

Original Article

Investigating the access barriers to oral and dental health services for children from the perspective of parents attending the health centers of Kerman

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ABSTRACT

Background: Oral health plays a key role in people's overall health. Dental caries is the most important problem in children's oral health. Despite significant advances made in the area of oral health around the world, there is inequality in access to oral health within Iran and abroad, and this is considered a public health challenge. This study was conducted to investigate the access barriers to children's oral health services from the perspective of parents attending the health centers of Kerman, Iran.

Materials and Methods: The present descriptive-analytical study was carried out, as a cross-sectional survey, on 410 parents of children living in Kerman, Iran. The data were collected by access barriers questionnaire, and then were analyzed by SPSS software using descriptive statistical methods and the multiple linear regression test. Confidence interval (CI) in this study was 95% (95% CI).

Results: The most common access barrier to children's oral health was the high treatment cost. The access barriers to children's oral health services were significantly associated with parental education ($P = 0.00$), maternal employment ($P = 0.04$), supplementary insurance ($P = 0.00$), and family income ($P = 0.01$). Parental satisfaction was also significantly correlated to the child's sex ($P = 0.04$), supplementary insurance ($P = 0.04$), and number of filled teeth ($P = 0.04$). The mean score of parental satisfaction was 1.83 ± 0.34 ; within the range of 1–3 from satisfied to dissatisfied.

Conclusion: The cost of dental treatment services high and there are many barriers to accessing children's oral health.

Key Words: Child, oral health, personal satisfaction, rural health services

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INTRODUCTION

Oral health plays a crucial role in people's general health. Oral diseases can sometimes cause serious health problems and have a negative impact on quality of life.^[1] They can also significantly reduce the quality

of life through toothaches, have negative effects on chewing and speaking, cause aesthetic problems, and have psychosocial consequences.^[2] In addition,

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poor oral hygiene may lead to pain, infection, and eating problems in children.^[3] The prevalence of oral diseases is associated with socioeconomic factors and the availability and access to oral health services.^[4]

The ninth goal of the World Health Organization, which is related to dental caries programs, highlights the importance of dental caries as the most common human disease.^[5] A global study of disease burden in 2017 estimated that oral diseases have affected at least 530 million children worldwide,^[6] and permanent teeth caries was the most common problem all around the world.^[7] Dental caries is the most prevalent oral health problem in children, and dentists spend most of their time treating it.^[8] The main indicator of dental caries is the decayed, missing, and filled teeth. The National Center for Health Statistics, Disease Control and Prevention in 2020 introduced dental caries as one of the most common chronic childhood diseases in the United States, with about 20% of the children having at least one untreated dental caries at the age of 5–11 years. Furthermore, 60% of 12–19 years old children had caries in their permanent teeth and 15% had untreated dental caries.^[9] The results of a study conducted in 2019 showed that the mean decayed, missing, filled (DMF) index (decayed, missing due to caries, and filled permanent teeth) was 0.2 for 6–9 years old children, 0.9–1.5 for 12 years old children, and 3.3–4.8 for 9 years old children.^[10]

Despite significant advances that have been made in oral health around the world, there is inequality in access to oral health in developing countries, and this is considered a public health challenge.^[11] Optimal and equitable distribution of health system resources is a serious problem for many governments.^[12] In this regard, one of the most important strategies that policymakers adopt to help people take advantage of social justice and have access to their fundamental rights is to provide health care equality in different countries and easy and continuous access to health care services they need.^[13,14] Access to services is realized with the concept of having the power and ability to use medical resources in any situation. Therefore, access is defined as the freedom to make use of services.^[15] However, access to health care is a complex concept and needs to be addressed in at least four dimensions, including geographical access, usability, financial access, and acceptability.^[16] Access to oral health care is usually limited in developing countries, and the health services for children are influenced by a variety of factors related to the patients and the

service providers, some of which are, economic status, insurance coverage, availability of the clinics providing dental services covered by insurance, fear of dentistry, regular dental visits, and transportation problems.^[17] Inequality in oral health care is rooted in a complex set of determinants of health, including social, behavioral, economic, genetic, and biological factors.^[11] Regarding the inequalities in the oral health of vulnerable people, the National Center for Health Statistics, Disease Control and Prevention stated that children aged 5–19 years from low-income families are twice as likely to develop dental caries than those from high-income ones.^[9] However, treatment of oral diseases and dental services are costly all over the world, and oral disease is even the fourth most expensive disease in the world.^[18] In high-income countries, about 5%–10% of government health expenditures are dedicated to oral health care.^[19] In addition, most families living in developing countries may suffer from catastrophic costs of oral health care.^[20]

In a study, Alshammary and Al-zahrani found out that children are the most vulnerable groups when it comes to oral diseases, and since parents are the decision-makers of children's health care, parental awareness and attitudes have a significant impact on the treatment of children's oral diseases.^[21,22] Thus, taking into account the differences between the access barriers to services in different regions of the world, we decided to examine the access barriers to oral health services for children from the perspective of parents attending the health centers of Kerman.

MATERIALS AND METHODS

The present descriptive-analytical study was carried out as a cross-sectional survey from August to October 2019. The research environment comprised of 4 government urban health centers in Kerman, Iran. These centers were randomly selected. The data were collected from the parents of the children receiving dental services at the selected centers. Having received an introduction letter from the University's Deputy for Research, the researcher attended the health centers in Kerman, and after obtaining permission from the centers' managements, distributed the questionnaires among the children's parents. The inclusion criteria for the children were; being 5–16 years old and having permanent residence in Kerman. Furthermore, the parents and children who were unwilling to participate in the research were excluded from the

study. At the beginning and before the children entered the dental offices, a verbal consent was obtained from the children's parents and they were all assured of the confidentiality of their information.

The sample size was calculated to be 410 children based on the 22% frequency of access barriers to pediatric dental services in the study of Eslamipour *et al.*,^[23] 95% confidence interval, and accuracy of 0.05. The multistage sampling method was used in such a way that Kerman's urban health centers were first divided into four categories based on geographical regions. Then, the cluster sampling method was applied to select 4 health centers from them. Each cluster consisted of children aged 5–16 years who had been randomly selected. To select the samples, number of children attending the health centers was obtained and the centers that were visited by more children were determined, and then eligible children were selected from those centers. The first part of the questionnaire was related to demographic characteristics, including the child's gender and age, parental education and occupation, number of family members, family income, and insurance coverage status.

The data collection tools included a demographic characteristics form and the questionnaire of access barriers to pediatric oral health services, which was previously used in the studies of Barakian *et al.*^[24] and Eslamipour *et al.*^[23] This questionnaire has three areas as follows:

The first area evaluates the parental satisfaction with the general state of oral health service delivery to their children by nine questions regarding the overall quality of dental care, office cleanliness, staff's friendly relationship with patients, waiting time, office location and easy access to it, office to home distance, office training, and overall satisfaction. The questions in this tool are scored based on three-point Likert's scale, ranging from satisfied (score 1), almost satisfied (score 2), and dissatisfied (score 3).

The second area is related to the general information about the current state of pediatric dental health care. It obtains the information through 5 multiple-choice questions on how to get information about the dentist, how long it takes from home to get to the dental office, what type of vehicle to use to go to the dental office, how long waiting is required for receiving emergency services, and finally how long waiting is required for receiving non-emergency services.

The third area of this tool evaluates the barriers and problems related to children's access to services by 19 questions.

In this study, the parents were provided with a list of 14 access barriers to dental services. They identified and prioritized their options and then, listed the items that they thought would improve access to services.

Validity of the questionnaire was confirmed by Eslamipour *et al.* in their study of a specific group. Its reliability was also assessed and the Cronbach's alpha of 0.70 was reported.^[23]

The descriptive statistics including percentage, mean and standard deviation were also calculated. The data were analyzed by SPSS-21 software (SPSS Statistics. IBM is based in New York, USA) using the multiple linear regression test.

RESULTS

Of all the children studied, 52.4% ($n = 215$) were girls and 47.6% ($n = 195$) were boys. Furthermore, 98.3% of the participants had public health insurance and 26.3% had a supplementary insurance. The minimum and maximum age of the parents in this study was 20 and 69 years, respectively. Furthermore, the mean and standard deviation of the children's age was 8.83 ± 2.88 years. The families had an average income of 176.78 ± 217.64 US dollars per month. The average number of children's decayed teeth was 1.26 ± 1.74 and the same rate for their filled teeth was 0.47 ± 1.04 . Furthermore, the mean and standard deviation of DMF index of the children was 1.73 ± 2.23 . The mean and standard deviation of visits to pediatric oral health care centers was 0.25 ± 0.69 in the previous year and 0.41 ± 0.78 within the last 6 months. The average number of children in each family was 2.09 ± 0.84 .

The mean and standard deviation of parental satisfaction score was 1.83 ± 0.34 , ranging from 1 (satisfied) to 3 (dissatisfied). Overall, the parental satisfaction was moderate to high [Table 1].

Regarding the general information on the current state of dental care for children, 40% of the participants stated that they had found their dentists through the advice of families and relatives, and 31.1% had been introduced to the dentists by physicians. Furthermore, 48% of the participants had traveled to the dentist office by private vehicles and for about 62.7% the travel had lasted for <30 min. In case of emergencies, 51% of the patients had been treated within a day and 61.2% within 2-week time.

The access barriers to children's oral health services are listed in Table 2. Among the barriers, high treatment cost

Table 1: Frequency of parental satisfaction

Satisfaction	Satisfied, <i>n</i> (%)	Almost satisfied, <i>n</i> (%)	Dissatisfied, <i>n</i> (%)
Overall quality of dental care that your child received	152 (37.1)	238 (58)	20 (9.4)
Advice and training that you received for your child's dental care	108 (26.3)	228 (55.6)	74 (18)
Dental office hygiene	146 (35.6)	246 (60)	18 (4.4)
Secretary and dentist's friendly relationship	116 (28.3)	253 (61.7)	41 (10)
Easy access of your child to the dentist in terms of location	115 (28)	231 (56.3)	64 (15.6)
Working hours of dental office or clinic	151 (36.8)	192 (46.8)	67 (16.3)
The time you had to wait for your child's dental appointment	65 (15.9)	248 (60.5)	97 (23.7)
Distance from your home to the dental center	134 (32.7)	223 (54.4)	53 (12.9)
Overall satisfaction	83 (20.2)	310 (75.6)	17 (4.1)

Table 2: Frequency of barriers to children's access to dental services

Barriers to access	Yes, <i>n</i> (%)	No, <i>n</i> (%)
I have problems taking my child to the dentist (transportation)	98 (23.9)	312 (76.1)
I forget that my child has a dental appointment	60 (14.6)	350 (85.4)
I do not feel like taking my child to the dentist	34 (8.3)	376 (91.7)
Dental services are not provided during my free time, and I cannot plan for them	60 (14.6)	350 (85.4)
Time constraints due to my job do not allow me to take my child to the dentist	120 (29.3)	290 (70.7)
I spend a long time waiting in the dentist office	229 (55.9)	181 (44.1)
My child is afraid of dentistry	206 (50.2)	204 (49.8)
In my absence when I take my child to the dentist, I need someone to take care of my other children	108 (26.3)	302 (73.7)
I don't know how to find a dentist	46 (11.2)	364 (88.8)
I have trouble finding a dental specialist	60 (14.6)	350 (85.4)
My main problem is the high cost of treatment	324 (79)	86 (21)
I am afraid of my child getting infectious diseases or the dentist will not follow hygienic tips	145 (35.4)	265 (64.6)
Many dentists do not have a contract with my child's health insurance	198 (48.3)	212 (51.7)
My child's health insurance does not cover dental expenses	198 (48.3)	212 (51.7)

had the highest and first priority for parents (69.5%). Furthermore, long waiting times (5.6%), transportation problems (4.4%), child's fear of dentistry (3.9%), lack of dental services during the parents' free time and lack of contracts between dentists and insurance companies (3.2%), and non-coverage of the treatment cost by insurance company (2.7%) had the second to sixth priorities, respectively.

The main parental suggestion to improve their children's access to dental services was to provide more information on appropriate dental care for children [Table 3].

The results of multiple linear regression test on demographic characteristics and access barriers to pediatric oral health services showed that parental education, maternal employment, supplementary insurance, and family income were significantly correlated to the access barriers to pediatric health services. In other words, children of the parents with higher education had better access to oral health care. Furthermore, children of mothers who had no employment (housewives) had fewer access barriers to oral health services. The increased family income and supplementary insurance coverage also increased access of children to oral health care services [Table 4].

The results of multiple linear regression test on demographic characteristics and access barriers showed that child's sex ($P = 0.04$), supplementary insurance ($P = 0.04$), number of filled teeth ($P = 0.04$), and the amount of barriers ($P = 0.02$) were significantly correlated to parental satisfaction with pediatric oral health services. In other words, the larger the number of barriers to access was, the lower the parental satisfaction with children's oral health services became. However, the families would have been more satisfied if they had supplementary insurance. In addition, lower number of filled teeth in children increased parental satisfaction with oral health services. The parents of female children were also less satisfied with the services.

DISCUSSION

Since dental services are one of the most expensive health services, access to these services and the level of satisfaction with them are lower than other health services.

In this study, children's access to dental services and parental satisfaction with the services were evaluated

from the parents' viewpoint. The parents' satisfaction with oral health services provided to children was moderate to high. The most common barriers to access were high treatment cost, long waiting times, transportation problems, and children's fear of dentistry. The barriers were significantly correlated to the parental education, maternal employment, supplementary insurance, and family income. Parental satisfaction was also affected by the child's gender, supplementary insurance, number of child's filled teeth, and the amount of barriers.

The mean number of referrals to oral health care providers in the previous year was 0.25 and the majority of children had not visited the dentist. However, 9.3% of the mothers reported that their children had at least one dental visit in the past year. In a study by Eslamipour *et al.*, 52.8% of the

children had at least one dental visit in the past year.^[23] Furthermore, Barakian *et al.*, reported that 61.5% of the children had dental visit at least once in the last year.^[24] Karimi *et al.*, stated that 62% of the children had never gone to the dentist, and 5.7% of them had visited a dentist once a year.^[3] In a study in South Australia, Wyne *et al.*, found that only 1 in 12 children had dental visits, which is not consistent with the results of present study in which, the financial status of the families in Kerman seemed to be the reason for less frequent or lack of dental visits.^[25]

According to the results of this study, it was possible for children to access dental services when needed. The overall parental satisfaction with the dental services received by their children was 61%, and the most important reason for their dissatisfaction was the length of time they waited for their children to receive such services. In the study of Eslamipour *et al.*, 48% of the parents were satisfied with dental services.^[23] Furthermore, Hajifattahy *et al.*, found that patient satisfaction with the dental clinics affiliated to Islamic Azad University at Tehran Dental Branch in 2008 was at an acceptable level, and the highest rate of dissatisfaction was related to the long waiting time at dentist office. It should be noted that the above study has been conducted on all age groups referring to

Table 3: Parental suggestions to improve access

Parental suggestions to improve access	Yes, n (%)	No, n (%)
Helping to solve transportation problems	76 (18.5)	334 (81.5)
Availability of more dentists	98 (23.9)	312 (76.1)
Allowing 24 h access to dental services	126 (30.7)	284 (69.3)
Introducing dentistry centers	181 (44.1)	229 (55.9)
Providing more information on appropriate pediatric dental care	245 (59.8)	165 (40.2)

Table 4: Comparison of the mean scores of parental demographic characteristics for access to dental services

Variables	Mean±SD	Regression coefficient (95% CI)	P
Mother's education (academic)	36.71±15.81		
Diploma	32.22±16.90	-4.49 (-9.13-0.14)	0.057
Under diploma	30.86±17.84	-5.84 (-11.46--0.23)	0.041
Father's education (academic)	27.81±15.40		
Diploma	33.87±16.85	6.05 (1.01-11.09)	0.019
Under diploma	38.10±19.36	10.29 (5.17-15.40)	0.000
Mother's job (self-employment)	28.47±13.53		
Office worker	35.52±15.25	7.04 (-0.48-14.57)	0.067
Housewife	35.80±17.93	7.32 (0.15-14.48)	0.045
Father's job (self-employment)	33.68±17.47		
Office worker	32.84±15.72	-0.83 (-4.83-3.15)	0.68
Child sex (boy)	33.88±16.16		
Girl	32.65±17.97	-1.23 (-4.38-1.91)	0.44
Public insurance (don't have)	36.47±21.98		
Have	30.05±17.03	-6.42 (-18.74-5.90)	0.30
Supplementary insurance (number coverage)	36.21±17.05		
Coverage	30.32±15.67	-5.89 (-10.12--1.66)	0.006
Mother's age	-	-0.08 (-0.52-0.35)	0.70
Father's age	-	0.21 (-0.21-0.64)	0.31
Child age	-	-0.02 (-0.59-0.54)	0.92
Family income	-	-0.33 (-0.67-0.01)	0.01
Number of children	-	1.05 (-0.98-3.07)	0.31
DF	-	0.67 (-0.06-1.41)	0.07

SD: Standard deviation; CI: Confidence interval; DF: Degrees of freedom

the clinics,^[26] and the results are consistent with the findings of present study.

In this study, 40% of the participants had been looking for a dentist through their families and relatives, and 31.1% through physicians. In addition, 15.6% of the parents had randomly selected their children's dentists and 7.3% had selected a dentist through advertisements. However, Barakian stated that 32.7% and 32.5% of the parents obtained such information through friends and physicians, respectively.^[24] Eslamipour *et al.*, found that in 42.2% of the cases, the dentist had been introduced by friends and acquaintances,^[23] which are consistent with the results of present study.

The parents referred to the most common problems and barriers as treatment costs, waiting time, transportation problems, child's fear of dentistry, the lack of dental services in parents' free time, and the lack of contracts between insurance companies and dentists. The findings of present study also showed that high treatment cost and parents' reluctance to take their children to dentist were the most (70%) and the least (8.3%) important access barriers to oral health services, respectively. The results of two studies conducted in Isfahan and Qom also showed that the most common barriers were high treatment cost, the lack of insurance coverage, and children's fear of dentistry,^[22,23] which are relatively consistent with the findings of present study. In a study in 2017, Manski and Moeller, reported that high treatment costs and the lack of insurance coverage were the main access barriers to oral health services,^[27] which is consistent with the findings of present study.

In a similar study carried out in 2016, Salloum *et al.*, referred to the lack of knowledge about service providers and lack of insurance coverage as the main barriers to access,^[28] the first of which is inconsistent with the results of present study, but the second one is not. In 2016, Nuernberg *et al.*, identified the lack of information about oral health providers as one of the main barriers to oral health access,^[29] which is inconsistent with the findings of present study. In the study by Rezapour *et al.*, in 2014, the unmet health needs and related barriers for the residences of Tehran were examined and it was found that the main unmet needs were related to dental services with a frequency of 40%, and one of the main barriers to dental health was the high cost of services.^[15] In terms of the high cost of services and the lack of insurance coverage,

this study is in line with the present study. In the above study, the cost of dental services was one of the main barriers to access to pediatric dental services, which is consistent with the present study.

The results of multiple linear regression tests on demographic characteristics and the barriers to access to oral health services for children showed that parental education, maternal employment, supplementary insurance, and family income were significantly correlated to the barriers. In 2014, Kumar *et al.*, showed that children's oral health status is often associated with social factors, such as parental income, education, and occupation.^[30] This is consistent with the results of present study. In another study, Mansky *et al.*, identified the lack of insurance coverage as one of the barriers to access to oral health services. They also referred to family income, father's education, maternal occupation, and supplementary insurance as the main factors affecting the access to oral health services.^[27] This finding is also in line with the results of present study.

In 2015, Williams *et al.*, stated that family income is one of the factors affecting the existence or lack of barriers to access to oral health services.^[31] This is consistent with the results of present study. In line with the present study and the Williams' study, Nuernberg *et al.*, (2016) also refer to family income as one of the factors affecting the access to oral health.^[29] As suggested by Barakian *et al.*, father's job is a factor that reduces the access barriers, while maternal job has no effect on them.^[24] In 2005, Kiyak and Reichmuth, found that family income, education, and insurance coverage were the factors that affect the access barriers to oral health services,^[32] which is inconsistent with the results of present study.

Limitations and strengths

This study had some limitations, one of which was the reluctance of some families to complete the questionnaire and provide information such as family income. The other limitation is that this study was conducted in Kerman city, so its findings may not be generalized to other cities.

Using a large number of subjects and selecting the regions in such a way that all groups of people in the community could be included in the study were among the strengths of this study.

Recommendations

Providing parents with amenities to increase their participants in future studies is recommended.

Conducting a larger study across the country is also suggested. Future researchers are recommended to give the questionnaires to the parents, fully explain the confidentiality of their information, and provide them with a box for placing the questionnaire, so that they will make sure of the confidentiality of their information.

CONCLUSION

In this study, the overall parental satisfaction with pediatric oral health services was from moderate to high, and most of the barriers were related to the cost of services. Hence, according to other studies mentioned above, health system policymakers and planners should make necessary planning to expand the provision of oral health services.

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Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or nonfinancial in this article.

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