

Original Research Article
Pediatric and Preventive Dentistry

Parental Awareness of Early Childhood Oral Hygiene and Bacterial Transmission in Pediatric Dentistry: A Cross-Sectional Study

Dr. Amna K^{1*}, Dr. Thomas Manjooran S², Dr. Hemjith Vasudevan³, Dr. Anju S Raj⁴, Dr. Sabeena P A⁵, Dr. Anamika Prathap¹

¹Post Graduate Student, Department of Pediatric and Preventive Dentistry, PSM College of Dental Science and Research, Thrissur, Kerala

²Professor and Head, Department of Pediatric and Preventive Dentistry, PSM College of Dental Science and Research, Thrissur, Kerala

³Professor, Department of Pediatric and Preventive Dentistry, PSM College of Dental Science and Research, Thrissur, Kerala

⁴Reader, Department of Pediatric and Preventive Dentistry, PSM College of Dental Science and Research, Thrissur, Kerala

⁵Senior Lecturer, Department of Pediatric and Preventive Dentistry, PSM College of Dental Science and Research, Thrissur, Kerala

DOI: <https://doi.org/10.36348/sjodr.2026.v11i09.003>

| Received: 12.07.2026 | Accepted: 05.09.2026 | Published: 08.09.2026

*Corresponding author: Dr. Amna K

Post Graduate Student, Department of Pediatric and Preventive Dentistry, PSM College of Dental Science and Research, Thrissur, Kerala

Abstract

Background: Early childhood oral hygiene is vital for preventing dental diseases like early childhood caries (ECC), a common chronic condition in children worldwide. Parents and caregivers are crucial in establishing and supervising oral care habits from infancy. Cariogenic bacteria, especially *Streptococcus mutans*, can be transmitted from caregivers to children through everyday behaviors, increasing caries risk. Despite this, parental knowledge about early oral hygiene and bacterial transmission varies, which can delay preventive care. Improving parental awareness and the mechanism of bacterial transmission is vital for effective pediatric oral health promotion and prevention of early childhood caries. **Aim:** To assess parental awareness and knowledge regarding early childhood oral hygiene and caregiver-to-child transmission of cariogenic bacteria, and to identify demographic factors associated with this awareness. **Methodology:** The study was conducted among 200 participants and consists of a cross-sectional survey tailored to the parents who applied to the clinic in questionnaires. Participation was completely voluntary, and parents who submitted a fully completed questionnaire and volunteered to participate were included, whereas parents did not answer at least one question, or were unable to read or write excluded. **Results:** Among the 200 participants, awareness regarding early childhood oral hygiene and bacterial transmission was generally low, and only a small proportion correctly identified when the brushing should begin. Awareness of cariogenic bacterial transmission was also low. A significant association was found between parental age and the initiation of toothbrushing ($p = 0.005$), whereas no significant associations were observed with gender, education, or awareness of bacterial transmission ($p > 0.05$).

Keywords: Early Childhood Oral Hygiene, Early Childhood Caries (ECC), Parental Awareness, Oral Health Knowledge, Cariogenic Bacteria, *Streptococcus mutans*.

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Early childhood oral health is an essential component of a child's overall health, growth, and quality of life. The maintenance of good oral hygiene from infancy is fundamental for preventing oral diseases, particularly Early Childhood Caries (ECC), one of the most common chronic diseases affecting preschool children worldwide. According to the World Health Organization (WHO), oral diseases affect approximately 3.5 billion people globally, with untreated dental caries in primary teeth remaining one of the most prevalent

health conditions among children [1]. ECC is defined by the American Academy of Pediatric Dentistry (AAPD) as the presence of one or more decayed, missing (due to caries), or filled tooth surfaces in any primary tooth in children younger than six years of age [2]. Despite being largely preventable, ECC continues to represent a significant public health challenge because of its high prevalence and long-term consequences.

The development of ECC is multifactorial and involves a dynamic interaction among cariogenic

Citation: Amna, K., Manjooran, T. S., Vasudevan, H., Raj, A. S., Sabeena, P. A., & Prathap, A. (2026). Parental Awareness of Early Childhood Oral Hygiene and Bacterial Transmission in Pediatric Dentistry: A Cross-Sectional Study. *Saudi J Oral Dent Res*, 11(9), 339-347. <https://doi.org/10.36348/sjodr.2026.v11i09.003>

microorganisms, dietary sugars, susceptible tooth surfaces, and time. Among these factors, *Streptococcus mutans* are recognized as the principal microorganism associated with the initiation and progression of dental caries. This bacterium possesses the ability to adhere to tooth surfaces, metabolize fermentable carbohydrates, produce extracellular polysaccharides, and generate organic acids that demineralize enamel, thereby initiating the carious process [3]. Although other microorganisms such as *Lactobacillus* species, *Scardovia wiggsiae*, and *Candida albicans* may contribute to caries progression, *S. mutans* remain the primary pathogen implicated in the establishment of cariogenic biofilms during early childhood [4].

The acquisition of *S. mutans* usually occurs during early childhood through transmission from caregivers, particularly mothers. Berkowitz (2006) described mothers as the primary reservoir for the transmission of cariogenic bacteria, with bacterial transfer occurring through routine activities such as sharing spoons, tasting food before feeding the child, cleaning pacifiers with saliva, sharing toothbrushes, and kissing children on the lips [5]. Earlier, Caufield *et al.*, (1993) introduced the concept of the "window of infectivity," suggesting that infants are particularly susceptible to colonization by *S. mutans* between approximately 19 and 31 months of age [6]. Early colonization has consistently been associated with an increased risk of developing severe ECC, emphasizing the importance of preventive measures before bacterial establishment.

Parental influence plays a decisive role in shaping children's oral health behaviors during infancy and early childhood. Since young children lack manual dexterity and cognitive ability to perform adequate toothbrushing independently, caregivers are responsible for initiating and supervising oral hygiene measures. The AAPD recommends cleaning the oral cavity even before tooth eruption using a soft cloth and initiating toothbrushing immediately after eruption of the first primary tooth with a smear layer of fluoridated toothpaste for children younger than three years [2]. Failure to establish these practices early may increase plaque accumulation, facilitate bacterial colonization, and accelerate caries development.

Numerous studies have demonstrated that parental oral health knowledge significantly influences children's oral health outcomes. A study reported that higher maternal oral health self-efficacy was associated with improved oral hygiene practices among children [7]. Similarly, in a systematic review it was concluded that inadequate parental knowledge and poor oral hygiene behaviors were consistently associated with increased prevalence of ECC [8]. It was reported that although many caregivers recognized the importance of oral hygiene, relatively few understood the mechanisms through which cariogenic bacteria are transmitted from

caregiver to child [9]. Similar observations have been reported in studies from both developed and developing countries, suggesting that inadequate knowledge regarding bacterial transmission represents a universal challenge.

The present cross-sectional study was undertaken to assess parental awareness regarding early childhood oral hygiene practices and bacterial transmission in pediatric dentistry among parents attending a pediatric dental clinic. The study also aimed to evaluate parental knowledge, attitudes, and practices related to oral hygiene and to identify demographic factors associated with oral health awareness. The findings are expected to provide valuable information for developing community-based oral health education programs and strengthening preventive strategies aimed at reducing the burden of early childhood caries.

MATERIALS AND METHODS

A questionnaire-based cross-sectional study was conducted among 200 parents and caregivers attending the Department of Pediatric and Preventive Dentistry, P S M College of Dental Science and Research, between March 2025 and September 2025. The study aimed to assess parental awareness regarding early childhood oral hygiene practices and the transmission of cariogenic bacteria, particularly *Streptococcus mutans*.

The sample size of 200 was calculated assuming a 50% expected proportion of a target population of 400, with a 95% confidence level. Participants were eligible for inclusion if they were parents or primary caregivers of children attending the pediatric dental clinic, willing to participate voluntarily, provided a written informed consent and completed the questionnaire in its entirety. Participants were excluded if they declined to participate in the study, submitted incomplete questionnaires and were unable to complete the questionnaire because of illiteracy.

Data were collected using a structured, self-administered questionnaire consisting of 14 questions designed to assess parental awareness, knowledge, attitudes, and practices regarding early childhood oral hygiene and bacterial transmission. A structured questionnaire was developed based on previously published literature and current pediatric oral-health recommendations. The questionnaire consisted of five sections on informed consent, demographic information, knowledge regarding early childhood oral hygiene practices, awareness regarding bacterial transmission, and oral hygiene practices. Multiple responses were permitted.

Eligible parents attending the pediatric dental outpatient department were informed about the objectives of the study. After obtaining informed consent, participants completed the questionnaire

independently. Clarifications regarding questionnaire items were provided when requested without influencing participants' responses. Completed questionnaires were collected immediately after completion and checked for completeness before data entry.

The primary outcome of the study was parental awareness regarding bacterial transmission of cariogenic microorganisms. Secondary outcomes included knowledge regarding early childhood oral hygiene, oral hygiene practices, attitudes toward oral health, sources of oral health information and, associations between demographic variables and oral health awareness.

The collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 26.0 (IBM Corp., Chicago, IL, USA). Descriptive statistics were used to summarize demographic variables and questionnaire responses as frequencies and percentages. Associations

between categorical variables were analyzed using the Chi-square test. A p-value of <0.05 was considered statistically significant.

RESULTS

A total of 200 parents and primary caregivers participated in the study. Females constituted most of the study population (79.0%), while males accounted for 21.0%. Mothers represented the largest proportion of respondents (64.0%), followed by fathers (30.5%), grandparents (1.0%), and other caregivers (4.5%). Regarding educational status, 73.5% of participants were graduates, 18.0% had completed higher secondary education, 7.5% had completed high school, and only 1.0% had no formal education. Most participants (74.5%) had two children, while 48.5% belonged to the 20–35-year age group, followed by 43.5% aged 36–50 years and 8.0% aged 51–68 years (Table 1).

Table 1: Demographic parameters

		Frequency	Percent
Gender	Female	158	79.0
	Male	42	21.0
Relationship	Father	61	30.5
	Grandparent	2	1.0
	Mother	128	64.0
	Other	9	4.5
Education	Graduate	147	73.5
	High school	15	7.5
	Higher sec	36	18.0
	No formal education	2	1.0
No of children	1	35	17.5
	2	149	74.5
	3	16	8.0
Age categories	20-35	97	48.5
	36-50	87	43.5
	51-68	16	8.0

Table 2 presents the knowledge of respondents regarding oral hygiene in early childhood. More than half of the participants (58%) believed that brushing should begin at 1 year of age, while 18.5% thought it should start at 2 years, and only 5.5% correctly identified that brushing should start as soon as the first tooth appears. Regarding recommended brushing aids, 27% mentioned the use of a soft-bristled brush, 11% recommended age-

appropriate fluoride toothpaste, whereas 22.5% felt toothpaste was not needed, and the majority (76%) did not know which toothpaste should be used. Concerning the frequency of brushing, 47.5% reported that children should brush once daily, 35.5% said twice daily, and 14.5% were unsure, while only 2.5% recommended brushing more than twice a day.

Table 2: Knowledge regarding oral hygiene in early childhood

		Frequency	Percent
Beginning of brushing	1 yr	116	58.0
	2 yr	37	18.5
	as soon as first tooth appears	11	5.5
	don't know	36	18.0
Recommended brushing aids	Soft bristle	54	27.0
	Adult size	14	7.0
	Age-appropriate fluoride	22	11.0
	Toothpaste not needed	45	22.5

		Frequency	Percent
Frequency of brushing	Toothpaste don't know	152	76.0
	Don't know	29	14.5
	More than twice	5	2.5
	Once	95	47.5
	Twice	71	35.5

Table 3 illustrates the awareness of respondents regarding the bacterial transmission of cariogenic bacteria. More than half of the participants (53%) were unaware of bacterial transmission, while 40.5% were unsure, and only a small proportion (6.5%) were aware

of it. When asked about the possible methods of transmission, 53% responded "none/don't know," 40.5% admitted they did not know, and only a few recognized correct routes such as sharing utensils (5.5%), kissing on the lips (3%), and sharing toothbrushes (3.5%).

Table 3: Awareness about bacterial transmission of cariogenic bacteria

		Frequency	Percent
Aware of bacterial transmission	No	106	53.0
	Not sure	81	40.5
	Yes	13	6.5
Method of transmission	Don't know	81	40.5
	Sharing utensils	11	5.5
	Kissing on lips	6	3.0
	Sharing tooth brush	7	3.5
	None don't know	106	53.0

Table 4 presents information on oral hygiene practices among respondents. More than half of the participants (51.5%) reported that dental visits occur only when a problem arises, while 33% visit once a year and only 15.5% maintain regular six-month dental checkups. Regarding children's oral hygiene habits, 63% of respondents stated that their child rinses the mouth

after food, while 37% do not. Most respondents (76.5%) indicated that their child does not keep food in the mouth for a long time, whereas 23.5% reported that this habit is present. In terms of brushing supervision, 43.5% of parents always assist their children, 20% sometimes supervise, 32.5% do so rarely, and 4% never supervise brushing.

Table 4: Oral hygiene practices

		Frequency	Percent
Dental visit	Every six months	31	15.5
	Once a year	66	33.0
	Only when there's a problem	103	51.5
Child rinses after food	No	74	37.0
	Yes	126	63.0
Child keeps food long	No	153	76.5
	Yes	47	23.5
Brushing assistance-supervision	Always	87	43.5
	Never	8	4.0
	Rarely	65	32.5
	Sometime	40	20.0

A statistically significant association was found between the age at which brushing begins and the respondents' age group ($\chi^2 = 18.47, p = 0.005$), indicating that parental age was significantly associated with the reported age at initiation of toothbrushing. Younger parents (aged 20–35 years) were more likely to begin brushing earlier compared to older age groups. In

contrast, no significant association was observed between brushing frequency ($\chi^2 = 5.23, p = 0.52$) or awareness of bacterial transmission ($\chi^2 = 2.71, p = 0.60$) and age group. This suggests that while the timing of initiating brushing may vary with parental age, knowledge and frequency-related practices are relatively consistent across age groups. (Figure 1)

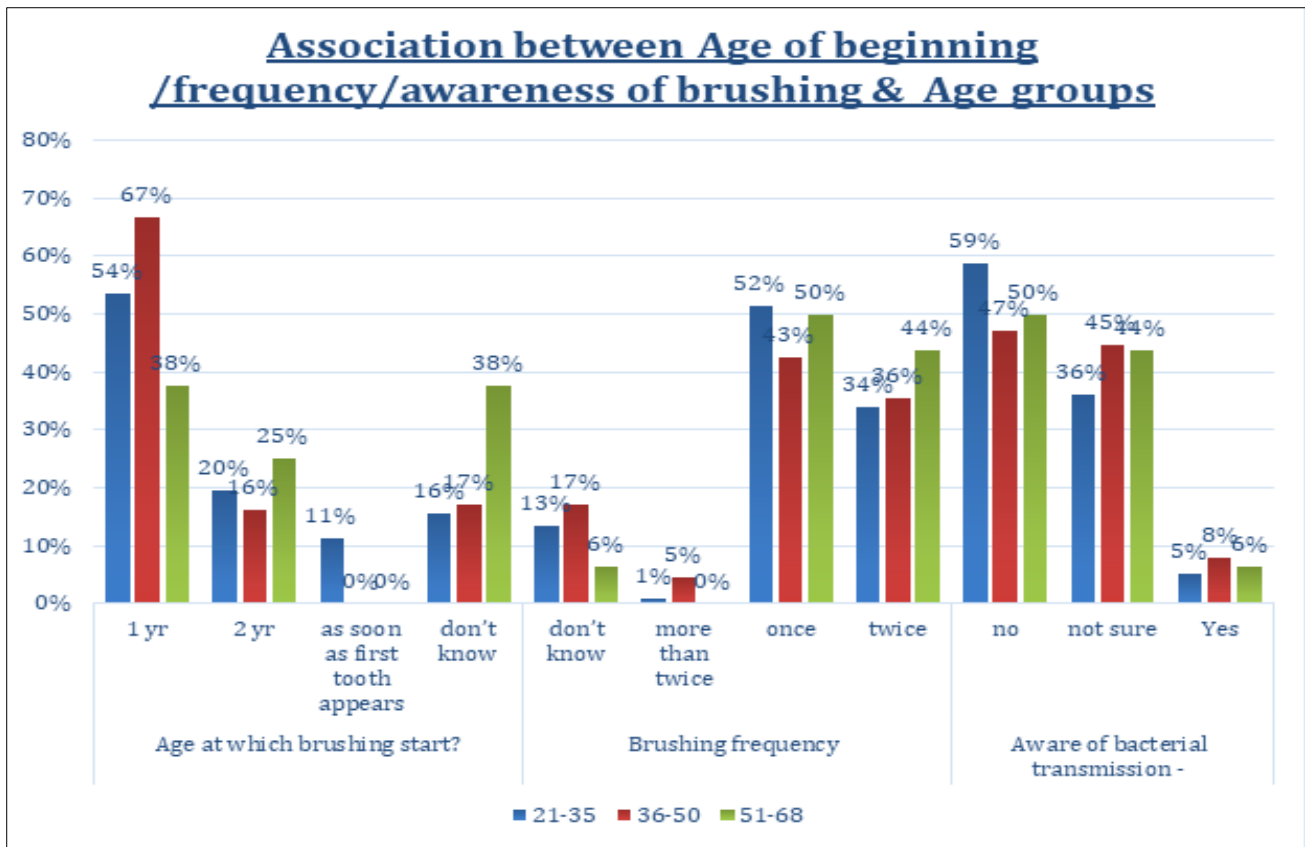


Figure 1: Distribution of toothbrushing initiation, brushing frequency, and awareness of bacterial transmission according to parental age group

Figure 2 presents the association between awareness of bacterial transmission and education level. The results indicate no statistically significant association between these variables ($\chi^2 = 5.54$, $p = 0.47$). Most participants across all education levels were either unaware (53%) or unsure (40.5%) about bacterial transmission, with only a small proportion (6.5%)

reporting awareness. While graduates and those with higher secondary education showed slightly higher awareness than other groups, the differences were not significant. No statistically significant association was observed between educational level and awareness of bacterial transmission in this study.

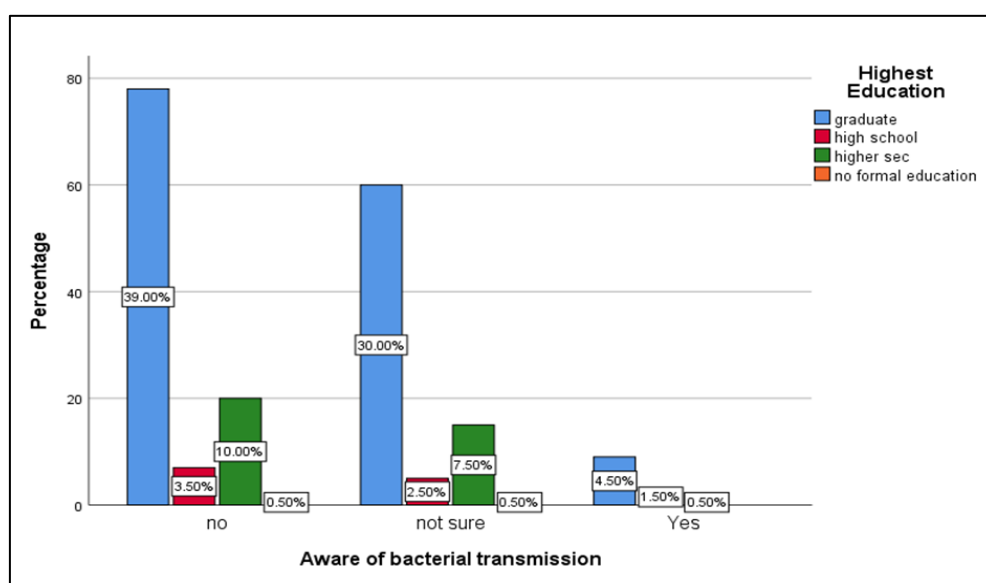


Figure 2: Association between awareness of bacterial transmission and education level

Figure 3 presents the association between the perceived importance of oral hygiene and brushing supervision. The results indicate no statistically significant association between these variables ($\chi^2 = 2.92, p = 0.81$). Among respondents who considered oral hygiene somewhat important, 48.3% reported always assisting their child with brushing, while smaller

proportions assisted sometimes (42.5%) or rarely (41.5%). Similarly, those who viewed oral hygiene as very important had comparable supervision patterns. These findings suggest that parental perception of the importance of oral hygiene does not necessarily translate into consistent brushing supervision.

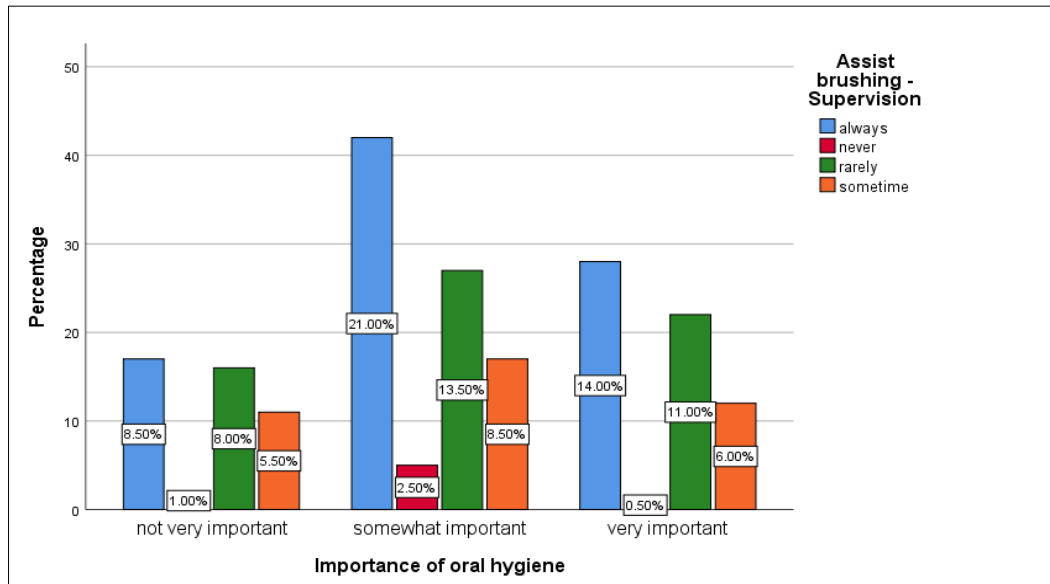


Figure 3: Association between the perceived importance of oral hygiene and brushing supervision

Figure 4 examines the association between the age at which brushing begins and the frequency of brushing. The results showed no statistically significant association between these two variables ($\chi^2 = 10.16, p = 0.33$). Although parents who began brushing their child's teeth at one year of age most reported once-daily brushing (50%), this pattern was consistent across other

groups, including those who started later or were unsure about when brushing should begin. Overall, the findings suggest that the frequency of brushing is not strongly influenced by the age at which brushing is initiated, indicating a general lack of structured brushing habits regardless of when oral hygiene practices are started.

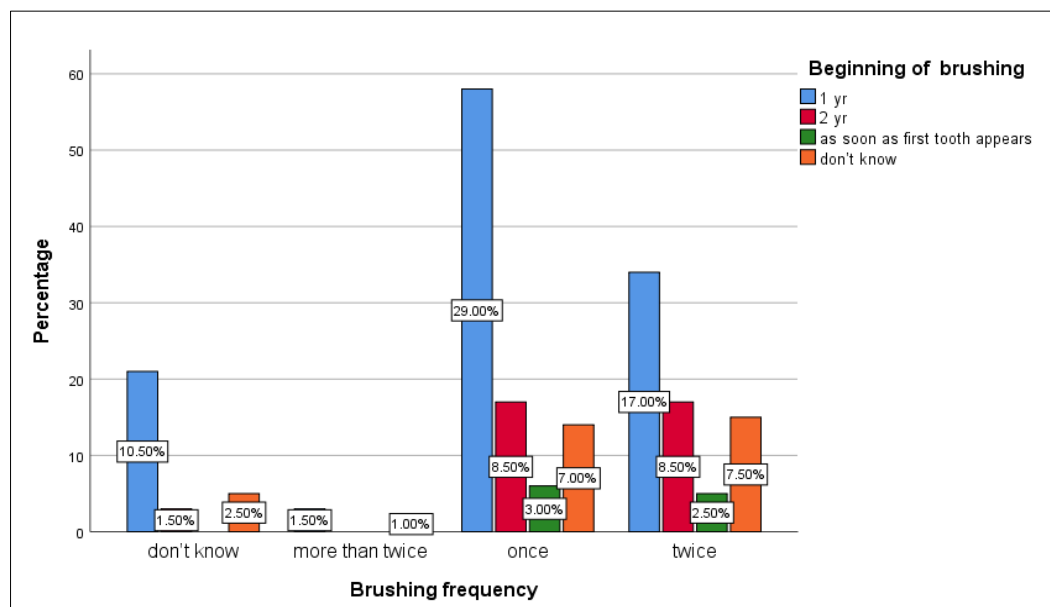


Figure 4: Association between the age at which brushing begins and the frequency of brushing

DISCUSSION

Parental awareness is widely recognized as one of the most influential determinants of children's oral health because parents establish feeding habits, supervise oral hygiene, regulate dietary practices, and determine the utilization of preventive dental services during the early years of life. Since infants and preschool children depend entirely on caregivers for maintaining oral hygiene, parental knowledge directly influences the development of lifelong oral health behaviors. The World Health Organization (WHO) recognizes oral diseases as a major global public health concern and emphasizes that preventive interventions should begin during infancy through parental education and community-based health promotion programs [1].

The AAPD Best Practice Guidelines recommend that oral hygiene should begin before tooth eruption by gently cleaning the infant's gums with a clean, moist gauze or soft cloth after feeding. Following eruption of the first primary tooth, toothbrushing should be initiated using a soft-bristled toothbrush and an age-appropriate smear layer of fluoridated toothpaste for children younger than three years. These preventive measures help reduce bacterial biofilm accumulation and establish healthy oral hygiene habits during the earliest stages of childhood.² Therefore, the delayed initiation of toothbrushing observed in the present study reflects an important deficiency in parental knowledge that may contribute to increased susceptibility to dental caries.

The findings of the present study are consistent with those reported by Finlayson *et al.*, (2007), who demonstrated that maternal oral health knowledge and self-efficacy were strongly associated with appropriate oral hygiene practices among young children [7]. Similarly, Hooley *et al.*, (2012) conducted a systematic review evaluating parental influence on the development of dental caries among children aged 0–6 years [8]. The review concluded that poor parental oral health knowledge, inadequate brushing supervision, inappropriate feeding practices, and delayed preventive dental visits were consistently associated with an increased prevalence of early childhood caries.

One of the most significant findings of the present study was the poor level of parental awareness regarding the transmission of cariogenic bacteria from caregivers to children. Although parents generally recognized the importance of maintaining oral hygiene, only 6.5% of participants correctly identified that cariogenic bacteria could be transmitted from caregivers to children, while 53.0% were unaware and 40.5% were uncertain. These findings highlight a critical gap in parental oral health literacy because caregiver-mediated bacterial transmission represents one of the earliest and most important events in the development of early childhood caries (ECC).

The pathogenesis of ECC begins with the establishment of a cariogenic oral biofilm, in which *Streptococcus mutans* plays a central role. *Streptococcus mutans* is an important cariogenic microorganism associated with the initiation and progression of dental caries. Although dental caries is recognized as a polymicrobial disease, *S. mutans* remains an important organism associated with cariogenic biofilm formation. *S. mutans* is a Gram-positive, facultative anaerobic bacterium capable of adhering to tooth surfaces, producing extracellular polysaccharides, and fermenting dietary carbohydrates into organic acids that demineralize dental enamel.

The findings of the present study agree with the observations of Berkowitz (2006), who identified mothers as the principal reservoir for the transmission of mutans streptococci to infants [5]. The author emphasized that maternal salivary levels of *S. mutans* strongly influence the likelihood of infant colonization, indicating that improving maternal oral health before and after childbirth may substantially reduce bacterial transmission.

Caufield *et al.*, described a period of increased susceptibility to acquisition of mutans streptococci during early childhood, traditionally referred to as the 'window of infectivity.' [6]. Children who acquired *S. mutans* during this critical developmental period exhibited significantly greater caries prevalence than children who experienced delayed bacterial colonization. These findings established that prevention of bacterial acquisition during early childhood represents a fundamental strategy for reducing the incidence of ECC. The poor parental awareness observed in the present study indicates that many caregivers remain unaware of this critical preventive opportunity.

The present study further demonstrated that awareness regarding the specific modes of bacterial transmission was extremely limited. Only a small proportion of participants recognized sharing eating utensils (5.5%), sharing toothbrushes (3.5%), or kissing on the lips (3.0%) as possible mechanisms of bacterial transfer, whereas the majority either believed that none of these behaviors were associated with transmission or were uncertain. These findings are clinically important because such behaviors occur frequently during routine childcare and are often perceived as harmless by caregivers.

The observations of the present study are comparable with those reported by Li and Caufield (1995), who used molecular typing techniques to demonstrate that identical genotypes of *S. mutans* were frequently isolated from mothers and their children, providing strong evidence for direct caregiver-to-child bacterial transmission [10]. Their findings reinforced the importance of reducing maternal bacterial load through

preventive dental care, dietary counselling, and meticulous oral hygiene before bacterial transfer occurs.

Likewise, Köhler and colleagues demonstrated that reducing maternal salivary levels of *S. mutans* through preventive interventions—including intensive oral hygiene instruction, professional prophylaxis, fluoride application, and chlorhexidine therapy—significantly delayed bacterial colonization in children and reduced the subsequent incidence of dental caries [11]. These studies collectively suggest that preventive strategies targeting caregivers may be more effective than interventions directed solely at children after bacterial colonization has already occurred.

The microbiological understanding of ECC has continued to evolve over recent years. Although *S. mutans* remains a major cariogenic pathogen, studies by Tanner *et al.*, demonstrated that severe early childhood caries is associated with a diverse microbial community that includes organisms such as *Scardovia wiggsiae*, *Veillonella* species, *Lactobacillus* species, and other acidogenic bacteria. Nevertheless, Tanner and colleagues also emphasized that *S. mutans* continues to be one of the earliest and most consistent microorganisms identified in children with ECC [12]. Therefore, parental education regarding bacterial transmission remains a cornerstone of primary prevention even within the broader context of the oral microbiome.

One of the notable observations in the present study was the pattern of dental attendance among children. More than half of the participants (51.5%) reported visiting the dentist only when their child experienced pain or developed a dental problem. In contrast, only 15.5% attended regular six-month preventive dental check-ups, while 33.0% reported annual dental visits. These findings indicate that most parents continue to perceive dental care as treatment-oriented rather than preventive. Comparable findings have been reported by Blinkhorn *et al.*, (2001) who observed that many parents sought dental care only after symptoms developed, largely because they underestimated the importance of preventive dental visits [13]. These findings agree with the present study and emphasize the need for increasing parental awareness regarding the preventive role of pediatric dental services.

Indian studies have reported similar trends. Jose *et al.*, (2013) found that many parents believed dental consultation was necessary only in the presence of pain or visible dental problems, while routine preventive visits were uncommon [14]. Likewise, Prabhu *et al.*, (2014) reported that delayed first dental visits among Indian preschool children were primarily associated with inadequate parental awareness rather than limited access to dental care [15]. Together, these findings suggest that preventive dental attendance remains an area requiring considerable improvement within the Indian population.

An important finding of the present study was the statistically significant association between parental age and the age at which toothbrushing was initiated ($p = 0.005$). Younger parents (20–35 years) were more likely to report earlier initiation of toothbrushing than older parents. This finding may be related to differences in exposure to oral-health information; however, this was not assessed in the present study.

Comparable findings have been reported by Schroth *et al.*, (2007), who observed that younger mothers participating in structured oral health education programs demonstrated greater awareness regarding infant oral hygiene and preventive dental care than older caregivers [16]. Similarly, Pine *et al.*, (2004) reported that younger parents were generally more receptive to preventive oral health messages delivered through community-based educational initiatives.¹⁷ These studies support the present findings, suggesting that age-related differences may influence the adoption of preventive oral health behaviors.

CONCLUSION

The present study demonstrated that while most parents and caregivers recognized the importance of maintaining children's oral hygiene, substantial gaps remained in their knowledge regarding evidence-based preventive oral healthcare practices. Awareness regarding the appropriate initiation of toothbrushing, the use of fluoridated toothpaste, preventive dental visits, and the caregiver-to-child transmission of cariogenic bacteria was inadequate.

Improving parental awareness through structured educational programs delivered by pediatric dentists and other healthcare professionals is essential for establishing healthy oral hygiene practices from infancy. Integrating oral health education into maternal and child healthcare services, promoting early establishment of a dental home, and emphasizing the prevention of caregiver-mediated bacterial transmission may contribute significantly to reducing the burden of early childhood caries and improving overall health and quality of life.

Limitations

This study has several limitations. The cross-sectional design limits the ability to establish causal relationships between demographic characteristics and parental oral-health practices. As the study was conducted at a single pediatric dental center, the findings may not be generalizable to the wider population. The use of a self-administered questionnaire may have introduced recall and social-desirability biases. In addition, bacterial transmission was assessed based on parental awareness rather than microbiological evaluation, and the study did not assess the children's actual caries status or bacterial colonization. Future multicenter studies incorporating validated

questionnaires and clinical or microbiological outcomes are warranted.

REFERENCES

1. World Health Organization. *Global oral health status report: towards universal health coverage for oral health by 2030*. Geneva: World Health Organization; 2022.
2. American Academy of Pediatric Dentistry. Policy on Early Childhood Caries (ECC): Classifications, Consequences, and Preventive Strategies. *The Reference Manual of Pediatric Dentistry*. Chicago, IL: AAPD; 2024.
3. Loesche WJ. Role of *Streptococcus mutans* in human dental decay. *Microbiol Rev*. 1986;50(4):353–380.
4. Tanner ACR, et al. Microbiota of severe early childhood caries before and after therapy. *J Dent Res*. 2011;90:1298–1305.
5. Berkowitz RJ. Mutans streptococci: acquisition and transmission. *Pediatr Dent*. 2006;28(2):106–109.
6. Caufield PW, Cutter GR, Dasanayake AP. Initial acquisition of mutans streptococci by infants: evidence for a discrete window of infectivity. *J Dent Res*. 1993;72(1):37–45.
7. Finlayson TL, Siefert K, Ismail AI, Sohn W. Maternal self-efficacy and early childhood oral health. *Community Dent Oral Epidemiol*. 2007;35(4):272–281.
8. Hooley M, Skouteris H, Boganin C, Satur J, Kilpatrick N. Parental influence and the development of dental caries in children aged 0–6 years: a systematic review. *J Dent*. 2012;40(11):873–885.
9. Gussy MG, Waters EG, Walsh O, Kilpatrick NM. Early childhood caries: current evidence for aetiology and prevention. *J Paediatr Child Health*. 2006;42(1–2):37–43.
10. Li Y, Caufield PW. The fidelity of initial acquisition of mutans streptococci by infants from their mothers. *J Dent Res*. 1995;74(2):681–685.
11. Köhler B, Andréen I, Jonsson B. The effect of caries-preventive measures in mothers on dental caries and the oral presence of mutans streptococci in their children. *Arch Oral Biol*. 1984;29(11):879–883.
12. Tanner ACR, Kent RL Jr, Holgerson PL, et al. Microbiota of severe early childhood caries before and after therapy. *J Dent Res*. 2011;90(11):1298–1305.
13. Blinkhorn AS, et al. Factors affecting dental attendance among young children. *Community Dent Health*. 2001.
14. Jose B, King NM. Early childhood caries among preschool children in India: parental knowledge and practices.
15. Prabhu N, et al. Parental awareness and dental attendance among preschool children in India.
16. Schroth RJ, et al. Maternal factors associated with early childhood caries. *Pediatr Dent*. 2007.
17. Pine CM, et al. Parental influences on children's oral health. *Community Dent Health*. 2004.