

## Oral Health Knowledge, Practice, and Attitudes among Saudi Public Schoolteachers in Al-Kharj

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### Abstract:

**Background:** To evaluate the level of oral health knowledge and practice among Saudi schoolteachers in Al-Kharj, and to assess their attitudes toward the utilization of schoolteachers' services in oral health promotion.

**Materials and Methods:** This cross-sectional study used a questionnaire comprising three sections and 18 different items that assessed teachers' oral health knowledge (6 items), practice (6 items), and attitudes (6 items). Mean section scores were calculated and a score of  $\geq 3$  was considered acceptable/positive. Non-parametric tests were used to compare the mean scores on each section among different age groups, genders, and educational levels.

**Results:** A total of 1258 completed questionnaires were returned with a response rate of 78.7%. From a score of 6, schoolteachers' mean scores were 3.01 for knowledge, 3.39 for practice, and 1.69 for attitudes. Older teachers, female teachers, and teachers with education below university level had better oral health knowledge, superior practice, and healthier attitudes toward oral health promotion in schools ( $P < 0.05$ ).

**Conclusion:** Saudi public school teachers in Al-Kharj had basic oral health knowledge and relatively acceptable practices; however, they had negative attitudes toward promoting oral health in schools.

**Key Words:** Attitude, knowledge, oral health, practices, Saudi schoolteachers

### Introduction

Health education is intended to include educational interventions for children, parents, teachers, policymakers, and health-care providers. The aim of oral health education is to improve knowledge among the target population, which may lead them to embrace positive oral health

behaviors that contribute to better oral health.<sup>1</sup> Schools strongly influence children's development and welfare, and can provide a valuable forum to enhance general and oral health awareness among children and adolescents.<sup>2</sup> In 2004, the Saudi authorities approved compulsory public education for all individuals in the Kingdom between the ages of 6 and 15 years.<sup>3</sup> Thus, this is a suitable age group in which to implement good oral hygiene habits that may promote lifelong healthy attitudes and behaviors.<sup>4</sup> Oral health education can be taught and reinforced at school through school-based programs conducted by external groups such as dental public health professionals. School is an ideal place for oral health education because services can be made available to all children, including those who may not have access to other health sources and those who may not receive professional dental care.<sup>5</sup> However, in Saudi Arabia, these preventive and educational programs usually target students in big cities where dental colleges and administrative sections of the Ministry of Health are located.

There is evidence that preventive educational programs provisionally improve the oral hygiene level of the target children.<sup>6,7</sup> Therefore, it is important to find a way to educate children and adolescents in rural areas that have a long-term effect on their oral health. Oral health education programs are effective in improving oral health knowledge and related practices of the target population when significant others are involved.<sup>8</sup> Thus, contributions from non-health professionals such as teachers and parents may help to improve oral health in children. Accordingly, oral health education programs can be provided internally by schoolteachers. Research shows that schoolchildren in Al-Kharj had good oral health knowledge and practice when exposed to an oral health education course because of the participation of school teachers in the program.<sup>9</sup> One advantage of using schoolteachers for such programs is the potential for improved stability of instruction at lower cost;<sup>5</sup> however, some individuals may not have adequate knowledge to provide oral health education.

Several studies have been conducted in different countries to evaluate teachers' oral health knowledge and practice; these have reported different levels of knowledge and practice.<sup>10-12</sup> Studies evaluating oral health responsiveness among schoolteachers in Saudi Arabia are few, and to date, there are no studies from rural areas. The purpose of this study was to evaluate the level of oral health knowledge and practice among

Saudi schoolteachers in Al-Kharj and to assess their attitudes toward the utilization of schoolteachers' services in oral health promotion.

### Materials and Methods

This cross-sectional study was conducted between February and April 2014, in Al-Kharj, Saudi Arabia. The local research and ethics committee at Al-Kharj Military Industries Corporation Hospital approved the research proposal. Al-Kharj is located in the southeast area of Riyadh, the capital, in an area of about 20,000 km<sup>2</sup>, and has a population of more than 600,000 people. Al-Kharj has great economic, agricultural, and military importance for the Kingdom of Saudi Arabia.<sup>13</sup>

A systematic sampling method was used. A list of public schools and the total number of teachers was obtained from the education administration in Al-Kharj. There were 320 public schools (127 boys' schools and 193 girls' schools) containing 1995 male and 2966 female schoolteachers. Based on the expected sample size and the number of schools, a sampling interval of four was used to select randomly 32 boys' public schools and 48 girls' public schools. A starting point was obtained from a table of random numbers. Allowing for a 40% non-response rate, a sample size of 1600 teachers was calculated with 95% confidence levels and a 2.5% margin of error. A self-administered Arabic questionnaire was constructed, and its face validity was certified by two dental faculty members. The test-retest reliability of the questionnaire was assessed on two different days with 40 teachers who were not included in the study. The alpha coefficient test results ranged from 0.78 to 0.97, indicating good reliability.

Permission to distribute the questionnaires to all male and female schoolteachers in the selected schools was obtained from the schools' administrations. The first part of the questionnaire elicited demographic data such as age, gender, and educational level. The subsequent sections contained 18 different items; six items assessed teachers' oral health knowledge, six items assessed their oral health practice and six items investigated their attitudes toward promoting oral health in children. Each knowledge and practice item had multiple-choice responses and teachers were instructed to indicate the correct answer; attitude items had agree or disagree option responses. Knowledge, practice, and attitude scores for each individual were calculated by assigning a score of 1 for answers that were correct or had an "agree" response. Scores for each item in each section were summed to obtain a section score for each participant. Mean section scores were calculated by dividing the total section scores of all participants by the number of participants. A score of  $\geq 3$  was considered acceptable/positive, and a score of  $< 3$  was considered unacceptable/negative. The Statistical

Package for Social Sciences Software, version 20 (IBM Corp., Armonk, NY, USA), was used for statistical analyses. Frequency and percentage distribution data were generated. As section scores were not normally distributed, non-parametric tests were used. The Mann-Whitney and Kruskal-Wallis tests were used to compare the mean scores of knowledge, practice, and attitudes between different age groups, genders, and educational levels. A  $P < 0.05$  was set as the significance level.

### Results

Out of a total of 1600, 1258 completed questionnaires were returned giving a response rate of 78.7%. Table 1 summarizes participants' sociodemographic data. About half the teachers were in the 31-40 age group (49.7%). More than half were males (57.6%), and the majority had a university-level education (83.4%).

Regarding oral health knowledge, 37% of participants knew that sticky candy is the food that most commonly causes dental caries; 55% of participants chose chocolate in response to this question. Only 9.6% of respondents knew that dental caries is bacterial and can spread from person to person. About 71.4% of teachers recognized that bleeding gums on brushing the teeth may be a sign of periodontal disease. However, only 27.1% knew that the most common reason for tooth loss in adults is periodontal disease, compared with 57% who selected dental caries.

Regarding teachers' oral hygiene practice, most clean their teeth, and 65.8% brush their teeth twice a day. Less than half of teachers (46.6%) change their brushes every 3 months. Almost half of respondents (48.4%) use dental floss to clean in-between the teeth. Only 15% of teachers visit a dentist regularly every 6 months; however, 71.6% visit a dentist in case of dental pain.

Most teachers (86.8%) believed that schoolteachers should instruct students about oral disease preventive measures. However, few teachers (8.7%) would refer students with dental problems to a dentist when needed, and only 4% would supervise daily brushing and flossing in school. Only 1.8% believed that teachers can educate students about the

Table 1: Participants' sociodemographic data (n=1258).

Variables	Number of participants (%)
Age group (years)	
≤30	367 (29.2)
31-40	625 (49.7)
≥41	266 (21.1)
Gender	
Male	725 (57.6)
Female	534 (42.4)
Educational level	
Below university	209 (16.6)
University	1049 (83.4)

prevention of oral diseases better than dental professionals. More than 30% of participants would like to have more training and to have a course in prevention of oral diseases in the school curriculum.

About 67%, 73%, and 27% of the respondents scored  $\geq 3$  on knowledge, practice, and attitudes, respectively, which was considered acceptable/positive. Table 2 shows that older teachers had significantly better knowledge and attitudes compared with younger teachers ( $P = 0.001$ , and  $P = 0.017$ , respectively). Female teachers scored significantly better than male teachers on knowledge, practice, and attitudes ( $P < 0.001$ ,  $P < 0.001$ , and  $P = 0.023$ , respectively). Teachers with education below university level had significantly superior practice, and healthier attitudes toward oral health promotion in schools compared with teachers who had university-level education ( $P = 0.002$ , and  $P = 0.004$ , respectively) [Table 2].

**Discussion**

The results of the current study suggest that Al-Kharj schoolteachers possess basic oral health knowledge. Older teachers had better knowledge than younger teachers, which is in contrast to findings from an Indian study, which found that younger schoolteachers had greater knowledge.<sup>10</sup> We found that female teachers had better scores compared with males, which is in agreement with previous findings.<sup>10,14</sup> Most schoolteachers possessed basic knowledge about dental caries and its relation to sugar. However, they could not identify which form of sugar is more cariogenic. More than half of teachers considered chocolate to be the most cariogenic food, although 37% chose sticky candy. A previous study showed that people cannot accurately assess the retentiveness of foods, which may explain our participants' responses.<sup>15</sup> Sticky, long-lasting sources of sugar have extended exposure time in the oral cavity and are retained on the tooth surface. They are gradually released during consumption while chocolate exhibits a very rapid rate of oral clearance.<sup>15,16</sup> Only 9.6% of Al-Kharj teachers knew that dental caries is bacterial and a transmissible disease, compared with 20% of Indian teachers and 58% of Brazilian parents.<sup>17,18</sup> The possibility of transmitting

caries exists mainly during the first 3 years of life and when the molars erupt in the 6<sup>th</sup> and 12<sup>th</sup> years, which is during the primary school period.<sup>19</sup> Most people are unaware of this information. Teachers were aware of signs of periodontal disease such as bleeding gums; this knowledge is comparable to the knowledge of Indian teachers.<sup>20</sup> However, most of our teachers could not recognize that periodontal disease is the most common reason for tooth loss in adults.

With regard to teachers' practice, female teachers scored better than males, which is in accordance with previous study findings.<sup>10,14</sup> This might be because females are generally more aware than males about oral hygiene. About 66% of schoolteachers in Al-Kharj brush their teeth twice a day, a figure that is higher than that for Indian adults (37%), similar to that for Pakistani teachers (66%), and lower than that for Indian teachers (92%).<sup>10,12,21</sup> Only 47% of our participants changed their toothbrush once in 3 months compared with 84% of Indian teachers and 22% of Indian adults.<sup>10,21</sup> About half of the respondents used dental floss to clean in-between the teeth in comparison with 10% of Nigerian teachers and 7% of Indian adults.<sup>11,21</sup> About 15% of the respondents visited the dentist every 6 months compared with 30% of teachers in Riyadh; 72% of the respondents visited a dentist in case of toothache, compared with 60% of teachers in Riyadh.<sup>22</sup> This indicates that they consider the prevention of dental disease a lower priority compared with pain and emergency dental treatment.

Regarding attitudes, schoolteachers in Al-Kharj demonstrated negative attitudes toward their role in promoting oral health, in contrast to Saudi teachers in Riyadh, Indian teachers, and Nigerian teachers, who all showed positive attitudes.<sup>10,11,22,23</sup> These attitude differences might be related to environmental, educational, and cultural factors, which can affect individuals' attitudes to health issues. In the current study, older teachers and female teachers had more positive attitudes. In comparison, a study in Al-Madinah found that male Saudi teachers had more positive attitudes,<sup>14</sup> and a study in Pakistan found that older and more experienced teachers had better attitudes.<sup>12</sup> Older, and female, teachers may show better attitudes because they

Table 2: Oral health knowledge, practice, and attitude scores by age group, gender, and educational level.

Variables	Knowledge score		Practice score		Attitude score	
	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value
*Age group (years)						
≤30	2.82 (1.14)	0.001	3.29 (1.42)	0.160	1.58 (0.91)	0.017
31-40	3.09 (1.17)		3.47 (1.40)		1.71 (0.98)	
≥41	3.05 (1.08)		3.35 (1.41)		1.77 (0.95)	
**Gender						
Male	2.82 (1.13)	<0.001	3.17 (1.47)	<0.001	1.63 (0.93)	0.023
Female	3.26 (1.13)		3.72 (1.25)		1.76 (0.97)	
**Educational level						
Below university	2.99 (1.16)	0.599	3.64 (1.54)	0.002	1.86 (0.99)	0.004
University	3.01 (1.15)		3.34 (1.38)		1.65 (0.94)	
Total: Mean (SD)	3.01 (1.5)		3.39 (1.41)		1.69 (0.95)	

\*Mann-Whitney test, \*\*Kruskal-Wallis test, SD= Standard Deviation

are experienced in dealing with children and adolescents, and take a parental attitude toward their students. Though teachers realized that one of their responsibilities is to instruct students about oral preventive measures, they did not consider supervision of students' brushing and flossing as related to their tasks, an attitude also found in studies of Indian and Nigerian teachers.<sup>10,11</sup> Teachers' opposition to accepting supervisory responsibilities may be because of their perceptions that this kind of task should be performed by others, such as school social workers or school administrative personnel. In addition, very few respondents believed that teachers can educate students about prevention of oral diseases better than dental professionals. This might be because of a lack of confidence in delivering such information, as many teachers did not have good oral health knowledge and had not been trained to disseminate oral health knowledge to their students.

More than 30% of teachers supported the idea of receiving training in oral disease prevention. In fact, there was an oral health educational campaign 10 years ago. This aimed to train 6000 schoolteachers across Saudi Arabia about oral preventive measures so that they could educate their students. However, this campaign did not cover Al-Kharj province and although it was a useful effort, it did not go far enough. Oral health education should be presented through early educational intervention in the school of education. New and young teachers should be encouraged to participate in oral health promotion activities, which might increase the acceptance of such responsibilities later on. More than 30% of our respondents were in favor of having courses on the prevention of oral diseases; therefore, these should be integrated into the school curriculum. Saudi public school curricula incorporate only a few oral health topics that are presented infrequently during the academic year. These topics are insufficient to educate students about oral health, and there is not enough time assigned to the teaching of these topics. Therefore, the implementation of courses on health education, including oral health, is necessary to improve oral hygiene knowledge and practice among students. If schoolteachers receive training in health education before or after graduation, they will feel more able and confident to teach this material to students.

### Conclusion

Saudi public school teachers in Al-Kharj possessed basic oral health knowledge and displayed acceptable oral health practices. Unfortunately, they had negative attitudes toward promoting oral health in schools. Schoolteachers' concerns and knowledge regarding oral health influence the oral health status of their students. There is a need to improve teachers' oral health knowledge and practices. Schoolteachers need to be more responsive toward oral health promotion and to take an optimistic view of school oral health education programs that are delivered in association with oral health professionals.

### References

1. Nakre PD, Harikiran AG. Effectiveness of oral health education programs: A systematic review. *J Int Soc Prev Community Dent* 2013;3(2):103-15.
2. The Status of School Health. Report of the School, Health Working Group and WHO Expert Committee on Comprehensive School Health Education and Promotion. Geneva: WHO; 1996.
3. Ministry of Education in Saudi Arabia. Available from: <http://www.moe.gov.sa/AR/PUBLICEDUCATION/GOV/Pages/default.aspx>. [Last accessed on 2015 Nov 11].
4. Stella YL, Petersen PE, Pine CM, Borutta A. Health promoting schools: An opportunity for oral health promotion. *Bull WHO* 2005;83:677-85.
5. Lang P, Woolfolk MW, Faja BW. Oral health knowledge and attitudes of elementary schoolteachers in Michigan. *J Public Health Dent* 1989;49(1):44-50.
6. Ivanovic M, Lekic P. Transient effect of a short-term educational program without prophylaxis on control of plaque and gingival inflammation in school children. *J Clin Periodontol* 1996;23(8):750-7.
7. Julien MG. The effect of behavior modification techniques on oral hygiene and gingival health of 10-year-old Canadian children. *Int J Paediatr Dent* 1994;4(1):3-11.
8. Rong WS, Bian JY, Wang WJ, Wang JD. Effectiveness of an oral health education and caries prevention program in kindergartens in China. *Community Dent Oral Epidemiol* 2003;31(6):412-6.
9. Al-Kheraif AA, Al-Bejadi SA. Oral hygiene awareness among female Saudi school children. *Saudi Med J* 2008;29:1332-6.
10. Amith HV, D'Cruz AM, Shirahatti R. Knowledge, attitude and practice regarding oral health among the rural government primary school teachers of Mangalore, India. *J Dent Hyg* 2013;87:62-9.
11. Ehizele A, Chiwuzie J, Ofili A. Oral health knowledge, attitude and practices among Nigerian primary school teachers. *Int J Dent Hyg* 2011;9:254-60.
12. Dawani N, Afaq A, Bilal S. Oral health knowledge, attitude and practices amongst teachers of public school set-up of Karachi, Pakistan. *J Dow Univ Health Sci* 2013;7:15-9.
13. Al-Kharj Province. Available from: <http://www.alkharj.gov.sa/Pages/Government.aspx>. [Last accessed on 2015 Nov 11].
14. Ahmad MS. Oral health knowledge and attitude among primary school teachers of Madinah, Saudi Arabia. *J Contemp Dent Pract* 2015;16(4):275-9.
15. Kashket S, van Houte J, Lopez LR, Stocks S. Lack of correlation between food retention on the human dentition and consumer perception of food stickiness. *J Dent Res* 1991;70(10):1314-9.
16. Touger-Decker R, Loveren C. Sugars and dental caries. *Am J Clin Nutr* 2003;78 Suppl: 881S-92.
17. Sakai VT, Oliveira TM, Silva TC, Moretti AB, Geller-Palti D, Biella VA, et al. Knowledge and attitude of parents or caretakers regarding transmissibility of caries disease. *J Appl Oral Sci* 2008;16(2):150-4.
18. Tangade PS, Jain M, Mathur A, Prasad S, Natashekara M.

- Knowledge, attitude and practice of dental caries and periodontal disease prevention among primary school teachers in Belgaum City, India. *Pesq Bras Odontoped Clin Integr João Pessoa* 2011;11:77-83.
19. Büttner M. Is dental caries contagious? *Rev Belge Med Dent* 1984;49:9-13.
  20. Sekhar V, Sivsankar P, Easwaran MA, Subitha L, Bharath N, Rajeswary. Knowledge, attitude and practice of school teachers towards oral health in Pondicherry. *J Clin Diagn Res* 2014;8:ZC12-5.
  21. Sharma R, Singh S, Rajmani H, Degra H. An evaluation of the current oral hygiene practices and attitude towards oral health in the population of Jaipur, India. *Int Dent Med J Adv Res* 2015;1:1-6.
  22. Almas K, Al-Malik TM, Al-Shehri MA, Skaug N. The knowledge and practices of oral hygiene methods and attendance pattern among school teachers in Riyadh, Saudi Arabia. *Saudi Med J* 2003;24:1087-91.
  23. Haloi R, Ingle NA, Kaur N. Caries status of children and oral health behavior, knowledge and attitude of their mothers and schoolteachers in Mathura City. *J Contemp Dent* 2012;2:78-83.