Int. J Med. Pharm. Res. (P-ISSN: 2958-3675 | E-ISSN: 2958-3683)
Available on: https://ijmpr.in/

International Journal
of Medical and Pharmaceutical Research

ORGINAL ARTICLE **OPEN ACCESS**

Parents Ability to Distinguish Between Primary and Permanent Teeth and Knowledge Regarding Eruption Age of First Permanent Tooth among Davangere Population

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Received: 20-10-2024
Accepted: 20-12-2024
Available online: 26-12-2024

A B S T R A C T

Purpose: To investigate ability of parents to identify and differentiate between primary and permanent teeth and knowledge on eruption age of permanent first molar.

Method: 337 parents (240 male, 97 female, mean age 39) were included in this study. All the children of age 6-12years were examined and first and fourth quadrant and parents asked to identify the permanent teeth among them. Each of their answer correct as zero(incorrect answer)one(correct answer) and the total score was calculated.
Results: 43% correctly identified that first primary teeth erupt at 6 months of age and 29 % identified that first permanent teeth erupt at 6 years of age.
Conclusion: Parents do not have sufficient knowledge to differentiate between primary and permanent teeth also eruption age of permanent teeth among Davangere population. Education and awareness is required about children's oral health.

Keywords: Primary teeth, permanent first molar, Pediatric dentistry.

INTRODUCTION

Dental caries is the most common chronic disease in childhood. Dental caries in children is linked to improper diet, consumption of cariogenic foods and the failure to maintain adequate oral hygiene. Since children may be unaware of the importance of oral hygiene and Parents' Ability to Distinguish between Primary and Permanent Teeth may not brush their teeth properly, oral care becomes the responsibility of their parents. Parents have a major impact on children's diet, dental care habits and oral health. If they do not understand their impact, dental caries becomes a problem. good parental knowledge and oral hygiene positively affects a child's dental health. Children are more likely to be caries free if they have parental involvement [1].

Permanent first molar has important functions, such as mastication and maintenance of the vertical facial height. Their important role in chewing and the growth and development of children is indisputable. Furthermore, they ensure the function and balance of occlusion in maxillofacial traumas and orthodontic treatments. Early extraction of permanent first molars can cause problems, such as tipping of the adjacent teeth to the extraction area, overeruption of the opposing teeth, shift of the midline to the extraction space, asymmetric or unilateral chewing habits, and periodontal problems caused by the loss of alveolar bone at the extraction site. Thus, eliminating risk factors for dental caries and raising parents' awareness of the importance of permanent first molars are essential steps in maintaining oral health [2].

Primary or deciduous teeth play an important role in basic life functions such as speech, phonetics, and eating. Primary teeth are useful to fulfil these basic needs in children. The management of deciduous teeth is not considered a primary concern in most of the population. The most increasing problem nowadays is the increase in caries risk referred to as early childhood caries. Further, the treatment of primary teeth is not considered important as it is believed that primary teeth will shed as the child grows, without having an effect on permanent dentition. Dental caries in children is rapidly increasing compared to that seen in permanent teeth. In early childhood caries, there is an aggressive spread of dental caries most commonly affecting the upper anterior teeth as they are the first teeth to erupt, and hence, compromising aesthetics [3]. This study aimed to evaluate knowledge regarding eruption age of first permanent tooth among Davangere population and evaluate Parents ability to distinguish between primary and permanent teeth

Materials and Methods

The study was conducted among children aged 6-12 years attending the Department of Pediatric and Preventive Dentistry at the College of Dental Sciences, Davanagere. Ethical approval for the study was obtained from the Institutional Ethics Committee (IEC) prior to commencement, ensuring compliance with ethical standards for research involving human subjects. Informed consent was secured from each parent or guardian of the participating children, and the study adhered to all relevant regulations and guidelines for ethical research.

Participants included in the study were selected based on specific criteria. Only children who had a permanent first molar present in each of their four quadrants and were in the mixed dentition period were eligible. Additionally, these children needed to have a minimum of six teeth present per quadrant and no significant medical conditions. Parents or guardians of these children provided informed consent, confirming their understanding and agreement to participate in the study.

Materials and equipment used during the study included a mouth mirror, sterile gloves, mouth masks, dental floss, and sterile cotton. These items ensured a sterile environment and accurate assessment of dental health. The study was designed as an in vivo comparative study, conducted over a period of three months.

The methodology involved a systematic approach to evaluating both parents' ability to differentiate between primary and permanent teeth and their knowledge regarding the eruption age of the first permanent tooth. Each child's dental status was assessed by an examiner who reviewed six teeth from both the first and fourth quadrants. Following this assessment, the parent was asked to identify the permanent teeth among the evaluated teeth. The accuracy of the parents' identifications was recorded and used to calculate the total correct answer score.

This study design and process ensured a comprehensive evaluation of parental knowledge and skills related to dental health, with the ultimate aim of improving understanding and practices surrounding children's oral care.

RESULTS

The study included 337 parents, with a mean age of 39.8 years and a standard deviation of 4.85 years. The majority of parents were male (71.2%), and most held a Bachelor's degree (45.1%). Socioeconomically, most parents were from the lower middle class (34.12%), with a significant number residing in rural areas (60%). Among the 337 children assessed, 62.9% were female, and 59.3% were first-born. The average DMFT score for the children was 3.97, indicating a moderate level of dental caries. The distribution of siblings among the children showed that 35.6% had one sibling, while 13.9% had four siblings as in Table 1.

The survey revealed diverse levels of parental knowledge about dental eruption and care. Most parents (43.9%) accurately identified that the first primary teeth erupt between 6 months and 1 year, but 34.4% were uncertain. For the first primary teeth to erupt, 54.0% correctly identified mandibular central incisors, while 37.4% did not know. The majority (30.0%) believed that the eruption of primary teeth is complete by 3 years, although 30.6% were unsure. When asked about the eruption of the first permanent tooth, 29.4% identified it as occurring around 6 years, with 29.1% unsure. For permanent teeth eruption order, 29.4% thought mandibular central incisors erupted first, but 23.2% did not know. Regarding the number of milk teeth, 43.0% correctly stated there are 20, and 49.9% knew adults have 32 teeth. The timing of the first milk tooth eruption was accurately known by 46.9% as occurring around 10 months, and 46.9% also identified that the first milk tooth sheds around 6 years. Most parents (59.9%) recognized that milk molars shed, while 32.3% incorrectly thought all permanent teeth replace milk teeth. The majority (73.3%) agreed on the importance of treating decayed milk teeth. For preventive treatment advice, 52.8% would agree to treat a 7-year-old's last molar before decay, with 47.2% dissenting mainly due to costs or personal apprehensions. If a molar was decayed, 59.6% would seek treatment, but 40.4% might not, often due to the tooth's location or treatment cost. Lastly, 50.7% would agree to extract a

decayed last molar if indicated, while 49.3% would refuse, citing reasons like cost or the belief that the new permanent tooth would render the treatment unnecessary as in Table 2.

The accuracy of parental identification of teeth varied across different categories. For maxillary right primary teeth, parents correctly identified central incisors (85%) most frequently, followed by lateral incisors (76%), canines (60%), first molars (47%), and second molars (42%). In contrast, for permanent maxillary right teeth, central incisors were most accurately identified (83%), while the first premolars were the least correctly identified (33%). The mandibular right primary teeth had better identification rates overall, with canines (60%) and second molars (44%) showing higher accuracy. For permanent mandibular right teeth, central incisors (86%) were identified most accurately, whereas canines (24%) were the least recognized. This data reflects a general trend of higher accuracy in identifying central incisors and a lower ability to identify premolars and canines as in Table 3.

Table 1: Sociodemographic Status of The Parents/ Children and Findings of The Children's Oral Clinical Examination

Sociodemographic status	n	%
Parents		
Age Mean$\pm$s.d39.80$\pm$4.85		
Sex		
Male	240	71.2%
Female	97	28.7%
Education		
Nil	10	2.9%
Primary	25	7.4%
High School	36	10.6%
College	84	24.9%
Bachelor's degree	152	45.1%
Master's degree	34	10.0%
Socioeconomic Status		
Upper	17	5.04%
Upper middle	100	29.67%
Lower middle	115	34.12%
Upper lower	85	25.22%
Lower	20	5.94%
Place of residence		
Rural	202	60%
Urban	135	40%
Childrens		
Sex		
Male	125	37.1%
Female	212	62.9%
Number of siblings		
One	120	35.6%
Two	100	29.7%
Three	70	20.8%
Four	47	13.9%
Order of birth		
First	200	59.3%
Second Or Higher	137	40.7%
Mean DMFTMean$\pm$s.d3.97$\pm$ 1.81		

Table 2: Responses of Subjects for the Questionnaire

Sl. No	Questions	Responses (n)	%
1.	**At what age do the first primary teeth erupt?**		
	o 6 months to 1 year	148	43.9

	o 2 years	51	15.1
	o 3 years	22	6.5
	o Do not know	116	34.4
2.	**Which primary teeth erupt first?**		
	o Mandibular central incisors	182	54.0
	o Other	29	8.6
	o Do not know	126	37.4
3.	**When does the eruption of primary teeth complete?**		
	o 1 year	18	5.3
	o 2 year	53	15.7
	o 3 year	101	30.0
	o 4 year	31	9.2
	o 5 year	19	5.6
	o 6 year	12	3.6
	o Do not know	103	30.6
4.	**When does the first permanent tooth erupt?**		
	o 4 year	22	6.5
	o 5 year	31	9.2
	o 6 year	99	29.4
	o 7 year	48	14.2
	o 8 year	18	5.3
	o Other	21	6.2
	o Do not know	98	29.1
5.	**Which permanent tooth erupts first?**		
	o Mandibular central incisors	99	29.4
	o Maxillary central incisors	49	14.5
	o Permanent first molars	79	23.4
	o Premolars	32	9.5
	o Do not know	78	23.2
6.	**How many milk teeth are present in child's mouth?**		
	o 20	145	43.0
	o 19	54	16.0
	o 10	32	9.5
	o 12	106	31.5
7.	**How many teeth are present in an adult's mouth?**		
	o 32	168	49.9
	o 28	52	15.4
	o 20	79	23.4
	o 18	38	11.3
8.	**When does the first milk tooth erupt?**		
	o 1 year	29	8.6
	o 2 year	42	12.5
	o 6 month	108	32.0
	o 10 month	158	46.9
9.	**When does the first milk tooth shed?**		
	o 6 year	158	46.9
	o 5 year	51	15.1
	o 4 year	41	12.2
10.	**Does the milk molar tooth shed?**		
	o Yes	202	59.9
	o No	135	40.1
11.	**Do you think all permanent teeth erupt by replacing the milk tooth?**		
	o Yes	109	32.3
	o No	69	20.5
	o Don't know	87	25.8

	o Some of them	72	21.4
12.	**Do you think it is important to treat decayed milk teeth?**		
	o Yes	247	73.3
	o No	90	26.7
13.	**Which is the most important tooth for chewing?**		
	o Incisor	101	30.0
	o Canine	48	14.2
	o Premolar	83	24.6
	o Molar	105	31.2
14.	**If your child is 7 years old and his dentist has advised a preventive treatment for his last molar teeth before any cavity forms, will you agree to treatment?**		
	o Yes	178	52.8
	o No	159	47.2
	If no, what is your reason?		
	o Costly treatment	72	45.3
	o No treatment needed before decay of tooth	32	20.1
	o Apprehension about dental treatment	18	11.3
	o Personal past fearful experience with dental treatment	37	23.3
15.	**If your child is 7 years old and his last molar tooth is decayed, will you take him to the dentist for treatment?**		
	o Yes	201	59.6
	o No	136	40.4
	If no, what is the reason?		
	o It is not a front tooth which will be seen.	63	46.3
	o Expensive treatment	29	21.3
	o It's unnecessary to spend time and money on a tooth which is going to shed anyway	23	16.9
	o Apprehension about dental treatment	21	15.4
16.	**Q16. If your child is 7 years old and his last molar tooth is indicated for extraction, will you agree to treatment?**		
	o Yes	171	50.7
	o No	166	49.3
	If no, what is the reason?		
	o Expensive treatment	62	37.3
	o The new permanent tooth will erupt, so it is useless to spend money on that tooth	48	28.9
	o Apprehension about dental treatment	36	21.7
	o Personal past fearful experience with dental treatment	20	12.0

Table 3: Parents' Correct Tooth Identification, With Mean±SD* And Median (min-max) Values

Tooth Category	**n (%)**	**n(%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Maxillary right teeth						
Primary teeth						
Tooth	Second molar	First molar	Canine	Lateral incisor	Central incisor	
Correct	67 (42)	82 (47)	95 (60)	81 (76)	48 (85)	
Total	160 (100)	175 (100)	160 (100)	107 (100)	56 (100)	
Permanent teeth						
Tooth	PFM**	Second premolar	First premolar	Canine	Lateral incisor	Central incisor
Correct	54 (33)	2(25)	3(33)	4 (40)	70 (78)	104 (83)
Total	165 (100)	8(100)	9(100)	10(100)	90 (100)	125 (100)
Mandibular right teeth						
Primary teeth						
Tooth	Second molar	First molar	Canine	Lateral incisor	Central incisor	

Correct	68 (44)	88 (49)	104 (60)	38 (63)	14 (70)	
Total	155 (100)	180 (100)	175 (100)	60 (100)	20 (100)	
Permanent teeth						
Tooth	PFM	Second premolar	First premolar	Canine	Lateral incisor	Central incisor
Correct	52 (34)	3(33)	4(36)	5(24)	98 (84)	115 (86)
Total	155 (100)	9(100)	11(100)	12(100)	116 (100)	134 (100)

DISCUSSION

The study highlights significant insights into parental knowledge and identification abilities concerning primary and permanent teeth. The findings reveal that while many parents have a basic understanding of primary teeth eruption and the importance of treating decayed milk teeth, there is a considerable gap in specific knowledge, such as the accurate timing of permanent teeth eruption and the exact number of milk and permanent teeth. Parents demonstrated better accuracy in identifying central incisors and were less confident about premolars and canines. This pattern suggests that parents may have a more generalized understanding of dental anatomy but lack detailed knowledge required for effective dental care. This lack of precise knowledge may impact their ability to provide optimal care and make informed decisions about preventive and restorative dental treatments for their children.

Comparative analysis with similar studies in the Medline and Scopus databases reveals some common trends and differences. For instance, a study by Kaur *et al*., (2021) published in the *Journal of Dental Research* indicated that parental knowledge about dental eruption times and the importance of early dental care was generally inadequate, aligning with our findings. However, their study highlighted a more pronounced lack of knowledge about dental caries prevention compared to our population [3]. Another study by Ali *et al.*, (2022) in *Pediatric Dentistry* reported higher parental accuracy in identifying dental stages, possibly due to more extensive educational interventions. This comparison underscores the variability in parental knowledge based on geographical and educational factors, emphasizing the need for targeted educational programs to improve dental awareness among parents [4].

The strengths of this study include its robust sample size and the use of a well-defined methodology to assess both parental knowledge and identification accuracy. The inclusion of a diverse population from both rural and urban areas adds to the generalizability of the findings. However, there are limitations to consider. The study's cross-sectional design does not account for changes in parental knowledge over time or the impact of specific educational interventions. Additionally, the reliance on self-reported data from questionnaires may introduce response biases. Future longitudinal studies could address these limitations by tracking changes in parental knowledge and the effectiveness of targeted educational programs over time.

The implications of these findings are significant for improving public health strategies and dental education. The gaps identified in parental knowledge about the timing of permanent teeth eruption and the importance of treating decayed milk teeth highlight the need for comprehensive educational programs. Dental professionals should focus on enhancing parental education through community outreach and school-based programs to improve understanding of dental development and care [5]. Emphasizing the importance of early intervention and preventive care can help reduce the incidence of dental caries and improve overall oral health outcomes. Furthermore, integrating detailed educational materials into routine dental visits could empower parents to make more informed decisions regarding their children's dental health, ultimately contributing to better long-term dental outcomes.

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