

PRACTICES AND ATTITUDE OF GENERAL DENTISTS IN SAUDI ARABIA TOWARDS VARIOUS CARIES PREVENTION METHODS

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ABSTRACT

The objective of the study was to determine the practices and attitude of general dentists in Saudi Arabia towards various caries preventive methods. A self-administered questionnaire was utilized to obtain the required information. The study sample consisted of general dentists attending the annual meeting of Saudi Dental Society in Riyadh. Results showed that nine in ten (91.2%) dentists provide oral hygiene instructions to their patients. Majority (78.1%) of the dentists provide the oral hygiene instructions at the first and last dental visit. More than four-fifth (83.3%) of the dentists provide dietary advice to their patients and the majority (78.1%) provide it only at the first dental visit. Four-fifth (80.7%) of the dentists perform dental prophylaxis on their patients. A considerable number (41.2%) of dentists do not use professional topical fluoride, and 72.8% do not prescribe fluoride supplements. The oral hygiene advice is rated as the most important preventive method for dental caries prevention by 87.7% of the dentists. Slightly more than half (53.5%) of the dentists have attended a continuing dental education program in preventive dentistry, but only 30.7% have attended any such program in preventive dentistry within the past two years. In conclusion, the general dentists attitude towards preventive is generally positive and their practices are mostly prudent. However, they need to improve in the area of reinforcement and follow-up of preventive advice.

Key words: Practices, attitude, general dentists, caries preventive methods.

INTRODUCTION

Dental caries continues to be a major problem in most parts of the world¹. Although, there are reports of declining caries prevalence in developed countries, the prevalence is still very high in many developing countries¹. Saudi Arabia is a developing country with a population of approximately 23 million. Recent studies have reported alarmingly high caries prevalence in Saudi children, drawing greater attention towards the need for preventive of dental caries²⁻⁵.

General dentists play an important role in the prevention of dental diseases⁶. There are several office-based methods utilized by general dentists to prevent dental caries in their patients. Examples of these methods include oral hygiene instructions (OHI), dental prophylaxis, dietary counseling and use of fluoride. The effectiveness of these methods have already been established⁷⁻¹⁰.

There have been surveys carried out in various parts of the world to assess the practices and attitude

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of general dentists towards various caries prevention methods ¹¹⁻¹⁴. In view of the high caries prevalence in Saudi children²⁻⁵, it is important to carry out such studies among the general dentists working in Saudi Arabia. However, there has been no such published report in Saudi Arabia. The objective of the present study was to assess the practices and attitude of general dentists towards various office-based caries preventive methods in Saudi Arabia.

SUBJECTS AND METHODS

A self-administered questionnaire was designed for the survey. The questionnaire was tested on ten general dentists who did not take part in the main study, and appropriate changes were made in the questionnaire. The following information was obtained through the questionnaire;

- 1 Demographic information such as age, gender, nationality, type of practice and years in practice
- 2 Oral hygiene instructions (OHI); frequency and method
- 3 Dietary advice; frequency and method
- 4 Prophylaxis; frequency and method
- 5 Fluoride; various methods and assessment of total fluoride intake
- 6 Rating of various preventive methods
- 7 Continuing dental education (CDE); attendance in CDE courses and its frequency, and status of interest in various specialties.

The questionnaire was distributed randomly to one hundred and fifty two general dentists who attended the Annual Meeting of the Saudi Dental Society held in Riyadh in January 2001. To ensure confidentiality, participants were not asked to reveal any identity or their names. A data file was generated through FOXPRO software. The data were analyzed using SPSS program. Chi-square tests were used to determine relationship between demographic variables such as age, gender, nationality and type of practice with the practices and attitude of general dentists towards various office-based caries preventive methods.

RESULTS

Response rate and demographic data

A total of 114 general dentists completed the questionnaire with a response rate of 75%. The mean

age of the respondents was 35.1 (SD 7.5) years. The gender distribution was almost equal and a majority was of Saudi Nationality (Table 1). Most of the participants work in primary care clinics and hospitals (41.2% and 39.5%) respectively). The sample had a balanced representation of young and experienced dentists (Table 1). There were no significant differences in the practices and attitude of general dentists towards various office-based caries preventive methods in relation to the demographic variables such as age, gender, nationality and type of practice. Therefore, combined data are presented here.

TABLE 1. DEMOGRAPHIC DATA OF PARTICIPANTS

Factor		N	%
Gender	Male	58	50.9
	Female	53	46.5
	Missing data	3	2.6
Nationality	Saudi	63	55.3
	Non-Saudi	51	44.7
Type of Clinic	Primary	47	41.2
	Private Clinic	21	18.4
	Missing data	1	0.9
Years in Practice	< 5 years	38	33.3
	6-10 years	31	27.2
	11-20 years	37	32.5
	> 20 years	8	7.0

TABLE 2. PARTICIPANTS' PRACTICES OF PREVENTIVE METHODS

Question	Answer	N	%
Do you give OHI to your patients	Yes	104	91.2
	No	2	1.8
	Missing	8	7.0
Do you provide dietary advice to your patients	Yes	95	83.3
	No	9	7.9
	Missing	10	8.8
Do you perform dental prophylaxis on your patients	Yes	92	80.7
	No	12	10.5
	Missing	10	8.8

TABLE 3. FREQUENCY AND METHODS OF DENTAL CARIES PREVENTION*

Method			N	%
Oral Hygiene Instructions	Frequency	First visit only	87	76.3
		First visit and last visit	89	78.1
		Each visit	47	41.2
Dietary Advice	Method	Teeth and jaw model	49	43.0
		Verbal	46	40.4
		Disclosing solution	90	78.9
	Frequency	First visit only	89	78.1
		First visit and last visit	88	77.2
		Each visit	49	43.0
Dental Prophylaxis	Method	Verbal	31	27.2
		Verbal and written	104	91.2
		Verbal, written and dietary record	108	94.7
	Frequency	First visit only	59	51.8
		First visit and last visit	88	77.2
		Each visit	94	82.5
	Method	Prophylaxis paste and cup	87	76.3
		Prophylaxis with pumice	84	73.7
		Prophylaxis with FL pumice	64	56.1

* Responses about the frequency and methods of prevention were not mutually exclusive.

TABLE 4. FLUORIDE USAGE PRACTICE BY PARTICIPANTS

Question	Response	N	%
Do you use professional topical fluoride	Yes	67	58.8
	No	47	41.2
Do you prescribe fluoride supplements?	Yes	31	27.2
	No	8.	72.8
Do you emphasize on using fluoridated toothpaste?	Yes	93	81.6
	No	21	18.4
Do you assess fluoride intake of your patients*?	Yes	33	28.9
	No	77	71.1

* Missing data

PREVENTIVE PRACTICES

Oral Hygiene Instruction (OHI)

Nine in ten (91.2%) dentists provide OHI to their patients (Table 2). A majority (78.1%) of the dentists provides. OHI at the first and last visit of the patient. In addition, 78.9% of the participants use disclosing solution for OHI (Table 3).

TABLE 5. RATING OF VARIOUS PREVENTIVE METHODS BY PARTICIPANTS*

Question	Rating			
	VI	I	NSI	NI
Where do you rate OHI	100 (87.7)	13 (1.6)	0 (0.0)	0 (0.0)
Where do you rate dietary advice?	61 (53.5)	40 (35.1)	11 (9.6)	0
Where do you rate professional prophylaxis	53 (46.5)	50 (43.9)	9 (7.9)	0
Where do you rate fluoride use of patients?	51 (44.7)	52 (45.6)	6 (5.3)	1 (0.9)

VI = Very Important, I = Important
NSI = Not So Important

* Some data missing.

Dietary advice

More than four-fifths (83.3%) of the dentists provide dietary advice to their patients (Table 2). A majority (78.1%) of the dentists provides dietary advice only

TABLE 6. PARTICIPANTS' INTEREST LEVEL IN VARIOUS CONTINUING DENTAL EDUCATION SUBJECTS

Subject	Interest Level (%)		
	Low	Medium	High
Endodontics	8.8	15.8	75.4
Implantology	26.8	29.4	43.8
Oral surgery	17.7	31.0	51.3
Orthodontics	30.1	30.1	39.8
Periodontology	27.0	32.4	40.6
Preventive dentistry	13.2	24.5	62.3
Prosthodontics	16.7	26.3	57.0

at patient's first dental visit, and use verbal/written instructions and dietary record forms (94.7%) for the purpose (Table 3).

Dental Prophylaxis

Four-fifths (80.7%) of the dentists perform dental prophylaxis on their patients (Table 2). More than four-fifth (82.5%) perform dental prophylaxis each visit. Three out of four (76.3%) of the dentists utilize prophylaxis paste and a rubber cup for the dental prophylaxis (Table 3).

Fluoride use

A considerable percentage (41.2%) of dentists do not use professional topical fluoride, and about three out of four (72.8%) do not prescribe fluoride supplements (Table 4). However, about four-fifths (81.6%) do emphasize on using fluoridated tooth-pastes. More than two-third (71.1%) do not assess patients' daily fluoride intake from various sources (Table 4).

Rating of preventive methods

Table 5 shows that OHI is rated a very important preventive method for dental caries by 87.7% of the dentists followed by dietary advice (53.5%), dental prophylaxis (46.5%) and fluoride use (44.7%).

CONTINUING DENTAL EDUCATION (CDE)

Slightly more than half (53.5%) of the participants have attended a CDE program in preventive dentistry, but less than one-third (30.7%) have attended a CDE program in preventive dentistry within the past two

years. The highest interest was shown in CDE programs for endodontics (75.4%) followed by preventive dentistry (62.3%) and prosthetics (57.0%). Table 6 shows further details of the interest levels in various areas of dentistry.

DISCUSSION

It is expected that the findings and recommendations of the present study will assist in improvement of the caries preventive services provided by the general dentists in Saudi Arabia. The results will also help future planning of caries prevention policy. In addition, the study provides useful base-line data for future comparisons.

Demographics

The majority of the participants were Saudi Nationals. This is an encouraging finding, and indicates that more and more Saudis are being drawn into the dental workforce. The gender representation was very balanced in the present survey, indicating that female dentists in the Kingdom are actively involved in CDE activities and intend to remain at par with the latest developments in dentistry. The sample had a good mix of new and experienced dentists, which show that dentists of all age groups and experience are interested in CDE activities in the Kingdom. It indicates that the patients here have opportunity to utilize a good combination of latest techniques and experience.

Preventive Practices

A great majority of the dentists provide OHI to their patients. However, most of them do it only at the first and the last visits. It is an established fact that changing human behavior is a challenging task¹⁵. Ideally, the oral hygiene advice needs to be reinforced at the beginning of each visit to improve the chances of success. Utilizing a disclosing solution during OHI to draw attention to areas of plaque deposition has been reported as an effective technique. A very high percentage of the dentists provide dietary advice to their patients, but mostly at the first dental visit only. As stated above, changing human behavior especially the dietary behavior is a difficult undertaking¹⁵. Therefore, to improve the dietary behavior of patients, a continuous reinforcement and follow-up are essential.

The dental prophylaxis seems to be very popular among the general dental practitioners with a large majority performing it at each visit. The above practice

and attitude may have some negative effects such as laziness on the part of the patients in maintaining their oral hygiene and complete dependence on the dentist for cleaning teeth. Therefore, it is important to inform the patients that it is their responsibility to clean their teeth and maintain a good oral hygiene. The dentist's responsibility is limited to providing guidance as and when required.

The role of topical fluoride in the prevention of caries has been established^{9,17}. Therefore, about four-fifths of the dentists prudently emphasize the use of fluoridated toothpastes to their patients. However, the use of professionally-applied topical fluoride is inadequate, and there is a need to encourage the use of professionally-applied topical fluoride among the general dentists. If properly utilized, the technique is very effective in the prevention of dental caries¹⁷. The dietary fluoride supplements could also be utilized where indicated^{18,19}. However, it is very important to assess the daily fluoride intake of a patient before prescribing fluoride supplements to prevent any excessive use of fluoride. Very few dentists in the present survey assess their patients' daily fluoride intake from various fluoride sources such as coffee, tea and water. Ingestion of excessive amount of fluoride increases the risk of dental fluorosis²¹.

The use of professionally-applied fluoride was rated last in the list of methods for prevention of dental caries in their patients. There could be several reasons for the above result. First, the frequent use of tea and coffee is a cultural trait in the Kingdom. Second, the public in Saudi Arabia utilizes multiple water sources with differing fluoride levels. The public water supplies also contain water mixed from various sources such as desalinated sea water, natural water fountains and well water. The above factors combined together make it very hard for the dentists to assess the total fluoride intake of their patients. It has probably resulted in decreased dependence on fluoride for the prevention of dental caries. The presence of plaque has been reported as one of the most important caries risk indicators^{22,23}. Therefore, the dentists in the present survey have rightly rated the OHI as the most important.

Continuing Dental Education

In spite of the fact that preventive dentistry was reported among the top three areas of interest for CDE, very few dentists have attended a CDE program in

preventive dentistry in the last two years. The results of the present study were not in agreement with that of Al-Fouzan²⁴ in term of top three areas of CDE interest; whereby preventive dentistry was not included in the list of top three CDE areas. However, Al-Fouzan²⁴ also reported that very few dentists had attended a CDE program in the two proceeding years. The lack of availability of CDE programs especially in preventive dentistry could be a major reason for such an infrequent attendance along with the lack of support from administration in this area of dentistry. Historically, more importance has been given to restorative services than preventive services by the concerned authorities.

The results of this survey have to be interpreted with some level of caution. The participants were aware that the survey was being conducted by the researchers from the Division of Pediatric Dentistry, College of Dentistry, King Saud University, which might have resulted in a tendency towards favorable responses. Secondly, the survey is biased towards those interested in CDE and prevention as participants of a dental conference and a prevention survey. It is recommended that a follow-up study in future with a larger representative sample, and the inclusion of preventive procedures such as fissure sealants and preventive restorations be carried out.

Nevertheless, within the limitation of the present survey, it can be concluded that the general dentists' attitude towards prevention is positive and their practices are mostly prudent. However, they need to improve in the area of reinforcement and follow-up of preventive advice.

RECOMMENDATIONS

- 1 The oral hygiene and dietary advice need to be reinforced at each visit to improve the chances of compliance.
- 2 A system of regular recall visits should be in place to monitor the patients/parents' compliance.
- 3 The patients/parents should be informed about their role and responsibilities in preventive efforts.
- 4 The caries prevention effort should be enhanced through the use of professionally applied topical fluoride where indicated.

- 5 There is an immediate need to provide further opportunities for CDE in preventive dentistry in Saudi Arabia.

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REFERENCES

- 1 Stephen KW. Caries in young populations — world wide. In: Cariology for Nineties. Bowen WH, Tabak LA. Eds., Rochester: University of Rochester Press, 1993. pp 37-50.
- 2 Al-Malik MI, Holt RD, Bedi R. The relationship between erosion, caries and dietary habits in preschool children in Saudi Arabia. *Int J Pediatr Dent* 2001; 11: 430-39.
- 3 Khan NB, Al-Ghannam NA, Wyne, AH. Caries in primary school children; Prevalence, severity and pattern in Al-Ahsa, Saudi Arabia. *Saudi Dent J* 2001; 13: 71-74.
- 4 Wyne A, Darwish S, Adenubi J, Battata S, Khan N. The prevalence and pattern of nursing caries in Saudi preschool children. *Int J Paediatr Dent* 2001; 11: 361-64.
- 5 Wyne, AH, Al-Ghoraibi BM, Al-Asiri YA, Khan NB. Caries prevalence in Saudi primary schoolchildren of Riyadh and their teachers' oral health knowledge, attitude and practices, *Saudi Med J* 2002; 23: 77-81.
- 6 Kidd EA. Caries management. *Dent Clin North Am* 1999; 43: 743-64.
- 7 Horowitz AM. Effects of supervised daily dental plaque removed by children after 3 years. *Community Dent Oral Epidemiol* 1980; 8: 171-77.
- 8 American Academy of Pediatric Dentistry. Oral Health Policies. *Pediatr Dent* 2002; 22 (Reference Manual): 18-42.
- 9 Brambilla E. Fluoride – is it capable of fighting old and new dental disease? An overview of existing fluoride compounds and their clinical applications. *Caries Res* 2001; 35: 6-9.
- 10 Van Loverence C, Duggal MS. The role of diet in caries prevention. *Int Dent J* 2001; 51: 399-406.
- 11 Holloway PJ, Asthon MA, Wainwright-Stringer Y, Worthington HV. Preventive technologies in dental practice in the UK *Int Dent J* 1997; 47: 271-74.
- 12 Main PA, Lewis DW, Hawkins RJ. A survey of general dentists in Ontario, Part II: Knowledge and use of topical fluoride and dental prophylaxis practices. *J Cand Dent Assoc* 1997; 63: 607-10.
- 13 Moon H, Paik D, Horowitz AM, Kim J. National survey of Korean dentists' knowledge and opinions: dental caries etiology and prevention. *J Public Health Dent* 1998; 58: 51-56.
- 14 Kallestal C, Wang NJ, Petersen PE, Arnadottir IB. Caries-preventive methods used for children and adolescents in Denmark, Iceland, Norway and Sweden. *Community Dent Oral Epidemiol* 1999; 27: 144-51.
- 15 Milgrom P. The impact of behavioral technology on dental caries. *J Dent Edu* 2001; 65: 1102-05.
- 16 Pitcher GR, Newman HN, Strahan JD. Access to subgingival plaque by disclosing agents using mouth rinsing and direct irrigation. *J Clin Periodontol* 1980; 7: 300-08.
- 17 Ogard, B Seppa L, Rolla G. Professional topical fluoride applications. *Adv Dent Res* 1994; 8: 190-201.
- 18 Horowitz HS. The role of dietary fluoride supplements in caries prevention. *J Public Health Dent* 1999; 59: 205-10.
- 19 Warren JJ, Levy SM. Systemic fluoride sources, amounts and effects of ingestion. *Dent Clin North Am* 1999; 43: 695-711.
- 20 Ophaug RH, Singer L, Harland BF. Dietary fluoride intake of 6-month and 2-year-old children in four dietary regions of the United States. *Am J Clin Nutr* 1985; 42: 701-07.
- 21 Wang NJ, Gropen AM, Ogard B. Risk factors associated with fluorosis in non-fluoridated population in Norway. *Community Dent Oral Epidemiol* 1997; 25: 396-401.
- 22 Alaluusua S, Malmivirta R. Early plaque accumulation: a sign for caries risk in young children. *Community Dent Oral Epidemiol* 1994; 22: 273-76.
- 23 Wandera A, Bakhta S, Barker T. Caries prediction and indicators using a pediatric risk assessment teaching tool. *ASDC J Dent Child* 2000; 67: 408-12.
- 24 Al-Fouzan K. Continuing education needs as reported by dentists in Saudi Arabia. *Saudi Dent J* 2001; 13: 75-81.