

## Factors Affecting Access to Oral Health Care among Adults in Abha City, Saudi Arabia

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ABSTRACT

**Aims and Objectives:** To investigate the self-reported access problems to dental care among adults in Abha city, KSA.

**Materials and Methods:** A cross-sectional descriptive survey was carried out among adults in Abha city, Saudi Arabia. A structured, close-ended, self-administered questionnaire elicited the access and utilization of dental care among a sample of adults. Data were collected and analyzed using SPSS version 21.0 statistical software. The descriptive statistics and logistic regression analysis were performed to predict the variables associated with access and utilization of dental care.

**Results:** A total of 499 adults (male = 270, female = 229) participated in the study. More than half (289, 57.9%) of the participants utilized dental services and emergency services (283, 56.7%) were the most common reason to visit dentist. For most of the participants (281, 57.1%), the last dental visit was less than 1 year. Majority (409, 82%) of the participants self-funded for their treatment in private dental clinics (382, 76.6%). More than half (258, 51.7%) of the participants received restorative treatment during their last visit to dentist. Cost (39.1%) and lack of time (28.7%) were the main barriers to accessing dental care. Education and income were all involved in predicting nonutilization of dental services among the study participants.

**Conclusion:** Access to and utilization of dental care are the multidimensional concepts influenced by many factors. Cost and lack of time were the predominant barriers to utilization of dental services. Access to dental care is a multidimensional issue with education and income, were considered as the significant predictors of nonutilization of dental services. Similarly, income and transportation problems significantly predicted the use of private dental services. Marital status, transportation problem, health problems, and difficulty in movement were all concerned with multiple barriers to accessing dental services among the study participants.

**KEYWORDS:** Access, adults, oral health care, self-report

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### INTRODUCTION

Oral health affects general health by causing significant pain and suffering and by changing people's food habits, speech, and their quality of life and well-being. Oral health also has an impact on other chronic diseases.<sup>[1]</sup> Hence, overall quality of life can be improved by providing sufficient availability of

medical and dental care to reduce early morbidity and mortality and preserve the function. Access to care is

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defined as the timely use of personal health services to achieve the best possible health outcomes.<sup>[2]</sup> Access to dental care includes both the availability of care and the patient's willingness to seek the care.<sup>[3]</sup> Affordable and acceptable access to health care is a basic requirement and fundamental human right. However, it is more frequently observed that the people who have greater health needs are the ones who receive the least amount of care.<sup>[4]</sup>

Worldwide access to dental care varies with many developing countries having very limited access to oral health care while developed countries having much better access to oral health care for their population. Patterns of access to dental care in Australia showed that 57.6% of the dentate adult population visited the dentist last year. Further, data showed that people in older age group, people having good income, and females tend to visit dentist were more likely in the last year. More than half (53%) of the Australian population visited the dentist for routine checkups rather than for dental pain or emergency treatments.<sup>[5]</sup> On the contrary, the Saudi Health Information Survey showed that only 11.5% of Saudi Arabian population aged above 15 years visited dentist for routine checkup and nearly half (48.3%) of them visited dentist during the dental problems.<sup>[6]</sup> Another study conducted in primary health care centers of Riyadh city showed that more than half (53%) of the patients visited a dentist in the past 12 months once.<sup>[7]</sup>

High levels of tooth loss, dental caries experience, and the prevalence rates of periodontal disease, xerostomia, and oral precancer/cancer have been commonly reported globally among the older adults with poor oral health. This has a negative impact of the quality of health among the old adults.<sup>[8]</sup> Hence, access to good oral health and addressing the barriers are of great significance for overall well-being among the young and older adults.

Rural–urban inequalities in access to health care are an important issue. The rural areas often experience a more vulnerable economic and demographic situation compared to the urban regions.<sup>[9]</sup> It has been observed that health beliefs of rural people can often delay early consultation with health services and late appearance.<sup>[10]</sup>

Understanding the factors that influence the access to dental care is an essential component to effectively provide the oral health services to the population. Several reports on access and utilization of dental care have been published from capital and other larger cities from Saudi Arabia.<sup>[6,7]</sup> However, until now, there is a lack of self-reported access to dental care among residents from Abha city, Saudi Arabia. Hence, the present study was undertaken with the purpose to investigate the

self-reported access problems to dental care among adults in Abha city, KSA.

## MATERIALS AND METHODS

### ETHICAL APPROVAL

The study proposal was submitted to the Research Center of Riyadh Elm University and the ethical approval was obtained. Informed consent was obtained from all the participants once they agree to be part of the study. This study was registered with a number FPGRP/43638007/129.

### STUDY PARTICIPANTS

This was a cross-sectional study conducted among a sample of adult (aged  $\geq 18$  years) residents of Abha city. The study was conducted during September–December 2017. Abha city was divided into five sites (north, south, east, west, and center); mosques and public places were selected from these sites to collect the data by applying inclusion and exclusion criteria. Inclusion criteria consisted of Saudi nationals, healthy patients, aged  $\geq 18$  years, and able to read and understand Arabic language. Exclusion criteria consisted of expatriates and those not willing to participate in the study.

### STUDY INSTRUMENTS

A structured, close-ended, self-administered questionnaire was prepared in the local Arabic language and distributed to the participants by one of the authors involved in the study. The same author was also responsible for answering the queries raised by the respondents. The study instrument was designed after extensive literature review.<sup>[3-7,11,12]</sup> Once the first draft of the questionnaire was prepared, it was validated by taking opinion of dental public health experts with regard to the simplicity and importance. Later, a pilot study was run by selecting a small sample ( $n = 10$ ) of adult mosque goers, who gave their opinions to make questionnaire simple and short. Changes suggested by the participants were implemented within the questionnaire. After comprehensive review, final version of the questionnaire was then distributed to the participants for their response. Reliability coefficient was found to be 0.72. A total of 600 questionnaires were distributed among the study participants and 499 responses were obtained. Questionnaires were distributed at the main entrance of the mosques and public places in the selected sites.

The questionnaire was divided into four parts. The first part was made up of sociodemographic information of the respondents. The second part identified the physical and health status of respondents. The third part assessed the self-reported utilization of dental services. The last

Questionnaire contents			
<b>Sociodemographic data</b> - Gender - Marital status - Living status - Work sector - Education - Income (SAR) - Transportation problem	<b>Physical and health status</b> - Current health problems - Current medication - Problems of movement - Able walk to the doctor or dentist alone	<b>Utilization of Dental services</b> - Dental service - Reasons to visit dentist - Last dental visit - Payment for dental services - Preferred dental clinic - Treatment received last visit	<b>Barrier for access to dental care</b> - Cost - shortage of time - Fear from dentist - Difficulty in getting appointment - Difficulty in accessing dental clinical - No need for treatment

Figure 1: Questionnaire contents

part determined the self-reported barriers to access to dental care among the study participants as shown in Figure 1.

### STATISTICAL ANALYSIS

Data analysis was performed using SPSS version 21.0 (SPSS® Inc., IBM Corp., Armonk, NY, USA). Descriptive statistics of frequency distribution and percentages were reported. Binary logistic regression analysis was performed to identify the significant predictors of utilization of dental services and multiple barriers to access dental care among the study participants by considering appropriate explanatory variables and dependent variables.  $P < 0.05$  was considered statistically significant.

### RESULTS

A total of 600 questionnaires were distributed and 499 participants filled the questionnaire and returned to the author. Thus, a response rate of 83% was obtained. In the present study, more than half were males (270, 54.1%), married (297, 59.5%), and living alone (297, 59.5%). Most of the participants worked for the government sector (448, 89.8%) having no formal education (311, 62.3%). Majority of the participants had no income (176, 35.3%) followed by <1000 SAR (165, 33.1%). Most of the participants mentioned that they do not have any transportation problems (306, 61.3%) as shown in Table 1.

Table 2 presents the physical and health status of the study participants, in which nearly one-fourth (126, 25.3%) of them complained of health problems. Similarly, more than quarter (136, 27.3%) of the study participants were on medication. Only 31 (6.2%) participants mentioned the problems of movements. On the contrary, 457 (91.6%) of the participants were able to go by walk to the doctor or dentist alone without the help and support of caregivers.

Table 1: Sociodemographic variables of the participants (n=499)

Variables	n (%)
Gender	
Male	270 (54.1)
Female	229 (45.9)
Marital status	
Single	202 (40.5)
Married	297 (59.5)
Living status	
With family	202 (40.5)
Alone	297 (59.5)
Work sector	
Government	448 (89.8)
Private	51 (10.2)
Education	
No formal education	311 (62.3)
Primary	55 (11.0)
Intermediate	133 (26.7)
Income (SAR)	
<10,000	165 (33.1)
10,000-15,000	76 (15.2)
>15,000	82 (16.4)
No income	176 (35.3)
Transportation problem	
Yes	72 (14.4)
No	306 (61.3)
Sometimes	121 (24.2)

Table 2: Physical and health status of the study participants (n=499)

Variables	n (%)
Current health problems	
Yes	126 (25.3)
No	373 (74.7)
Currently on medication	
Yes	136 (27.3)
No	363 (72.7)
Problems of movement	
Yes	31 (6.2)
No	468 (93.8)
Able walk to the doctor or dentist alone	
Yes	457 (91.6)
No	42 (8.4)

More than half (289, 57.9%) of the participants utilized dental services and emergency services (283, 56.7%) were the most common reason to visit dentist. For most of the participants (281, 57.1%), the last dental visit was <1 year. Majority (409, 82%) of the participants self-funded for their treatment in private dental clinics (382, 76.6%) as shown in Table 3.

Most of the study participants preferred dental services under government clinics (67, 13.4%) due to its quality

of care. However, availability of different treatment types (204, 40.9%) was the main perceived reason to prefer dental services in private dental clinics as shown in Table 4. Intermediate level of education (odds ratio [OR] = 2.51) and income category <10,000 SAR (OR = 2.06) showed significant odds of predicting nonutilization of the dental services as shown in Table 5.

Age of the study participants showed odds of 0.982 (95% confidence interval [CI], 0.954–1.01) using private dental services, suggesting that as the age increased, participants were less likely to utilize private dental services. Female participants were (OR = 1.38) more likely to utilize the private dental services compared to male participants. Single participants compared to married participants (1.162 [95% CI, 0.60–2.24]), adults working in government compared to private sector (1.88 [0.93–3.79]), participants with intermediate level of education compared to no education of the participants (OR = 1.01) and primary educational level (1.096 [95% CI, 0.49–

2.44]), participants with income level 10,000–15,000 SAR (1.37 [95% CI, 0.62–3.02]) compared to no income, and adults having transportation problem compared to sometimes problem (1.9 [95% CI, 1.17–3.27]) were more likely to utilize the private dental services compared to the government dental services [Table 6].

Being married (OR = 2.13), having transportation problem sometimes (OR = 2.27), and difficulty in movement (OR = 3.296) were the significant ( $P < 0.005$ ) predictors of multiple barriers for access to dental care as shown in Table 7.

## DISCUSSION

In general, the findings of our study showed that more than half (57.9%) of respondents were dental service users. Most of them visited dentists when they had dental emergency and only few participants went for regular checkups. This result is in agreement with the other reported studies in Saudi Arabia.<sup>[6,7,13]</sup> However, Saudi population visited less frequently compared to neighboring Arab country.<sup>[12]</sup>

Majority of the participants visited dentist during emergency treatment. Last dental visit for most of the participants was <1 year, followed by 1–2 years, 2–5 years, and >5 years. This is suggestive of irregular pattern of dental visit and utilization of dental services among the study participants. This could be due to the fact that most of the participants did not have insurance and dental services were self-funded with long waiting periods for appointments.<sup>[14]</sup> Fear of the dentist and trouble in obtaining a dental appointment and dental anxiety were the main causes of irregular dental attendance or not seeking dental care.<sup>[15,16]</sup>

It has been argued that high-quality healthcare services tend to increase individual utilization of dental care.<sup>[17]</sup> Other reasons for that could affect the regular utilization of dental services include belief among the population that dental conditions are less life-threatening and lack of oral health illiteracy.<sup>[12]</sup>

In the present study, cost, shortage of dentists, difficulty in getting appointment, no need for treatment, and fear of dentist were the main perceived barriers to access to dental care. This result is in line with that of the reported study by Al-Ansari, in which cost, unavailability, and lack of insurance were the main reasons for accessing preventive oral health care among the study population.<sup>[14]</sup> However, Obeidat *et al.* reported that time constraint was the most common barrier for not attending the dental offices regularly.<sup>[12]</sup> A study conducted among elderly from Australia disclosed several barriers to accessing dental care; these include cost of services, fear

**Table 3: Utilization of dental services among study participants**

Variables	n (%)
Dental service	
User	289 (57.9)
Nonuser	210 (42.1)
Reasons to visit dentist	
Checkup	216 (43.3)
Emergency	283 (56.7)
Last dental visit (years)	
<1	285 (57.1)
1-2	114 (22.8)
2-5	57 (11.4)
>5	43 (8.6)
Payment for dental services	
Government	36 (7.2)
Insurance	54 (10.8)
Self-funded	409 (82.0)
Preferred dental clinic	
Government	117 (23.4)
Private	382 (76.6)

**Table 4: Perceived reasons for preferring government and private dental services**

Preferences	Variables	n (%)
Government	Free treatment	38 (7.6)
	Close to house	12 (2.4)
	Quality	67 (13.4)
Private	Quality	179 (35.9)
	No waiting time	56 (11.2)
	Continued treatment	37 (7.4)
	Availability of different treatment types	204 (40.9)
	Easy to get an early appointment	104 (20.8)



**Table 5: Factors related to nonutilization of dental services**

Variables	B	SE	Wald	df	P	Exp (B)	95% CI for Exp (B)	
							Lower	Upper
Male versus female	0.039	0.209	0.035	1	0.852	1.04	0.69	1.567
Single versus married	0.157	0.245	0.413	1	0.52	1.17	0.725	1.89
Government versus private	-0.581	0.34	2.915	1	0.088	0.56	0.287	1.09
Education			13.295	2	0.001			
No education versus intermediate	-0.921	0.26	12.577	1	0.000	0.398	0.239	0.662
Primary versus intermediate	-0.293	0.354	0.686	1	0.407	0.746	0.373	1.493
Income			11.442	3	0.01			
<10,000 versus no income	0.725	0.236	9.456	1	0.002	2.065	1.301	3.278
10,000-15,000 versus no income	-0.018	0.306	0.004	1	0.952	0.982	0.539	1.788
>15,000 versus no income	0.27	0.3	0.81	1	0.368	1.31	0.728	2.357
Missing teeth: Yes versus no	-0.231	0.201	1.316	1	0.251	0.794	0.535	1.178
Transportation problems			1.696	2	0.428			
Yes versus sometimes	-0.192	0.329	0.34	1	0.56	0.825	0.433	1.573
No versus sometimes	-0.312	0.24	1.689	1	0.194	0.732	0.457	1.172
Current health problem: Yes/no	0.068	0.295	0.054	1	0.817	1.071	0.6	1.909
Taking medication: Yes/no	-0.089	0.295	0.09	1	0.764	0.915	0.514	1.631
Difficulty movement: Yes/no	-0.887	0.484	3.359	1	0.067	0.412	0.159	1.063
Go market dentist: Yes/no	0.033	0.356	0.009	1	0.926	1.034	0.514	2.077
Constant	0.795	0.624	1.624	1	0.203	2.215		

SE=Standard error, CI=Confidence interval

**Table 6: Factors related to utilization of private dental services**

	B	SE	Wald	df	P	Exp (B)	95% CI for Exp (B)	
							Lower	Upper
Age	-0.018	0.015	1.568	1	0.210	0.982	0.954	1.010
Male versus female	-0.323	0.243	1.767	1	0.184	0.724	0.450	1.166
Single versus married	0.150	0.335	0.201	1	0.654	1.162	0.603	2.241
Government versus private	0.635	0.356	3.180	1	0.075	1.887	0.939	3.794
Education			0.074	2	0.964			
No education versus intermediate	-0.010	0.299	0.001	1	0.973	0.990	0.551	1.780
Primary versus intermediate	0.092	0.408	0.051	1	0.822	1.096	0.493	2.441
Income			9.379	3	0.025			
<10,000 versus no income	-0.493	0.267	3.424	1	0.064	0.610	0.362	1.030
10,000-15,000 versus no income	0.318	0.402	0.623	1	0.430	1.374	0.624	3.022
>15,000 versus no income	-0.707	0.323	4.805	1	0.028	0.493	0.262	0.928
Transportation problem			6.730	2	0.035			
Yes versus sometimes	0.552	0.363	2.314	1	0.128	1.737	0.853	3.536
No versus sometimes	0.673	0.262	6.608	1	0.010	1.961	1.173	3.277
Constant	1.148	0.705	2.653	1	0.103	3.153		

SE=Standard error, CI=Confidence interval

of dentists, length of waiting lists, and availability of oral health care services.<sup>[18]</sup> The cost and fear were consistent findings reported by different studies.<sup>[12,14,19]</sup>

Retrospective life history data of elderly Europeans showed that the frequent dental avoidance is due to the lack of felt need and awareness of importance of regular dental visits.<sup>[20]</sup>

Majority of the participants mentioned that they received restorative care followed by prosthodontic, extraction, gum treatment, and orthodontic treatment

during their last visit to the dentist. This high demand for restorative treatment is due to the high prevalence of dental caries among Saudi population.<sup>[21]</sup> Moreover, restorative treatment is the most preferred therapy for the children by dental professionals.<sup>[22]</sup> This finding is in line with that of the reported study in which restorative treatment was most commonly sought by the participants.<sup>[12]</sup>

Providing adequate healthcare services to its citizens is a governmental priority in Saudi Arabia. Ministry

**Table 7: Multiple barriers for access to dental care**

Variables	B	SE	Wald	df	P	Exp (B)	95% CI for Exp (B)	
							Lower	Upper
Age	-0.024	0.015	2.527	1	0.112	0.976	0.948	1.006
Gender: Male versus female	0.136	0.235	0.336	1	0.562	1.146	0.723	1.816
Marital status: Single versus married	-0.760	0.335	5.159	1	0.023	0.468	0.243	0.901
Government versus private	0.624	0.418	2.232	1	0.135	1.867	0.823	4.234
Education			2.877	2	0.237			
No education versus intermediate	0.417	0.315	1.756	1	0.185	1.518	0.819	2.814
Primary versus intermediate	0.659	0.420	2.468	1	0.116	1.934	0.849	4.402
Income			2.148	3	0.542			
<10,000 versus no income	-0.087	0.259	0.112	1	0.738	0.917	0.552	1.522
10,000-15,000 versus no income	-0.409	0.370	1.219	1	0.270	0.664	0.322	1.373
>15,000 versus no income	0.185	0.329	0.318	1	0.573	1.204	0.632	2.293
Transportation problem			25.691	2	0.000			
Yes versus sometimes	0.586	0.327	3.218	1	0.073	1.797	0.947	3.411
No versus sometimes	-0.823	0.259	10.087	1	0.001	0.439	0.264	0.730
Current health problem: Yes versus no	0.277	0.302	0.842	1	0.359	1.320	0.730	2.387
Taking medication: Yes versus no	-0.025	0.305	0.007	1	0.934	0.975	0.536	1.773
Difficulty in movement: Yes versus no	1.193	0.438	7.429	1	0.006	3.296	1.398	7.771
Able to go to dentist: Yes versus no	0.284	0.399	0.509	1	0.476	1.329	0.608	2.905
Dental service user : Yes versus no	-0.241	0.225	1.146	1	0.284	0.786	0.505	1.222
Reason visit dentist: Checkup versus emergency	-0.309	0.220	1.976	1	0.160	0.734	0.477	1.130
Clinic preference: Government versus private	0.059	0.267	0.048	1	0.826	1.060	0.629	1.789
Payment for service			0.113	2	0.945			
Government versus self-funded	0.125	0.442	0.080	1	0.777	1.134	0.477	2.696
Insurance versus self-funded	-0.054	0.370	0.021	1	0.884	0.947	0.459	1.956
Constant	-0.499	0.854	0.341	1	0.559	0.607		

SE=Standard error, CI=Confidence interval

of Health is the main provider and regulator of public and private sector healthcare services in different regions of Saudi Arabia.<sup>[23]</sup> Our study pointed out that most of the study participants preferred dental services from private clinics rather than government clinics because of availability of different types of treatment, quality of dental care, easy and early availability of appointment, and no waiting time and possibility to continue treatment. This finding is similar to the study reported by Obeidat *et al.*<sup>[12]</sup> Moreover, the belief was that privately paid care can get adequate time and better care by the doctors.<sup>[23]</sup>

In this study, participants preferred government clinics for its quality of care that is free of cost and close to the house. However, this finding is in contrast with the study reported by Obeidat *et al.*, in which participants preferred government clinics mainly due to free treatment. The concept of quality of care was not a priority in government clinics due to the lack of resources and unplanned service allocations.<sup>[12]</sup>

Binary logistic regression analysis was performed to predict the factors related to nonutilization of dental

services, utilization of private dental clinics, and multiple barriers to accessing dental care.

Our study revealed that education and income levels of the study participants were the significant predictors of nonutilization of dental services among the study participants. This finding is similar to that of reported by El Bcheraoui *et al.*, in which probability of the participants to utilize dental services increased with education.<sup>[6]</sup> This result is in contrast with the study reported by Obeidat *et al.*, in which age, gender, family income, educational level, employment, reported general health, dental insurance, and transportation status did not show any significant difference with regard to the utilization and regularity of dental services.<sup>[12]</sup> A recent study showed that regular checkup measure taken by parents is associated with better reported oral health outcome.<sup>[24]</sup> Previous studies have reported that younger aged respondents more likely visit dentist on a regular basis for preventive treatment whereas middle-aged participants visited dentist for more dental checkups compared to younger respondents.<sup>[25,26]</sup>

Our study showed that the income level of the study participants was a significant predictor of nonutilization of dental services among study participants. This finding is suggestive of that low-income level respondents were less likely to use dental services. A study by Kakatkar *et al.* found that the higher income group had better access to dental care than the lower income group.<sup>[26]</sup> In our study, single participants were more likely nonutilizers of dental services compared to married participants. This finding is in line with the reported study by Obeidat *et al.*<sup>[12]</sup>

Binary logistic regression of factors related to utilization of private dental services showed that the income and transportation problems significantly predicted the use of private dental services.

Marital status, transportation problem, health problems, and difficulty in movement were found to be the significant predictors and multiple barriers to access to dental care in this study. This may signify that access to dental care is not straightforward issue requiring multiple approaches to solve them.

While comparing the results of our study with other studies, caution should be taken due to subjectivity in responses and possible role of social, economic, and cultural factors. The size of the sample, data collection method, and restriction of study to only Abha city were all considered the limitations of the study. Hence, this study result cannot be generalized for all Saudi Adults. Further studies with larger sample size and nation studies are needed to draw closer look at access and utilization of dental care among Saudi adults.

## CONCLUSION

Within the limitations of the study, it can be concluded that the vast majority of Saudi adults from Abha city utilized dental services during emergency rather than for routine checkups. Restorative care was the most common type of treatment they received during the last dental visit. Cost and lack of time were the predominant barriers to utilization of dental services. Access to dental care is a multidimensional issue with education and income were considered as the significant predictors of nonutilization of dental services. Similarly, income and transportation problems significantly predicted the use of private dental services. Marital status, transportation problem, health problems, and difficulty in movement were all concerned with multiple barriers to accessing dental services among the study participants.

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## CONFLICTS OF INTEREST

There are no conflicts of interest.

## REFERENCES

- Petersen PE. The world oral health report 2003: Continuous improvement of oral health in the 21<sup>st</sup> century – The approach of the WHO global oral health programme. *Community Dent Oral Epidemiol* 2003;31 Suppl 1:3-23.
- Institute of Medicine. *Access to Health Care in America*. Washington, DC: The National Academies Press; 1993.
- Guay AH. Access to dental care: Solving the problem for underserved populations. *J Am Dent Assoc* 2004;135:1599-605.
- Naseem M, Shah AH, Khiyani MF, Khurshid Z, Zafar MS, Gulzar S, *et al.* Access to oral health care services among adults with learning disabilities: A scoping review. *Ann Stomatol (Roma)* 2016;7:52-9.
- Harford J, Ellershaw A, Stewart J. Access to dental care in Australia. *Aust Dent J* 2004;49:206-8.
- El Bcheraoui C, Tuffaha M, Daoud F, Kravitz H, AlMazroa MA, Al Saeedi M, *et al.* Use of dental clinics and oral hygiene practices in the kingdom of Saudi Arabia, 2013. *Int Dent J* 2016;66:99-104.
- Al-Jaber A, Da'ar OB. Primary health care centers, extent of challenges and demand for oral health care in Riyadh, Saudi Arabia. *BMC Health Serv Res* 2016;16:628.
- Petersen PE, Yamamoto T. Improving the oral health of older people: The approach of the WHO global oral health programme. *Community Dent Oral Epidemiol* 2005;33:81-92.
- Boutayeb A, Helmert U. Social inequalities, regional disparities and health inequity in North African countries. *Int J Equity Health* 2011;10:23.
- Boutayeb A, Serghini M. Health indicators and human development in the Arab region. *Int J Health Geogr* 2006;5:61.
- Ajayi DM, Arigbede AO. Barriers to oral health care utilization in Ibadan, South West Nigeria. *Afr Health Sci* 2012;12:507-13.
- Obeidat SR, Alsa'di AG, Taani DS. Factors influencing dental care access in Jordanian adults. *BMC Oral Health* 2014;14:127.
- Farsi JM. Dental visit patterns and periodontal treatment needs among Saudi students. *East Mediterr Health J* 2010;16:801-6.
- Al-Ansari A. Awareness, utilization, and determinants of using oral diseases prevention methods among Saudi adults – A clinic-based pilot study. *Int J Health Sci (Qassim)* 2016;10:77-85.
- El-Qaderi SS, Taani DQ. Oral health knowledge and dental health practices among schoolchildren in Jerash district/Jordan. *Int J Dent Hyg* 2004;2:78-85.
- Crocombe LA, Broadbent JM, Thomson WM, Brennan DS, Slade GD, Poulton R. Dental visiting trajectory patterns and their antecedents. *J Public Health Dent* 2011;71:23-31.
- Saeed AA, Mohamed BA. Patients' perspective on factors affecting utilization of primary health care centers in Riyadh, Saudi Arabia. *Saudi Med J* 2002;23:1237-42.
- Mariño RJ, Khan AR, Tham R, Khew CW, Stevenson C. Pattern and factors associated with utilization of dental services among older adults in rural victoria. *Aust Dent J* 2014;59:504-10.
- Alshoraim MA, El-Housseiny AA, Farsi NM, Felemban OM, Alamoudi NM, Alandejani AA. Effects of child characteristics and dental history on dental fear: Cross-sectional study. *BMC Oral Health* 2018;18:33.
- Listl S, Moeller J, Manski R. A multi-country comparison of reasons for dental non-attendance. *Eur J Oral Sci* 2014;122:62-9.

21. Al-Shammery AR. Demand for dental care in Saudi Arabia. *Ann Saudi Med* 1987;7:327-9.
22. Halawany HS, Salama F, Jacob V, Abraham NB, Moharib TN, Alazmah AS, *et al.* A survey of pediatric dentists' caries-related treatment decisions and restorative modalities – A web-based survey. *Saudi Dent J* 2017;29:66-73.
23. Alshahrani AM, Raheel SA. Health-care system and accessibility of dental services in kingdom of Saudi Arabia: An update. *J Int Oral Health* 2016;8:883-7.
24. AlHumaid J, El Tantawi M, AlAgl A, Kayal S, Al Suwaiyan Z, Al-Ansari A. Dental visit patterns and oral health outcomes in Saudi children. *Saudi J Med Med Sci* 2018;6:89-94.
25. Al-Shammari KF, Al-Ansari JM, Al-Khabbaz AK, Honkala S. Barriers to seeking preventive dental care by Kuwaiti adults. *Med Princ Pract* 2007;16:413-9.
26. Kakatkar G, Bhat N, Nagarajappa R, Prasad V, Sharda A, Asawa K, *et al.* Barriers to the utilization of dental services in Udaipur, India. *J Dent (Tehran)* 2011;8:81-9.