

Parental awareness about the presence of permanent first molars and its relation to DMFT index in 7-9-year-old children

J. Vejdani ¹, N. Amrollahi ^{2✉}, M. Amrollahi ³, Z. Peirowfeiz ⁴, D. Alinejad ⁵.

¹ Assistant Professor, Dental Sciences Research Center, Department of Pediatric Dentistry, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran

² Assistant Professor, Dental Research Center, Department of Pediatric Dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

³ Dental Sciences Research Centre, Department of Orthodontics, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran

⁴ Dentist, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran

⁵ Assistant Professor, Department of Pediatric Dentistry, School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Background and Aim: Permanent first molars (PFMs) are highly susceptible to caries due to their special anatomical form, early eruption, lack of awareness about their eruption and misidentifying them from the primary teeth. Parental awareness about the existence of PFMs in their children's mouth could lead to caries prevention. This study aimed to determine the level of parental awareness about the presence of PFMs and its relation to DMFT index in 7-9-year-old children in Rasht.

Materials and Methods: This analytical cross-sectional study was conducted on 553 elementary school students in Rasht. Cluster random sampling was done. A checklist was filled out by the parents after obtaining their informed consent. Intraoral examination was performed by one specialist using a dental mirror, an explorer and a head light. Children's DMFT index of PFMs (DMFT6) was recorded. Data were entered into SPSS software version 21. Chi-square test, Cochran's test, sign test and logistic regression model were used for statistical analysis.

Results: In this study, only 151 parents (27.3%) knew about the PFMs' eruption time. DMFT6 was 0.48 ± 0.84 in 7-9-year-olds. There was a significant correlation between DMFT6 and the frequency of consumption of sugary snacks ($P=0.025$) and toothbrushing ($P=0.016$). But the correlation between DMFT6 and parental knowledge ($P=0.918$), gender ($P=0.44$), father's educational level ($P=0.103$) and mother's educational level ($P=0.145$) was not significant.

Conclusion: Considering the low level of awareness of parents, attention to early education, prevention and treatment is necessary.

Key Words: Dental Caries, Knowledge, Molar, Parents

✉ Corresponding author:
N. Amrollahi, Assistant
Professor, Dental Research
Center, Department of Pediatric
Dentistry, School of Dentistry,
Isfahan University of
Medical Sciences, Isfahan, Iran

nargeslamr@yahoo.com

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Introduction

Permanent first molars (PFMs) are the first teeth that erupt posterior to the deciduous teeth. The anatomical occlusal form as well as strong roots make PFMs the most important teeth in the

occlusion. These teeth also preserve the vertical dimension of the face. Due to the painless eruption of PFMs without any primary tooth loss, parents usually consider these teeth as deciduous teeth [1]. Plaque accumulation in deep fissures especially in

the first two years after their eruption makes the PFMs susceptible to caries. The carious lesions are usually visible after drying and plaque removal [2, 3].

In 6-7 year-old children, despite the rapid development in toothbrushing ability, it is still the responsibility of the parents to be the oral hygiene provider [2]. In one study, the caries prevalence in 7-8-year-old children was compared with that in 9-12 year-olds and it was found that the prevalence of dental caries increases by age [4].

Studies have shown that 71% of children have decayed PFMs, and the caries prevalence in the upper and lower PFMs is estimated to be 46% to 47%, and 40% to 41%, respectively. Hence, the maxillary teeth are more prone to caries than mandibular teeth, which may be the result of limited access to the upper jaw [5]. A previous study assessed the parental knowledge about oral hygiene of their children and timing of PFM eruption and revealed that only 5.48% of the parents were aware of these facts, which resulted in poor diet and oral health [6].

Al-Samadani and Ahmad [4] assessed the prevalence of PFM caries and its relation to the dental knowledge of 9-12-year-old children. They found that children's knowledge had a positive correlation with the PFM carious lesions. Sadeghi [7] reported that caries prevalence among 12-year-old students in Rafsanjan was less than the global rate. Warren et al. [8] assessed first-molar caries experience in Taiwanese children and declared that prevention should be promoted to reduce the rate of caries among children, especially those at high risk of dental caries. Zouashkiani and Mirzakhani [1] investigated the parental knowledge about the presence of PFMs and its effect on oral health. Hashemi et al. [9] found that the DMFT index of PFMs was equal for children whose mothers were and were not aware of eruption of these teeth in their children's mouth.

Despite the reduction of caries prevalence in developed communities, dental caries is still among the highly prevalent diseases in children. Direct supervision of parents on children's oral health is essential, and parental awareness about the timing of PFM eruption can improve children's oral health status. These teeth also need close sanitary care and parental notice. The aim of this

study was to determine the parental knowledge about the presence of PFMs in 7-9-year-old children in Rasht city.

Materials and Methods

In this analytical cross-sectional study, a total of 553 school children between 7 to 9 years were randomly selected from public and private primary schools in Rasht city, Iran. A checklist was prepared to educate the parents about the study purpose, the procedures and the risks and benefits, and to obtain their informed consent before their enrollment. The inclusion criteria were children in whom the PFMs had erupted and did not have any systemic disease or dental developmental anomalies.

In this study, sampling was cluster random. According to the sampling frame of students in Rasht, this framework was divided into primary schools of first and second regions, public and private schools and boys and girls schools. Based on the ratio of private and public schools in Rasht, 18% and 82% of samples were collected from these schools, respectively. A simple random sample was obtained of many clusters from all possible classrooms and data were obtained on every child in each of the randomly selected classrooms. Children were selected by choosing a random number from the students' class list.

Finally, examination was done in 12 schools from October 2014 to March 2015 and only in children who had their four PFMs erupted and their parents filled out the questionnaires. The questions included child's dental history, parental awareness about the presence of PFMs, parental education and number of children in the household.

Intraoral examination was done using a dental explorer, dental mirror and a headlight, and the DMFT of the PFMs was recorded according to the World Health Organization criteria [10]. In order to calibrate the decay detection, first in a 25-individual sample, the examiner's diagnosis was compared with the gold standard (under the supervision of a pediatric dentist with more than 10 years of clinical experience). Calibration was statistically significant at Kappa=0.859 ($P<0.0001$) and showed very high agreement. Data were analyzed by chi-square, logistic-regression and Cochran's tests.

Results

The present study assessed the parental awareness about the presence of PFMs in 533 elementary school children between 7-9 years (57.9% boys, 42.1% girls) in Rasht.

The mean DMFT index of PFMs (DMFT6) was 0.48 ± 0.84 ; 387 students (30%) were caries free. In 57% of students, PFMs were decayed and 16% of them had filled PFMs.

Figure 1 shows the increasing trend of DMFT6 by age. There was no significant correlation between gender and the mean DMFT6 in the study population ($P=0.44$).

Based on DMFT index, 87.9% of PFMs were sound, 9.3% were decayed and 2.8% were filled, and none of the permanent teeth were extracted. About 63% of the children visited the dentist 1-2 times a year while 27.1% had no dental visit. Moreover, 66.6% of the children brushed their teeth once a day and 16.7% reported toothbrushing rarely or irregularly. In 86% of the cases, parents reported supervision on toothbrushing. Study results exhibited that 23.1% of children consumed sugary foods twice a day, 46.7 once a day, 22.9% two to three times a week and 7.3% once a week.

Table 1 demonstrates the correlation between DMFT and other variables (visiting a dentist, sugar intake, frequency of toothbrushing and parental supervision). The correlation between DMFT index and the frequency of toothbrushing

($P=0.016$) and sugar intake ($P=0.025$) was significant.

The results indicated that children who brushed irregularly had the highest DMFT index. DMFT index in children who consumed sugary foods or drinks twice a day or more was higher.

It was shown that 67.7% of parents were aware of the presence of PFMs while only 27.3% of them had correct information about their eruption time.

There was no significant correlation between the DMFT index and parental knowledge about the PFM eruption time ($P=0.918$). Table 2 compares the caries prevalence in PFMs according to the Cochran's test and reveals that the highest and lowest caries prevalence were in the lower left (15.7%) and upper right (4%) PFMs, respectively ($P<0.001$). The prevalence of caries in the upper and lower PFMs was 10.8% and 27.3%, respectively and according to the sign test this difference was significant ($P<0.001$). The percentage of sound left and right PFMs was 76.9% and 82.6%, respectively and this difference was statistically significant ($P=0.003$).

Parental knowledge about timing of PFM eruption had a significant correlation with father's level of education while there was no correlation with mother's level of education. On the other hand, parental education had no correlation with DMFT6 (Table 3). Only 24 children (4.34%) had been treated with fissure sealants (Figure 2).

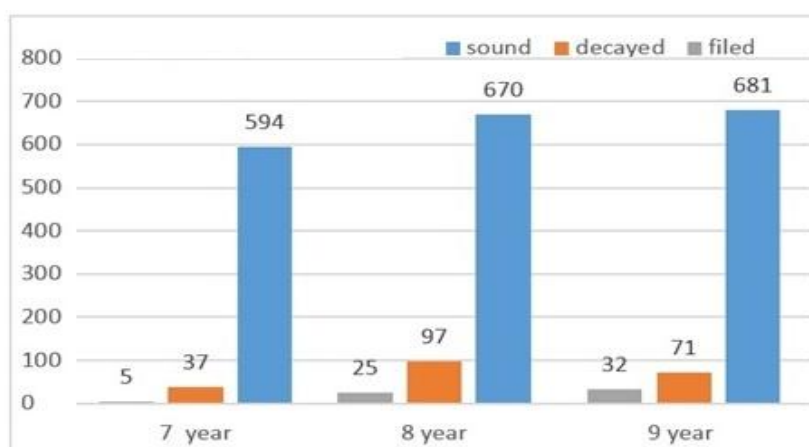


Figure 1. Distribution of sound, decayed and filled teeth by age

Table 1. Correlation between DMFT and visiting a dentist, sugar intake, frequency of toothbrushing and parental supervision

Variables	Dental visit			Sugar intake				Toothbrushing frequency				Supervision	
	No dental visit	1-2 y [♦]	3 y ≤	1w●	2-3w	d#	2 d	Rarely	1 w	d	2-3 d	Yes	No
Mean	0.46	0.44	0.69	0.28	0.54	0.4	0.5	0.73	0.6	0.4	0.34	0.46	0.64
SD	0.79	0.82	0.93	0.60	0.89	0.8	0.8	1.1	1.6	0.8	0.64	0.82	0.92
P-value	0.124			0.025*				0.016*				0.071	

*: Significant difference (P<0.05)

♦y=Yearly; ●w=Weekly; #d=Daily

Table 2. Distribution of decayed, missing and filled teeth

Tooth	16			26			36			46			Total
	S *	D ♦	F ●	S	D	F	S	D	F	S	D	F	
Number	525	22	6	511	35	7	440	87	26	469	61	23	553
Percentage	94.9	4	1.1	92.4	6.3	1.3	79.6	15.7	4.7	84.8	11	4.2	100

*S=Sound; ♦D=Decayed; ●F=Filled

Table 3. Mean DMFT6 based on parental education

Parental education	Father				Mother			
	I*	Ud•	H▪	B ^a	I*	Ud	D	L
Awareness about timing of eruption	(0.10)1	(36.3)29	(24.6%)77	(29.3%)43	(0.0%)0	(36.8%)32	(27.7%)82	(23.4%)36
P-value	0.004*				0.114			
Mean DMFT	0.11±0.33	0.57±0.95	0.53±0.88	0.38±0.71	0.20±0.42	0.59±0.98	0.50± 0.83	0.37±0.76
P-value	0.103				0.145			

* Chi-square test, significant correlation (P<0.05)
 *Illiterate; •Under high-school diploma; ▪High-school diploma; ^aBachelor’s degree or higher

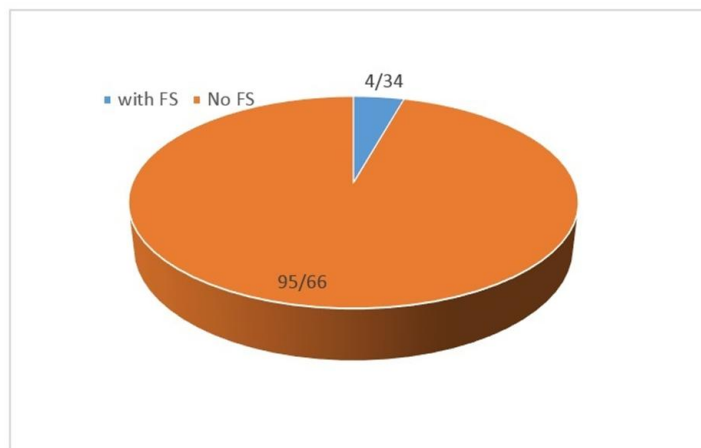


Figure 2. Distribution of children with fissure sealants on permanent first molars

Discussion

Based on the present study results, the mean DMFT6 was 0.48 ± 0.84 . In a study conducted by Haerian et al. [11] on 7-11-year-old children of elementary schools in Yazd, the DMFT index of 7-year-olds was 0.36 ± 0.92 . Mohebi et al. [12] found that the mean DMFT index in 9-year-olds was 1.09 ± 0.22 , which was higher than the results of the present study. In their study, the DMFT index of all teeth was considered while in our study, only PFMs were evaluated. On the other hand, the mean age of children in the present study was lower than that in their study, which results in lower DMFT index. Haerian et al. [11], Preshaw et al. [13] and Khedmat and Bahreyni [14] also showed that caries index was related to age. In the present study, 30% of PFMs were sound while 70% were decayed or filled. The results reported by Lame [15] in Kashan were in accordance with our study results (18.9% of sound and 81.8% of decayed PFMs).

This study found no significant correlation between DMFT6 and gender, which is the same as the results of Ajami and Ebrahimi [16] and Mohebi et al. [12]. While in the study by Haerian et al. [11] the caries index was higher in girls. In another study, the highest rate of DMFT belonged to decayed teeth [17]. Hence, parental oral health education is necessary to take care of PFMs.

This study revealed no significant correlation between caries and dental visit; 27% of the children had no dental examination and 63% of them had at least one dental visit. Similarly, Zouashkiani and Mirzakhani [1] reported that 55.6% of children had at least one dental visit. In most cases, the highest percentage of DMFT belonged to decayed teeth. It shows the need for paying more attention to parental education and early treatment of decayed teeth. Al Ghanim et al. [18] demonstrated that the children who had their first dental visit earlier had better oral health status. In this study, there was a significant correlation between DMFT6 and the frequency of toothbrushing. It means that by increasing the frequency of toothbrushing, the caries index decreased. These findings are consistent with the results of Meamar et al. [19] Mohebi et al. [12] and Lame [15], while there was no significant correlation in another study [20].

By the consumption of sugary foods, salivary pH decreases which is the main factor in tooth decay. In a study by Fallahzadeh et al. [21] a significant correlation was found between the frequency of sugary food intake and DMFT6. These results were similar to our study findings. Lukacs and Largaespada [22] also revealed that increased incidence of caries in girls was related to hormonal fluctuations, while Lame [15] showed no such correlation.

In the present study, the highest and the lowest caries incidence rates were noted in the lower left PFM (15.7%) and upper right PFM (4%), respectively; this difference was statistically significant. Moreover, caries incidence in the left PFMs (23.1%) was higher than that in the right PFMs (17.4%). The specific anatomy, deep occlusal grooves and earlier growing pattern of lower PFMs make them more susceptible to caries. These findings were confirmed by Aghahosseini and Enshaei [23] and Lame [15].

Many families are not able to treat their children's teeth due to financial problems. Therefore, it is important for the parents to know the PFMs' eruption time. In this study, only 27.3% of parents were aware of the PFMs' eruption time. There was no correlation between the parental knowledge and DMFT6, which could be due to the low caries prevalence in our young study population. In this study, only 24 children (4.43%) had been treated with sealants, which represents the very low percentage of preventive care in our study population.

The present study found no significant correlation between parental education and DMFT6, which is similar to the findings of Lame [15]. Father's level of education significantly affected their knowledge about the timing of eruption of PFMs. However, Zouashkiani and Mirzakhani [1] found no correlation between them. Fallahzadeh et al. [21] also revealed that by increasing the parents' level of education, the PFMs' occlusal caries decreased. Considering the important role of PFMs in the occlusion, mastication and arch integrity, it is necessary to educate the parents about the timing of PFMs' eruption and their distinction from primary teeth. Prevention methods based on frequent recall examinations with at least 6-month intervals should be considered.

Conclusion

The results of this study indicated that DMFT6 in 7-9-year-old children in the city of Rasht was 0.48 ± 0.84 and untreated dental caries was the major component. According to low level of parental awareness in this study, attention to early parental education, prevention and treatment of PFMs is imperative.

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