



# Predictors of First Dental Visit Among Children in Ardabil, Iran

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## Abstract

**Background:** Children's first referral to the dental clinic offers preventive care and parent education about the child's oral health. Considering the importance of dental health in children, this study aimed to examine the reasons and time for children's first dental visit. **Methods:** This cross-sectional study comprised 598 children (314 girls and 284 boys) from birth to age 10 who first referred to Ardabil's dental clinics in 2022. Information about the child's dental visit, the age and education level of the parents, and the number of children in the family were collected. Chi-square and Fisher's exact test were utilized to analyze the associations between the variables. The level of statistical significance was set at  $P < 0.05$ .

**Results:** The mean age of children at their first visit to the dentist was  $6.268 \pm 1.07$  years. It was revealed that pain (51.3%) and caries (22.2%) were the first two reasons for the first dental visit. No significant relationship was found between gender and the reasons for the first dental visit ( $P = 0.05$ ). The child's referral age decreased with increasing parental education ( $P = -0.240$  for the mother,  $P = -0.186$  for the father). A significant and positive correlation was found between parents and the child's age at the time of referral ( $P = 0.00$ ).

**Conclusion:** Children commonly had a late first dental visit, as opposed to medical recommendations. The predominant reasons for the child's first dental visit were pain and dental caries. More awareness among parents/caregivers is necessary in this regard.

**Keywords:** Dentistry for children, Dental care, Pain, Dental caries

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## Introduction

Oral health is especially important for children's growth and systemic health. Deciduous teeth play an essential role in mastication, articulation, beauty, and space maintenance for permanent teeth. Dental problems in deciduous teeth often appear in the form of pain and swelling, which can cause the child distress and difficulty in chewing or speaking or affect the child's appearance (1,2). Research shows that 46.2% of primary teeth and 53.8% of permanent teeth are affected by tooth decay (3), and early childhood caries (ECC) is highly prevalent in children worldwide (4). This disease affects children and highlights parents' responsibility for the necessary care (5). Dental problems were shown to be the main reason for children's hospitalization in Australia in 2015. ECC significantly impacts the family's quality of life, including financial and health consequences (6,7). A timely visit to a dentist is an essential preventive measure for young children. The first dental visit at an appropriate age and before the onset of caries enables dental professionals to diagnose the symptoms of ECC and assess the growth and development of teeth. Parents or caregivers should

also guide and encourage children to maintain oral health (8). Diet counseling, providing information on risk factor management, teaching the proper practices in dental emergencies for traumatic injuries, and motivating parents to take preventive measures are other services that a dentist provides in the first session (9,10). The first visit to a dentist dramatically impacts a child's attitude and how they tolerate future treatments and helps children have more confidence in their dentist (11). Going to a dental office at an early age can reduce children's stress and anxiety.

Furthermore, the provision of basic dental education can make parents self-sufficient in managing their children's oral health (12). A systematic review by Bhaskar et al showed that preventive dental visits during the first year of a child's life were associated with a reduced need for restorative procedures and lower costs of dental procedures (13). While some believe that the first visit to a dentist should be at age 1(10), some suggest that it should occur between the ages of 12 and 18 months (14). Mohammadi reported in 2019 that the dental caries index was  $4.16 \pm 3.72$  in deciduous teeth and 90% of children



had caries in the elementary school students of Ardabil, indicating a two-fold prevalence compared to the expected goals of the World Dental Federation (FDI) and the WHO (15). Parents or caregivers have a poor general attitude towards primary teeth and believe them to be temporary. Therefore, they do not see the need to treat primary teeth unless the child is in pain; odontogenic infections in children are a frequent reason for seeking medical care at an emergency department (16). Based on the results of epidemiological studies on the increase in the prevalence of caries in children, postponement of the first dental visit, and the effects of the patient's chief complaint on quality oral health care, this study was conducted with the aim of determining the age and reason for the first visit to the dentist in children. The results can be a source of information for both the care provider and the patient.

## Methods

This cross-sectional study was conducted in 2022 on children who referred to dental clinics in Ardabil. The sample size was 600 people, determined by Cochran's formula. Out of the 600 respondents, two did not complete the checklist completely.

A checklist was prepared for parents to assess the relationship between children's age and reasons for the first dental visit from birth to the age of 10 (2, 10). The reasons for the child's first dental visit mentioned in the interview included 1) pain, 2) decay noted by parents, 3) swelling and abscess, 4) trauma, 5) soft tissue lesions, 6) adaptive visit, 7) discoloration and staining of teeth 8) retained deciduous teeth, 9) oral habits, 10) malocclusion, 11) dental anomalies, and 12) mobile teeth.

The parents completed the checklist related to the demographic characteristics of the family of children referring to dental clinics (age and gender of the child, number of children in the family, and age and educational status of the parents).

Only children attending their first dental visits with no previous dental experience were included in the study. Informed consent was obtained from parents. Children suffering from any mental/physical disability and those with exceptional needs or accompanying systemic disorders were excluded from the study. The data were entered into the SPSS version 25 software. The chi-square and Fisher's exact tests were used to determine the relationship between variables at the  $P < 0.05$  level.

The study included 0- to 9-year-old children visiting the dentist for the first time and their parents who gave written informed consent to participate in the study.

## Results

The mean ( $\pm$  SD) age of the first dental visit was  $6.268 \pm 2.08$  years. A total of 314 (52.5%) and 284 (47.5%) children out of 598 children who had their first dental visit were girls and boys, respectively. The 46.1% ( $n=276$ ) of children

who made their first visit to the dentist were over six years old. The first dental visit in 1.5% of the children occurred before age one. The first appointment with a dentist for 53.9% ( $n=322$ ) of the study participants occurred before the age of six. The youngest patient in this study was 1 year old and had an adaptive visit to the dentist. The oldest child who had the first visit to the dentist was 10 years old, and the visit was due to tooth pain. Referring to the dentist for prevention occurred more in children younger than six than those older than six.

Most (51.3%) of children visited a dentist due to tooth pain. The next most common reason was dental caries (22.2%). However, a small number of patients were referred for an adaptive visit (12.9%), abscess and swelling (9.2%), and retained deciduous teeth (5.7%). It is worth mentioning that none of the children in this study had a dental anomaly (Figure 1).

There was no statistically significant relationship ( $P=0.05$ ) between gender and reasons for the first dental visit. The reasons for the first dental visit were almost the same in girls and boys.

The mean age of mothers and fathers was 35.06 and slightly more than 39.84 years, respectively. There was a significant association between the parents' and the children's age at the time of referral, i.e., older children had older parents ( $P=0.00$ ).

In this study, 38.0% and 34.4% of mothers and fathers, respectively, had the highest level of education, which was a bachelor's degree. A significant negative relationship was observed between parents' education and children's referral age, with the child's referral age decreasing with increasing parental education ( $P=-0.240$  for the mother and  $P=-0.186$  for the father). Concerning the relationship between the reasons for dentist referral and parents' education, only dental caries had a significant relationship with parents' education (Table 1).

Regarding birth order, 58.7%, 31.4%, 8.0%, 1.7%, and 0.2% of children were the first, the second, the third, the fourth, and the fifth child in the family, respectively. However, the number of children in the family was related to the age of the first visit to the dentist ( $P=0.006$ ).

## Discussion

Based on risk assessments, the child's first dental visit should occur as early as 6 months and no later than 12 months (17). The delay in a child's initial dental visit increases the possibility of developing serious dental problems that will aggravate in the absence of appropriate care and treatment (8). Our study showed that the mean age of the children at their first dental visit was 6.26 years. The largest number of children made their visit to the dentist at the age of six.

This result is in line with results reported from South India, where the first visit to a dentist most commonly occurred among children between 5 and 6 years of age

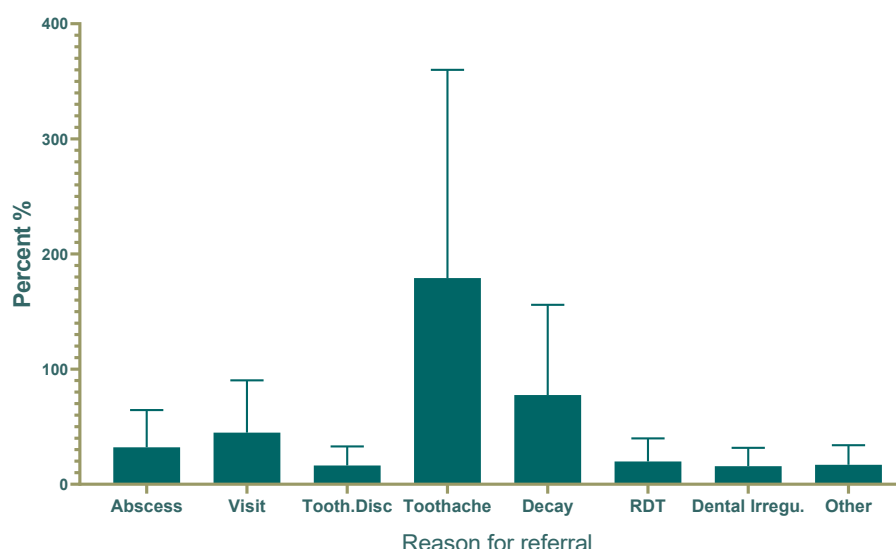


Figure 1. The reasons for the children's first dental visit

(8). Similar findings were reported in younger age groups (3–5 years) in Saudi Arabia (18), India (7 years) (9), and the United States (2–4 years) (19).

One reason for delaying the child's first dental visit may be financial constraints and lack of access to dental services in public settings, especially for younger children. It should be noted that dental insurance is not provided for the general public in Iran. On the other hand, some people don't even know about nor are interested in using free prevention services.

Another reason for late clinic visits may be parents' lack of knowledge and awareness about the proper age for children's first dental visit and the importance of primary dentition in children's general health.

Based on the study conducted by Bahuguna et al, the idea that a child's first dental visit should occur at the age of 1 year was supported by 25% of parents (20). In a survey among 1300 parents in Mumbai, India, only 39% believed that the first dental visit must occur at age 1 (21). Only 1.5% of the children in this study had their first dental visit before the age of 1 year. Despite the current professional recommendations for dental visits in the first year, reports worldwide indicated that only a small number of children have timely dental visits (8,19). Bulut et al. in Turkey reported that 2.9% of children under three visited a dentist in the first year of life (22). Reports for Nigerian children consistently indicate that only 0.8% have had their first dental appointment before the age of 1 (10). In contrast, in the study performed by Hartwig et al., 5.3% of Brazilian children visited a dentist before the age of 1 (23).

In a study conducted by Hussein et al, 84% of parents of Malaysian children who referred to a university pediatric dental clinic were against the idea that a child's first dental visit should occur before the age of 1 on the basis that they had incomplete teeth, there was no disease, or the child

did not cooperate (16).

In this study, no significant association was found between gender and reasons for the first visit to a dentist. The common reasons for the first dental visit were almost identical in boys and girls. Similarly, no significant difference was observed between boys and girls in the study by Moses et al (24). On the contrary, the rate of dental caries in a study by Savale and Lanjewar was slightly higher in boys than girls (25). The reason for this discrepancy between the two studies can be related to such factors as the difference in age of the sample population, demographic locations, and ethnic factors. Olatosi et al conducted a study examining children's gender (10). The results showed a significant correlation between gender and reasons for the first dental visit. It should be noted that pain, tooth decay, prophylaxis, and dental abscesses were the most prominent reasons for the first dental visit in girls compared to boys. However, trauma, malocclusion, routine dental examinations, and discoloration were more common causes of dental visits in boys than girls.

The most prominent reasons reported for children's first dental visit in different studies included pain, followed by dental caries (26), pain, followed by regular checkups (27), and pain and other dental emergencies (trauma and infection) (18). In this study, the most common reason for the first dental visit was pain, followed by caries, which was in line with the results obtained in previous studies. A study by Bodhale et al showed that most parents believed the child should be taken to the dentist after complaining of toothache (28). Similarly, in a study conducted by Alhareky and Nazir in Saudi Arabia, the most common reason for dental visits was dental pain, followed by dental caries (29). Most parents believe that the primary teeth are temporary and do not require a dentist's care unless there are problems (16,18). In the study of Hussein

**Table 1.** Causes of first dental visit based on demographic characteristics

	Abscess	Visit	Trauma	Soft tissue lesions	Oral habits	Tooth discoloration	Toothache	Decay	Retained deciduous teeth	Dental irregularity	Losing baby teeth
<b>Age (year)</b>											
<3	7.30%	38.20%	7.30%	55	55	10.90%	32.70%	18.20%	0.00%	0.00%	1.80%
3-6	9.40%	9.00%	0.70%	267	267	2.60%	55.40%	24.00%	3.40%	2.20%	1.50%
>6	9.40%	11.60%	1.10%	276	276	5.40%	51.10%	21.40%	9.10%	7.60%	4.30%
<i>P</i> value	0.874	0.000	0.001	0.557	0.000	0.022	0.009	0.576	0.003	0.003	0.121
<b>Gender</b>											
Male	10.50%	12.10%	1.30%	0.30%	0.30%	5.10%	52.90%	21.70%	5.10%	5.10%	2.50%
Female	7.70%	13.70%	1.80%	0.00%	0.40%	4.20%	49.60%	22.90%	6.30%	3.90%	3.20%
<i>P</i> value	0.243	0.552	0.625	0.341	0.943	0.615	0.432	0.718	0.512	0.472	0.648
<b>Mother's age</b>											
<30	12	17	1	1	1	10	78	29	4	5	6
30–40	36	50	7	0	1	12	179	77	26	17	10
>40	7	19	1	0	0	6	50	27	4	5	1
<i>P</i> value	0.317	0.982	0.999	0.14	1	0.252	0.339	0.333	0.884	0.001	0.992
<b>Father's Age</b>											
<30	3	1	0	0	0	3	12	8	2	4	3
30–40	30	45	4	1	2	15	178	73	20	10	8
>40	22	31	5	0	0	10	117	52	12	13	6
<i>P</i> value	0.963	0.944	0.1	0.552	1	0.046	0.716	0.133	0.742	0.029	0.537
<b>Mother's education</b>											
≤High school diploma	14	9	2	1	0	5	48	10	2	6	2
High school diploma	14	18	3	0	0	6	105	40	11	8	1
Associate degree	0	3	0	0	0	3	15	4	3	1	6
≥Bachelor's degree	27	47	4	0	2	14	139	79	18	12	8
<i>P</i> value	0.052	0.071	0.755	0.191	0.514	0.348	0.505	0.029	0.458	0.786	0.67
<b>Father's Education</b>											
≤High school diploma	8	15	3	29	0.992	8	15	3	29	0.992	8
High school diploma	18	16	4	44	0.482	18	16	4	44	0.482	18
Associate degree	2	3	1	3	0.819	2	3	1	3	0.819	2
≥Bachelor's degree	1	0	0	0	0.172	1	0	0	0	0.172	1
<i>P</i> value	0.992	0.482	0.819	0.172	0.431	0.967	0.518	0.002	0.434	0.425	0.668

et al, most Malaysian parents believed that a dental examination should be the main reason for the first visit to a dentist (16). A study conducted on 844 children aged 0–36 months at the University of Sao Paulo indicated that preventive purposes was the prominent reason to seek dental care, followed by caries/treatment and dental trauma (30). The discrepancies between the results of different studies can be attributed to such factors as age differences, sample size, parental awareness, and cultural differences in different societies.

In this study, the relationship between parents' education and children's referral age was significant and negative. Parents with higher education are more likely to care about their children's dental visits. A study by Kato et al showed a negative relationship between parents'

education and their child's age (31). In a four-year prospective study on Scottish children aged 1–4 years, parents' employment was strongly correlated with a lower rate of caries progression (32). This can be explained by the mothers knowingly postponing the first dental visit due to a lower prevalence of dental caries among their children. A cross-sectional study by Baggio et al. showed that parental occupations with higher profession status had a significant inverse association with caries prevalence among 36–71-month-old children (33). The present study showed that the children of parents with higher education had their first dental visits mainly because of caries. A cohort study conducted in Brazil reported that maternal age and education level had no relationship with a child's early dental visit.

Furthermore, delayed dental visits after six years of age were prevalent even among children with educated mothers (34). In Saudi Arabia, mothers' higher education level was highly associated with regular dental visits in children (29). Moreover, a significant association was found between parents' education level and routine dental visits in Indian children in Ashwin's study (35).

The late dental visit of children with highly educated parents in this study showed that parents' awareness of the need for an early dental visit was low. In one study, parents with higher education had children with lower risk of dental caries. This could be a reason why these parents think their children do not need to visit the dentist at an early age (31). These parents usually work in professional occupations and can be too busy. Therefore, plans are needed to increase parents' awareness regarding the importance of children's first dental visits in their oral health.

This study's limitation is that it was done in a small sample from the city of Ardabil. The availability of dental services and the reasons for children not visiting the dentist in time may have had an effect on the findings; these factors were not investigated in this study. Future studies are recommended to include different clinics in different areas of Iran and evaluate barriers to parental failure to bring children to dental clinics.

## Conclusion

Toothache and tooth decay were the most prominent reasons for children's first visits to the dentist. The mean age of children at their first dental visit was 6.2 years, which is much higher than the recommended age of less than 1 year. Therefore, it is necessary to raise the general population's awareness of the significance of oral health care for children at the earliest eruption stage of their teeth.

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## Authors' Contribution

**Conceptualization:** Somayeh Hekmatfar.

**Data curation:** Mahdieh Salmani.

**Formal analysis:** Telma Zahirian Moghadam.

**Funding acquisition:** Somayeh Hekmatfar.

**Investigation:** Mahdieh Salmani, Somayeh Hekmatfar.

**Methodology:** Somayeh Hekmatfar.

**Project administration:** Telma Zahirian Moghadam, Somayeh Hekmatfar.

**Resources:** Somayeh Hekmatfar.

**Software:** Telma Zahirian Moghadam.

**Supervision:** Somayeh Hekmatfar.

**Validation:** Somayeh Hekmatfar.

**Visualization:** Telma Zahirian Moghadam.

**Writing—original draft:** Mahdieh Salmani, Somayeh Hekmatfar.

## Competing Interests

The authors declare that they have no competing interests. of

interest.

## Ethical Approval

This study has been approved by the Ethics Committee of Ardabil University of Medical Sciences (ARUMS) with the code IR.ARUMS.REC.1399.627, confirming that all methods of this study were performed in accordance with the relevant guidelines and regulations. All participants provided informed consent.

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