The assistant group helped the researchers in distributing the questionnaire and gave instructions to the secondary school students regarding the questionnaire.

Data were analyzed using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, version 20 for windows. Means and frequency distribution were calculated. The t-test was used to compare between different means and $P<0.05$ was considered significant.

RESULTS

Socio-demographic data of the secondary school students according to age & gender are summarized in table (1), which shows that the study population included 1000 students and consisted of 50% (n=500) male and 50% (n=500) female, with a mean age of 17±2 years. The number of students who their age ranged from 16-17 years was 668 students (66.8%). However, the number of students who their age ranged from 18-19 years was 332 (33.2%).

Table-1: Socio-demographic data of the secondary school students according to age and gender

Variable	n	%
Gender		
Male	500	50%
Female	500	50%
Total	1000	100%
Age by years		
16-17	668	66.8%
18-19	332	33.2%

Oral health knowledge scores of the secondary school students are summarized in table (2), which shows the following results:

The highest rate of correct answers (90.2%) was observed in response to the question "Do teeth caries affect dental appearance and aesthetics?" with better response in female students (54.5%) than male students (35.7%). However, the lowest rate of correct answers (31.2%) was observed in response to the question "Is flossing method needed to get optimal cleaning of the teeth?" with also better response in female students (17.3%) than male students (13.9%).

The relationship between oral health knowledge scores and gender showed that the mean of knowledge scores for the secondary school students was 72.27 with a statistically significant difference between males and females ($P = 0.001$).Therefore, the study results showed a good oral health knowledge among the secondary school students with a bitter mean knowledge scores in female students (41.71) than male students (30.56).

Table-2: Oral health knowledge scores of the secondary school students (n=1000)

Question	Correct answer n (%)			Wrong answer n (%)			Don't know n (%)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Is the treatment of toothache as important as any organ in the body?	380 (38.0%)	485 (48.5%)	865 (86.5%)	56 (5.6%)	37 (3.7%)	93 (9.3%)	23 (2.3%)	19 (1.9%)	42 (4.2%)
Does bad oral hygiene impact the health of the body?	303 (30.3%)	498 (49.8%)	801 (80.1%)	58 (5.8%)	46 (4.6%)	104 (10.4%)	59 (5.9%)	36 (3.6%)	95 (9.5%)
Do teeth caries affect dental appearance and aesthetics?	357 (35.7%)	545 (54.5%)	902 (90.2%)	45 (4.5%)	29 (2.9%)	74 (7.4%)	13 (1.3%)	11 (1.1%)	24 (2.4%)
Does more dental plaque lead to dental caries?	248 (24.8%)	374 (37.4%)	622 (62.2%)	213 (21.3%)	121 (12.1%)	334 (33.4%)	26 (2.6%)	18 (1.8%)	44 (4.4%)
Does gingival bleeding mean inflamed gingivae ?	304 (30.4%)	349 (34.9%)	653 (65.3%)	192 (19.2%)	143 (14.3%)	335 (33.5%)	7 (0.7%)	5 (0.5%)	12 (1.2%)
Do sweets and soft drinks affect teeth adversely?	377 (37.7%)	448 (44.8%)	825 (82.5%)	85 (8.5%)	68 (6.8%)	153 (15.3%)	14 (1.4%)	8 (0.8%)	22 (2.2%)
Does regular use of the toothbrush and paste provide a healthy mouth and reduce gingivitis?	337 (33.7%)	465 (46.5%)	802 (80.2%)	92 (9.2%)	73 (7.3%)	165 (16.3%)	22 (2.2%)	11 (1.1%)	33 (3.3%)
Is flossing method needed to get optimal cleaning of the teeth?	139 (13.9%)	173 (17.3%)	312 (31.2%)	332 (33.2%)	302 (30.2%)	634 (63.4%)	33 (3.3%)	21 (2.1%)	54 (5.4%)

Mean of knowledge scores: Male = 30.56, Female = 41.71, Total = 72.27
Test value: t = 0.046, *P* value = 0.001

Attitudes of the secondary school students towards oral care are summarized in Table-3, which shows the following results:

Nearly 75.5% of the secondary school students reported that regular visits to the dentist are necessary. In contrast, nearly (60.3%) of them visited the dentist when they felt pain and toothache was the most leading reason provided for visiting the dentist (62.1%). The percentages of dentist visits as regularly, occasionally and never were nearly 14.6%, 13.9% and 11.2% respectively. However, the percentage of leading reasons provided for visiting the dentist as dentist's advice, parent's advice and other reason were 14.7%, 16.8% and 6.4% respectively.

About 66.0% of the study sample reported that their dentists explained the dental problems and tried to solve them. While 72.0% of the study sample reported their dentists explained the dental procedures before treatment. Approximately 24.0% of the study sample reported that dentist care was more about treatment than prevention. While 50.2% of them reported that dentists involved them in their treatment.

Moreover, nearly 42.9% of the study sample reported that fear of needles and drilling was the major reason for their fearing of visiting the dentist. However, other reasons as fear of pain, fear of infection, long waiting time and high cost wear reported 29.5%, 8.1%, 17.1% and 17.5% respectively.

Oral care practices of the secondary school students are summarized in table (4), which shows the following results:

The use of toothbrush and paste was the most oral hygiene method used (78.6%). Other oral hygiene methods used in association with it as mouthwash, dental floss and toothpick that reported 23.4%, 7.6% and 12.3% respectively.

About 44.6% of the study sample brushed their teeth once per day and 36.8% of them spent one minute for brushing their teeth. Nearly 44.3% of them reported that the time of tooth brushing was before going to bed only. Finally, most of them (74.1%) reported that their parents advised them about the importance of oral hygiene without their watching and did not supervise them.

Table-3: Attitudes of the secondary school students towards oral care (n=1000)

Attitude	Frequency %		
	Male	Female	Total
Are regular visits to the dentist necessary?			
Yes	323 (32.3%)	432 (43.2%)	755 (75.5%)
No	98 (9.8%)	95 (9.5%)	193 (19.3%)
Don't know	28 (2.8%)	24 (2.4%)	52 (5.2%)
How often do you visit the dentist?			
Regularly	62 (6.2%)	84 (8.4%)	146 (14.6%)
When pain occurs	258 (25.8%)	345 (34.5%)	603 (60.3%)
Occasionally	75 (7.5%)	64 (6.4%)	139 (13.9%)
Never	69 (6.9%)	43 (4.3%)	112 (11.2%)
What are the causes that made you visit the dentist for your last visit?			
Toothache	307 (30.7%)	314 (31.4%)	621 (62.1%)
Dentist's advice	71 (7.1%)	76 (7.6%)	147 (14.7%)
Parent's advice	81 (8.1%)	87 (8.7%)	168 (16.8%)
Other reason	31 (3.1%)	33 (3.3%)	64 (6.4%)
Does dentist always explain the problem and try to solve it?			
Yes	306 (30.6%)	354 (35.4%)	660 (66.0%)
No	111 (11.1%)	98 (9.8%)	209 (20.9%)
Don't know	74 (7.4%)	57 (5.7%)	131 (13.1%)
Does the dentist always explain procedures before treatment?			
Yes	336 (33.6%)	384 (38.4%)	720 (72.0%)
No	121 (12.1%)	107 (10.7%)	228 (22.8%)
Don't know	29 (2.9%)	23 (2.3%)	52 (5.2%)
Is dentist care more about treatment than prevention?			
Yes	128 (12.8%)	112 (11.2%)	240 (24.0%)
No	308 (30.8%)	373 (37.3%)	681 (68.1%)
Don't know	48 (4.8%)	31 (3.1%)	79 (7.9%)
Does the dentist always involve you in your treatment?			
Yes	234 (23.4%)	268 (26.8%)	502 (50.2%)
No	213 (21.3%)	189 (18.9%)	402 (40.2%)
Don't know	52 (5.2%)	44 (4.4%)	96 (9.6%)
*What are the reasons that make you fear visiting the dentist?			
Fear of needles and drilling	197 (19.7%)	232 (23.2%)	429 (42.9%)
Fear of pain	112 (11.2%)	183 (18.3%)	295 (29.5%)
Fear of infection	36 (3.6%)	45 (4.5%)	81 (8.1%)
Long waiting time	94 (9.4%)	77 (7.7%)	171 (17.1%)
High cost	93 (9.3%)	82 (8.2%)	175 (17.5%)

*More than one response.

DISCUSSION

In Yemen, data on oral health knowledge, attitudes and practices of school students is not available, henceforth the present study intended to provide such information with regards to the secondary school students in Sana'a city and to provide a comprehensive overview which can help the planning and evaluation of the oral health promotion program in this region.

Oral health is considered as one of the most important health issues worldwide. Today, oral care, including tooth brushing is considered an easy and affordable procedure for people of different age groups. Furthermore, oral health attitudes and practices are used as measures of a community's knowledge of oral health [11, 13].

In the present study, the mean knowledge scores for all of oral health questions was considered good (72.27). This is in disagreement with other studies [7, 8, 11, 14]. This difference may be related to difference in sample size with region and time of the study.

Table-4: Oral care practices of the secondary school students (n=1000)

Practice	Frequency %		
	Male	Female	Total
*Oral hygiene methods used:			
Toothbrush and paste	365 (36.5%)	421 (42.1%)	786 (78.6%)
Mouth wash	131 (13.1%)	103 (10.3%)	234 (23.4%)
Dental floss	28 (2.8%)	48 (4.8%)	76 (7.6%)
Toothpick	101 (10.1%)	22 (2.2%)	123 (12.3%)
Frequency of tooth brushing (per day):			
Never	138 (13.8%)	76 (7.6%)	214 (21.4%)
Once	182 (18.2%)	264 (26.4%)	446 (44.6%)
Twice	81 (8.1%)	142 (14.2%)	223 (22.3%)
More than twice	49 (4.9%)	68 (6.8%)	117 (11.7%)
Time spent for brushing (per minute):			
Less than one minute	111 (11.1%)	156 (15.6%)	267 (26.7%)
One minute	174 (17.4%)	194 (19.4%)	368 (36.8%)
Two minutes	121 (12.1%)	127 (12.7%)	248 (24.8%)
More than two minutes	54 (5.4%)	63 (6.3%)	117 (11.7%)
Time of tooth brushing:			
Before going to bed only	202 (20.2%)	241 (24.1%)	443 (44.3)
Morning only	58 (5.8%)	74 (7.4%)	132 (13.2%)
Before going to bed and morning	155 (15.5%)	197 (19.7%)	352 (35.2%)
After each meal	35 (3.5%)	38 (3.8%)	73 (7.3%)
Role of family in supervising oral hygiene:			
Parents advise with their watching	112 (11.2%)	122 (12.2%)	234 (23.4%)
Parents advise without their watching	314 (31.4%)	427 (42.7%)	741 (74.1%)
Parents never care	11 (1.1%)	14 (1.4%)	25 (2.5%)

*More than one response.

The link between oral health and general health was demonstrated as high percentage where the rate of correct answer (80.1%) was observed in response to the question "Does bad oral hygiene impact the health of the body?". This finding is in agreement with a previous studies [4, 5] and disagreement with earlier study by Khamaiseh and ALBashtawy [11] that may be due to the sample size and region.

One of the interesting findings in this study is that female students had the best mean knowledge score (41.71) compared with male students (30.56). One of the explanations for this result might be that females are typically more concerned about their oral care during adolescence than males [7, 11, 15, 16]. In contrast, Lian *et al.*, found no statistical difference between females and males regarding their knowledge about oral health [8]. Furthermore, Joshi *et al.*, found that males had better knowledge scores than females[17]. Smyth *et al.*, reported that good oral health knowledge leads to better oral health practice [6].

A large percentage of school students (75.5%) reported the importance of regular visits to the dentist and they considered them to be necessary. This result is in agreement with a previous studies [7, 11, 16]. However, 14.6% of them actually visited the dentist regularly. This finding is in disagreement with the same studies where the students visited their dentists when dental pain occurred.

In the current study, most of the students reported that toothache was the leading cause that led them to visit the dentist. However, factors such as fear of needles, drilling and pain made them fear visiting dentists. These results are agreed with other studies [7, 8, 11], but contrast with a study of Scott *et al.*, which reported that most of the students participated in dental services regularly every 6 months [18]. Moreover, Nicolas *et al.*, reported that early adoption of oral education programs positively influences pain anxiety [19].

The use of toothbrush and paste was reported as the most common hygiene method used. This finding is agreed with other studies [7, 8, 11, 20]. Regarding oral care habits, 44.6% of the school students brushed their teeth once per day. This result is in disagreement to those of several studies [7, 11, 16].

In the present study, most of the school students spent less than 2 minutes for brushing their teeth, and most of them brushed their teeth only before going to bed without the supervision of their parents. These findings may be explained by the fact that teenagers often try to achieve independence and establish their own identity without parental

interference [8, 11, 16]. In contrast, in California, Barker and Horton found that parents played a major role in influencing and encouraging their children in developing and maintaining regular oral hygiene [21]. This may be to poor of community- oriented oral health programs for both parents and school students in the developing countries.

An accurate explanation of the problem, procedures and treatment by dentists can encourage teenagers to visit the dentist regularly. Furthermore, an increase in awareness of the school students about oral health, prevention and treatment procedures will help encourage them to visit dental clinics for routine check-ups to enhance oral care and prevent dental caries [7, 11, 16, 22].

The current study provides essential data regarding oral health knowledge, attitudes and practices among secondary school students aged 16 to 19 years in Sana'a city, Yemen. It can be used as a basis for comparison with other studies conducted in other governorates in Yemen or other studies in developing or developed countries.

CONCLUSION

It may be concluded that the students had a good oral health knowledge. However, their oral health knowledge, attitudes and practices were bitter in female students than male students. School students would be the appropriate target group to receive the first organized intervention leading towards correct knowledge along with a positive attitude which is essential to bring about a change in their oral health practice.

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