

Original Article

The role of parenting attitudes and feeding practices in early childhood caries: A cross-sectional analysis

D. Benadic James¹, AKR Santhosh Priya², C. Vishnu Rekha³, Dhanraj Kalaivanan⁴, Santham Krishnamoorthy⁴, Deepak Prabhu⁵

¹Intern (General Dentist), ²Senior Lecture, ³Professor and Head, ⁴Reader, Department of Pediatric and Preventive Dentistry, Sathyabama Dental College and Hospital, ⁵Senior Lecture, Department of Orthodontics and Dentofacial Orthopedics, Tagore Dental College and Hospital, Chennai, Tamil Nadu, India.



***Corresponding author:**

AKR Santhosh Priya,
Department of Pediatric
and Preventive Dentistry,
Sathyabama Dental College and
Hospital, Chennai, Tamil Nadu,
India.

santhosh.appiya@gmail.com

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ABSTRACT

Objectives: Early Childhood Caries (ECC) constitutes a prevalent dental affliction among the pediatric population in India, bearing substantial ramifications for both their oral health and general welfare. Parenting attitudes and feeding styles have been identified as influential factors in the development of ECC, yet their specific impacts remain obscure.

Material and Methods: A cross-sectional investigation was undertaken involving a sample of 100 children within the age range of 3 to 6 years, along with their parents. Parental attitudes were assessed using the Parenting Styles and Dimensions Questionnaire (PSDQ), while parental feeding practices were evaluated using the Parental Feeding Style Questionnaire (PFSQ). The children's dental health was examined, and their Decayed, Extracted, and Filled Teeth (def) index was recorded. Descriptive statistics were used and chi-square test was employed to explore associations between parenting styles, feeding practices, and ECC.

Results: Of the 100 children, 59 exhibited ECC, and 41 were caries-free. The majority of parents demonstrated authoritative parenting, followed by authoritarian and permissive styles. No statistically significant correlation was identified between various parenting styles and the prevalence of ECC. However, parental feeding styles showed significant association with ECC.

Conclusion: This study highlights that parental feeding practices, may play a role with increased incidence of ECC irrespective of their distinctive parental attitudes.

Keywords: Early childhood caries, Low socioeconomic status, Parental feeding practices, Parenting style, Preschoolers

INTRODUCTION

The prevalence of dental caries in the pediatric demographic of India is documented at 46.9%, with a slightly diminished statistic of 44.6% noted in the southern regions of the country.^[1] Early childhood caries (ECC) adversely affects children below the age of six, resulting in rapid deterioration of primary teeth and frequently leading to discomfort, infections, and possible developmental complications. ECC is determined by a multitude of factors, including inadequate fluoride exposure, habitual intake of sugary foods and beverages, and substandard oral hygiene practices. Furthermore, familial dietary practices and parental methodologies significantly influence the incidence of ECC. ECC is linked to a diverse array of risk factors, including breastfeeding practices, socioeconomic status, gender, the child's age, parental educational levels,

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and inadequate maternal education, among others.^[2] The significance of diet in relation to dental caries is paramount and is predominantly overseen by the caregivers of preschool-aged children.

Research studies have indicated that parenting styles might play a significant influence on the oral health and incidence of caries.^[3] According to Baumrind,^[4] parenting styles pertain to the manner in which parents engage, discipline, communicate, and respond to their child's actions while guiding them within their social milieu. Baumrind delineated two fundamental dimensions of parenting: Acceptance/responsiveness and demandingness/control, and delineated three unique typologies of parenting practices, namely, Authoritative (parents who show both responsiveness and control in a balanced form), Authoritarian (parenting style having high control but low warmth), and Permissive (parenting having high responsiveness but low control).

González-Olmo *et al.*^[5] propose that caregivers utilize food as a mechanism to manage their children behavior and alleviate the adverse emotional states stemming from anxiety, consequently impacting dental health. It is postulated that each caregiver may exhibit diverse feeding practices, which could significantly influence the prevalence of dental caries in young children. A variety of evaluative instruments, including the Child Feeding Questionnaire and Preschooler Feeding Questionnaire, have been referenced in literature to evaluate food-related parental behaviors; however, these tools possess limitations such as the problematic structure of certain dimensions (predominantly restrictions) and the potential for parents to misinterpret the questions.^[6,7] Recently in 2012, a more reliable and valid tool named Parental Feeding Style Questionnaire was developed by Wardle, which evaluates "emotional feeding" (using food to influence a child's emotions), "instrumental feeding" (using food to influence a child's behavior), "prompting and encouragement to eat" (encouraging children to consume a range of foods), and "control over eating" (deciding what, when, and where and how much a child should eat).^[8]

In the Indian context, the emotional attachment of parents to their children may be reflected in their feeding patterns. As a result, we hypothesized that varied parental feeding techniques may contribute to a greater risk of ECC in young children. Studies have explored the possible causal relationship between parenting style, child's behavior, and caries experience. Nevertheless, there exists a paucity of information regarding the correlation between parental attitudes and feeding patterns among the parents of young children. Consequently, our study explored the relationship between parenting styles, parental feeding practices, and the prevalence of ECC in children.

MATERIAL AND METHODS

Study design

A cross-sectional investigation was undertaken employing a convenience random sampling technique within the Department of Preventive and Pediatric Dentistry at Sathyabama Dental College and Hospital, located in Chennai, Tamil Nadu, India. The research methodology and ethical considerations were rigorously scrutinized and sanctioned by Sathyabama's Institutional Review Board and Ethical Committee [Ref:367/IRB-IBSEC/SIST].

Participants

The calculation of the required samples was carried out with G*Power (Version3.0) based on previous study done by Ng *et al.*^[9] One hundred healthy children of age group 3–6 years of low socioeconomic status according to modified Kuppuswamy scale 2024 attending the outpatient department along with the ethical parents were recruited into the study.^[10] Informed consent and child assent was obtained from both the parent and child according to the ethical guidelines specific to pediatric research. Children with systemic illness or any cognitive impairment and any reported allergy to food products were excluded from the study.

Procedure

Tools used

The Parenting Style Dimension Questionnaire, devised by Robinson *et al* in 2001, was employed in the present study.^[11] The instrument comprised 30 items, which were categorized into three distinct classifications based on the parent's reactions to the child's conduct [Supplemental Material]. These classifications encompassed authoritative, authoritarian, and permissive parenting styles. The questionnaire underwent translation into the local vernacular language, utilizing blinded translators, and subsequently was back-translated into English to ensure its validity. Following the validation process, the questionnaire was implemented in our research. Each item was evaluated using a scale ranging from 1 to 6 (1-Never, 2-Rarely, 3-Occasionally, 4-Half the time, 5-Very often, and 6-Always). The authoritative and authoritarian style inquiries encompassed thirteen items each, with possible scores varying from 0 to 65. In contrast, the permissive style inquiries consisted of four items, with scores ranging from 0 to 24. An overall mean score was computed for each category of parenting style, culminating in the identification of the parent who exhibited the highest mean score among the three categories.

The parental feeding strategies were assessed utilizing the Parental Feeding Style Questionnaire formulated by Wardle

et al.^[8] This questionnaire tool comprises 27 inquiries that are based on four distinct factors related to the emotional eating construct [Supplementary Material]. These four factors evaluated the extent to which children have received emotional support from their parents. Responses were rated on a scale ranging from 1 to 5 (1 = I never do, 2 = I rarely do, 3 = I sometimes do, 4 = I often do, and 5 = I always do). The mean score of parental responses was computed to ascertain a final score on the questionnaire, with elevated scores signifying a higher level of emotional nurturance afforded by the parents.

Clinical examination

The clinical examination of the child was performed according to the World Health Organization criteria, under proper illumination. According to AAPD, ECC is defined as “the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries), or filled surfaces, in any primary tooth of a child under age six.” The presence of ECC (Decayed, Extracted, and Filled Teeth index) was diagnosed and recorded by a single trained and calibrated resident doctor supervised by a pediatric dentist.

Statistical analysis

Statistical tests were conducted utilizing Statistical Package for the Social Sciences software (version 25) (IBM). Descriptive statistics were employed to illustrate the frequency distribution concerning parenting styles, feeding practices, ECC, and the severity of ECC. Chi-square test was performed to ascertain any potential associations between parenting styles and the prevalence of ECC, as well as between parental feeding styles and ECC. Multivariate logistic regression model was performed to see the associations between parental feeding styles, parental attitude and ECC.

RESULTS

The sample was composed of 100 parent and child pair in which 51 children were boys and 49 were girls with a mean age range of 4.87 ± 0.5 years. Out of 100, 41 children were caries free and 69 children presented with ECC.

Most of the parents showed Authoritative parenting followed by Authoritarian parenting and permissive parenting. On comparing the parental attitude with ECC, it was observed that there was no statistical significance with parental attitude and ECC [Table 1].

Our results indicated that the encouragement feeding and the parental control feeding style were significantly associated with presence of ECC, while the other patterns did not [Table 2].

A multivariate logistic regression model revealed that there is an association between parenting style and ECC. In a

Table 1: Association between the parenting style and the distribution of ECC.

Parenting style	ECC absent n (%)	ECC present n (%)	P-value
Authoritarian	1 (25.0)	3 (75.0)	0.767
Authoritative	30 (31.6)	65 (68.4)	
Permissive	0 (0.0)	1 (100.0)	

ECC: Early childhood caries, P-value < 0.05

Table 2: Correlation between the parental feeding methodology and the prevalence of ECC.

Parental feeding style	ECC absent n (%)	ECC present n (%)	P-value
Parental control feeding	31	69	0.010*
Instrumental feeding	31	69	0.154
Emotional feeding	31	69	0.081
Encouragement feeding	31	69	0.026*

ECC: Early childhood caries, *P-value < 0.05

Table 3: Multivariate regression results of associations between parental feeding styles, parental attitude, and ECC.

	OR (CI)	P-value
Gender		
Female	1.404 (0.498–6.594)	0.367
Parenting style		
Authoritarian	8.326–7.260	0.000*
Feeding style		
Parental control feeding	1.516–151.8	0.021*
Instrumental feeding	0.020–30.256	0.896
Encouragement feeding	0.159–6.738	0.972
Emotional feeding	0.430–55.446	0.201

ECC: Early childhood caries, OR: Odds ratio, CI: Confidence interval.

*P-value < 0.05

parenting attitude/style after adjusting for covariates, only authoritarian has association with ECC. Similarly, in feeding style after adjusting all covariate parental control feeding style has association with ECC [Table 3].

DISCUSSION

ECC is defined as one or more decayed, missing (resulting from caries) or filled teeth in primary dentition in children of up to 71 months of age. Factors contributing to the risk of developing ECC include feeding, oral hygiene practices, levels of *Streptococcus mutans*, various dental problems in parents or caregivers, the socioeconomic status, parenting style, and the time of the first dental visit.^[12–14] Recent researches have concluded that parental style and parental

feeding practices also has a major contribution to the development of ECC.^[15-17] Therefore, this study aimed to examine the correlation between parenting styles, parental feeding practices, and ECC in preschoolers. As this is the first exploratory study among the South Indian population, convenient sampling method was chosen accordingly.

The parenting style is a family's ability to give time, attention, and support to fulfill children's physical, psychological, and social needs. Howenstein *et al.* states that the parenting style significantly affects children's consumption of high-energy-density foods, behavior within dental settings, and the prevalence of caries. In the current investigation, the predominant parenting style observed among participants was authoritative, mirroring findings from previous research.^[15] The outcomes of the present study indicated no statistically significant correlation between parenting style and ECC. This finding stands in contrast to earlier studies, which determined that permissive and authoritarian parenting styles were associated with an increased incidence of caries and this may be due to change in ethnicity backgrounds causing change in outcome.^[16,17] Further these contrasting results may be justified by the Parenting Styles and Dimensions Questionnaire scale depicting the western norms of child rearing where individualistic culture is predominant compared to collectivistic culture (different socio-cultural contexts) in Indian parenting.

Parental feeding styles refer to specific practices that influence the food intake of children. The parental feeding style conceptualized by Wardle *et al.*^[8] was established to evaluate the risk determinants associated with obesity in children, considering the dietary selections made by parents and classified them: Parental control feeding, instrumental feeding, encouragement feeding, and emotional feeding. Therefore, the choices made by parents regarding their child's nutrition could be a contributing factor to the incidence of dental caries. In our study, parental control feeding and encouragement feeding had more carious lesions compared to Nembhwani and Winnier, who identified an increase caries incidence with control and emotional feeding pattern which may be attributed to the fact that parents lack awareness on choices of nutritious and caries-preventive diet, resulting in increased incidence of dental caries.^[18] The PFS questionnaire is easy for anyone to understand, but in India, certain factors such as the involvement of caretakers in feeding, differences in meal texture, and cultural and traditional food practices, unlike those in Western countries where the questionnaire was developed, could have led to a difference in the results.

A notable limitation in our study was the selection of a study population with predominantly low socioeconomic backgrounds and similar dietary patterns, which may have influenced our findings. Hence, our results should be interpreted with caution as multitude of factors is associated

with the incidence of ECC. Furthermore, this study could be expanded to encompass diverse and larger community cohorts to yield more robust conclusions regarding the relationship between feeding styles and ECC.

Our study is significant for pediatric dentists as it reveals that parenting style itself does not have a significant influence on the incidence of ECC, suggesting that broader parenting behaviors may not directly contribute to caries development. However, it highlights that specific parental feeding styles, such as control feeding (restricting or controlling what and how much children eat) and encouragement feeding (using food to reward or encourage behavior), are strongly associated with the presence of ECC. This finding underscores the importance of addressing feeding practices during dental consultations, as certain feeding behaviors can increase the risk of ECC. Pediatric dentists can use this information to guide more effective, targeted interventions that focus on modifying feeding habits and educating parents about the impact of their feeding strategies on their child's oral health.

CONCLUSION

From this study we can conclude that parenting style itself does not have a significant influence on the incidence of Early Childhood Caries. Control feeding (restricting or controlling what and how much children eat) and Encouragement feeding (using food to reward or encourage behavior), are strongly associated with ECC with regard to the feeding practices. Thus, discussing feeding practices during dental consultations is crucial for promoting a shift toward a caries-free dietary pattern.

Ethical approval: The research/study approved by the Institutional Review Board at Sathyabama Institute of science and technology, number Ref:367/IRB-IBSEC/SIST, dated 18th April 2024.

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