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Evaluation of Pediatric Patient's Age, Behaviors, and Reasons for the First Dental Visit in Edirne, Turkey: a Cross-Sectional Study

Evaluación de la edad, los comportamientos y las razones de la primera visita dental del paciente pediátrico en Edirne, Turquía: un estudio transversal

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ABSTRACT: Oral and dental health are vital parts of general baby health, and early dental visits provide significant prevention-focused intervention and parental counseling regarding oral health. Evaluating the age and main complaints of children is therefore important during their first dental visit (FDV). The purposes of this study were to determine the age, reason for the visit, behavioral response, and caries status at the FDV and to evaluate the factors affecting these parameters. Parents of 325 pediatric patients (159 males; 166 females; mean age 7.20 ± 2.78 years) at their FDV were asked to fill out a questionnaire requesting sociodemographic information and their child's medical history, brushing habits, and reasons for attending dental consultation. The decayed-missing-filled-teeth (dmft/DMFT) scores were also recorded. The child's behavioral responses during the FDV were evaluated according to Frankl's Behavior Rating Scale (FBRS). Higher maternal education level and dmft/DMFT score were associated with earlier FDV age. The most common reason for the FDV was dental caries in 33.5% of patients, followed by toothache (29.5%). Most of the children showed positive behavior (46.7%), with positive behavior affected by age and negative behavior affected by the dmft/DMFT score and distance from home. The mean dmft/DMFT score was 8.1 ± 4.4 and was negatively affected by toothbrushing frequency and family income. These study results indicate that Turkish children living in Edirne present at a late age for the FDV. Raising awareness in terms of dental health care among parents is important to ensure that children attend their FDV at an early age.

KEYWORDS: Oral hygiene; First dental visit; Children; DMFT.

RESUMEN: La salud oral y dental son partes vitales de la salud general del bebé, y las visitas dentales tempranas brindan una importante intervención centrada en la prevención y asesoramiento a los padres sobre la salud bucal. Por lo tanto, evaluar la edad y las principales quejas de los niños es importante durante su primera visita al dentista (FDV por sus siglas en inglés). El propósito de este estudio fue determinar la edad, motivo de visita, respuesta conductual y estado de caries en la FDV y evaluar los factores que afectan estos parámetros. A los padres de 325 pacientes pediátricos (159 hombres; 166 mujeres; edad media $7,20 \pm 2,78$ años) en su FDV se les pidió que llenaran un cuestionario solicitando información sociodemográfica y el historial médico de su hijo, hábitos de cepillado y motivos de presentación a la consulta dental. También se registraron las puntuaciones de dientes cariados-faltantes-obturados (dmft/DMFT). Las respuestas conductuales del niño durante la FDV se evaluaron de acuerdo con la escala de calificación de conducta de Frankl (FBRS). Un mayor nivel de educación materna y una puntuación de dmft/DMFT se asociaron con una edad más temprana de la FDV. La causa más común de la FDV fue la caries dental en el 33,5% de los pacientes, seguida del dolor de muelas (29,5%). La mayoría de los niños mostró un comportamiento positivo (46,7%), con un comportamiento positivo afectado por la edad y un comportamiento negativo afectado por el puntaje dmft/DMFT y la distancia del hogar. La puntuación media de dmft/DMFT fue de $8,1 \pm 4,4$ y se vio afectada negativamente por la frecuencia de cepillado de dientes y los ingresos familiares. Los resultados de este estudio indican que los niños turcos que viven en Edirne se presentan a una edad avanzada para la FDV. Es importante concienciar a los padres sobre el cuidado de la salud dental para garantizar que los niños asistan a su FDV a una edad temprana.

PALABRAS CLAVE: Higiene bucal; Primera visita dental; Niños; DMFT.

INTRODUCTION

Early childhood caries (ECC) is a chronic multifactorial infectious disease and one of the most common diseases in children (1). Despite preventive practices to prevent tooth decay, ECC continues to be a worldwide health problem (2). In the last 6 months, the Turkey Statistical Institute data (2019) have revealed an age range of 0-6 years in group-treated diseases, with oral and dental diseases ranking as one of the top five diseases at 6.4%. A review by Baltaci *et al.* (3) documented the

prevalence of early childhood caries in Turkey at between 40.7% and 69.8%.

The American Academy of Pediatric Dentistry (AAPD) and the American Dental Association (ADA) recommend that children have their first dental visit (FDV) within six months of eruption of the first primary tooth and no later than 12 months of age (4). Early visits are important for the child to gain familiarity with the dental clinic and dentist, as this reduces dental anxiety in young children. The FDV of children is also an important opportunity for the

parents to address their own anxieties and fears about dental care, as these can be inadvertently transmitted to the child (5).

Early visits for infants and their families offer a chance to educate and inform parents about the oral health of their children. The caregivers can be provided with dental guidance in the form of information on infant oral hygiene and oral habits, home-based and office-based fluoride therapies, dietary counseling, caries risk evaluations, and prevention of dental injuries (6). Infancy dental examinations can diagnose dental disease early, thereby increasing the possibility of using conservative nonsurgical caries management techniques, including remineralization and fluoride varnish for early lesion arrest (7). Conservative treatments can delay or prevent any need for surgical intervention, thereby minimizing the risk of adverse outcomes by eliminating or postponing more extreme and resource-intensive behavior management techniques, such as moderate and deep sedation and general anesthesia (8).

Early dental visits are expected to improve oral health and reduce the child's future dental risk. Untreated dental problems increase in severity and intensify the need for more extensive and costly treatment; therefore, timely intervention has great potential to reduce the costs of dental treatment (9). One of the most important aims of the FDV is to diagnose and control tooth decay, which can often be observed shortly after the tooth eruption (10). In Turkey, 19% of children start school with dental caries in their permanent dentition. An average of 4.5-5 caries occur in the deciduous teeth in the 6-8 year age group, and the prevalence exceeds 80% (11).

Despite the importance of early dental visits, the FDV age is usually over 1 year old (12-15). The primary purpose of this study was to present the parameters of age, reasons for the visit, behavioral response, and caries status at the FDV.

The secondary aim was to evaluate the factors affecting these parameters.

MATERIALS AND METHODS

Ethical approval was obtained for this study (Decision number: TUTF-BAEK 2020/122), and 325 children who applied to Trakya University, Faculty of Dentistry, Department of Pediatric Dentistry for their FDV between December 2019 and March 2020 were included. A signed informed consent form was obtained from the parents of each child. Children who had not undergone any dental procedure from another dentist were also included in the study. Children who had any mental/physical disability were excluded from the study.

Parents were asked to fill out a questionnaire consisting of 3 sections that requested sociodemographic information about the family, information about the child's medical history and brushing habits, and specific information about the FDV. Information about family income was a part of the sociodemographic information section. Family income less than 2000 Turkish Lira (TL) was classified as low, between 2000 and 6700 TL was classified as medium, and more than 6700 TL was classified as high. The age of the children at the FDV, the person who brought the child to the clinic, and the main reasons for the FDV were questions included in the section on specific information about the FDV.

Children were clinically examined with a curved probe and dental mirror under a dental reflector light. Two examiners evaluated the caries status of each child to record the decayed-missing-filled-teeth (DMFT) scores (16). The study group included ages with both primary and mixed dentition, so the summation of both primary (dmft) and permanent (DMFT) values was also reported and presented as dmft/DMFT. This summed value was also used for linear regression analyses. The behavioral responses during the first examination

were evaluated according to the FBRs (17) in the patients who were over 3 years of age.

STATISTICAL ANALYSIS

Statistical analyses were conducted using the IBM SPSS 21.0 program. Beside descriptive statistics, a stepwise linear regression test was used to determine factors affecting the dmft/DMFT score, age, and behavioral response at the FDV. A *p* value less than 0.05 was accepted as statistically significant.

RESULTS

The mean age of the children was 7.20 ± 2.78 years (range: 0.46-13.06 years); 166 patients (51.1%) were female and 159 (48.9%) were male. The age and sex distributions of the patients are shown in Table 1. The majority of the children belonged to families with middle (57.2%) and low (35.2%) monthly incomes. The education levels of the parents are presented in Table 2.

The person who brought the child to the clinic was most frequently the mother (55.4%), followed by the father (24.6%), and then both parents (17.8%). Only 2.1% of the patients were brought to the clinic by other relatives. The parents of 94.8% of the patients were alive and living together, whereas 4.9% of the parents were divorced and 1 patient (0.3%) had lost his father. The majority of the children (56.9%) came from outside the city, followed by patients from the city center (28.9%) and districts (14.2%).

In total, 216 patients (66.5%) were referred by other dentists and 14 (4.3%) by pediatricians, while the remaining 95 reported that they came to our clinic by their own preference (29.2%). The reasons for the patients coming to the clinic are shown in Figure 1. The most common reason was dental caries in 33.5% of the patients, followed by toothache (29.5%), and abscess formation

(12.3%). The mean dmft, DMFT, and dmft/DMFT values of the patients were 6.7 ± 4.7 ; 1.4 ± 2.0 and 8.1 ± 4.4 , respectively.

Twenty (6.2%) of the children reported a history of systemic disease which are listed in Table 3. Overall, 65.5% of the children used antibiotics before 2 years of age. In 92.5% of these children, the reason for antibiotic use was upper respiratory tract infections. The most commonly used antibiotic was penicillin, in 74.6% of the cases, followed by cephalosporins, in 19.7% of the cases. In total, 93.8% of the children used antibiotics between the ages of 2 and 8 years. In 84.3% of those children, the reason was upper respiratory tract infections, and 95.1% of the cases used penicillin.

Behavior assessment results according to the FBRs are shown in Figure 2. The majority of the children showed positive behavior (46.7%). The information about the toothbrushing habits of the patients and the use of toothpaste are presented in Table 4.

The regression analysis for the determination of factors that could affect the age of the first dental visit revealed that higher maternal education level ($p=0.007$) and higher dmft/DMFT score ($p<0.001$) were associated with a significant decrease in the age of admission.

The regression analysis for the determination of the factors that may affect the behavior scale indicated that a farther home to hospital distance ($p=0.006$) and a higher dmft/DMFT score ($p=0.011$) negatively affected the child's behavior, while a higher age ($p<0.001$) positively affected the behavior.

The regression analysis for the determination of factors that could affect the dmft/DMFT score indicated a significantly lower dmft/DMFT score with increasing monthly family income level ($p<0.001$) and frequency of toothbrushing ($p=0.027$). In

addition, patients with divorced parents ($p=0.002$) and those who came to the clinic on their own preference rather than being referred ($p=0.006$) had significantly lower dmft/DMFT scores.

Table 1. Age and sex distribution of the participants

	Female	Male	Total
Mean Age \pm SD*	7.48 \pm 2.69	6.92 \pm 2.85	7.20 \pm 2.78
<1	1 (0.6%)	1 (0.6%)	2 (0.6%)
1-3	6 (3.6%)	10 (6.3%)	16 (4.9%)
3-6	50 (30.1%)	58 (36.5%)	108 (33.2%)
6-9	60 (36.1%)	52 (32.7%)	112 (34.5%)
9-12	39 (23.5%)	31 (19.5%)	70 (21.5%)
>12	10 (6%)	7 (4.4%)	17 (5.2%)
Total	166	159	325

Percentages corresponds to the ratios in the column.

*SD: Standard deviation

Table 2. Education level of children's parents (highest degree obtained).

	Mother	Father
Illiterate	15(4.6%)	3(0.9%)
Primary school	147(45.2%)	136(41.8%)
High school	123(37.8%)	140(43.1%)
University	36(11.2%)	44(13.1%)
Master/Doctorate	4(1.2%)	2(0.6%)

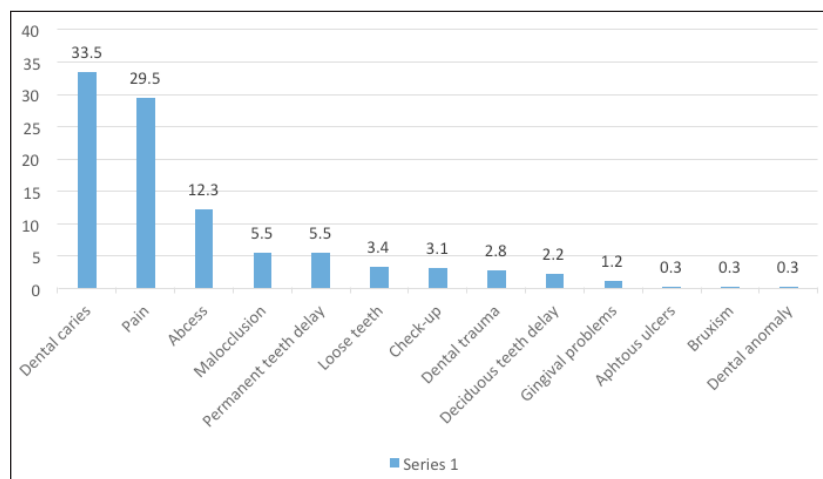


Figure 1. Percentages of the reasons of the first dental visit.

Table 3. Systemic diseases reported by children's parents during FDV.

Disease	N (%)
Epilepsy	5 (25)
Asthma	4 (20)
Anemia	2 (10)
Throid diseases	2 (10)
Other	7 (35)
Total	20 (100)

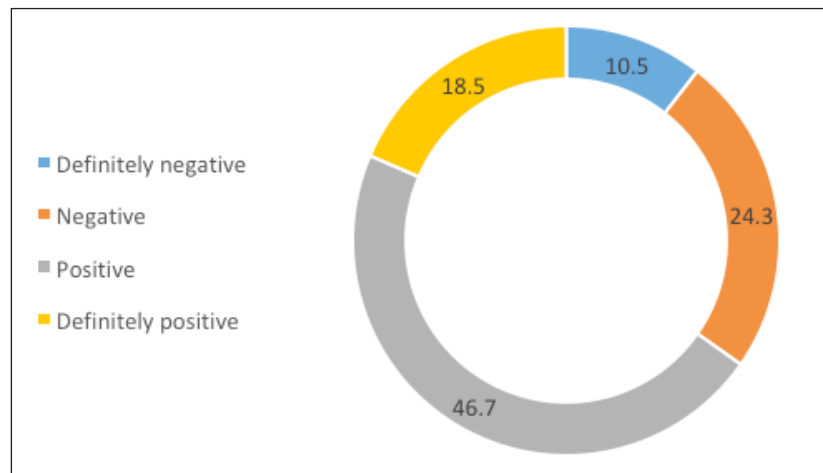


Figure 2. Behavior state of children according to Frankl's Behavior Rating Scale during FDV.

Table 4. Tooth brushing habits and toothpaste use among pediatric patients in FDV.

Tooth brushing frequency	
Never	18(5.5%)
Once or Twice a week	173(53.2%)
Once a day	99(30.5%)
Twice a day	35(10.8%)
Toothpaste usage	
Yes	294(95.8%)
No	13(4.2%)
Toothpaste ingredient	
Containing Fluoride	170(57.8%)
Non-containing Fluoride	48(16.3%)
Unknown	76(25.9%)

DISCUSSION

As in other medical branches, preventive dental methods have become important in today's health policy. The importance of early diagnosis and treatment of diseases that cannot be prevented is a universally accepted reality. For these reasons, the importance of early and regular dental visits cannot be denied.

In the present study, the mean age of FDV was 7.20 ± 2.78 years, whereas other studies on FDV have reported mean ages between 3.79 and 7.90 years (12,14,18). The FDV of patients under the age of 1 year was reported in previous studies as between 0.63 and 8.00% of the population. In the present study, only 0.6% of the children were under 1 year of age. An FDV at less than 3 years of age was reported in 3.00-40.50% of the population in previous studies (13,19-21), whereas the rate was 5.5% in the present study. Other reports have stated that most of the children were aged between 6 and 9 years (12,19) or 3 and 6 years (13,15) at FDV. In the present study, 34.5% of the patients attending their FDV were between ages of 6 and 9 years and 33.2% were between the ages of 3 and 6 years, in agreement with the previous literature. However, these findings obviously indicate that we are quite far from the target in terms of early dental visits. In addition, in this study, we found that higher dmft/DMFT scores were associated with lower FDV ages. The increasing numbers of caries again clearly emphasize the importance of an earlier visit to the dentist.

In the literature, the most common cause of the FDV is dental caries or toothache. Studies reporting dental caries as the most common cause reported that 34.9-59.9% of the FDVs were due to caries (13,18,21). Studies reporting tooth pain as the most common cause reported that 33.1-34.9% of the FDVs were due to pain (12,14,15,20). These two reasons constituted 42.6-61.1% of the

reasons for the FDV (12,14,15,20,21). In this study, the most common reason for the FDV was dental caries in 33.5% of patients, followed by toothache (29.5%), with these two reasons accounting for 64% of the total FDVs. Patients who attended our clinic for control purposes constituted only 3.1% of the total study group. In the literature, the group of patients who came for control purposes was typically between 2.6 and 54.3% (12-15,18, 20-22). The results of the present study show that the routine control examinations that we expect to see as the most common cause of FDVs constitute a very low fraction of applications, in accordance with the literature data.

In this study, the most common education level of both mothers and fathers was primary school. A similar study conducted by Sanguida *et al.* (19) reported a good overall education level of the parents, with 85% of them having completed high school and above, with most parents unaware of the FDV time, regardless of education level. However, Efe *et al.* (23) reported that mothers with a high educational level had children with more certain knowledge about oro-dental health, and 86.1% of the children of those parents said that they had learned to brush their teeth from their parents. In this study, higher maternal education level was associated with a significant decrease in the age of the FDV. This may reflect the fact that mothers with higher education levels are more likely to be aware of the control examination recommendations or to react earlier to lesions in the child's mouth.

This study showed that the most common systemic diseases were epilepsy (25%) and asthma (20%). Penicillin was used in 74.6% of the cases. Daou *et al.* (18) reported the most common medical problem as allergic/asthma (15.9%), followed by ear, nose, and throat problems (12.7%). Overall, 9.1% of the children had already taken antibiotic(s) (18).

In this study, the FBRs scores revealed that the most common behavior state of children was positive (46.7%). Alshahrani *et al.* (15) and Viswanath *et al.* (24) reported that approximately 39.67% and 80% of the children, respectively, showed positive behavior at the FDV. Viswanath *et al.* (24) attributed this high percentage to the assessment of the state of behavior during a non-invasive procedure. In the present study, increasing age was found to have a positive effect on the behavioral status, whereas increasing distance between the hospital and home and higher dmft/DMFT scores had a negative effect. The positive effect of age on behavioral status is already well known, whereas the negative effect of a long distance between the hospital and the home may reflect a decrease in the adaptability of the child after a difficult and tiring journey. Children with a high dmft/DMFT score may also have been exposed more often to frightening rhetoric about dentists as a result of their caries being noticed by their families and their neighbors.

The study by Efe *et al.* (23) reported that 77.5% of the children knew that they needed to brush their teeth after meals and before going to bed. Hatipoglu *et al.* (25) reported that only 51.3% of the children knew about the necessity of brushing their teeth at least twice a day, while Berk *et al.* (26) reported that 96.3% of the children knew this. Serious differences are therefore clearly evident between these studies in terms of consciousness about brushing and this is therefore reflected in the FDV. Gökalp *et al.* (27) reported children brushing their teeth at least twice a day and children never brushing their teeth as 30.1% and 9.4% of their study population, respectively. The same ratios were 10.8% and 5.5% in the present study; however, although most of the children brushed their teeth (94.5%), only a small fraction (10.8%) did so at the recommended frequency.

Only 29.2% of the children participating in this study came to our clinic by their own

preference, without any referral. Daou *et al.* (18) reported that 74.1% of their child patients came without any referral. Most of the referrals we received were from other dentists, and we believe that this is due to the fact that our hospital is a tertiary center.

Mika *et al.* (14) reported a mean dmft/DMFT index of 3.82 for the total analyzed pediatric population during the FDV. In this study, the mean dmft, DMFT and dmft/DMFT values of the patients were 6.7 ± 4.7 , 1.4 ± 2.0 , and 8.1 ± 4.4 , respectively. These values are quite high compared to the study conducted by Mika *et al.* (14), but the average age at FDV for our patients was 7.2 years, while it was 3.8 in the earlier study. This shows that resistance to dental visits is higher in Turkey.

We also reported a significantly lower dmft/DMFT score as monthly income level of the family and as frequency of toothbrushing increased. In other studies investigating the effect of socio-economic situation on caries risk, poor socio-economic status has been shown to negatively affect oral hygiene and nutrition, thereby increasing the risk of caries and a low emphasis on oral hygiene (28, 29). One of the main obstacles to dental visits handled by our interviewees was the cost of dental treatments. Due to the absence of a national oral health policy in Turkey, an oral health delivery system is lacking (30). Implementing oral health policies, such as Early Head Start programs (31) and Access to Baby and Child Dentistry (ABCD) programs (32), may have the potential to increase access to care and to improve oral health.

Lack of knowledge about the primary teeth and the importance of preventive dental visits are another important issue to be taken into consideration. Mass media, school, and parents' dental health education can make a significant contribution in terms of raising awareness about the importance of the FDV. Patients living in rural areas are also likely to face geographic remoteness, poor

or no public transportation, and poverty; therefore, they could benefit from teledentistry to obtain basic information about oral health care (33).

CONCLUSION

According to the present study results, Turkish population is far from the ideal early dental visit age target. As the knowledge level increases, the dental visit age decreases, emphasizing the importance of community education. In order to take advantage of the early dental visit, stronger health policies should be implemented to reduce the age of the first dental visit.

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