

ORIGINAL ARTICLE

Perceived barriers to preventive dental care among Libyan dentists

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Aim: To explore the barriers to providing preventive dental care to patients, as perceived by Libyan dentists working in Benghazi.

Settings and design: A cross-sectional, questionnaire-based survey was conducted among dentists working in Benghazi, Libya.

Materials and methods: All dentists registered with the Dental Association of Benghazi and with 2 or more years of practice were invited to participate. The questionnaire collected information on participants' demographic and professional characteristics as well as the patient-, practice- and dentist-related barriers to providing preventive dental care.

Statistical analysis: Scores for each type of barrier were compared by demographic and professional characteristics in bivariate and multivariate analyses.

Results: One hundred and seventy five dentists returned the questionnaires (response rate: 79%) and 166 had complete information on all the variables selected for analysis (75%). The majority were females (70%), aged between 23 and 34 years (85%), was working in the public health sector (43%), and had up to 5 years of service (46%). Patient-related barriers were scored the highest, followed by practice- and dentist-related barriers. Dentists with mixed practice reported lower scores on patient- and practice-related barriers than those in public or private practice.

Conclusion: Respondents were generally aware of the barriers to preventive dentistry and perceived the barriers as being more related to their patients than to their practices or themselves. However, these perceptions varied by practice sector.

Keywords: *prevention; dentists; dental health services; barriers; dentistry*

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Despite dental associations and groups endeavouring to implement preventive practices based on scientific evidence, these practices are not fully applied and there has been incompatibility between what is known and what is practised (1). The implementation of effective measures for the prevention of oral diseases and oral health promotion is urgently needed at national and international levels (2). The literature on the main barriers in the areas of availability, access, and utilisation of preventive health care services had been reviewed and the necessity for addressing these barriers was confirmed (3). Various factors related to dental care providers, patients, practice, and dental care and health care delivery systems have been associated with the uptake of dental services

(4, 5). In order to improve oral health, barriers to providing preventive dental care should be investigated, identified, and addressed (6). A considerable number of the barriers to applying preventive dental care can be dealt with successfully, which will shortly result in a higher implementation rate (7).

After Libya's revolution in 2011, the new health care authority is facing a reconstruction challenge and the country's shattered health system needs revitalisation (8). A recent study among Libyan children has revealed high levels of untreated dental caries (9). Dental caries and periodontal disease are major public health problems and the main causes of tooth loss among Libyans during different decades of their lives (10). This information may

indeed justify an inference of poor preventive dental services in Libya. So far, however, no research in Libya has explored any of the various aspects of providing preventive dental care from the dentists' viewpoint. The present study was set out to explore the barriers to providing preventive dental care, as perceived by Libyan dentists working in Benghazi.

Subjects and methods

Participants

A cross-sectional, questionnaire-based survey was conducted among dentists working in Benghazi, Libya, between May and June 2012. Benghazi is the second largest city in Libya, with a population size of around 620,000 and a dentist-to-population ratio of six dentists for every 10,000 inhabitants (11). The list of all dentists registered with the Dental Association of Benghazi, the official body which provides practising licences to dentists, was used as the sampling frame for the study. All 221 dentists on the registry with 2 or more years of practice were invited to participate in the survey. Recently graduated and dentists not in practice were excluded. Of the 221 dentists who fulfilled the selection criteria, 175 returned the questionnaires (response rate: 79%). The present analysis is based on 166 participants who had complete information on all the variables selected for analysis (75% of the study population). A minimum sample size of 141 subjects was required to estimate a population mean (score for barriers) with standard deviation of 10 units, absolute precision of 1 unit, 80% statistical power, and 95% confidence level.

Formal permission was obtained from the authorities at the Ministry of Health and Private Health Care Centres. The participants' consent was implied by the return of completed questionnaires.

Data collection

Participants were approached at public and private dental care centres where they worked and were invited to participate by the main researcher (AA). After acceptance, a copy of the self-administered questionnaire, written in simple English, was handed out and the main researcher returned the day after for collection. Participants provided information on their demographic characteristics (sex and age), practice sector (public, private, or mixed), and years of service. They also stated their perceptions of barriers to providing preventive dental care using an instrument developed for a previous study among Iranian dentists (6). The original instrument consisted of 12 items enquiring about dentists' perceptions of practice- (4 items), dentist- (4 items), and patient-related (4 items) barriers to applying preventive measures for their patients. The 12 statements are presented in Table 2. The only difference between the Iranian and Libyan version of the instrument is that one

of the four practice-related statements originally included in the instrument was rephrased during the validation process to be compatible with dental services in Libya where there are no dental auxiliaries. The rephrased item read 'there are no dental auxiliaries available to provide preventive care'. For each statement, dentists answered the following question: 'How much does this item preclude you from carrying out preventive measures for patients?' The answers were given on a 5-point Likert scale ranging from 'not at all' (indicating no impediment, scored as 0) to 'very much' (indicating a very strong impediment, scored as 4). Scores of the four statements within each barrier were summed up to serve as an indicator of the dentist's perceived extent of practice-, dentist-, and patient-related barriers to the provision of preventive measures, each ranging from 0 to 16. Higher scores indicated higher perceptions of barriers.

The questionnaire was tested among 20 volunteers and found to be clear and understandable. In this sample, Cronbach's α was 0.68 for the practice-related barriers, 0.62 for the dentist-related barriers, and 0.83 for the patient-related barriers. As no changes to the questionnaire were actually needed during the pilot study, the questionnaires completed by the 20 volunteers were included in the final study sample.

Statistical analysis

Data management and analysis was performed using the IBM SPSS Statistics software version 20.0. The mean, standard deviation, and minimum and maximum values were used to describe scores for practice-, dentist-, and patient-related barriers.

The scores for each type of barrier were compared by sex using the *t*-test for independent sample, and by age groups (23–34, 35–44, and 45–56 years), practice sector (public, private, or mixed), and years of service (0–5, 6–10, and > 10 years) using one-way Analysis of Variance (ANOVA). Multiple linear regression models were fitted to compare scores for patient-, practice- and dentist-related barriers by demographic and professional characteristics in a multivariate context.

Results

Data from 166 Libyan dentists were analysed for this study. Their characteristics are described in Table 1. The majority were females (70%), between 23 and 34 years of age (85%), working in the public health sector (43%), and had up to 5 years of service (46%).

Table 2 reports the barriers to preventive dental care. The patient-related barriers had the highest score (mean: 12.47, SD: 3.10), followed by practice- (mean: 10.96, SD: 2.90), and dentist-related barriers (mean: 10.08, SD: 3.66). Patients' poor knowledge of the potential of caries prevention was the statement with the highest score among patient-related barriers and all barriers

Table 1. Characteristics of the study sample ($n = 166$)

Variables	<i>N</i>	%
Sex		
Men	50	30
Women	116	70
Age group (years)		
23–34	141	85
35–44	15	9
45–56	10	6
Practice sector		
Public	71	43
Private	37	22
Mixed	58	35
Years of service		
0–5	77	46
6–10	69	42
> 10	20	12

assessed (mean: 3.22, SD: 0.92), whereas the lack of dental auxiliaries available to provide preventive care (mean: 2.81, SD: 1.31) and the traditional reliance of dentistry on treatment, not prevention (mean: 2.89, SD: 1.27) were the dentist- and practice-related barriers with the highest scores, respectively.

Table 3 reports comparison of barriers by to preventive dental care by demographic and professional characteristics. There were differences between practice sectors in the scores for patient- and practice-related barriers but not in those for dentist-related barriers. Dentists working

in mixed practice reported lower patient- and practice-related scores than those working on public or private practice exclusively. No differences were found by participants' sex, age group, or years of service. Differences by practice sector remained significant after adjusting for sex, age group, and years of service (Table 4).

Discussion

This study shows that dentists in Benghazi perceived patient-related barriers as the most prominent. Poor patient knowledge of caries prevention, unwillingness to pay for preventive dentistry, and lack of knowledge about dental visits were ranked high by Libyan dentists. This finding is in agreement with studies which showed that dentists perceived patients' poor appraisal of preventive treatment as a major barrier to the provision of preventive dental care (6, 12, 13).

Although participants perceived dentist- and practice-related barriers as less prominent, the lack of dental auxiliaries and the low priority given to preventive dentistry in the dental curriculum as well as the traditional reliance on treatment, the difficulty to access preventive dental materials, and the lack of printed material for dental health education were the most highly recognised dentist- and practice-related barriers. Dental services have focused for a long time and are still focusing on restorative treatment or tooth extraction for the management of existing disease despite the fact that most oral diseases are highly preventable (14–16). Similar trends have been found reflecting the attitudes of patients and providers,

Table 2. Barriers to providing preventive dental care ($n = 166$)

Items	Mean (SD)	Range
Patient-related barriers		
Patients have poor knowledge of the potential of caries prevention	3.22 (0.92)	0–4
Patients are unwilling to pay for preventive care	3.05 (0.91)	0–4
Patients ignore regular dental visits	3.11 (0.98)	0–4
Patients' poor oral health is an obstacle to preventive care	2.92 (1.01)	0–4
Sub-score	12.47 (3.10)	1–16
Dentist-related barriers		
Preventive care gives dentists no/minor esteem	2.42 (1.33)	0–4
Preventive care is not profitable for dentists	2.16 (1.32)	0–4
Preventive dentistry has low priority in the dental curriculum	2.69 (1.28)	0–4
There are no dental auxiliaries available to provide preventive care	2.81 (1.31)	0–4
Sub-score	10.08 (3.66)	2–16
Practice-related barriers		
Dental insurance covers no preventive measures	2.42 (1.37)	0–4
Materials needed for preventive dentistry are not easily available	2.83 (1.20)	0–4
Printed material for dental health education is scarce	2.83 (1.06)	0–4
Traditionally, dentistry relies on treatment, not on prevention	2.89 (1.27)	0–4
Sub-score	10.96 (2.90)	0–16

Table 3. Barriers to preventive dental care by demographic and professional characteristics (*n* = 166)

Variables	Patient-related barriers		Dentist-related barriers		Practice-related barriers	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Sex						
Men	11.96	(3.68)	10.26	(3.96)	10.48	(3.22)
Women	12.69	(2.82)	10.01	(3.54)	11.17	(2.73)
<i>p</i>	0.166		0.686		0.158	
Age group						
23–34 years	12.47	(3.18)	10.20	(3.82)	11.10	(2.95)
35–44 years	12.07	(3.03)	10.00	(2.80)	10.27	(2.66)
45–56 years	13.10	(2.23)	8.60	(1.96)	10.10	(2.42)
<i>p</i>	0.720		0.411		0.358	
Practice sector						
Public	13.01	(2.38) ^a	9.58	(3.01)	11.46	(2.36) ^a
Private	13.22	(2.42) ^b	10.27	(4.15)	11.65	(2.66) ^b
Mixed	11.33	(3.91) ^{a,b}	10.59	(4.02)	9.91	(3.35) ^{a,b}
<i>p</i>	0.002		0.281		0.002	
Years of service						
0–5 years	12.61	(3.29)	10.52	(4.05)	11.25	(2.99)
6–10 years	12.23	(3.01)	9.94	(3.36)	10.94	(2.71)
> 10 years	12.75	(2.81)	8.90	(2.81)	9.95	(3.09)
<i>p</i>	0.699		0.194		0.204	

Superscripts indicate where differences were located.

Independent sample *t*-test and ANOVA were used to compare characteristics with two and three groups, respectively.

availability and accessibility of care, and philosophies of dental treatment (14, 17).

The findings of this study regarding the role of dental education in preventive dentistry are in line with other studies (18, 19) which have concluded that current undergraduate dental curricula do not adequately prepare dentists for prevention-oriented treatment, and the public health role and continuing dental education may be insufficient to change clinical practice. Participants' opinions on practice-related barriers are consistent with others expressed by dentists in earlier research in Iran (6) and Mongolia (12) and may support the idea that that informed and motivated dentists are lacking the support from policy makers to enhance preventive dental programmes (20).

A second interesting finding was that dentists with mixed practice (working in both private and public sectors) showed lower perception of the impact of patient- and practice-related factors than those with exclusive practice in the public or private health care sectors. Such finding can be attributed to the nature of the working environment; considering their working hours and duties, mixed practice practitioners are working part time in both sectors with limited role in administration and organisation processes and less communication with patients. Hence, they would not be familiar with work place issues

and customer needs, and have less control at work, which is considered a key job characteristic that satisfies higher needs and contributes to job satisfaction (21). In addition and contrary to our expectations, this study did not find sex differences in the perception of barriers to preventive care. A previous study had shown that male dentists reported significantly higher scores for both practice- and dentist-related barriers than the female dentists (6). However, females are more positive and interested in practicing preventive dentistry than males (22, 23), which in turn could lead to more awareness of barriers to preventive dentistry. Cultural factors may explain the different results found in this study compared to other groups of dentists.

These findings enhance our understanding of the factors hindering the practice of preventive dentistry in Libya and raise a number of questions. Future research on the barriers to preventive dental care as perceived by patients and policy makers would help to validate dentists' views and identify areas of mutual concern. In addition, reviewing the contents of the dental curriculum in Libya would help in establishing a greater degree of accuracy on this matter. Our findings suggest several courses of action for enhancing the practice of preventive dentistry in Libya. There is, therefore, a definite need for greater emphasis on dental health education and public health programmes

Table 4. Multivariate regression models for patient-, dentist-, and practice-related barriers to preventive dental care ($n = 166$)

Variables	Patient-related barriers		Dentist-related barriers		Practice-related barriers	
	Coef.	(95% CI)	Coef.	(95% CI)	Coef.	(95% CI)
Sex						
Men	0.00	(Reference)	0.00	(Reference)	0.00	(Reference)
Women	0.05	(-1.14, 1.24)	0.22	(-1.22, 1.66)	0.07	(-1.02, 1.17)
p	0.938		0.762		0.892	
Age group						
23–34 years	0.00	(Reference)	0.00	(Reference)	0.00	(Reference)
35–44 years	-0.27	(-2.47, 1.94)	0.63	(-2.04, 3.29)	0.13	(-1.9, 2.16)
45–56 years	0.15	(-3.07, 3.36)	0.05	(-3.83, 3.93)	0.05	(-2.91, 3)
p	0.940		0.866		0.991	
Practice sector						
Public	0.00	(Reference) ^a	0.00	(Reference)	0.00	(Reference) ^a
Private	0.14	(-1.21, 1.48) ^p	0.43	(-1.19, 2.05)	-0.11	(-1.35, 1.13) ^p
Mixed	-1.69	(-2.95, -0.42) ^{a,b}	0.86	(-0.66, 2.38)	-1.76	(-2.92, -0.60) ^{a,b}
p	0.007		0.538		0.004	
Years of service						
0–5 years	0.00	(Reference)	0.00	(Reference)	0.00	(Reference)
6–10 years	-0.40	(-1.46, 0.66)	-0.54	(-1.82, 0.74)	-0.41	(-1.38, 0.56)
> 10 years	-0.13	(-2.86, 2.61)	-1.68	(-4.98, 1.62)	-1.74	(-4.26, 0.77)
p	0.743		0.530		0.367	

Superscripts indicate where differences were located.

Linear regression models were fitted and regression coefficients reported.

to increase patients' awareness of the importance and value of preventive dentistry. They also have important implications for developing an approach, including the public, dental care providers, and governmental sectors, to eliminate barriers to accessing preventive dental services in Libya.

Some limitations of this study need to be discussed. The first limitation is related to the selection of the study group – from one Libyan city only. As such, participants' views are not representative of the entire population of dentists in Libya. A second limitation relates to the use of quantitative methods for data collection (i.e. using a self-administered questionnaire). The use of qualitative methods would provide more in-depth exploration of the barriers as well as facilitate validation of views from different stakeholders.

Conclusion

Participants in this study were generally aware of the barriers to providing preventive dentistry to their patients and perceived the barriers as being more related to their patients rather than to their practices or themselves. However, these perceptions varied by practice sector. The multiple dimensions and different roots of the current situation of preventive dentistry in Libya need to be tracked and suitable solutions and plans applied.

Conflict of interest and funding

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