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ORIGINAL ARTICLE

Children's ages and reasons for receiving their first dental visit in a Saudi community

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KEYWORDS

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Abstract *Objective:* Epidemiological studies conducted in different parts of the world have revealed the postponement of first dental visits and an increased prevalence of early childhood caries in general populations in developed and developing countries. This study aimed to assess the average age of and most common reasons for first dental visits in children attending governmental and private dental clinics in Riyadh, Saudi Arabia.

Subjects and methods: Data were collected retrospectively from the dental records of new pediatric patients attending a governmental institute (College of Dentistry, Department of Pediatric Dentistry and Orthodontics, King Saud University) and a private clinic (the investigator's private practice) in Riyadh. Only children attending their first dental visits with no previous dental experience were included in the study. Descriptive statistics, cross-tabulation analysis, and chi-squared test were done. The significance level was set at $P \leqslant 0.05$.

Results: Initial dental visitation occurred at 1–3 years in 32.2% of children, 3–5 years in 52.9% of children, at >5 years in 14% of children. Pain was the dominant reason (71.5%) for first dental visits. Dental check-up was the main reason for 27.3% of dental visits, and fluoride application was the main reason for 20.5% of visits. Emergency cases accounted for 44.7% of first dental visits during the study period. Most (68%) children were medically fit, and 67.2% behaved positively during their first dental procedures.

Conclusions: Parental compliance with the standard age for initial dental visitation recommended by the major dental academies is lacking.

1. Introduction

The age at which children receive dental care for the first time, and the reasons for such dental visitation, vary greatly and depend on many factors. These factors may include parents' socioeconomic status, level of education, and previous dental experience, as well as governmental and geographic factors. The major academies of dentistry have achieved unified agreement about the recommended age for a child's first dental visit.

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For years, the recommended age was around the time of the child's first birthday, but it has been altered recently to a more general timeframe: the period between 6 months of age and the eruption of the first tooth (American Academy of Pediatrics [AAP], 2014. The primary goals of recommending such early visits are to prevent early childhood caries (ECC) and to detect and arrest the progression of any incipient carious lesion. Additional goals include educating parents about proper oral hygiene for infants and toddlers, the use of fluoride, oral habits, teething management, ways to prevent accidents that could damage the face and teeth, and the link between diet and oral health (AAP, 2014; American Academy of Pediatric Dentistry, 2014).

Epidemiological studies have revealed an increase in the prevalence of ECC in general populations of developed and developing countries (Alamoudi et al., 1995; Al-Ansari, 2014; Bagramian et al., 2009; Morgano et al., 2010), and the postponement of first dental visits in different populations (Al-Shalan, 2003; Al-Shalan et al., 2002; Mileva and Kondeva, 2010; Poulsen, 2003). Thus, the aforementioned dental academies have prioritized the issue of first dental visits in an attempt to shift public perspective from awareness of only the therapeutic aspect of dental care to awareness of its preventive and educational aspects as well. Evaluating the age of and most common reasons for children's first dental visits has become essential for the planning of future public awareness efforts. The aim of this study was to assess the average age of and the most common reasons for first dental visits in children visiting governmental and private dental clinics in Riyadh, Saudi Arabia.

2. Subjects and methods

The present study included children visiting dental clinics for the first time between September and Dec 2014. September was chosen as the start time for data collection because it is the beginning of the school year, when students at the College of Dentistry, King Saud University start accepting new cases; it is thus an ideal time to target new patients. The Ethical Committee of the Research Center at the College of Dentistry, King Saud University approved this study and registered as (FR0194). The author collected data retrospectively from the dental records of new pediatric patients attending a governmental institute (College of Dentistry, Department of Pediatric Dentistry and Orthodontics, King Saud University) and a private clinic (the investigator's private practice) in Riyadh. Patients at the College of Dentistry were attended by undergraduate students, postgraduate students, board residents, and clinical specialists; those at the private clinic were attended by seven consultants in pediatric dentistry, who shared the practice with consultants in other dental specialties. Only children attending their first dental visits with no previous dental experience were included in the study. Any children whose records were missing important information pertaining to the aim of the study were excluded.

A special clinical form was designed for this study to collect information about each child's age and sex and the main reason for the first dental visit. The following reasons for visitation were provided as options: pain, check-up only (when parents refused topical fluoride application), fluoride application, extraction of retained or mobile primary tooth/teeth, referral from another dentist of a different specialty (referral as advice with no examination or treatment), referral from medical personnel, or any type of emergency (e.g., trauma, infection, abscess). The form included a space to record the child's medical condition and the option to categorize him/her as medically fit or medically compromised. Space to describe the child's general behavior during the first appointment was also provided in the form using the Frankl categories. The Frankl scale is one of the most reliable tools used in dentistry to evaluate children's attitudes and cooperation during dental procedures. The scale comprises four categories: definitely negative, negative, positive, and definitely positive (Frankl et al., 1962). The validity of the study form was inferred based on the design and use of similar forms in previous studies (Murshid, 2005).

2.1. Data analysis

The data were entered and analyzed using IBM SPSS software (version 21; IBM Corporation, Armonk, NY, USA). Descriptive statistics (e.g., frequencies and percentages) were calculated to explore the general features of the data. A cross-tabulation analysis was conducted to examine the categorical variables, and the chi-squared test was used to identify any significant differences between the different variables (variables of the data collected from the children attending the College of Dentistry and the children attending the private clinic). To determine the significance of variation or association, the significance level was set to $P \leqslant 0.05$.

3. Results

A total of 594 children (49.8% male, 50.2% female) had their first dental visits at the two participating clinics between September and December 2014. Almost 60% of these children attended the College of Dentistry and about 40% attended the private clinic (Table 1).

Approximately one-third (32.2%) of the children had their first dental visits between the ages of 1 and 3 years. More than half (52.9%) of the group had their first dental visits between the ages of 3+ and 5 years. A lesser percentage of children (14.0%) had their first dental visits between the ages of 5+ and 8 years, and only 1% had their first dental visits when they were older than 8 years (Table 2).

Table 1 Distribution of the children according to their gender and place of first dental visit.

Gender	Number and percentage	Children from the College of Dentistry	Children from the private practice	Total
Male	Count	179	117	296
	% within Groups	50.4%	49.0%	49.8%
Female	Count	176	122	298
	% within Groups	49.6%	51.0%	50.2%
Total	Count	355	239	594
	% within Group	100%	100%	100%

P value – 0.73.

Table 2 Distribution of the children according to their age.

Age groups	Number and percentage	Children from the College of Dentistry	Children from the private practice	Total
<1 to 3	Count	65	73	191
	% within Groups	18.3%	13.9%	32.2%
3+ to 5	Count	217	97	314
	% within Groups	61.1%	40.6%	52.9%
5+ to 8	Count	68	15	83
	% within Group	19.2%	6.3%	14.0%
8+	Count	5	1	6
	% within Groups	1.4%	0.4%	1.0%
Total	Count	355	239	594
	% within Groups	100%	100%	100%

P value – 0.00.

Table 3 Distribution of the children according to reasons for first dental visit.

Reasons for first dental visit		Children from the College of Dentistry	Children from the private practice	Total	*P*-value
Due to pain	No	132	37	169	0.000
		37.2%	15.5%	28.5%	
	Yes	223	202	425	
		62.8%	84.5%	71.5%	
For check up only	No	214	218	432	0.000
		60.3%	91.2%	72.7%	
	Yes	141	21	162	
		39.7%	8.8%	27.3%	
For fluoride application	No	303	169	472	0.03
		85.3%	70.7%	79.5%	
	Yes	52	70	122	
		14.6%	29.3%	20.5%	
To extract retained primary tooth	No	315	216	531	0.01
		88.7%	90.4%	89.4%	
	Yes	40	23	63	
		11.3%	9.6%	10.6%	
Due to emergency	No	176	152	328	0.016
		49.6%	63.5%	55.2%	
	Yes	179	87	266	
		50.4%	36.4%	44.7%	
Referred from other dentist	No	355	239	594	Not applicable
		100%	100%	100%	
	Yes	0	0	0	
		0%	0%	0%	
Referred from medical specialists	No	355	239	594	Not applicable
		100%	100%	100%	
	Yes	0	0	0	
		0%	0%	0%	
Medically fit	No	30	160	190	0.000
		8.5%	66.9%	32.0%	
	Yes	325	79	404	
		91.5%	33.1%	68.0%	
Total	No.	355	239	594	
	%	100%	100%	100%	

Pain was the dominant factor (71.5%) bringing children to their first dental visits. Pain was the main reason for visitation in almost 63% of children attending the College of Dentistry and 84.5% of those attending the private clinic. Check-up was cited infrequently as a main reason for children's first dental visits (27.3%); it was the main reason for nearly 40% of children who visited the College of Dentistry and only 8.8% of children who visited the private clinic (Table 3). Fluoride application was the main reason for only 20.5% of all children's first dental visits (private clinic, 29.3%; College of Dentistry, 14.6%). A total of 10.6% of children had their first dental visits due to retained primary tooth/teeth. Almost equal numbers of children visited the College of Dentistry (11.3%) and the private clinic (9.6%) due to retained primary teeth (Table 3). Emergency cases accounted for 44.7% of children's first dental visits during the study period; emergency conditions

Table 4 Distribution of children according to their behavior during the first dental visit procedure.

Behavior during first dental visit		Children from the College of Dentistry	Children from the private practice	Total
Definitely negative	Count	24	48	72
	% within Groups	6.8%	20.1%	12.1%
Negative	Count	39	26	65
	% within Groups	10.9%	10.8%	10.9%
Positive	Count	257	142	399
	% within Groups	72.4%	59.4%	67.2%
Definitely positive	Count	35	23	58
	% within Groups	9.9%	9.6%	9.8%
Total	Count	355	239	594
	% within Groups	100.0%	100.0%	100.0%

P value 0.002.

were the main reason for visitation for almost half of the children attending the College of Dentistry and 36.4% of children attending the private practice. No referral by dental or medical personnel was recorded in the children's dental files (Table 3). Most (68%) of the children were medically fit and 32% had various medical conditions. More medically fit children visited the College of Dentistry (91.5%) in comparison with the private practice (33.1%; Table 3).

The majority (67.2%) of children behaved positively at their first dental visits (College of Dentistry, 72.4%; private clinic, 54.4%). Almost 15% of the children showed negative behavior, 9.8% showed definitely positive behavior, and only 8.4% showed definitely negative behavior, the differences is significant at *P* value 0.002 (Table 4).

4. Discussion

The longer a child's initial dental visit is delayed, the more likely he or she is to develop serious dental problems that could potentially deteriorate rapidly in the absence of proper care and treatment. Undetected and untreated tooth decay can lead to infection and moderate to severe pain, which can actively prevent children from eating, sleeping, and enjoying daily activities, as well as ultimately leading to expensive dental treatment and, in some case, early loss of teeth. These consequences may extend to affect children's overall health and development. Given these issues, the investigation of early dental visitation is warranted.

4.1. Age at first dental visit

Most of children in the current study visited dental clinics for the first time between the ages of 3 and 5 years. Similarly, (Al-Shalan, 2003; Al-Shalan et al., 2002) reported that parents in Saudi society believed that dental visitation before the age of 1 year was inappropriate, with the majority favoring an age range of 3–6 years for the first dental visit. Perceptions about the suitable age for first dental visitation throughout the world are remarkably diverse; the most commonly reported age range is 2–5 years (Agostini et al., 2001; Farid et al., 2013; Ismail and Sohn, 2001; Mileva and Kondeva, 2010; Nainar and Straffon, 2003; Savage et al., 2004; Rodrigues Gomes et al., 2013). Older age ranges of 6–12 years (Meera et al., 2008) and 7–11 years (Ghimire et al., 2013) were reported from India and Nepal, respectively. The results of these previous studies clearly demonstrate parents' universal reluctance to take their infants to visit the dentist at the young age recommended by the dental academies.

4.2. Reasons for first dental visit

If not for pain and other dental emergencies (e.g., trauma and infection), most participants in this study may not have visited the dental clinics at the recorded ages. Other studies conducted in Saudi Arabia have also documented late exposure to dental care, with considerable percentages of parents reporting that they did not see the need for dental visitation if their children were not in pain (Al-Shalan, 2003; Al-Shalan et al., 2002; Wyne and Khan, 1998). Results of other studies conducted in different parts of the world reflect the same attitude, with pain reported as the dominant factor prompting parents to seek first dental appointments for their children (Meera et al., 2008; Oliva et al., 2008).

In the present study, insufficient percentages of parents sought initial dental care for their children for preventive reasons, such as check-up or fluoride application. These results demonstrate a clear lack of dental knowledge and unawareness of the significance of primary dentition among parents of the study participants. Baghdadi (2014) reported similar attitudes among parents in Saudi society, showing underestimation of the role that teeth—particularly primary teeth—play in the general health and well-being of their children, as well as a lack of knowledge regarding the appropriate time for a child's first dental visit.

Parents' dental knowledge and attitudes toward their own dental health have been found to be associated significantly with their children's oral health and oral hygiene practices (Amin and Al-Abad, 2008; Mannaa et al., 2013; Vanagas et al., 2009). The majority of mothers participating in a study conducted in Karachi generally visited the dentist only in cases of pain or dental problems, and believed the same was applicable to their children (Farid et al., 2013). A study of low-income Mexican immigrant parents' in the United States showed that even children's complaints of pain were insufficient to warrant dental visitation, as the upkeep of primary teeth was not seen as an important issue (Horton and Barker, 2009). Caregivers often delayed treatment because they viewed their children's oral diseases as mere "stains" requiring cleaning, rather than as bacterial infections requiring restorative treatment (Horton and Barker, 2009).

The reported delay in or non-occurrence of dental check-up visits in low-income societies can be anticipated due to the high expense of dental treatment and caregivers' priorities in spending their incomes. In Saudi communities, however, dental

treatment can be accessed for absolutely no cost in the majority of government hospitals and dental colleges, and for a small expense in private dental colleges. Government institutes provide full dental intervention for disease prevention and all kinds of dental treatment at no charge but most probably due to the lack of awareness of the importance of early dental visits, many families do not bring their children for early check-ups or preventive measures as recommended by the major dental Academics. Treatment in private clinics in Saudi Arabia is usually costly and was previously limited to families with high socioeconomic statuses. Recently, however, the increasing popularity of dental insurance services has made access to such high-quality services affordable for many families, wherein patients have convenient afternoon appointments and treatment is performed by highly qualified consultants. This could potentially explain the high number of children that visited the private practice clinic with pain, or children in medically compromised conditions.

4.3. Children's behavior at first dental visits

Dental anxiety among children is predictable, especially when they imagine that they might be exposed to potentially threatening situations (Frankl et al., 1962). Children in this study showed a wide range of behavior during their first dental visits. The majority of children behaved positively, which was not unexpected when taking into consideration their older ages, which makes the explanation of preventive procedures straightforward. In addition, a typical first dental visit usually includes an introduction to the dental environment, prophylaxis, oral hygiene instructions, X-rays, and topical fluoride application, all of which should be painless. The negative behavior observed in a small percentage of children may be related to late exposure to dental care, especially in those who came to the clinic with pain and infections that required urgent treatment. More definitely negatively behaved children visited the private clinic than the College of Dentistry. This finding can be attributed to a variety of factors, though we theorize that the main cause could be the parents' socioeconomic status. To clarify; children from families with higher social statuses are generally more spoilt and accustomed to being coddled, particularly those raised primarily by their nannies and home helpers as opposed to their parents. Therefore they were usually more apprehensive to enter the dental clinic and reacted much more negatively than children at the University hospital, whose patients were usually of a lower socioeconomic class. This would lead to parents becoming more involved in managing the children's behavior, due to the increased pressure of wanting to maintain free dental treatment.

These factors may also explain the large numbers of medically fit children who visited the College of Dentistry and medically compromised children who visited the private clinic.

The results of this study reflect parents' and healthcare providers' lack of attention to the importance of early dental check-up. No child was referred for dental check-up by a physician or pediatrician. Thus, efforts to increase awareness of the significance of a child's first dental visit among parents and healthcare providers are strongly recommended. Healthcare providers meet parents in the early stages of children's lives (e.g., for immunization and check-ups), which places them in a prime position to educate parents, coordinate with them, and refer their children to pediatric dentists for dental check-ups at an appropriately early age. Parents who obtain dental advice from medical practitioners or pharmacists are generally able to do so because they are familiar or comfortable with these providers (Mason et al., 1997).

Highlighting the importance of children's early exposure to the dental environment will give pediatric dentists the chance to educate new parents and expectant mothers regarding early intervention techniques and materials. Such education would include instructions to avoid saliva transfer from parents or caregivers to children through such actions as sharing spoons, kissing babies on the mouth, and orally cleansing dropped pacifiers or toys, which would help prevent early colonization of *Streptococcus mutans* in infants. *S. mutans* levels in parents and primary caregivers have been associated positively with the risks of transmission to infants and ECC (Köhler et al., 1984; Tenovuo et al., 1992).

4.4. Limitations

This study has some limitations that may have affected the results. For example, the data collection method, the limited data collection period, and the clinics included, all had a hand in slightly skewing the results. The method of collecting data was convenient for the author as having access to patient records at both locations; however this offered a potential bias. The period for data collection could have been longer, and further studies could potentially lengthen the period for better results. Future studies including different clinics in different areas of Saudi Arabia are strongly recommended.

5. Conclusions

Within the limitations of this study, the following conclusions can be drawn.

1. Parental compliance with their children's initial dental visitation at the standard age recommended by the major dental academies is lacking. The recommendation of early dental visitation at around 6 months of age may have not been distributed or advertised as widely as needed among parents in Saudi communities.
2. The fact that dental pain was the most common reason for visiting the dental clinic indicates that, if pain was not a potential factor, most parents would not even bring their children in for a dental visit at all. This raises great concerns about the future of oral health in Saudi Arabia.

5.1. Recommendations

More organized prevention, promotion, and education programs are needed in Saudi communities to increase awareness about the importance of first dental visitation at the age recommended by the major dental academics. In addition, increased awareness among primary healthcare providers of the importance of early referral to dental clinics is essential.

Conflict of Interest

The author have no known conflicts of interest associated with this study.

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