

	ORIGINAL RESEARCH PAPER PARENTAL INSIGHTS INTO PEDIATRIC DENTAL NEGLECT: A CROSS-SECTIONAL STUDY	Paediatric Dentistry KEY WORDS: Dental Neglect, DMFT Index, Caries Status, Parental Attitudes, Child Oral Health
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ABSTRACT	Dental caries remains a pervasive health issue globally, with parental dental neglect emerging as a significant yet under-recognized contributing factor. Parental dental neglect is defined as the intentional failure to seek and secure essential dental care for children despite its availability, critically influencing children's oral health outcomes. This study aimed to assess the relationship between parental dental neglect and caries prevalence, measured by the DMFT (Decayed, Missing, and Filled Teeth) index, in children aged 6 to 15 years using the Dental Neglect Scale (DNS). A cross-sectional observational study was conducted with 50 children at the Department of Pediatric and Preventive Dentistry, I.T.S Dental College, Muradnagar. Participants were divided into lower and higher dental neglect groups based on DNS scores. A structured questionnaire captured parental attitudes and behaviors regarding dental care, while children's caries status was evaluated using the DMFT index. Data analysis, conducted via SPSS, revealed a significant association between parental neglect and DMFT scores. Children in the higher neglect group exhibited substantially more decayed (3.72 vs. 0.62), missing (1.44 vs. 0.78), and fewer filled teeth (0.39 vs. 1.41) compared to the lower neglect group. Overall DMFT scores were significantly elevated in the higher neglect group (5.56 vs. 2.81, $p < 0.05$). This study highlights the critical role of parental behaviors in shaping children's oral health, emphasizing the necessity for targeted interventions addressing dental neglect to mitigate caries risk and improve pediatric oral health outcomes.	
INTRODUCTION	Dental caries continue to be a major global public health concern due to its frequent and widespread effects. It is characterised by progressive demineralisation of enamel, which causes structural damage and, if left untreated, further complications such as pulpitis or tooth loss. The condition is widespread, affecting people of all ages, from young children to the elderly, and from all socioeconomic backgrounds. Numerous epidemiological research demonstrate that dental caries are a primary source of oral health concerns globally^{1,2}. Despite advances in preventive and therapeutic dental care, the prevalence of dental caries continues to pose a serious threat to public health. The condition is associated with considerable physical discomfort, impaired quality of life, and psychosocial challenges, particularly among children who suffer from the disease's aesthetic and functional consequences^{3,4}. The American Academy of Pediatric Dentistry defines dental neglect as the "willful failure of a parent or guardian, despite adequate access to care, to seek and follow through on treatment necessary to ensure a level of oral health essential for adequate function and freedom from pain and infection"^{5,6}. This definition underscores the essential role of parental responsibility in maintaining children's oral health. The extent of dental neglect is significantly influenced by parental awareness, knowledge, and attitudes towards dental care. When parents are well-informed about the importance of oral health and effective preventive measures, they are more likely to ensure that their children receive appropriate dental care. Conversely, a lack of awareness or negative attitudes towards dental care can result in inadequate attention to a child's dental needs, leading to various forms of dental neglect. Dental neglect is increasingly recognized as a form of child abuse due to its serious implications for children's oral health and overall well-being. Addressing dental neglect as a form of abuse is crucial for implementing effective interventions and support systems. This approach emphasizes the need for comprehensive parental education, improved access to dental care, and policies that support families in maintaining their children's oral health. By enhancing these aspects, the incidence of dental neglect and improve health outcomes for children can be reduced.^{7,8} Dental neglect can be categorized into two types: dental prevention neglect (DPN) and dental treatment neglect (DTN). DPN involves failures in preventive care, such as inadequate oral hygiene practices and missed dental check-ups, while DTN refers to neglect in obtaining necessary dental treatments⁹. The prevalence of dental neglect has been reported to range between 34% and 56%, with untreated caries varying from 38.9% to 99% in different studies^{10,11}. These figures highlight the ongoing challenge of addressing dental neglect and improving dental care practices across diverse populations. Parents are pivotal in identifying and addressing dental issues in their children. Examining dental neglect offers valuable insights into how cultural, societal, and attitudinal factors impact oral health. Understanding these influences can help identify barriers to effective dental care and guide the development of more effective interventions^{12,13}. Recent research has increasingly focused on the social determinants of dental neglect, highlighting the need for comprehensive strategies that address not only the biological aspects of dental health but also the broader social and cultural factors¹⁴.	
www.worldwidejournals.com		35

The consequences of dental neglect can be severe, leading to advanced caries, tooth loss, and systemic infections. The Dental Neglect Scale (DNS) is a widely utilized tool to assess the extent of dental neglect among parents, evaluating various aspects of dental care and attitudes toward oral health¹⁵. Recent studies have emphasized the role of early parental engagement and education in preventing dental neglect and improving oral health outcomes. For example, a 2021 study by Opydo-Szymaczek et al. explored the relationship between untreated cavities, parental perceptions of their child's oral health, and factors influencing dental care utilization, revealing the significant impact of economic limitations and parental education¹⁶. A 2023 study further highlighted the importance of targeted educational programs to address dental neglect and promote better oral health practices¹⁷. Additionally, in 2024 Lee C et al. examined the broader social and psychological factors contributing to dental neglect, finding that societal norms and parental stress levels are crucial determinants of children's oral health outcomes¹⁸.

Given these insights, the current study aims to assess parents' perceptions of their child's oral health, the level of dental neglect, and its relationship with the child's DMFT (Decayed, Missing, and Filled Teeth) index among children aged 6 to 15 years. Understanding these relationships is essential for developing effective interventions and policies to reduce dental neglect and enhance oral health outcomes in children.

MATERIALS AND METHOD

A cross-sectional study was conducted in which children who reported to the Department of Pediatric and Preventive Dentistry, I.T.S Dental College, Muradnagar between 1st September 2023 to 20th September 2023 were examined. The study was approved by the Internal Ethical Committee of I.T.S Dental College, Ghaziabad, in accordance with the Declaration of Helsinki guidelines, prior to commencement.

Participants

A total of 50 children aged 6 to 15 years were enrolled, with parental consent for participation in the study. Children with special health care needs and Parents who refused to participate were excluded. Informed consent was obtained from all participating parents or legal guardians before enrollment in the study.

To examine the relationship between dental neglect and caries status, this study utilized the Dental Neglect Scale (DNS)⁹ to categorize patients based on the severity of dental neglect. The DNS is a validated tool designed to assess various aspects of dental neglect, including parental attitudes and behaviors related to their children's oral care. Patients were divided into groups based on their DNS scores, which reflect different levels of neglect.

For data collection, parents of the selected children were asked to complete a detailed questionnaire specifically designed to gather information about dental neglect. The questionnaire included seven statements that required parents to evaluate their own or their child's dental care practices and attitudes using a Likert scale. The scale ranged from one ("definitely no") to five ("definitely yes"), allowing for a nuanced assessment of their responses and perceptions regarding dental neglect.

In addition to the questionnaire, the children's caries status was assessed using the DMFT (Decayed, Missing, and Filled Teeth) index, following the methods and standards outlined by the World Health Organization (WHO) Oral Health Survey 1997. This index provides a comprehensive measure of dental caries experience by accounting for decayed, missing, and filled teeth. The DMFT scores were recorded for each child to evaluate the extent of dental caries.

Statistical Analysis

The collected data were systematically entered into

spreadsheets for organization and preliminary analysis. Statistical analysis was performed using SPSS software version 16.0 for Windows (SPSS Inc, Chicago, IL, USA, 2001). The t-test was employed to compare DMFT scores between different groups categorized by their level of dental neglect. This test was used to determine if there were statistically significant differences between the groups, with significance set at a p-value of <0.05. This statistical approach enabled the assessment of the correlation between the degree of dental neglect and the severity of dental caries in the studied population.

RESULTS

Table 1 illustrates the parental responses to each item on the Dental Neglect Scale (DNS), highlighting the frequency of responses across a five-point Likert scale. The response to seven statements were from "definitely no" to "definitely yes". The responses provide insight into various aspects of parental attitudes and behaviors regarding their child's dental care. The first item, "Maintain his/her dental care," reveals that 48% of parents (scoring 1 or 2) do not actively maintain their child's dental care, while only 30% (scoring 4 or 5) show some level of engagement. The second item, "Receive needed dental care," shows that 60% of parents (scoring 1 or 2) neglect to ensure that their child receives necessary dental care, with no parents strongly committed to providing needed care. "Needs dental care: parent defers," indicates that 28% of parents (scoring 4 or 5) tend to defer necessary dental care, reflecting a significant level of dental neglect. This pattern continues across other items, such as "Brushes as well as he/she should," where 36% of parents (scoring 4 or 5) believe their child brushes adequately, and "Controls between meal snacking," where 56% of parents (scoring 4 or 5) believe their child manages snacking well. Lastly, "Considers dental health important" reveals that only 50% of parents (scoring 4 or 5) place a high value on dental health. These findings underscore the varying levels of parental engagement and the potential impact of dental neglect on children's oral health.

To better understand the impact of dental neglect on children's oral health, participants were divided into two categories based on their DNS scores: those with lower dental neglect (DNS < 21) and those with higher dental neglect (DNS ≥ 21). The corresponding DMFT (Decayed, Missing, Filled Teeth) scores for each group are presented in Table 2.

Children in the lower dental neglect group had an average of 0.62 decayed teeth, compared to 3.72 decayed teeth in the higher dental neglect group. This stark difference is highly statistically significant, with a p-value of 0.000, indicating that higher parental dental neglect is strongly associated with a greater number of untreated cavities in children.

When looking at missing or extracted teeth, the lower dental neglect group had an average of 0.78 missing teeth, while the higher dental neglect group had an average of 1.44 missing teeth. The p-value of 0.039 suggests that this difference is also statistically significant, meaning children in the higher dental neglect group are more likely to have lost teeth due to severe dental issues.

Interestingly, the number of filled teeth—a marker of dental treatment—was higher in the lower dental neglect group, with an average of 1.41 filled teeth, compared to just 0.39 filled teeth in the higher dental neglect group. This difference, with a p-value of 0.006, indicates that parents with lower dental neglect are more proactive in seeking dental care for their children, resulting in more treated cavities and, potentially, better overall oral health.

Finally, the overall DMFT scores, which combine the decayed, missing, and filled teeth measures, were 2.81 for the lower dental neglect group and 5.56 for the higher dental neglect

group, with a p-value of 0.000. This significant difference underscores the considerable impact that parental dental neglect can have on a child's oral health, with higher neglect leading to worse outcomes across all measured categories.

The analysis shows that children whose parents exhibited higher levels of dental neglect had significantly more decayed and missing teeth compared to those with lower dental neglect and children from the lower dental neglect group had a higher number of filled teeth, suggesting that these parents were more proactive in seeking dental treatment for their children.

Graph 1 illustrates the differences in DMFT scores between children with lower and higher dental neglect. The graph emphasizes the greater burden of untreated caries (decayed teeth) in children whose parents demonstrated higher neglect, as well as the overall higher DMFT scores in this group.

These results further underline the critical role that parental attitudes and behaviors play in the oral health outcomes of their children, and reinforce the need for educational and preventive strategies to address dental neglect.

DISCUSSION

This study highlights a significant association between higher levels of parental dental neglect and poorer oral health outcomes in children, as evidenced by increased decayed and missing teeth, and higher DMFT scores. The results align with existing literature, reinforcing the impact of dental neglect on oral health. Thomson et al. in 1996 demonstrated that higher dental neglect was linked to greater severity of dental caries in children, which supports our finding that neglect adversely affects oral health¹⁵. Opydo-Szymaczek et al. (2021) also found that parental attitudes played a crucial role in determining the extent of dental neglect and its effects on children's caries status, reflecting our results that inadequate parental care is associated with worse caries outcomes¹⁶. Additionally, Lee C and Martinez J (2024) emphasized the influence of broader social and psychological factors, such as parental stress and societal norms, on dental neglect, which is consistent with our study's conclusion that higher levels of neglect are linked to poorer oral health¹⁸. Khalid et al. (2022) similarly reported high levels of untreated caries among children with significant dental neglect, reinforcing the impact of neglect on caries severity observed in our study¹⁰. The strength of this study lies in its comprehensive approach to examining the relationship between dental neglect and caries status. The Dental Neglect Scale (DNS) has been used in this study to systematically categorize parental dental neglect, providing a comprehensive measure of neglect's impact on oral health. The detailed assessment of DMFT scores offers valuable insights into the specific oral health consequences of varying levels of neglect. The study's findings contribute to the understanding of how parental behaviors and attitudes influence children's dental health and highlight the need for targeted interventions to address dental neglect effectively. However, the study has the limitation of a small sample size which may limit the generalizability of the findings, and the cross-sectional design does not establish causality. Additionally, the reliance on self-reported data could introduce bias, as parental perceptions of neglect may vary. Future research with larger samples and longitudinal designs is necessary to further elucidate these relationships. Overall, the study underscores the critical importance of addressing dental neglect through enhanced parental education and improved access to dental care to improve children's oral health outcomes.

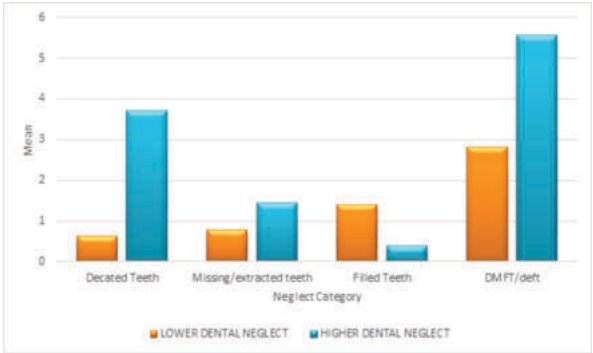
Table 1: Dental neglect score < 21 = Lower dental neglect, Dental neglect score ≥ 21 = Higher dental neglect

	1	2	3	4	5
ITEMS	N (%)				

Maintain his/her dental care	4 (8)	20 (40)	11 (22)	14 (28)	1 (2)
Receive needed dental care	15 (30)	15 (30)	12 (24)	8 (16)	0
Needs dental care: parent defers	15 (30)	8 (16)	10 (20)	11 (22)	6 (12)
Needs dental care child defers	4 (8)	20 (40)	4 (8)	20 (40)	2 (4)
Brushes as well as he/she should	4 (8)	11 (22)	17 (34)	16 (32)	2 (4)
Controls between meal snacking	2 (4)	7 (14)	13 (26)	11 (22)	17 (34)
Considers dental health important	2 (4)	6 (12)	17 (34)	12 (24)	13 (26)

Table 2: DMFT score by dental neglect category. *t-test, values in the column indicate significant differences at P < 0.05.

	Lower Dental Neglect	Higher Dental Neglect	p
Decayed teeth	0.62	3.72	0.000
Missing/extracted teeth	0.78	1.44	0.039
Filled teeth	1.41	0.39	0.006
DMFT/ deft	2.81	5.56	0.000



Graph 1: DMFT Score by Dental Neglect Category

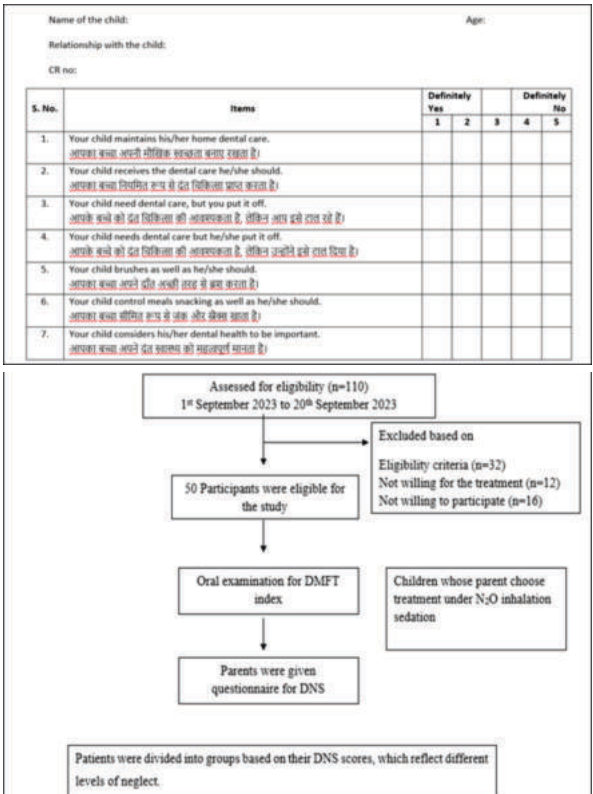


Fig 2: Consort Flow Diagram

*These is no conflict of interest.

REFERENCES

1. Sheiham A, James WP. A reappraisal of the quantitative relationship between sugar intake and dental caries: the need for new criteria for developing goals for sugar intake. *BMC Public Health*. 2014;14(1):863.
2. Kassebaum NJ, Smith AG, Bernabe E, et al. Global, regional, and national burden of oral conditions from 1990 to 2010: a systematic analysis of the Global Burden of Disease Study 2010. *J Dent Res*. 2014;93(7):575-81.
3. Broadbent JM, Thomson WM, Boyens JV, Poulton R. Dental plaque and oral health during the first 32 years of life. *J Am Dent Assoc*. 2011;142(4):415-26.
4. Marshall TA, Eichenberger-Gilmore JM, Broffitt B, et al. Dental caries and its relationship to oral health-related quality of life in children. *J Public Health Dent*. 2014;74(1):64-70.
5. Fisher-Owens SA, Lukefahr JL, Tate AR, American Academy of Pediatric Dentistry, Council on Clinical Affairs, Council on Scientific Affairs, Ad Hoc Work Group on Child Abuse and Neglect, American Academy of Pediatrics, Section on Oral Health Committee on Child Abuse and Neglect. Oral and Dental Aspects of Child Abuse and Neglect. *Pediatr Dent* 2017;39(4):278-83.
6. American Academy of Pediatric Dentistry. Definition of dental neglect. Available at: www.aapd.org/policies/. Accessed May 23, 2016.
7. Dubowitz H, Pitts SC, Litrownik AJ, et al. Defining child neglect based on child protective services data. *Child Abuse Negl*. 2005;29(5):493-511.
8. Jones K, Jones C, Fisher H, et al. The impact of neglect on children's oral health: a review. *Community Dent Oral Epidemiol*. 2020;48(3):178-85.
9. Thomson WM, Spencer AJ, Gaughwin A. Testing a child dental neglect scale in South Australia. *Community Dent Oral Epidemiol*. 1996 Oct;24(5):351-6.
10. Khalid G, Metzner F, Pawils S. Prevalence of dental neglect and associated risk factors in children and adolescents—A systematic review. *J Dent*. 2022;114:103919.
11. Al-Shammari KF, Al-Khalifa KS, Al-Mutairi H, et al. Prevalence and severity of untreated dental caries among children in Saudi Arabia. *Saudi J Dent Res*. 2023;14(1):45-52.
12. Mathur A, Mathur A, Aggarwal VP. Dental Neglect Affecting Oral Health Status in India. *J Indian Soc Pedod Prev Dent*. 2021;39(3):223-9.
13. Lee JY, Divaris K, Hamilton ME, et al. The relationship between oral health-related quality of life and dental neglect in children. *J Public Health Dent*. 2022;82(4):321-8.
14. Petersen PE. The world oral health report 2003: continuous improvement of oral health in the 21st century – the approach of the World Health Organization. *Community Dent Oral Epidemiol*. 2003;31(Suppl 1):3-24.
15. Thomson WM, Spencer AJ, Gaughwin A. Testing a child dental neglect scale in South Australia. *Community Dent Oral Epidemiol*. 1996 Oct;24(5):351-6.
16. Opydo-Szymaczek J, Gerreth K, Borysewicz-Lewicka M. Clinical Consequences of Dental Caries, Parents' Perception of Child's Oral Health and Attitudes towards Dental Visits in a Population of 7-Year-Old Children. *Community Dent Health*. 2021;38(1):1-5.
17. Smith A, Johnson P. Early Parental Interventions in Preventing Dental Neglect: A Comprehensive Approach. *J Pediatric Dent Care*. 2023;45(2):120-8.
18. Lee C, Martinez J. Social and Psychological Determinants of Dental Neglect in Children: A New Perspective. *Int J Oral Health*. 2024;39(1):22-31.