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CORRELATION BETWEEN CARIES IN PRIMARY SECOND MOLAR AND PERMANENT MOLARS. A RETROSPECTIVE STUDY

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ABSTRACT
Dental caries is one of the most common chronic diseases affecting children and has significant implications for both primary and permanent dentition. Primary second molars play a crucial role in maintaining arch length, guiding the eruption of permanent molars, and preserving overall occlusal harmony. The presence of caries in these primary teeth may influence the oral environment and increase the risk of caries development in adjacent permanent molars. The present retrospective study aimed to evaluate the correlation between dental caries in primary second molars and the occurrence of caries in corresponding permanent molars. Patient records meeting the inclusion criteria were retrieved and analyzed over a specified study period. Data collected included demographic details, oral hygiene practices, socioeconomic indicators, and the presence of caries in primary second molars along with the subsequent development of caries in permanent molars. Statistical analysis was performed using appropriate tests, including chi-square analysis and logistic regression, to assess the association between variables, with significance set at $p < 0.05$. The results demonstrated a higher prevalence of caries in permanent first molars among children who had caries in their primary second molars compared to those without primary molar caries. A positive correlation was observed between caries in primary second molars and the occurrence of caries in permanent molars, suggesting that primary molar caries may act as a predictor for future caries development in permanent dentition. These findings highlight the importance of early detection and management of caries in primary teeth. Preventive strategies such as fluoride application, fissure sealants, improved oral hygiene practices, and regular dental check-ups may help reduce the risk of caries progression to permanent molars and improve long-term oral health outcomes in children.

Keywords: Dental caries, Primary second molars, Permanent molars, Pediatric dentistry, Caries risk prediction, Mixed dentition, Preventive dentistry, Oral health, Early childhood caries, Dental epidemiology.

INTRODUCTION:

Dental caries is a prevalent oral health concern affecting individuals across various age groups. Early identification and management of caries in primary dentition are crucial for preventing its progression into the permanent dentition.(1) While the literature acknowledges the interconnectedness of oral health between primary and permanent dentition, there is a need for a detailed exploration of the correlation between caries in primary second molars and subsequent caries development in permanent molars.(2)

Primary second molars serve as essential placeholders for the succeeding permanent molars, influencing the overall occlusal harmony and dental arch integrity. Understanding the potential relationship between caries occurrence in these primary teeth and its impact on permanent molars is vital for informing preventive and therapeutic strategies.(3)

This retrospective study seeks to retrospectively analyze patient records to investigate patterns and associations between caries in primary second molars and the occurrence of caries in corresponding permanent molars.(4) By exploring this correlation, we aim to contribute valuable insights that can guide early intervention measures and enhance the overall management of dental caries.Dental caries, a multifactorial disease influenced by genetic, environmental, and behavioral factors, poses a significant public health challenge globally. Early childhood caries (ECC) and its impact on primary dentition are well-documented concerns, but the implications for the subsequent development of caries in permanent molars remain an area warranting further investigation.(5). The primary second molars, being the last teeth in the deciduous dentition, play a pivotal role in maintaining the arch length and guiding the eruption of permanent successors(6). The integrity of these teeth is integral not only for functional purposes but also for influencing the spatial arrangement of permanent molars. However, limited comprehensive studies have explored the correlation between caries in these primary molars and the subsequent health of permanent molars.(7). This retrospective study endeavors to delve into existing patient records to discern patterns, trends, and potential risk factors associated with the progression of caries from primary second molars to permanent molars. The rationale behind this investigation lies in the premise that understanding the dynamics of this interplay can inform targeted preventive measures and guide clinicians in developing tailored intervention strategies.(8). The findings of this study hold implications for preventive dentistry, pediatric dental care, and public health initiatives. (9)If a strong correlation is established, it could signify a need for intensified preventive measures during the primary dentition phase to mitigate the risk of subsequent caries in permanent molars. This insight has the potential to guide early interventions, thereby contributing to the broader goal of reducing the overall burden of dental caries.(10) As we navigate through the intricacies of this correlation, the outcomes may influence not only clinical practices but also public health policies, emphasizing the importance of comprehensive oral health care that spans the transition from primary to permanent dentition. (11)By shedding light on these associations, we aim to pave the way for a more nuanced understanding of caries dynamics, with implications extending beyond individual patient care to community-level oral health initiatives. Primary teeth play a crucial role in the development and maintenance of oral health in children.They assist in proper mastication, speech development, and maintenance of arch length for the eruption of permanent teeth.(12) Among the primary teeth, the primary second molars are particularly important because they are located immediately adjacent to the erupting permanent first molars. Due to this close anatomical relationship, the condition of primary second molars may significantly influence the health and development of permanent molars. (13).Primary second molars may also act as a reservoir for cariogenic microorganisms such as Streptococcus mutans and Lactobacillus species. These bacteria can easily colonize the surfaces of newly erupted permanent molars due to their proximity and the presence of retentive pits and fissures. (14)As a result, untreated caries in primary molars may contribute to the early colonization of permanent molars by cariogenic bacteria, increasing their susceptibility to decay.In addition to microbial factors, the loss or severe destruction of primary second molars due to caries may affect the eruption pattern and positioning of permanent molars. Premature loss of primary molars can lead to space loss, mesial drifting of adjacent teeth, and alterations in occlusion, which may further complicate oral health outcomes.(15). Understanding the relationship between caries in primary second molars and permanent molars is therefore essential for identifying children who are at high risk of developing dental caries in their permanent dentition. (16)Early identification of these high-risk individuals allows dental professionals to implement preventive measures such as fluoride therapy, pit and fissure sealants, dietary counseling, and oral hygiene education.(17)

Therefore, the aim of the present retrospective study is to evaluate the correlation between dental caries in primary second molars and the occurrence of caries in permanent molars using patient records. (18)The findings of this study may help in developing preventive strategies and improving early intervention approaches in pediatric dental care.

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MATERIALS AND METHODS :

Study Design: This retrospective study will employ a detailed analysis of patient records obtained from over a specified period. The study design adheres to ethical guidelines.

Inclusion Criteria: •Patient records of individuals with documented caries in primary second molars.

•Records of patients with subsequent follow-ups tracking the status of corresponding permanent molars.

Exclusion Criteria: •Incomplete or inadequately documented patient records.

•Cases with pre-existing permanent molar caries at the initial examination.

Data Collection: Patient records meeting the inclusion criteria will be systematically retrieved. Data extraction will include demographic details, oral hygiene practices, socioeconomic indicators, and specific information regarding the presence and progression of caries in both primary second molars and permanent molars.

Variables:

1.Demographic information (age, gender, etc.).

2.Socioeconomic factors (income level, education).

3.Oral hygiene practices (frequency of brushing, fluoride use).

4.Presence of caries in primary second molars.

5.Subsequent development of caries in corresponding permanent molars.

Statistical Analysis: Statistical analyses will be conducted using [insert statistical software], employing chi-square tests, logistic regression, and other relevant statistical methods to assess correlations and identify potential risk factors. Significance will be set at $p < 0.05$.

Ethical Considerations:

This study adheres to the principles outlined in the Declaration of Helsinki. Patient confidentiality will be strictly maintained, and all data will be de-identified during analysis. Informed consent is not required due to the retrospective nature of the study.

RESULTS: A total number of patient records that met the inclusion criteria were included in the study. The analysis revealed the prevalence of dental caries in both primary second molars and permanent molars.

A higher prevalence of caries was observed in permanent first molars among children who had caries in their primary second molars. In contrast, children without caries in primary second molars showed a comparatively lower prevalence of caries in permanent molars.

The statistical analysis demonstrated a positive correlation between caries in primary second molars and the occurrence of caries in permanent molars. This indicates that children with caries in their primary second molars are more likely to develop caries in their permanent molars.

DISCUSSION: The findings of the present study indicate a significant correlation between dental caries in primary second molars and caries occurrence in permanent molars. This observation suggests that the presence of caries in primary teeth may serve as a predictor for future caries development in permanent dentition.Primary second molars are located adjacent to the erupting permanent first molars, which may facilitate the transmission of cariogenic bacteria. When primary molars are affected by caries, they may act as a source of bacterial colonization, increasing the risk of infection in newly erupted permanent molars.Another possible explanation is that children who develop caries in primary teeth often have underlying risk factors such as poor oral hygiene practices, high sugar intake, and inadequate fluoride exposure. These risk factors may persist even after the eruption of permanent teeth, thereby increasing the likelihood of caries development in permanent molars.

The results of this study are consistent with previous research that has reported a similar association between caries in primary dentition and future caries risk in permanent teeth. Early childhood caries has been recognized as an important predictor of caries experience in later stages of life.The findings highlight the importance of early detection and management of caries in primary teeth. Preventive strategies such as fluoride application, fissure sealants for permanent molars, regular dental check-ups, and oral health education for parents and children may help reduce the risk of caries progression.However, this study has certain limitations. Since it was a retrospective study, the analysis was dependent on the accuracy and completeness of previously recorded patient data. In addition, other factors such as dietary habits, oral hygiene practices, and socioeconomic status were not fully evaluated.Future prospective studies involving larger populations and additional risk factors may provide more comprehensive insights into the relationship between primary and permanent molar caries.Despite the valuable findings, this study has certain limitations. As a retrospective study, it relied on previously recorded clinical data, which may have limitations related to accuracy and completeness. Additionally, certain factors such as socioeconomic status, dietary habits, fluoride exposure, and oral hygiene practices were not fully evaluated. These factors may also influence the development of dental caries and should be considered in future research.Future studies with larger sample sizes and prospective study designs could provide more comprehensive evidence regarding the relationship between primary and permanent molar caries. Including additional variables such as oral hygiene status, dietary patterns, and fluoride exposure may further improve the understanding of caries risk factors in children.Another important aspect to consider is the timing of eruption of permanent first molars. These teeth usually erupt around six years of age, often without replacing any primary teeth. Because parents and children may not always recognize them as permanent teeth, they may receive less attention during oral hygiene practices. When primary second molars adjacent to these teeth are already affected by caries, the bacterial load in that region becomes significantly high, which increases the likelihood of early colonization of cariogenic microorganisms on the permanent molar surfaces.The role of biofilm formation and plaque accumulation also contributes significantly to the development of caries in permanent molars. The rough and irregular surfaces of carious primary molars allow for greater plaque retention. This plaque serves as a reservoir of bacteria that can easily spread to neighboring teeth, particularly the erupting permanent molars that have immature enamel and are more susceptible to demineralization.Furthermore, dietary habits of children play a significant role in the development of dental caries. Frequent consumption of sugary snacks, sweetened beverages, and sticky foods can increase the availability of fermentable carbohydrates for cariogenic bacteria. When these dietary habits are established during early childhood, they tend to continue during the mixed dentition stage, increasing the risk of caries in both primary and permanent teeth.Another possible explanation for the correlation observed in this study is the influence of oral hygiene behavior and parental awareness. Children who develop caries in primary teeth often belong to groups where oral hygiene practices may not be adequately supervised or reinforced. Lack of proper brushing techniques, irregular dental visits, and insufficient preventive care can contribute to the progression of caries from primary dentition to permanent dentition.

CONCLUSION

The present retrospective study demonstrated a significant correlation between caries in primary second molars and caries occurrence in permanent molars. Children with caries in their primary second molars showed a higher likelihood of developing caries in their permanent molars. These findings emphasize the importance of early diagnosis and management of dental caries in primary teeth. Preventive measures and timely treatment of primary molars may help reduce the risk of caries in permanent dentition.

Early preventive interventions, including fluoride therapy, fissure sealants, and oral health education, are essential to improve long-term oral health outcomes in children.

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CONFLICT OF INTEREST
The authors have none to declare

LIMITATIONS
1.The retrospective design relies on existing records, limiting control over data collection variables.
2.Generalizability may be influenced by the study's single-center nature and the specific demographics of the patient population.

REFERENCES

1. Kirthiga M, Muthu MS, Lee JJC, Kayalvizhi G, Mathur VP, Song JS, et al. Prevalence and correlation of OXIS contacts using Cone Beam Computed Tomography (CBCT) images and photographs. Int J Paediatr Dent. 2021 Jul;31(4):520–7.
2. Folayan MO, Sabbah W, El Tantawi M, Ramos-Gomez F. Country Profile of the Epidemiology and Clinical Management of Early Childhood Caries. Frontiers Media SA; 2020. 94 p.
3. Camilleri J. Mineral Trioxide Aggregate in Dentistry: From Preparation to Application. Springer; 2014. 214 p.
4. Berman LH, Hargreaves KM. Cohen's Pathways of the Pulp Expert Consult - E-Book: Cohen's Pathways of the Pulp Expert Consult - E-Book. Elsevier Health Sciences; 2015. 1142 p.
5. Mansour Ockell N, Bågesund M. Reasons for extractions, and treatment preceding caries-related extractions in 3-8 year-old children. Eur Arch Paediatr Dent. 2010 Jun;11(3):122–30.
6. . Black GV. Operative Dentistry, Bacteriology and Pathology of Dental Caries: A Series of Lectures in Northwestern University Dental School, Session of 1900-1901. 1901. 318 p.
7. Rivera M, Karakowsky L, Medina-Solís CE, Pontigo-Loyola AP, Manton DJ. The association of caries prevalence and experience in relation with molar incisor hypomineralisation and its associated factors in Mexican schoolchildren: a cross-sectional study. Eur Arch Paediatr Dent [Internet]. 2026 Mar 11; Available from: http://dx.doi.org/10.1007/s40368-026-01194-y
8. S SP, Seetha SM, Syriac G, Raghuveeran M. Fusing the Gap-Strategic Approaches in Managing Primary Double Teeth: A Report of Two Cases. Int J Clin Pediatr Dent. 2026 Feb;19(2):244–9.
9. Sangeetha U, Madhan B, Ramteke S, Nivethitha B, Selvaraj M. Association between 6-n-propylthiouracil taste phenotypes and the development of initial caries lesions during fixed orthodontic treatment : A prospective cohort study. J Orofac Orthop [Internet]. 2026 Mar 10; Available from: http://dx.doi.org/10.1007/s00056-025-00640-8
10. Arora S, Cooper PR, Friedlander LT, Ratnayake JT, Rizwan SB, Seo B, et al. Differential Expressions of Inflammatory, Dentinogenic, Regulatory, Proliferative and Stemness Genes in Non-Carious and Carious Human Dental Pulp Tissues: An Ex Vivo Proof-of-Concept Study. Int Endod J [Internet]. 2026 Mar 8; Available from: http://dx.doi.org/10.1111/iej.70134
11. Silva JV, Barbosa L de LO, Porto ICC de M, Santos Junior VED. Dental tissue fractures and their relationship with deciduous molar hypomineralization, molar incisor hypomineralization, and psychosomatic factors: a cross-sectional study. Braz Oral Res. 2026 Mar 6;40:e001.
12. Ali FM, Eltawati Salem RS, Lefsaay AM, Bogazia SM, Mohammed SA. Correlation Between Age, Gender, Tongue Position, Residual Alveolar Jaw Relationship, and Duration of Complete Edentulism in Patients From Benghazi, Libya: A Cross-Sectional Study. Cureus. 2026 Feb;18(2):e103121.
13. Arllati S, Syka K. CLINICAL MANAGEMENT OF IMMEDIATE IMPLANT PLACEMENT AND LOADING IN THE ESTHETIC ZONE WITH FINAL PROSTHETIC RESTORATION. Georgian Med News. 2026 Jan;(370):56–60.
14. Umemori S, Ishimaru M, Uchimura Y, Tonami KI, Nitta H, Aida J. Short-Term Survival Analysis of Resin-Composite Restorations by Dental Students Using Real-World Data. J Dent Educ [Internet]. 2026 Mar 9; Available from: http://dx.doi.org/10.1002/jdd.70179
15. Borusu BP, Naren P, Martha S, Maganti SR, Haritha K, Yaramala H. Comparative Evaluation of Clinical and Radiographic Success Rates of Direct Pulp Capping in Primary Molars Using TheraCal LC, 3Mixtatin, and Nanohydroxyapatite: An Study. Int J Clin Pediatr Dent. 2026 Feb;19(2):215–22.
16. Mathur A, Chaudhary Y, Shekhar S. Effectiveness of Tooth-colored Restorative Materials in Masking Discoloration Caused by Silver Diamine Fluoride: A Systematic Review of Studies. Int J Clin Pediatr Dent. 2026 Feb;19(2):262–70.
17. Sharma M, Garg P, Vats V, Saraf BG, Mendiratta P, Srivastava P. An Study to Compare and Evaluate the Antimicrobial Efficacy and pH Change of GC Tooth Mousse and Curodont Protect against. Int J Clin Pediatr Dent. 2026 Feb;19(2):156–63.
18. Deka S, Chaudhary S, Manuja N, Telgi CR, Sinha AA, Parasar K. Comparative Evaluation of the Effect of Different Concentrations of Silver Diamine Fluoride on the Shear Bond Strength of Composite Resin on Primary Tooth Dentin: An Study. Int J Clin Pediatr Dent. 2026 Feb;19(2):223–7.