

APPRAISAL OF ACCESS TO DENTAL SERVICES IN SOUTH EAST OF IRAN USING FIVE AS MODEL

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ABSTRACT

Background: Access to dental services not only refers to utilization but also to the extent by which the utilization is judged according to professional norms. This study aimed to study the access to dental services using the Five As model. **Methods:** This cross sectional study was conducted in southeast of Iran. A sample of 400 subjects participated in the study according to a multistage sampling method. A questionnaire was used for data collection. Data were analyzed using independent T test, ANOVA and multivariate linear regression models by means of SPSS V.20 software. **Findings:** Affordability, availability, accessibility, accommodation and acceptability mean scores were 58.2 ± 12.2 , 53.9 ± 12.9 , 59.4 ± 15.7 , 60.2 ± 8.6 , 70 ± 11.5 and 60.3 ± 7.4 respectively. According to multivariate linear regression models, there was significant associations between affordability and age, education level, having basic insurance and family income. Moreover, total accessibility was significantly correlated with education and monthly family income. **Conclusion:** This study showed that access to dental services was at the moderate level among the studied population. It also revealed that age, basic insurance coverage, family income and level of education, are determinants of this accessibility.

Key words: Dental services, Affordability, Availability, Access ability, Accommodation, Acceptability.

1. INTRODUCTION

Dental disorders have affected human being for a long time and, mankind has always tried to get rid of this problem. Therefore, oral health is an essential part of the public health which should be considered in health care policies. Thus, improving oral health and quality of life is the final goal of the oral surveillance system (1-3).

Access to health services including oral health has been one of the main challenges of developing countries health systems to achieve social justice during the last two decades (4). Accessibility refers to a wide range of concepts which focus on enabling people to access to required health services consistent with their culture. Failing to access to health care is strongly associated with different factors such as poverty, mismanagement of services, unavailability of facilities, gender, unemployment, long distance and age. Lack of complete access to health services is mainly a cause of poor health and satisfaction among deprived societies (4-8). In addition to other factors, lack of dental insurance coverage and limited ability to pay the costs contribute to lower

utilization of dental services, especially preventive services, by low-income individuals and families (9-10). According to a Norwegian study, low-income populations did not utilize dental services because of difficulty in paying costs as well as lack of dental insurance coverage (9-10).

There is a considerable gap between potential of health systems and their performance this is more important for dental services case (7-8, 10-11). As the non-life threatening nature of dental diseases makes patients delay their demand for dental services (12). Besides, access to dental services not only refers to utilization but also to the extent by which the utilization is judged according to professional norms (13). One commonly cited framework which uses five interdependent dimensions of availability, accessibility, accommodation, affordability and acceptability was used in this study to evaluate access to dental services in this study (14).

2. METHODOLOGY

This cross sectional study was carried out between 2011-2012 in south-east of Iran (Kerman city). The required

Variable		N	%
Gender	Male	212	53
	Female	188	47
Age group	15-29	164	41
	30-44	138	34.5
	≤45	98	24.5
Education	Under diploma	66	16.5
	Diploma , Associates	214	53.5
	Bachelor degree and higher	120	30
Household size	3≤	119	29.8
	4-5	193	48.2
	≤6	88	22
Basic health insurance coverage	yes	332	83
	no	68	17
Complementary health insurance coverage	Yes	142	35.5
	no	258	64.5
Income	4000000 Rials>	103	25.8
	4000000-8000000 Rials	186	46.5
	8000000-12000000 Rials	68	17
	12000000 Rials <	43	10.8

Table 1. Demographic characteristics of the studied subjects

sample size was estimated as of 384 and increased to 400. These participants were selected using multistage cluster sampling method. According to Kerman municipal division, four residential areas were selected as stratum. Using the information of all population, 10 households were selected within each stratum as seeds of clusters by systematic random sampling. At first, the research team attended the first seed's home and then moved toward the right adja-

cent household until 10 participants (head of household or his partner) were recruited within that cluster. Totally, 100 individuals were selected for each stratum. We tried to recruit relatively equal number of genders within each cluster. Data collection was performed using a questionnaire including two main parts. The first section contained questions on demographic variables. The second part evaluated five dimensions of access on a five point likert scale (strong agreement=5 and strong disagreement=1). These 1-5 scores were converted to percent during analysis. Questionnaire validity was confirmed consulting expert opinion and the literatures. Its reliability was measured using test re-test method (r=0.89). Statistical analysis was performed using descriptive methods and analytical tests (independent samples T test, Analysis of Variance and multivariate linear regression models) by SPSS Version 20 software. All statistical tests were two sided and P value less than 0.05 was considered significant.

Since we did not collect any identifying information from participants no ethics committee was approached for permission. We obtained participants verbal consent to enter the study but we did not document it. We ensured all participants that they were free to withdraw from the study at any time.

3. RESULTS

Total amount of 400 subjects were recruited in the study from four residential areas of Kerman city, of them, 53% were male. Most of them aged between 15-29. Among them, 53.3% had diploma and associates degree. Family size of 48.2% was between 4 and 5. Moreover, 83% of the study popula-

parameter		Affordability		availability		access ability		accommodation		acceptability		Total level of access	
		%	P	%	p	%	p	%	p	%	p	%	p
Gender	Male	59.6	0.02	53.4	0.4	59.9	0.5	60.1	0.8	69	0.07	60.4	0.8
	Female	56.7		54.4		58.9		60.3		71.1		60.3	
Age group	15-29	61.6	0.0001	55.2	0.08	61.2	0.2	59.6	0.5	71.4	0.07	61.8	0.003
	30-44	56		51.9		58.2		60.6		68.3		59	
	≤45	55.7		54.4		58.2		60.6		69.9		59.8	
Education	Under diploma	50.8	0.0001	55.4	0.2	54.1	0.007	61.3	0.3	66.6	0.03	57.7	0.005
	Diploma and associate	58.9		54.4		59.9		60.3		70.6		60.8	
	Bachelor degree and higher	61.04		52.1		61.5		59.3		70.6		60.9	
Household size	3≤	58.8	0.4	51.6	0.02	59.2	0.9	59.1	0.004	70.7	0.7	59.9	0.5
	4-5	58.6		54.05		59.6		59.7		69.9		60.3	
	≤6	56.7		56.7		59.4		62.8		69.4		61.02	
Basic health insurance coverage	yes	59.2	0.0001	54.3	0.2	59.5	0.7	60.1	0.6	69.7	0.2	60.6	0.2
	no	53.1		52		58.9		60.7		71.5		59.3	
Complementary health insurance coverage	Yes	58.8	0.4	54.1	0.8	60.1	0.5	60.3	0.8	69.3	0.4	60.5	0.7
	no	57.8		53.8		59.1		60.1		70.4		60.3	
Income	4000000 Rials>	53.6	0.0001	54.6	0.5	55.4	0.001	60.5	0.6	69.4	0.3	58.7	0.001
	4000000-8000000 Rials	57.7		53.3		58.9		60.5		69.3		59.9	
	8000000-12000000 Rials	60.9		55.5		64.2		59.01		71.4		62.2	
	12000000 Rials <	67.3		52.3		63.3		60.1		72		63	

Table 2. The status of access varieties aspects to dental services by variables studied

Variables	Affordability			Total level of access		
	B	p.v	CI	B	p.v	CI
Gender	2.9	0.1	1.2-5.1	-0.009	0.9	-1.4-1.4
Age group	-2.5	0.001	-4.03--1.1	-1.03	0.03	-1.9- -0.09
Education	2.2	0.01	1.1-4.04	0.5	0.3	-0.6-1.7
Household size	-0.1	0.8	-1.7-1.4	0.8	0.1	-0.2-1.8
Basic health insurance	-5.4	0.001	-8.5- -2.3	-0.9	0.3	-3.01-1.04
Complementary health insurance	0.1	0.9	-2.3-2.5	-0.1	0.8	-1.7-1.3
Income	3.1	0.0001	1.8-4.4	1.2	0.003	0.4-2.1

Table 3. Multivariate analysis of the related factors with Affordability and overall access in dental services

tion were covered by basic insurance, while only 35.5% had complementary insurance. Monthly income of 72.3% of the study families were less than 8,000,000 Rials (Table 1).

Mean level of access to dental services in the study population was 60.3±7.4 percent. Corresponding figures for affordability, availability, accessibility, accommodation and acceptability were 58.2±12.2, 53.9±12.9, 59.4±15.7, 60.2±8.6, 70±11.5 and 60.3±7.4 percent respectively.

Affordability was significantly higher among males, those aged 15-29, subjects with bachelor or higher degrees, those with basic insurance coverage and those with monthly income more than 12,000,000 Rials (Official currency of Islamic republic of Iran - each US dollar = 11468 rials at the time of the study). While, the associations were significant only between availability and family size, access ability with educational level and monthly income, accommodation with family size, acceptability with educational level. In addition, overall level of access was significantly higher among 15-29 age group, those with diploma and higher grades of education and those with monthly income more than 12,000,000 Rials (Table 2).

According to multivariate linear regression models, significant associations were between total level of access with education and monthly family income. Moreover, affordability was significantly associated with age, education, basic insurance coverage and family income (Table 3).

4. DISCUSSION

Present study indicated that the access to dental services was not at a promising status. The same was true for each of five components of access as described by 5a's model. However the picture was a little better when it came to acceptability dimension (with 70 scores out of 100). This might be because of the fact that the population of the studied city (Kerman) is homogenous and there is not serious cultural differences affecting acceptability of services. This is good news for local policy makers as it is not the story for other countries. For example; Gilbert et al indicated in their study that African Americans were less likely to receive dental care(15). The effect of racial and ethnic issues on dental services utilization has been confirmed in the literature (16-19).

The analysis also indicated that the acceptability of dental services was related to education level of participants. The respondents belonging to higher level education groups received better scores regarding acceptability dimension compared to their lower level education counterparts. Davidson and Anderson indicated that education was significantly associated with use of dental services among Non

Hispanic Whites, but not among African Americans (19).

Availability dimension received the lowest score (53.9 out of 100). This indicates that the people believed there were not enough resources, such as personnel and technology, to meet their needs. Since, traditionally access has been equal to this dimension, hence this has caught policy makers' attention in previous years and the dentist population ratio in Iran is improved to 1:5500, with more than 80%of the dentists practicing in private sector (20) but as the results of this study indicate, this has not been sufficient. Shortage of dentists and dental hygienists has been reported in previous studies (21). There was also a significant relationship between availability of services and household size, which is consistent with Aday and Forthofor who reported that members of larger families had the lowest probability of having been to a dentist in the past year (22). This might be explained by the fact that most crowded families are living in marginalized areas of the city which lack sufficient public or private dental facilities. This hypothesis is further reinforced when we look at the similar significant difference between accommodation dimension and household size, with people from larger families perceived lower accommodation of dental services. However, this dimension received a relatively good mean score (60 out of 100), which suggests that the provider's operation is organized in ways that meet the limitations of the patients (23). The significant share the private sector in the dental services market of Iran both in individual and group practice has provided the population with a flexible working hour. This has made it easy for most to set an appointment with the dentist according to their free time, however there is not still good accommodation for disabled people.

Accessibility dimension which received 59.4 out of 100 refers to geographic accessibility, which is refers to easiness of patients' physical access to the provider's location. The present figure suggests that dentistry facilities are not well distributed in the city and some people have difficulty reaching dental services location. In this regard Mark et al found out that four hundred thirteen of 1,008 zip codes in Ohio lack dentists (24). This is consistent with a broader concept of geographical influences in health care access which emphasizes the fact that place has both direct (through distance) and indirect influences (by shaping of beliefs and attitudes of local people) (25).

Affordability dimension of access which mainly focuses on financial issues of using dental services received 58.2 out of 100. The relatively small score of this dimension, indicates that for a significant number of the studied people, inability to pay for dental services was an obstacle in front of using dental services. This situation was worse for people of low income groups as well as who did not have basic health insurance, this is line with previous studies for example Casey et al indicated that A lack of dental insurance and limited ability to pay the costs of dental care contribute to lower use of dental services, especially primary services, by poor individuals and families (26). Although Gilbert et al. found that affordability was certainly a barrier to access to adequate dental care for African Americans and non-Hispanic whites in their sample (15), also important were other nonfinancial predictors that varied in both significance and

effect between the two groups (23). In their study, Bayat et al suggested that having a commercial insurance had a strong impact on attendance at dental checkups (27).

In the study by Valas and Makenti (28), people strongly troubled with the costs of dental care and not being able to pay the expenditures. Kiyak & Reichmuth suggested financial barriers are the most important problems to use dental services particularly among low income populations(29). Moreover, in another Iranian study by Fallahi et al, concerns about the high costs (almost two times more than other factors prevented the patients to seek dental care visits (30).

In the study conducted by Bayat et al (2006) in Tehran (capital of Iran), was reported that uninsured patients missed more tooth's compared to insured people. Among insured individuals, those with lower levels of education or those with root problems reported more history of tooth missing. In the present Iranian's health system, Insurance companies have little influence on utilizing dental care services(31).

Ramraj et al showed that by 2009, middle-income Canadians had the lowest levels of insurance coverage for dental services (48.7%). They reported the greatest growth in cost-barriers to dental services, from 12.6% in 1996 to 34.1% by 2009. Middle-income class of Canadians experienced the largest rise in out-of-pocket charges for dental care since 1978. Their study suggests that affordability issues in accessing dental care are not the problem of lowest income group in Canada, but are now making troubles for middle-income group as a result of their lack of, or declined access to, complete dental insurance (32).

Accessibility which refers to things like transport, web based services, access for disabled, language obstacles(33), varied among people belonging to different income groups. Hanibuchi showed lower level of geographical dental care access among elderly men compared to elderly women (34).

The accommodation of dental care services is appropriate. It means that the dentists working hours and way of organizing service providers is acceptable for service recipients. Convenience and accommodation of services were different only among different Household sizes. Kiyak & Reichmuth introduced different factors such as age, social level, education, ethnicity, income, insurance coverage, urbanization and physical access to health service providing centers as barriers and enablers of dental care use (29).

In a study in Iran, expenses, inconvenience, panic, organization, and the relation of patient-dentist were the barriers in front of access to dental services among which the expenses and the relationship were identified. Expensive dental care has caused patients to forgo referring to the clinic. Hence, policymakers, administrators, and insurance organizations play a major role in improving access to dental services. They can provide innovative financing mechanisms, shift the available funds to primary care and regular checkups, and ponder providing proper and ample locations for dental care facilities (35).

In relation to Social insurance for dental care in Iran Jadidfard et al reported currently, four major social funds are engaged in health (including dental) insurance in Iran, under the supervision of The Supreme Council for Health Insurance, based at the newly established Ministry of Co-

operatives, Labour & Social Welfare. Approximately 90% of Iranians are covered for health insurance within a Bismarckian system to which the employed, the employers, and the Government contribute. The dental sector of Iranian social insurance should establish a strategic purchasing plan for dental care to improve performance and access to care. Within the plan, there should be a basic benefit package of dental services based on the criteria such as cost-effectiveness, training sufficient number of allied dental professionals to provide basic services, and familiarizing mixed payment systems (36).

Bloom et al study in USA showed 75% of adults belonging to 18-64 age group enjoyed very good or good oral health, 17% had relatively good oral health, and 7% experienced poor oral health. Medicaid beneficiary adults were almost five times as likely as adults with private health insurance not to have good oral health. Medicaid beneficiary adults (21%) were almost twice as likely as adults overall (12%) to not have had a dental visit in more than 5 years. Among 18-64 age groups, the principal excuse to ignore visiting a dentist in the last six months was expenses; 42% could not pay for treatment or were uninsured. Fear caused ten percent of the adults not to go to dentist for oral health consult (37).

One of the limitations of the current study was the high variability in the comprehension of "access" and its dimensions among participants could lead to underestimation or overestimation of the results.

5. CONCLUSION

According to the results of our study, level of access to dental care services is not very good and age, basic insurance, family income and level of education are determinants of this access.

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