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Dental Services Utilization and Barriers among Primary School Children in Al-Medina Region, Saudi Arabia

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Abstract

Background: Studying the pattern of and barriers to dental services utilization will greatly help in oral health decision-making and improve oral health.

Objective: To determine the pattern and barriers of dental services utilization among 6- to 12-year-old school children in Al-Medina, Saudi Arabia.

Subjects and Methods: A total of 500 primary school children participated in this cross-sectional study using an interview-style self-administered questionnaire. Data were collected and statistically analyzed using a Chi-square test.

Results: A high percent (85.4%) of participants had previously visited a dental clinic. About 29.2% of children perceived that visits should occur when there is a dental problem. Nearly 63% were afraid of going to the dentist, and 34% received information about oral health from the schools. The utilization of dental services increased with age. Three-quarters of participants advocated for private dental clinics. Teeth fillings and extractions were the most common dental procedures. Lack of perceived need (44%), fear of pain (17%), and cost (12%) were the most common barriers to the utilization of dental services.

Conclusion: The utilization of dental services among the present school children was high and mainly symptomatic. The major barrier was a lack of perceived need.

Keywords: *Dental Services Utilization; Barriers; Primary School Children; Dental Visit; Oral Health*

Introduction

Good oral health mirrors overall health and wellbeing. Untreated oral diseases can interfere with normal nutrition, speech, self-esteem, and daily routine activities of children [1]. The best ways to maintain one's teeth involve proper home oral care, regular dental visits, and utilization of dental services [2]. Dental care utilization is measured as the percentage of the population that accesses dental services over a specified period [3]. The barriers to oral health care can be classified as predisposing (sociodemographic factors like age, sex, occupation, and social network), enabling (transportation, income, and information), and need (perceived health or professionally assessed illness) factors [4].

Oral health policy decision-making is greatly affected by the utilization of and barriers to dental services [5]. Although many studies have discussed the utilization of and barriers to dental services among the different regions in Saudi Arabia (SA) [6-9], reports regarding the utilization of dental services among children are insufficient.

Aim of the Study

The present study aims to determine dental service patterns and barriers affecting the utilization of dental health care services among primary school children in Al-Medina Al-Munawara, SA.

Materials and Methods

This was a descriptive cross-sectional study among 6- to 12-year-old primary school children for the duration of 3 months (March to June 2023) in the urban area of Al-Medina Al-Munawara, SA. Before the commencement of the study, ethical clearance was obtained from Taibah University, College of Dentistry, Research Ethics Committee (TUCD-REC). Moreover, permission from the general administration of public education in Al-Medina to visit the schools was received. The sample size was calculated according to a formula found on the OpenEpi website, Version 3, open-source calculator-SSPropor, at a 95% confidence level and 50% anticipated frequency [10]. According to the calculation, the sample size was 370 participants, which was increased to 500 participants to cover more children.

Al-Medina Al-Munawara is a big city in the west of SA, with a surface area of 589 km2. According to a list provided by the general administration of public education in Al-Madinah Al- Munawara, there are 340 public primary schools in the urban area, divided into 176 and 164 schools for boys and girls, respectively.

A multistage sampling technique was adopted to recruit the present study participants. The first stage involved the random selection of 10 public primary schools using the lottery method equally distributed between boys and girls (five of each). The second stage contributed to the random selections of two classes with populations of children aged 6 to 12 years from boys' and girls' schools. The last stage involved random selections of around 50 children from each class, with the exclusion of medically compromised children. Because of three absent boys compensated by three girls, the total sample of 500 children included 247 boys (49%) and 253 girls (51%) with a mean age of 9.5 ± 1.8 years old.

The utilization of and barriers to dental services were investigated by using an anonymous, interview-structured, self-administered, previously validated questionnaire [11]. It covered most aspects of the utilization of dental services. Authors translated the English questionnaire into Arabic. Two bilingual dentists read the original English questionnaire and the translated Arabic versions and independently confirmed their similarity. It included two sections: The first section recorded sociodemographic data on participants' age, sex, and parents' education level. The second section included the subject's perception of dental visits, pattern and frequency of dental visits, type of dental facility or clinic visited (public or private), procedures carried out, barriers to using the dental facility, and finally, sources of oral health information. The questionnaires were distributed to the study subjects, who were asked to fill them in the classroom. The researchers answered and explained any questions from the children. The collected data were statistically analyzed using the Social Package of Statistical Science (SPSS) software version 16.0 for Windows. The demographic variables and their associations were tested using Chi-square tests with $P \leq 5\%$ of statistical significance difference at a 95% confidence level.

Results

Table 1 shows that 496 participants (99.2%) considered dental visits to be important. There was a high percentage of past dental service utilization (427; 85.4%); 73 (14.6%) had never been to the dentist. The majority of participants reported they had visited the dentist within the last 6 months (33.4%) and within the last year (22.6%). Although 219 (43.8%) respondents believed that dental visits

should be twice a year, 146 (29.2%) suggested that visits are only necessary when there is a dental problem. Three hundred and thirteen (62.6%) of the present participants were afraid of going to the dentist. Girls (90; 28.8%) were less afraid of visiting the dentist than boys (223; 71.2%). They showed a higher perception of visiting the dental clinic twice a year (136; 62.1%) than boys (83; 37.9%). Most of the present respondents 486 (97%) received information about oral health through schools (34%), parents (26%), and dentists (15%) (Figure 1).

Table 1: Perception/pattern of dental services utilization according to the gender of the respondents:

	Male n (%)	Female n (%)	Total n (%)	Chi-square (*p*)
ARE DENTAL VISITS IPORTANT?				
YES	246 (49.6)	250 (50.4)	496 (100) (99.2)	1.961 *P*=0.375
NO	0 (0)	2 (100)	2 (100) (0.4)	
DON'T KNOW	1 (50)	1 (50)	2 (100) (0.4)	
PAST DENTAL VISIT:				
YES	230 (53.9)	197 (46.1)	427 (100) (85.4)	23.317 *P*=0.000*
NO	17 (23.3)	56 (76.7)	73 (100) (14.6)	
LAST DENTAL VISIT WAS:				
6TH MONTHS AGO,	67 (40.1)	100 (59.9)	167(100) (33.4)	59.226 *P*=0.000*
1 YEAR AGO,	56 (49.6)	57 (50.4)	113 (100) (22.6)	
2 YEARS AGO,	47 (68.1)	22 (31.9)	69 (100) (13.8)	
3 YEARS AGO,	60 (77)	18 (23)	78 (100) (15.6)	
NEVER	17 (23.3)	56 (76.7)	73 (100) (14.6)	
PERCEPTION ON FREQUENCY OF DENTAL VISITS:				
ONCE A YEAR	84 (71.8)	33 (28.2)	117 (100) (23.4)	35.100 *P*=0.000*
TWICE A YEAR	83 (37.9)	136 (62.1)	219 (100) (43.8)	
WHEN THERE IS DENTAL PROBLEM	71 (48.6)	75 (51.4)	146 (100) (29.2)	
NEVER	9 (50)	9 (50)	18 (100) (3.6)	
ARE YOU AFRAID OF GOING TO THE DENTIST?				
YES	223 (71.2)	90 (28.8)	313 (100) (62.6)	159.786
NO	24 (12.8)	163 (87.2)	187 (100) (37.4)	*P*=0.000*
HAVE YOU EVER RECEIVED INSTRUCTION ON CARE OF THE TEETH				
YES	241 (49.6)	245 (50.4)	486 (100) (97.2)	0.247
NO	6 (42.9)	8 (57.1)	14 (100) (2.8)	*P*=0.619

***STATISTICALLY SIGNIFICANT *P*<0.05**

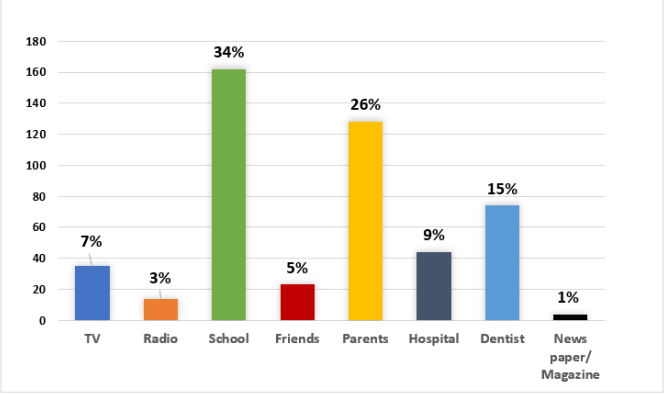

Figure 1: *The source of oral health information.*

Table 2 shows that almost 21% of 9- and 12-year-old children considered dental visits to be indispensable with 23% of both age groups having had a previous dental visit. Past dental service utilization increases with age. Twelve-year-old children recorded the highest percentage (27.5%) of dentist visits during the last 6 months before the study. Dental problems were the cause of dental visits for 9- and 12-year-olds (24.7% and 23.3%, respectively). Demographic variables (gender and age) had a significant impact on the perception and pattern of dental service utilization (Table 1 and 2).

Table 2: Perception/pattern of dental services utilization according to the respondents' age

	6 years n (%)	7 years n (%)	8 years n (%)	9 years n (%)	10 years n (%)	11 years n (%)	12 years n (%)	Total n (%)	Chi square P. value
ARE DENTAL VISITS IPORTANT?									
Yes	9 (1.8)	73 (14.7)	75 (15.1)	105 (21.2)	63 (12.7)	65 (13.1)	106 (21.4)	496 (100) (99.2)	32.620 P=0.001*
No	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (100)	2 (100) (0.4)	
Don't know	1 (50)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (50)	2 (100) (0.4)	
PAST DENTAL VISIT:									
Yes	2 (0.5)	61 (14.3)	58 (13.6)	98 (23)	52 (12.2)	59 (13.8)	97 (22.7)	427 (100) (85.4)	46.760 P=0.000*
No	8 (11)	12 (16.4)	17 (23.3)	7 (9.6)	11 (15.1)	6 (8.2)	12 (16.4)	73 (100) (14.6)	
LAST DENTAL VISIT WAS:									
6th months ago,	0 (0)	23 (13.8)	18 (10.8)	27 (16.2)	27 (16.2)	26 (15.6)	46 (27.5)	167 (100) (33.4)	47.867 P=0.003*
1 year ago,	3 (2.7)	14 (12.4)	18 (15.9)	25 (22.1)	16 (14.2)	14 (12.4)	23 (20.4)	113 (100) (22.6)	
2 years ago,	2 (2.9)	11 (15.9)	10 (14.5)	19 (27.5)	3 (4.3)	9 (13)	15 (21.7)	69 (100) (13.8)	
3 years ago,	0 (0)	12 (15.4)	13 (16.7)	26 (33.3)	5 (6.4)	9 (11.5)	13 (16.7)	78 (100) (15.6)	
Never	5 (6.8)	12 (16.4)	16 (21.9)	7 (9.6)	13 (17.8)	7 (9.6)	13 (17.8)	73 (100) (14.6)	
PERCEPTION ON FREQUENCY OF DENTAL VISITS:									
Once a year	6 (5.1)	16 (13.7)	22 (18.8)	27 (23.1)	13 (11.1)	17 (14.5)	16 (13.7)	117 (100) (23.4)	26.227 P=0.095
Twice a year	1 (0.5)	35 (16)	38 (17.4)	38 (17.4)	25 (11.4)	27 (12.3)	55 (25.1)	219 (100) (43.8)	
When there is dental problem	3 (2.1)	21 (14.4)	13 (8.9)	36 (24.7)	22 (15.1)	17 (11.6)	34 (23.3)	146 (100) (29.2)	
Never	0 (0)	1 (5.6)	2 (11.1)	4 (22.2)	3 (16.7)	4 (22.2)	4 (22.2)	18 (100) (3.6)	

*** STATISTICALLY SIGNIFICANT P<0.05**

Three-quarters of participants advocated for private dental clinics. Regarding respondent's reasons for accessing dental care, figure 2 shows a negative record for preventive measures like fissure sealants or topical fluoride application. The most common dental procedures were tooth filling (28.8%) and tooth extraction (26.7%), followed by cleaning (19.4%). Seventy-three participants (14.6%) had never visited the dentist before (Table 1). The most common barriers to utilization of dental services by the present respondents were lack of perceived need (no dental problem) (44%), fear of pain (17%), and cost (12%) (Figure 3).

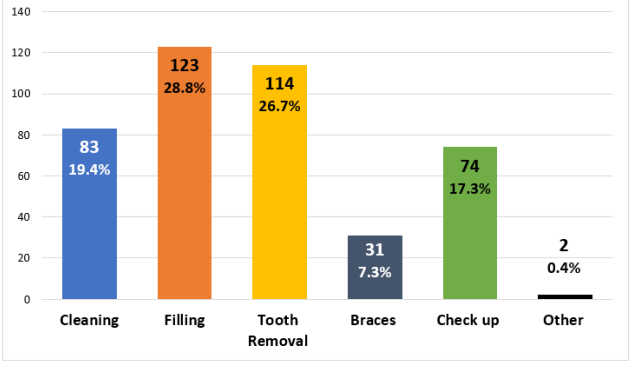

Figure 2: *The respondents' reasons for accessing dental care.*

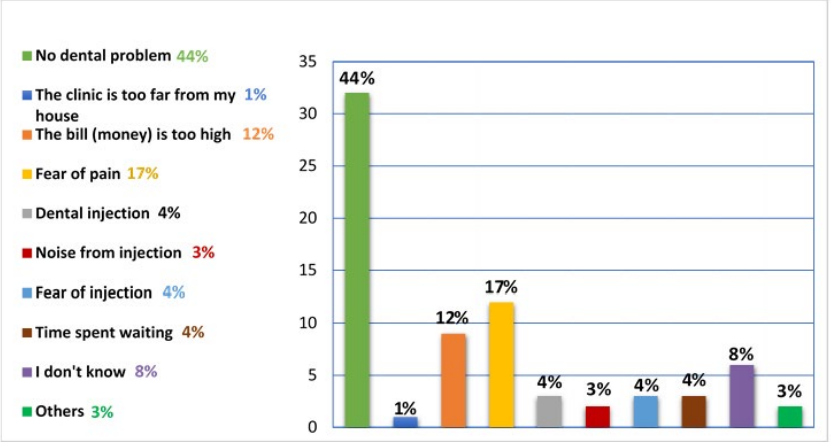

Figure 3: *Barriers to dental services utilization for those who had never visited a dental facility.*

Discussion

Health service utilization does not depend on the willingness of people to seek care but on the actual attendance by the members of the public at health care facilities to receive care [12]. The most common oral disease affecting children is dental caries [13,14]. The highest risk group is children between 6 and 12 years old [14,15]. The prevalence of dental caries among primary school children in Al-Medina Al-Munawara ranged between 87% and 68% for 6- to 12-year-olds, respectively [16,17]. Maintenance of oral health can be achieved through routine dental visits [11,18]. An online search failed to identify any study on dental services utilization and barriers among primary school children in Al-Medina Al-Munawara, SA, which provided justification for the present study.

Comparable to Nigerian children [11], the current study showed that 99.2% of participants considered dental visits to be important. This response was reflected in their high percentage of past dental services utilization (85.4%); 14.6% had never had a dental visit (Table 1). This agrees with the findings of Rajab., *et al* [19]. Several other studies found a lower utilization rate of dental services than the present study among Nigerian [11,18,20], Indian [15,21], and Saudi children [7,22-24], even after receiving oral health referrals [7,18]. The high use of dental services in the current study may be related to the fact that all the present children were from public schools, as observed by Rodelo., *et al* [25]. Another plausible explanation is the regular outreach activities to schools by the Dental Public Health Department's colleagues at the College of Dentistry, Taibah University in Al-Medina Al-Munawara.

The proportion of children who had had a dental visit within the year prior to the current study was 22.6% (Table 1). This result is relevant to previous study findings in Nigeria (21%) [11], lower than children in Nicaragua (27.7%) [26], and higher children in India (13.3%) [21]. Like previous studies on Saudi children [22,23,27,28], 29.2% of the present respondents reported that dental visits should occur when there is a dental problem manifested by pain.

Almost two-thirds of the present participants were afraid of going to the dentist (Table 1). Nigerian children recorded a lesser percent (19.5%) [11]. Unlike other studies [29-33], the girls in the present study showed less dental fear (28.8%) than boys (71.2%). This may be one of the reasons dental visits were more common among girls in the present study (62.1%) in comparison with boys (37.9%). This possibly due to the fact that females have a greater tendency to expect good results from dental visits (Table 1) [34]. The conflicting findings related to gender in this study could be due to the use the use of self-reported questionnaires by children, which may

overestimate or underestimate the real number of fearful boys and girls. The high number of girls visiting the dentist in the current study is justifiable as a previous study in Al-Medina Al- Munawara reported that 6- to 12-year-old females had a significantly higher level of decay in their primary and permanent dentition than males [17]. Studies in Ibadan and Nicaragua [20,26] also reported higher dental services utilization among females than males. However, a contradictory result reported that boys from public schools used more dental services than girls [25]. The discrepancies in these results may be related to parental factors [35].

Present study respondents were mainly provided with dental information by their schools (34%) (Figure 1). This dental information was provided through the schools' continuous dental education program. This program is performed under the supervision of the Dental Public Health Department's colleagues of Taibah University in Al-Medina. Previous studies highlighted the role of the dentist [11], and television and teachers [15], as other sources of dental information.

The major demographic factor affecting the utilization of dental health services by children was age [35]. As has been noted in previous studies [25,26,36], the current study showed that dental service utilization increased with the age of the children (Table 2). As age increases, exposure to cariogenic challenges also increases. This puts children at risk of dental problems and consequently increases their use of dental health services [25]. This explains the current study results that show increased use of dental services by the age of 9 to 12 years old, in comparison to 6-years-olds, as shown in table 2. Unlike other studies [11,37] where demographic variables had no significant impact on the use of dental services, the current study reveals that the use of dental services was significantly affected by age and gender (Table 1 and 2).

Following the findings of previous studies among adolescent females in Riyad [6] and adults in Abha [8], SA, the majority of the present study respondents utilized private dental clinics. Unlike the current study finding, Nigerian children have been found to prefer public facilities where treatment is affordable and subsidized [11]. The preference of private clinics in the present study may be related to the availability of different types of treatment, the lack of waiting time, and the possibility of early appointments. Moreover, dentists are available at night, weekends, and days on which parents are usually not working, when appointments will not interfere with school time [6,38].

Although free dental services are available in SA, most dental visits are symptomatic (curative) and not preventive among children [7,22-24,39], and adults [8,9]. The current study results reveal the same, which indicates that symptomatic use of dental visits is characteristic of the Saudi population [24]. In agreement with Denloye., *et al*. [20], tooth fillings were the most common treatment received by the study respondents, followed by extraction and cleaning (Figure 2). Checkup and cleaning were the most frequently used services reported by another study [37]. On the other hand, Prasanth., *et al*. [21] reported that scaling was the most common treatment received by their participants. This high demand for tooth fillings in the present study may be due to the high prevalence of dental caries among Saudi children in Al-Medina Al-Munawara [16,17]. Moreover, dental professionals prefer restorative treatment for carious teeth in children [40]. The increased tooth removal in the current study is logical based on the mixed dentition stage (6 to 12 years), where the primary teeth start to be replaced by permanent ones. A possible explanation for the lack of use of preventive dental care among children in the present study is that some parents have a "pain reaction" response [41] instead of a disease prevention response [42]. On the other hand, Onyejaka., *et al*. [18] proved that the use of referral letters increased the number of children who sought preventive treatment.

Since medical barriers can affect the utilization of dental services [36,43], the present study excluded medically compromised children. To bridge the gap between the need for oral care and the amount of care sought, the barriers that prevent children from seeking dental utilization should be clarified [44]. Like previous studies [11,15,17,20,21,35,37], the current study recorded no perceived need (44%), fear of pain (17%), and high cost of dental treatment (12%) (Figure 3) as the most common reasons that prevented children from using

dental services. "No perceived need" was interpreted from their replies (no dental problems). Primary school children in Abha, SA, recorded other barriers to visiting the dentist related to parental factors like "lack of time" and "logistic problems" [8].

Limitations of the Study

The study did not consider how this children's parents might affect their utilization of dental services. The children's reasons for not using dental services may differ from those of their parents. The sample size of the study was limited to public primary schools in the urban area of Al-Medina Al-Munawara. The current study assessed the utilization of dental services through a self-reported questionnaire. This method could affect the validity of the information as respondents may have difficulty recalling their exact attendance.

Conclusion

To the best of our knowledge, this is the first study to discuss the utilization of dental services and barriers among primary school children in Al-Medina Al- Munawara. The utilization of dental services among the present primary school children was high, symptomatic (curative) not preventive, and increased with age. Lack of perceived need was the main reason for the lack of use of dental services, indicating low perceived need among children. This study may be used as a framework for comparison of long-term changes in dental service utilization among Saudi primary school children. Further research within a broader population, including both urban and rural areas in public and private schools in SA, is mandatory. It is imperative to identify ways to facilitate the utilization of preventive oral health care by primary school children in SA.

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Conflict of Interest

The authors declare no conflict of interest.

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Volume 23 Issue 2 February 2024