JODR
Volume 12, Issue 1, 2025

Mothers' Awareness about the Presence of the First Permanent Molars Teeth in Kurdistan, Iraq

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Received 07 January, 2025.
Accepted for publication on March 29, 2025.
Published 6 May, 2025.
Doi: https://doi.org/10.58827/641790idtffd

Abstract
Introduction The first permanent molar erupts at age 6-7, posterior to the second deciduous molar teeth. Since the painless eruption of first permanent molars and with no primary tooth loss, mothers suspect permanent teeth emerge after all deciduous teeth are exfoliated, consider the first permanent molar as a deciduous tooth, and are unconcerned about their health. **Objectives** To evaluate the mothers' awareness and knowledge about the eruption time of the first permanent molar in the Kurdistan region, Iraq. **Materials and Methods** This cross-sectional study was conducted on 100 Kurdish children aged 6-12 years with their mothers in Erbil and Duhok cities, Kurdistan Region, Iraq. A cross-sectional random sampling was done. Questionnaires were filled out by the mothers, and the first permanent molar condition was registered in dental clinics. Statistical analysis was done using SPSS version 26, a T-test to compare the variables measured with a statistical significance of $p \leq 0.05$. **Results** The results showed a significant relationship between the mother's level of education and their awareness of first permanent molar teeth (P= 0.000) and between first permanent molar status and brushing (P= 0.00). A non-significant correlation existed between the mother's awareness and the first permanent molar status (P = 0.11). There was a significant difference between FMP status concerning brushing (P = 0.00), eating snacks (P = 0.04), and regular and irregular dental visits (P =0.01). **Conclusion** Parents lack awareness of the presence of the first permanent molar. Therefore, parent awareness of the first permanent molar eruption age and caries prevention techniques is important.

Keywords: Deciduous teeth; dentition; dental health education; first permanent molar.

Introduction

The first permanent molar (FPM) erupts at age 6-7 years posterior to the second deciduous molar teeth. FPMs are the largest teeth in the oral cavity. They play an important role in mastication, occlusion, the correct positioning of other teeth, aesthetics, and vertical orientation preservation. With deep pits and fissures on the occlusal surface of the FPM, it is an ideal location for storing food and sweet snacks. This predisposes the tooth to dental caries very soon after its eruption and reserves a greater proportion of dental caries in the oral cavity (Aras and Dogan, 2020). Since the painless eruption of FPMs and with no primary tooth loss, mothers suspect permanent teeth emerge after exfoliation of deciduous teeth, consider FPMs as deciduous, and are unconcerned about their health. Dentists can visualise the caries after drying and plaque removal. Despite rapid development in toothbrushing ability in 6-7-year-old children, the parents are responsible for providing oral hygiene (Sahiti, et al, 2019). One of the most common causes of early caries and loss of teeth is ignorance of the existence of PFM (Elkarmi et al, 2019). According to Zouashkiani and Mirzakhan, (2007), parental knowledge about the timing and manner of the FPM eruption has a major impact on the child›s dental health. In contrast, Vejdani et al, (2018) concluded that there was no significant correlation between mothers› level of education and parental knowledge. With the reduction in caries prevalence in developed societies, dental caries remains one of the most common diseases in children. Direct maternal monitoring of children›s oral health is critical. Mothers aware of the timing of FPM eruption can enhance children›s oral health. These teeth require careful attention and the observation of the mothers. Attention to early parental awareness, prevention, and care of PFMs is commanding (Vejdani, 2018). The importance of this research is that it will give an idea about the mothers' awareness of FPM in Kurdistan, Iraq, to put strategies and recommendations to promote the knowledge of the society about the eruption time and presence of FPM. The study hypothesised that the mothers' awareness of the eruption of FPM is essential in preventing dental caries in this tooth. This study aimed to evaluate the mothers' awareness of the eruption time and the presence of FPM in children of the Kurdistan region in Iraq and its relation to dental caries; therefore, we can identify the weak points and provide recommendations to the community.

Materials and Methods

Before starting the research, the researchers obtained the approval of the faculty ethical committee (Reference No. 7 on 25/09/2024). The researcher explained the aim of the study to the mothers who agreed to participate with their children. The study was started on the 26th of September 2024 and finished at the end of November 2024. The children were selected randomly from many sites in Duhok and Erbil clinics.

Subjects

The study focused on Kurdish children aged 6 to 12 years in the cities of Duhok and Erbil. Children who had not yet had their first permanent molar (FPM) erupt were excluded from the study. The mothers of the children with an erupted FPM participated by completing a questionnaire. An intraoral examination was conducted to assess the FPM status of the children. The participating children were divided into two age groups: 6-9 years and 10-12 years. The inclusion criteria were Kurdish children aged 6-12 years. The included child should have one or more erupted FPM. The mother agreed to participate with her child. Any criteria other than the inclusion criteria were excluded from the study, such as non-erupted FPM, non-Kurdish, and refusal to participate.

Study Design and Sample Selection

The study was a random cross-sectional study to explain the current situation of the FPM and its correlation to the mother's information. The author visited many health centers in Erbil and

Duhok to examine every child in the field of inclusion criteria. One hundred and ten mothers and their children were included in the study. After inclusion and exclusion criteria, the sample was 100 mothers and 100 children.

Intra-oral examination

All children were examined on an ordinary chair using a mirror and a probe. The examination included all FPM in all quadrants of the child's mouth. The study included children who had at least one FPM. Children who have not undergone the FPM were excluded from the study. All the surfaces of the FPM were examined, and any caries on any surface of the tooth was considered unsound FPM (USFPM). In addition, any filling present or missing because of caries was recorded as USFPM, otherwise, it was recorded as sound (SFPM). The tooth was considered carious when the probe had caught in the enamel in case of incipient lesions or the tooth was cavitated. The mothers of the same children were included in the study to answer the questionnaire.

Questionnaire

The questionnaire included four main questions. The first question was whether the mothers knew about the eruption time of the FPM. The second question was about the educational achievement of the mother. The third question was about taking care of the child›s oral health. This question included several branches to test the factors affecting the child›s oral health and teeth. These factors were: do you brush your child›s teeth, does the child visit the dentist regularly, and another question was about his eating habits. The fourth question was about the type of school for the child, whether private or governmental.

Statistical analysis

For analysing the data, SPSS version 26 measures the means of the gender, type of school, awareness of the presence of FPM, and PFM status. The standard deviation and the standard error were calculated. A t-test was used to compare these variables. One-way analysis of variance (ANOVA) was used to compare the level of education and mothers' awareness. The relationship between the variables was measured with a statistical significance of $p \leq 0.05$.

Results

Demographic characteristics of the sample

Table 1 demonstrates the demographic characteristics of the sample. The ages of the children in the sample were from 6 to 12 years. The sample included eight children (8%) aged six years, and the seven-year-olds were 11 children (11%). Whereas, the eight-year-old children were 16 (16%). The ages nine, 10, 11, 12, and 13 years numbers were 14(14%), 17 (17%), 10 (10%), 21 (21%), and three (3%), respectively. The table shows the children's gender, the boys were 55 (55%) and the girls 45 (45%0. In addition, it shows the type of school; the majority of the children were in public schools (85%), while a few were educated in private schools (15%). Considering the mother's education, the table shows that more than a third of the mothers were university graduates (37%), followed by primary school education (29%). Other mothers were illiterate and secondary school educated (19% and 15% respectively). The sample age groups were (6-9) years old (49%) and (10-12) years old (51%).

Relationship between FPM status with different variables

Table 2 illustrates the relationship between FPM status and brushing, eating snacks, dental visits, and mothers' awareness. The children who were brushing their teeth were 63% of the sample, 43 of them had SFPM, and 20 had USFPM. Whereas children who did not brush their teeth were 37%, 10 had SFPM, and 27 had USFPM. The difference between the status of the FPM and brushing was statistically highly significant (P =0.00). The relationship between the FPM status was statistically significant between

those who had multiple snacks a day and those with once-a-day snacks (P = 0.04). There was a difference between FMP status concerning regular and irregular dental visits (P = 0.01). The relationship between the mother›s awareness and the Status of FPM. The mothers who were aware of the presence of the FPM were 49% of the sample, 30 of their children were with SFPM, and 19 had. Whereas mothers who were unaware of the presence of the FPM were 51%, 23% of their children were SFPM, and 28% were USFPM. The total summation of children with USFPM was 53%, whereas 47% had USFPM. The difference between the status of the FPM and mothers' awareness was statistically non-significant (P = 0.11).

Relationship between mother's education and mother's awareness of the presence of FPM

Table 3 illustrates the relationship between Mother›s Education and Mother›s Awareness of the Presence of FPM. The illiterate mothers were 19% of the sample. Five of the children's mothers were aware of the presence of FPM, and 14 were not. The mothers whose education was primary school were 29% of the sample; 3 of the children, their mother was aware of the presence of FPM, and 26 were not. Whereas, the mothers who had their education was secondary school, 15%. Nine of the children and their mothers were aware of the presence of FPM, and 6 were not. Whereas, of the mothers who were university (graduates) 37%, 32 of the children, their mothers were aware of the presence of FPM, and 5 were not, the difference between the status of the type of Mother›s education and Mother›s Awareness of the Presence of FPM was statistically highly significant (P = 0.00).

Relationship between Type of School and Mother's Awareness of the Presence of FPM

Table 4 illustrates the relationship between the type of school and the mother's awareness of FPM presence. The children in public school were 85% of the sample; 39 of the children, their mothers were aware of the presence of FPM, and 46 were not. Whereas the children in private schools, 15% of the sample, 10 of the children, their mothers were aware of the FPM presence, and 5 were not. The difference between the type of school and the mother's awareness of the presence of FPM was statistically non-significant (P = 0.14).

Distribution of the age groups and their relationship with different variables

Table 5 illustrates the relationship between age groups, gender, type of school, awareness of the presence of dental fissure sealants (FPM), and the status of preventive dental measures (PFM). There was no significant difference in the number of children between the two age groups (P = 0.44). Similarly, no significant difference was observed between the types of schools (P = 0.14). However, mothers' awareness was significantly higher in the older age group (ages 10-12) compared to the younger group (P = 0.02). Among the children, those aged 10-12 had a higher prevalence of untreated fissure sealants (27 children) compared to the 6-9 age group, which had fewer children (20). This difference was statistically significant (P = 0.04).

Table (1): Demographic characteristics of the sample and maternal education.

Factors	Frequency	Percent
Children's ages (years)		
6	8	8.0
7	11	11.0
8	16	16.0
9	14	14.0
10	17	17.0
11	10	10.0
12	21	21.0
13	3	3.0
Total	100	100.0
Gender		
Boys	45	45.0
Girls	55	55.0
Total	100	100.0
Type of school		
Public	85	85.0
Private	15	15.0
Total	100	100.0
Mother's education		
Illiterate	19	19.0
Primary School	29	29.0
Secondary School	15	15.0
University Graduate	37	37.0
Total	100	100.0
Age groups		
6 – 9	49	49.0
10 – 12	51	51.0
Total	100	100.0

Table (2): Relationship between FPM status with Brushing, snacks, dental visits, and mothers' awareness.

Variables	Answer	FPM status		Total	p-value (T-test)
		SFPM (N)	USFPM (N)		
Brushing	Yes	43	20	63	0.00*
	No	10	27	37	
More than 2 snacks a day	Yes	30	28	58	0.04*
	No	23	19	42	
Dental Visits	Regular	21	18	39	0.01*
	Irregular	32	29	61	
Mother's Awareness of the Presence of FPM	Yes	30	30	49	0.11
	No	23	23	51	

*Significant difference.

Table (3): The relationship between Mother›s Education and Mother›s Awareness of the Presence of FPM.

Mother's level of education	Mother's Awareness of the Presence of FPM		Total	P-value (ANOVA)
	Yes (N)	No (N)		
Illiterate	5	14	19	0.00*
Primary School	3	26	29	
Secondary School	9	6	15	
University Graduate	32	5	37	
Total	49	51	100	

*Significant difference.

Table (4): Type of School and Mother›s Awareness of the Presence of FPM.

Type of school	Mother's Awareness of the Presence of FPM		Total	P (T-test)
	Yes	No		
Public	39	46	85	0.14
Private	10	5	15	
Total	49	51	100	

Table (5): Distribution of the age groups and their relationship with gender, type of school, mothers' awareness, and FPM status using T-test.

Variables	Age Classes	N	Mean	Std. Deviation	P-value
Gender	6 - 9	49	1.51	0.50	0.44
	10 - 12	51	1.59	0.49	
Type of school	6 - 9	49	1.20	0.40	0.14
	10 - 12	51	1.10	0.30	
Mother's Awareness of the Presence of FPM	6 - 9	49	1.39	0.49	0.02*
	10 - 12	51	1.63	0.48	
PFM status (USFPM)	6 - 9	20	1.37	0.48	0.04*
	10 - 12	27	1.57	0.50	

*Significant difference.

Discussion

The FPM is an important tooth in the mouth due to its role in preserving healthy occlusion and its major role in the chewing process (Aras, 2020). Due to its great importance, dentists have to look for the causes of decay for this tooth, as its decay can lead to its loss over time (Zouashkiani and Mirzakhan, 2006). One of the causes of caries in the FPM is the parents› lack of awareness of the eruption of a permanent tooth at the age of six years, behind the deciduous teeth. Because the tooth is located at the back and its shape is filled with deep grooves, this helps in initiating dental caries and the possibility of its loss (Toogo et al, 2011; Jaradat et al, 2013; Sadat-Sajadi et al, 2014). This research aimed to assess the mothers› knowledge of the FPM and the time of its eruption. The researcher decided that this study would be conducted in the cities of Erbil and Duhok to be a start for implementing a comprehensive one for all the provinces of Kurdistan. The children were chosen from the age of six years because this is the time of the eruption of FPM. In this study, the researcher searched for sound and unsound teeth, even initial caries, which can happen even in partially erupted teeth, especially in children with neglected oral hygiene. This experimental study included a sample of Iraqi Kurdistan children (n =100) to prepare for more comprehensive research of all cities of Kurdistan. In this study, the correlation between FPM status and brushing was statistically significant in the children who brushed their teeth. In comparison between the children regarding the health of FPM (P = 0.00). Children who brush can eliminate dental plaque and preserve good oral hygiene, and brushing teeth twice daily with the proper method and fluoride toothpaste is considered the most acceptable and effective in preventing caries (Walsh et al, 2019; Farooq et al, 2015). Fluoride strengthens the enamel, encourages enamel remineralisation, and affects the metabolism of cariogenic bacteria to prevent dental cavities (Que et al, 2021). Heydari et al, (2018) concluded that the mothers' awareness of FPM had a crucial effect on the dental caries level in FPM. The parents of 7-8-year-old children in Kerman, regarding the presence of the FPM and concepts of preventive dentistry and the education level, showed a significant difference in the mean of DMFT of the FPM awareness of the presence of this tooth in their children (Li et al, 2020). In this study, the difference between the status of the FPM and mothers' awareness was statistically non-significant. In this study, the difference between the status of the FPM and the dental visits was statistically significant (P = 0.01). The children who visited the dentist regularly were 39% of the sample, while 61% did not. Children with poor levels of knowledge were shown to be fearful of going to the dentist and think of dental visits as unpleasant; therefore, they tended to go to the dentist for treatment rather than prevention. Parents' level of awareness and attitude may directly affect their children›s oral health. Children who have not experienced regular dental visits tend to be more fearful (Alenezi and Aldokhayel, 2022). Sadat-Sajadi et al, (2014) concluded that the parents' educational level did not affect their awareness of the presence of the FPM, oral and dental hygiene principles, and preventive methods. Unlike this study, the difference between the type of mother›s education and the

mother›s awareness of the presence of FPM was highly significant; mothers' higher educational levels enhance their awareness of oral hygiene practice. The monitoring of children's oral health behaviors, including the proper use of toothpaste and toothbrushes, when to brush, and patterns of sweet eating, can be achieved and is also correlated with the education of the mother. The most important source of children›s oral health knowledge is their parents (Al-Darwish, 2016). The researcher divided the samples into two groups depending on children's ages, the first group included children whose ages ranged from 6 to 9, and the other group comprised children's ages ranged from 10 to 12. According to the results of this study, mothers' awareness was higher when their children were 10-12 years old. Moynihan and Kelly, (2014) studied the prevalence of dental caries in the FPM, they found that the most serious risk factor for dental caries in the FPM among 12 years-old students was the frequent eating of candy/chocolate frequently eaten more than twice per day and incorrect tooth status self-assessment leads to accumulative effect of these factors leading to dental caries. In this study, a significant relationship was found between USFPM between the two age groups (P = 0.04). Sugar intake should be limited to 5% of the total calories consumed to reduce the incidence of dental caries (West and Joiner, 2014; Moynihan, 2016). The most important element for caries is the multiplication of bacteria, which feed on sugar. Frequent sugar consumption can result in enamel demineralization and a long-term acidic mouth environment, which promotes caries. The reason the mothers will be aware of the FPM after years of its eruption, which necessitates the education program for the community in this subject, is that increased education can prevent dental caries of teeth, especially the FPM, and prevent their loss (Toogo, 2011; Serindere et al, 2021). Increasing the education of children and their mothers will decrease the incidence of dental caries (Kamiab, 2021). These high-risk age groups and their parent›s knowledge of the presence, eruption time, and position of the FPM and their children's oral health have been partially revealed by this paper›s findings. These suggestions will assist in providing information to help create preventive and research initiatives that may be adjusted for different groups or wider populations. However, dentists should be aware of examining the teeth in children and refer them for preventive programs, minimally invasive dentistry, and restoration if necessary (Abdullah et al, 2020).

Conclusion

In this study, there was no relation between mothers› awareness and the health of FPM, but it has a relation with oral health care, as it plays an essential role in protecting the teeth from dental caries. Based on the findings of this study, we may conclude that raising parent› knowledge of their children›s dental health through education is one of the most successful strategies. Additionally, parents must be informed about the eruption time of the FPM at the time when their children are old enough to start school. Therefore, the dentist is responsible for educating the parents about the FPM eruption age and caries prevention techniques.

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