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Original Research Article

Oral health status, dietary habits and parental perception among preschool children aged 3-5 years attending Anganwadi Centers in Vikarabad district: a cross-sectional study

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ABSTRACT

Background: Oral health in early childhood is influenced by dietary habits and parental perception. Dental caries remains a significant public health problem among preschool children, particularly in rural populations. Aim was to assess the oral health status, dietary habits, and parents' perception regarding child's oral health among 3-5-year-old children attending Anganwadi centers and to evaluate their association with dental caries.
Methods: A cross-sectional study was conducted among 202 preschool children selected using cluster sampling from Anganwadi centers in Vikarabad district. Data regarding dietary habits and parents' perception were collected using a structured questionnaire. Clinical examination was performed using World Health Organisation (WHO) oral health assessment criteria (2013). Descriptive statistics were used to summarize the data, and the Chi-square test was applied to determine associations. The level of significance was set at $p<0.05$.
Results: The prevalence of dental caries was 14.9%, while gingival bleeding and dental trauma were observed in 2.5% and 0.5% of children, respectively. Most parents (88.1%) perceived their child's oral health as good. A high frequency of consumption of cariogenic foods was observed, and a statistically significant association was found between certain dietary habits and dental caries ($p<0.05$). whereas other dietary factors showed no significant association.
Conclusions: Caries was significantly associated with the consumption of sugary foods and beverages. Parental perception often underestimated early oral health problems. Oral health education and dietary counselling, along with regular screening at Anganwadi centers, are essential for improving oral health outcomes.

Keywords: Dental caries, Dietary habits, Anganwadi, Preschool children, Oral health

INTRODUCTION

Oral health is an integral component of general health and well-being, particularly during early childhood. The WHO defines oral health as a state of the mouth and related structures that enables individuals to perform essential functions such as eating, speaking, and breathing, while also contributing to psychosocial well-being and quality of life.[1] Oral health in early childhood is crucial, as it influences growth, nutrition, speech development, and overall systemic health. Poor oral health can lead to pain, infection, difficulty in eating, and impaired quality of life in children.

The age group of 3-5 years represents a critical period for the development of primary dentition and the establishment of oral health-related behaviours. During this stage, children are highly dependent on their parents for maintaining oral hygiene and dietary practices. The oral health status established during early childhood often

persists into later stages of life, emphasizing the importance of early assessment and prevention of oral diseases.

Dental caries is the most prevalent chronic disease affecting children worldwide and remains a major public health concern.[2] It is a multifactorial disease resulting from the interaction of host factors, microorganisms, diet, and time. According to the Global Burden of Disease study, untreated dental caries in primary teeth affects millions of children globally.[3] Early childhood caries (ECC), a severe form of dental caries, affects a substantial proportion of preschool children worldwide, with considerable geographical variations.[4]

Dietary habits play a crucial role in the development and progression of dental caries. Frequent consumption of fermentable carbohydrates, particularly sugary foods and beverages, leads to acid production by oral bacteria, resulting in demineralization of tooth structure.[5] The frequency, consistency, and timing of sugar intake are key determinants in caries development. Children who frequently consume sweets, candies, and sugar-containing snacks are at higher risk of developing dental caries, whereas diets rich in fruits, vegetables, and dairy products have a protective effect by promoting salivary flow and reducing plaque accumulation.[6]

Parental perception and awareness significantly influence a child's oral health. Preschool children depend on caregivers for maintaining oral hygiene and dietary practices. However, parents may underestimate early signs of oral diseases, which can delay timely preventive and therapeutic interventions.[7]

In developing countries like India, changes in lifestyle and dietary patterns have increased the consumption of processed and sugar-rich foods among children, contributing to a rising burden of dental caries. The Integrated Child Development Services (ICDS) scheme provides a platform for delivering health and nutrition services to children under six years of age through Anganwadi centers. These centers serve as an important setting for assessing oral health status and associated risk factors, especially in rural populations.

Despite the known influence of dietary habits and parental perception on oral health, there is limited data among preschool children attending Anganwadi centers in rural areas such as Vikarabad district. Therefore, the present study was undertaken to assess the oral health status, dietary habits, and parents' perception of their child's oral health among children aged 3-5 years attending Anganwadi centers in Vikarabad district and to evaluate their association with dental caries.

METHODS

A cross-sectional study was conducted among preschool children aged 3-5 years attending Anganwadi centers in rural areas of Vikarabad district, Telangana, over a period of two months. Ethical clearance was obtained from the Institutional Ethics Committee (13/SSCDS/SS/IEC/2026) of Sri Sai College of Dental Surgery, Vikarabad, prior to the commencement of the study. Official permission to conduct the study was obtained from the Department of Women and Child Development. The nature and purpose of the study were explained to the parents or caregivers, and informed consent was obtained before participation.

The study population included children aged 3-5 years attending selected Anganwadi centers. A cluster sampling technique was employed, wherein Anganwadi centers were considered as clusters. From the available list, Anganwadi centers was selected, and all eligible children present on the day of examination were included in the study. Children whose parents provided informed consent and who were cooperative during examination were included, whereas those with systemic illnesses, conditions affecting oral examination, or uncooperative behavior were excluded. A pilot study was conducted to assess feasibility and estimate the prevalence of dental caries, which was found to be 16%. The calculated sample size was 207 rounded off, and a final sample of 202 participants was included in the study.

Data collection

Data were collected using a predesigned, structured questionnaire based on the WHO Oral Health Survey proforma (2013). The questionnaire included sections on demographic details, dietary habits, and parents' perception of their child's oral health, with close-ended questions assessing the frequency of consumption of sugary foods and beverages. The questionnaire was administered through face-to-face interviews in a language understandable to the participants.

Clinical examination was carried out using type III examination with a mouth mirror and probe under adequate illumination, following WHO Oral Health Assessment criteria (2013). Dentition status, gingival bleeding, and dental trauma were recorded. All examinations were performed by a single trained and calibrated examiner, and intra-examiner reliability was found to be acceptable.

Statistical analysis

The collected data were entered into Microsoft excel and analyzed using the statistical package for the social sciences (SPSS) software. Descriptive statistics were expressed as frequency and percentage. The Chi-square test was applied to assess the association between dietary habits and dental caries. Dietary frequency responses were dichotomized into frequent (several times a day, every day, several times a week, once a week) and infrequent (several times a month, never) for analysis. A $p<0.05$ was considered statistically significant.

RESULTS

The present study evaluated the oral health status, dietary habits, and parental perceptions among preschool children. A total of 202 children were examined to assess the prevalence of dental caries and other oral conditions, along with oral hygiene practices and utilization of dental services. In addition, the association between dietary habits-particularly the consumption of sugary foods and beverages-and dental caries was analysed to identify potential risk factors influencing oral health outcomes in this population.

Table 1 shows that among the 202 children examined, majority were aged 3 years (56.4%) and a nearly equal gender distribution. The prevalence of dental caries was 14.9%. Gingival bleeding (2.5%) and dental trauma (0.5%) were minimal. Most children (96.0%) did not report toothache in the past 12 months. None of the children had received dental care. All of them used a toothbrush and toothpaste, but fluoride awareness among parents was absent (100%). Most children (96.5%) brushed once daily. Parental perception indicated good teeth condition in 88.1% and good gum condition in 90.1% of children.

Table 2 shows the association between dietary habits and dental caries among the study participants. A high frequency of consumption of sugary foods and beverages was observed. Significant association with dental caries was observed for milk with sugar, coffee with sugar, and snack consumption ($p<0.05$).

Table 1: Distribution of demographic characteristics, oral health status, oral hygiene practices, and parental perception among study participants (n=202).

Variables	Category	N	Percentage (%)
Age (in years)	3	114	56.4
	4	71	35.1
	5	17	8.4
Gender	Male	103	51.1
	Female	99	48.7
Dental caries	Absent	172	85.1
	Present	30	14.9
Gingival bleeding	Absent	197	97.5
	Present	5	2.5
Dental trauma	Absent	201	99.5
	Present	1	0.5
Toothache (past 12 months)	Rarely	8	4.0
	Never	194	96.0
Dental visit (past 12 months)	Never received dental care	202	100.0
Oral hygiene practice	Toothbrush	202	100.0
Use of toothpaste	Yes	202	100.0
Fluoride awareness	Don't know	202	100.0
Frequency of cleaning teeth	Once a day	195	96.5
	Two or more times	7	3.5
Teeth condition (perception)	Good	178	88.1
	Average	21	10.4
	Poor	3	1.5
Gum condition (perception)	Good	182	90.1
	Average	20	9.9
	Poor	-	-

Table 2: Association between dental caries and dietary habits among study participants (n=202).

Dietary habits	Frequency	Caries absent, N (%)	Caries present, N (%)	P value
Fresh fruits	Infrequent	32 (80.0)	8 (20.0)	0.324
	Frequent	140 (86.4)	22 (13.6)	
Lemonade	Infrequent	139 (83.2)	28 (16.8)	0.119
	Frequent	33 (94.3)	2 (5.7)	
Jam and honey	Infrequent	79 (84.0)	15 (16.0)	0.696
	Frequent	93 (86.1)	15 (13.9)	
Chewing gum	Infrequent	43 (78.2)	12 (21.8)	0.118
	Frequent	129 (87.8)	18 (12.2)	
Milk with sugar	Infrequent	15 (68.2)	7 (31.8)	0.027**
	Frequent	157 (87.2)	23 (12.8)	

Continued.

Dietary habits	Frequency	Caries absent, N (%)	Caries present, N (%)	P value
Tea with sugar	Infrequent	31 (88.6)	4 (11.4)	0.613
	Frequent	141 (84.4)	26 (15.6)	
Coffee with sugar	Infrequent	149 (83.2)	30 (16.8)	0.029**
	Frequent	23 (100.0)	0 (0.0)	
Potato, chips/ snacks/peanuts	Infrequent	0 (0.0)	2 (100.0)	0.021**
	Frequent	172 (86.0)	28 (14.0)	

**P value significant.

DISCUSSION

Anganwadi centers, functioning under the ICDS scheme, play a vital role in the growth and development of preschool children in India. These centers provide essential services such as supplementary nutrition, immunization support, health education, and early childhood care, particularly in rural and underserved populations. As a primary point of contact for young children and their parents, Anganwadi centers offer a valuable platform for implementing preventive health programs, including oral health promotion and education. The present cross-sectional study was conducted to assess the oral health status, dietary habits, and parents' perception among 3-5-year-old children attending Anganwadi centers and to evaluate their association with dental caries.

Oral health is an important component of general health, influencing the growth and quality of life of children. Dental caries, a common chronic disease, can lead to pain, infection, and impaired eating if left untreated. The prevalence of dental caries observed in the present study was 14.9%, which is comparatively lower than that reported by Hegde et al who found a higher prevalence among Anganwadi children.[10] The lower prevalence observed in the present study may be attributed to several factors. Firstly, the study population consisted of younger children (3-5 years), who may have had less cumulative exposure to cariogenic challenges compared to older children. Secondly, the rural setting may have influenced dietary patterns, with relatively lower availability or affordability of processed sugary foods compared to urban populations. Thirdly, parental supervision of feeding practices at younger ages may have contributed to reduced exposure to cariogenic diets.

Fluoride plays a critical role in the prevention of dental caries by promoting remineralization and inhibiting demineralization. The use of fluoridated toothpaste is one of the most effective preventive measures. In the present study, none of the parents were aware of fluoride toothpaste, indicating a significant lack of awareness. This may reduce the protective benefits of fluoride and increase susceptibility to dental caries, highlighting the need for oral health education.

Oral hygiene practices play a crucial role in maintaining oral health and preventing dental diseases such as dental caries and periodontal conditions. Tooth brushing is the most effective and widely practiced method for the mechanical removal of dental plaque, which contains cariogenic microorganisms responsible for acid production and enamel demineralization. Regular brushing, particularly twice daily with fluoridated toothpaste, is recommended to maintain optimal oral hygiene. In the present study, all children used a toothbrush and toothpaste; however, the majority brushed only once daily, which may be insufficient for effective plaque control. Inadequate brushing frequency can lead to accumulation of dental plaque, thereby increasing the risk of dental caries. These findings are in agreement with those reported by Priya et al who observed suboptimal oral hygiene practices among preschool children.[13] The inadequate oral hygiene practices observed in the present study may be attributed to lack of parental awareness, insufficient supervision during brushing, and limited knowledge regarding proper brushing techniques.

Utilization of dental services is an important determinant of oral health. Regular dental visits aid in early detection and prevention of oral diseases. In the present study, none of the children had visited a dentist, reflecting poor utilization of dental services. This may be due to lack of awareness, accessibility issues, or low perceived need for dental care. Similar findings have been reported by Priya et al who observed that low utilization of dental services among preschool children was mainly due to inadequate parental awareness, socioeconomic constraints, and the tendency to seek dental care only when symptoms become severe.[14]

Parental perception plays a crucial role in determining children's oral health practices, as parents are primarily responsible for supervising oral hygiene, regulating dietary habits, and seeking dental care. Accurate perception of a child's oral health status is essential for early identification of problems and timely intervention. However, misperception may lead to neglect of oral health needs. In the present study, the majority of parents perceived their child's oral health as good despite the presence of dental caries. This discrepancy indicates a lack of awareness regarding early signs of dental disease. These findings are consistent with those reported by Talekar et al.[7]

Dietary habits play a significant role in the development of dental caries, particularly the frequency of consumption of sugary foods and beverages. In the present study, a high proportion of children consumed cariogenic foods frequently, indicating an increased risk for dental caries. A statistically significant association was observed between dental caries and the consumption of milk with sugar, coffee with sugar, and potato

chips/snacks/peanuts ($p<0.05$). These findings are consistent with those reported by Sheiham et al and Moynihan et al who emphasized the role of free sugars in the etiology of dental caries. Comparable findings were also reported by Priya et al.[11-13]

The study is strengthened by the use of standardized WHO criteria and inclusion of both clinical and behavioural data in a rural population.

The present study has certain limitations. Being cross-sectional in design, it provides information on the association between dietary habits and dental caries at a single point in time and does not establish a causal relationship. In addition, data on dietary practices and parental perception were self-reported, which may be subject to recall bias and social desirability bias. Some dietary variables also showed limited variability, which restricted further statistical analysis.

Despite these limitations, the findings highlight important implications for improving oral health among preschool children in rural settings. There is a need for implementation of structured oral health promotion programs focusing on dietary counseling, oral hygiene practices, and early detection of dental problems. Addressing barriers to access and improving awareness can contribute to better oral health outcomes in underserved populations.

Dental professionals play a key role in these interventions by conducting regular screening, providing preventive and therapeutic care, and training Anganwadi workers (AWWs) to deliver basic oral health education. Anganwadi centers can serve as an effective platform for promoting oral hygiene practices and reinforcing healthy dietary behaviors among children and their caregivers.

Maintaining the health of primary teeth is essential for overall growth and development. Therefore, improving parental awareness and fostering a positive attitude toward preventive and curative dental care is crucial for reducing the burden of dental caries in early childhood.

CONCLUSION

The present study demonstrated a relatively low prevalence of dental caries (14.9%) among preschool children attending Anganwadi centers in a rural setting. However, a high frequency of consumption of consumption of milk with sugar, coffee with sugar, and potato chips/snacks/peanuts was observed, which showed a significant association with dental caries. Despite this, the majority of parents perceived their child's oral health as good, indicating a gap between perceived and actual oral health status. Oral hygiene practices were found to be inadequate, along with lack of awareness regarding fluoride toothpaste and poor utilization of dental services. These findings highlight the need for improved awareness, preventive strategies, and early interventions to promote better oral health among preschool children.

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REFERENCES

1. World Health Organization. Oral health. Geneva: WHO. 2022. Available at: https://www.who.int/team/noncommunicable-diseases/global-status-report-on-oral-health-2022. Accessed on 3 May 2026.
2. Petersen PE. The global burden of oral diseases and risks to oral health. Bull World Health Organ. 2005;83(9):661-9.
3. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJ, Marcenes W. Global burden of untreated caries. J Dent Res. 2015;94(5):650-8.
4. Policy on Early Childhood Caries (ECC): Classifications, Consequences, and Preventive Strategies. Pediatr Dent. 2016;38(6):52-4.
5. Sheiham A. Dietary effects on dental diseases. Public Health Nutr. 2001;4(2B):569-91.
6. Moynihan P. The role of diet in the prevention of dental diseases. J Dent. 2000;28(3):201-6.
7. Talekar BS, Rozier RG, Slade GD, Ennett ST. Parental perceptions of their preschool-aged children's oral health. J Am Dent Assoc. 2005;136(3):364-72.
8. World Health Organization. Oral Health Surveys: Basic Methods. 5th ed. Geneva: WHO. 2013. Available at: https://www.who.int/publications/i/item/9789241548649. Accessed on 3 May 2026.
9. World Health Organization. Oral health assessment form for children. Geneva: WHO. 2013. Available at: https://www.yunbaogao.cn/index/partFile/5/who/2022-04/5_28045.pdf. Accessed on 3 May 2026.
10. Hegde V, Nanukuttan A. Dental caries experience among preschool children attending Anganwadi centers. J Indian Assoc Public Health Dent. 2018;16(2):133-6.
11. Sheiham A, James WP. Diet and dental caries: The pivotal role of free sugars. J Dent Res. 2015;94(10):1341-7.
12. Moynihan P, Kelly S. Effect on caries of restricting sugars intake: Systematic review. J Dent Res. 2014;93(1):8-18.
13. Priya H, Acharya S, Kumar M, Bhat M, Purohit B. Oral health status among preschool children attending Anganwadi centres. Oral Health Prev Dent. 2012;10(4):355-63.
14. Petersen PE. The World Oral Health Report 2003: Continuous improvement of oral health. Community Dent Oral Epidemiol. 2003;31(1):3-24.

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