Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 32s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Prevalence Of Early Childhood Caries, Malocclusion And Ameloblastoma In Children And Radiographic Findings Of Ameloblastoma In A Known Population

Dr. Gagandeep Lamba[*1], Dr. Lavanya Thota[2], Dr. Gunaranjan Thota[3], Dr. Ranjan Bajpai[4], Dr. Nidhi Malde[5], Dr. Archana Jain[6]

[*1]MDS, department of paediatric and preventive dentistry, Associate professor, Ranjeet Deshmukh Dental College And Research Centre Nagpur

[2]MDS, Assistant Professor in Oral Medicine and Radiology, Department Of Maxillofacial Surgery and Diagnostic Sciences, College of Dentistry, Majmaah University, Al majmaah ,11952,Saudi Arabia

[3]MDS, Assistant Professor Of Restorative Dental Sciences, Department Of Restorative Dental Sciences(RDS), College of Dentistry, Majmaah University, Al majmaah ,11952,Saudi Arabia.

[4]MDS, Oral & Maxillofacial, Surgery

[5]Senior lecturer, Goenka Research Institute of Dental Science, conservative dentistry and endodotics

[6]Reader, M.M. College of dental sciences and research, Mullana (Aambala)

[*]**Corresponding author:**

Dr. Gagandeep Lamba

Cite this paper as: Dr. Gagandeep Lamba, Dr. Lavanya Thota, Dr. Gunaranjan Thota, Dr. Ranjan Bajpai, Dr. Nidhi Malde, Dr. Archana Jain, (2025) Prevalence Of Early Childhood Caries, Malocclusion And Ameloblastoma In Children And Radiographic Findings Of Ameloblastoma In A Known Population. *Journal of Neonatal Surgery*, 14 (32s), 8034-8038.

ABSTRACT

Background: This study was conducted to assess the Prevalence of Early Childhood Caries and Malocclusion in Children and, Radiographic Findings of Ameloblastoma in a known population.

Material and methods: This study comprised of 100 participants aged from 2 years to 15 years. The parents of the children were informed about the study procedure. All the parents agreed to give consent and hence, all the participants were included in the study. The children underwent oral clinical examination. The prevalence of early childhood caries and malocclusion were noted and the findings were tabulated. The children suspected for ameloblastoma underwent radiographic examination. All the radiographic findings observed had been noted down. Statistical analysis was conducted using SPSS software.

Results: In this study, there were total 100 children of which 49 belonged to the age group of 2-5 years, 26 belonged to the age group of 6-10 years and 25 belonged to the age group of 11-15 years. Early childhood caries was seen in 33 children. Malocclusion was seen in 47 children and ameloblastoma was seen in 20 children. Out of 47 children, type I, type II and type III malocclusion were seen in 16,23 and 8 children, respectively. The chief radiographic findings seen in children with ameloblastoma were multilocular radiolucency, cortical expansion towards both cheek and tongue, root resorption and ill-defined margins.

Conclusion: Based on the findings of this study, it can be concluded that the prevalence of early childhood caries, malocclusion and ameloblastoma in children was 33%, 47% and 20%, respectfully. The chief radiographic findings seen in children with ameloblastoma were multilocular radiolucency, cortical expansion towards both cheek and tongue, root resorption and ill-defined margins.

Keywords: *ECC, Malocclusion, Ameloblastoma, Prevalence.*

1. INTRODUCTION

The prevalence of early childhood caries (ECC) has been rising in numerous countries, emerging as a critical health issue, particularly among socially disadvantaged groups. ECC is characterized by the presence of one or more decayed, missing, or filled surfaces of primary teeth in children aged 71 months or younger. It exhibits distinct clinical features, including the rapid progression of caries, which can affect multiple teeth shortly after their eruption in the oral cavity. These lesions typically involve tooth surfaces that are less susceptible to caries development.[1]

Various terms have been employed to describe this condition, including nursing bottle caries, nursing caries, rampant caries, baby bottle caries, baby bottle tooth decay, milk bottle syndrome, and prolonged nursing habit caries. ECC is a complex disease resulting from the interplay of factors such as cariogenic microorganisms, exposure to fermentable carbohydrates due to improper feeding practices, and a variety of social determinants. It is a serious health issue prevalent among children in socially disadvantaged communities, where malnutrition represents a significant social and health inequity.[1,2]

Furthermore, ECC is linked to a range of other health complications, including localized pain, infections, abscesses, which can lead to difficulties in chewing, malnutrition, gastrointestinal issues, and sleep disturbances.[3]

The World Health Organization (WHO) regards malocclusion as one of the most significant oral health issues, following dental caries and periodontal disease.[4] The prevalence of malocclusion varies considerably, with estimates ranging from 39% to 93% among children and adolescents.[5-7] This broad range indicates a high level of heterogeneity. Such variability may be attributed to differences in ethnicity and age among the populations studied when evaluating the prevalence of malocclusion.[8,9]

Malocclusions can manifest in three distinct spatial planes: sagittal, transverse, and vertical. Within the sagittal plane, three different types of skeletal relationships can be identified, which are defined through the analysis of the ANB angle, reflecting the antero-posterior intermaxillary relationship.

This study was conducted to assess the Prevalence of Early Childhood Caries and Malocclusion in Children and, Radiographic Findings of Ameloblastoma in a known population.

2. MATERIAL AND METHODS

This study comprised of 100 participants aged from 2 years to 15 years. The parents of the children were informed about the study procedure. All the parents agreed to give consent and hence, all the participants were included in the study. The children underwent oral clinical examination. The prevalence of early childhood caries and malocclusion were noted and the findings were tabulated. The children suspected for ameloblastoma underwent radiographic examination. All the radiographic findings observed had been noted down. Statistical analysis was conducted using SPSS software.

3. RESULTS

Table 1: Age-wise distribution of children.

Age group	Number of subjects	Percentage
2-5 years	49	49
6-10 years	26	26
11-15 years	25	25
Total	100	100

In this study, there were total 100 children of which 49 belonged to the age group of 2-5 years, 26 belonged to the age group of 6-10 years and 25 belonged to the age group of 11-15 years.

Table 2: Prevalence of ECC, Malocclusion and Ameloblastoma.

Condition	Prevalence	Percentage
Early childhood caries	33	33
Malocclusion	47	47
Ameloblastoma	20	20
Total	100	100

Early childhood caries was seen in 33 children. Malocclusion was seen in 47 children and ameloblastoma was seen in 20 children.

Table 3: Type of malocclusion

Type of malocclusion	Number of children	Percentage
Type I Malocclusion	16	34
Type II Malocclusion	23	48.9
Type III Malocclusion	8	17.1
Total	47	100

Out of 47 children, type I, type II and type III malocclusion were seen in 16,23 and 8 children, respectively.

The chief radiographic findings seen in children with ameloblastoma were multilocular radiolucency, cortical expansion towards both cheek and tongue, root resorption and ill-defined margins.

4. DISCUSSION

Despite the reduction in the occurrence of dental caries among children in Western nations, caries in preschool-aged children continues to pose a significant challenge in both developed and developing regions.[10] The prevalence of early childhood caries (ECC) exhibits considerable variation influenced by numerous factors such as race, culture, and ethnicity; socioeconomic status, lifestyle, dietary habits, and oral hygiene practices, as well as differing factors across various countries and localities. A review of existing literature indicates that in the majority of developed nations, the prevalence rate of ECC ranges from 1% to 12% (14). Conversely, in less developed countries and among underprivileged populations in developed nations, the prevalence has been documented to reach as high as 70%.

Ameloblastoma is a neoplasm originating from odontogenic epithelium, accounting for 11-13% of all odontogenic tumors.[11] This tumor is characterized by its persistent and locally invasive nature, exhibiting aggressive yet benign growth patterns.[12] There are three distinct clinicoradiographic types: the conventional solid/multicystic intra-osseous ameloblastoma, the unicystic ameloblastoma, and the peripheral ameloblastoma. Furthermore, the desmoplastic ameloblastoma is considered a fourth subtype due to its unique biological behavior, radiographic features, and histological characteristics. Ameloblastomas are tumors derived from odontogenic epithelial tissue. They can develop from various sources, including the rest cells of the dental lamina, the developing enamel organ, the epithelial lining of odontogenic cysts, basal cells of the oral mucosa, and heterotopic epithelium found in other regions of the body (such as the pituitary gland).[13]

This study was conducted to assess the Prevalence of Early Childhood Caries and Malocclusion in Children and, Radiographic Findings of Ameloblastoma in a known population.

In this study, there were total 100 children of which 49 belonged to the age group of 2-5 years, 26 belonged to the age group of 6-10 years and 25 belonged to the age group of 11-15 years. Early childhood caries was seen in 33 children. Malocclusion was seen in 47 children and ameloblastoma was seen in 20 children. Out of 47 children, type I, type II and type III malocclusion were seen in 16,23 and 8 children, respectively. The chief radiographic findings seen in children with ameloblastoma were multilocular radiolucency, cortical expansion towards both cheek and tongue, root resorption and ill-defined margins.

More C et al[14] conducted a study by reviewing the clinical and radiographic records of ameloblastoma cases from 2009 to 2011, available in the archives of the department. The data of a total of 14 patients were analyzed. They observed that the patients affected with ameloblastoma were in the age-group of 19-68 years. The male: female ratio was 1.3:1. The mandible (78.57%) was more commonly affected than the maxilla (14.28%). Six patients (42.86%) had unilateral involvement and eight cases (57.14%) had bilateral involvement. The multilocular and unilocular types of ameloblastoma were noted in 12 (85.72%) and 2 cases (14.28%), respectively. The soap-bubble (50.00%), spider-web (21.43%), and honeycomb (14.28%) appearances were seen in the multilocular variety. Root resorption of variable degree was distinctly observed in 11 cases (78.57%). Radiographs are an important aid for the diagnosis of oral lesions of various types, especially those that involve bone. It is important for the practicing clinicians to know the salient features of ameloblastoma which are peculiar to the local population.

Balachandran P et al[15] designed this review to assess the prevalence of malocclusion among 8–15 years old Indian children. The review protocol was registered in PROSPERO data with register number CRD42020214211. They employed the standard methodological procedures according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. Electronic search was done in PubMed database and other sources in 2020 to identify studies. Only studies published in English after January 1, 2000 that assessed prevalence of malocclusion using Dental aesthetic Index (DAI) or Angle's classification of malocclusion were considered for screening. Selection of articles, data extraction and validity assessment were done independently by the two reviewers. Pooled prevalence of malocclusion is 35.40% (CI:35.37–35.43, 54 studies, 97959 participants). Males had higher proportion of malocclusion (36.20%, CI: 36.12–36.28,33 studies,

40456 participants). 13 years had higher prevalence of malocclusion (33.50%, CI:33.34–33.66, 11 studies, 3366 participants).Prevalence of malocclusion was higher among urban population (32.78%, CI:32.71 32.85,11 studies, 18313 participants). South India showed higher prevalence of malocclusion (39.58%, CI:39.54–39.62, 41 studies, 58645 participants). Prevalence of malocclusion as assessed by mean DAI score was 21.23 (CI:21.14–21.33,11 studies, 12345 participants). The pooled prevalence of malocclusion among 8–15 years children in India is 35.40% (CI:35.37–35.43,54 studies, 97959 participants). Included studies were heterogeneous in their methods of assessment of malocclusion.

Sofian MA et al[16] conducted a study that aimed to compare the prevalence of ECC in children aged 2–6 years from the highland and lowland areas of West Java. The research method used a cross-sectional study. Data collection was conducted in Rancabali District, Bandung Regency as a highland with an altitude of 1600 masl and Cijulang District, Pangandaran Regency as a lowland with an altitude of 30 masl. Sampling was determined using purposive sampling technique with a total sample of 201 children consisting of 98 children in the highlands and 103 children in the lowlands. Data were analysed using the Chi-Square test. The prevalence of early childhood caries in children aged 2–6 years in Bandung Regency was 91.8% with a mean def-t index of 10.03 and in children aged 2–6 years in Pangandaran Regency was 96.1% with a mean def-t index of 10.74. The mean value of the def-t index in both regions is in the very high category according to WHO. Chi-square test results with a p-value >0.05, namely 0.201, showed that there was no significant difference between the prevalence of ECC in children aged 2–6 years in Bandung Regency and Pangandaran Regency. There is no difference in the prevalence of early childhood caries in children aged 2–6 years in the highlands and lowlands of West Java.

5. CONCLUSION

Based on the findings of this study, it can be concluded that the prevalence of early childhood caries, malocclusion and ameloblastoma in children was 33%, 47% and 20%, respectfully. The chief radiographic findings seen in children with ameloblastoma were multilocular radiolucency, cortical expansion towards both cheek and tongue, root resorption and ill-defined margins.

REFERENCES

[1] De Grauwe A, Aps JK, Martens LC. Early childhood caries (ECC): what's in a name? Eur J Paediatr Dent (2004) 5(2):62–70.

[2] Feldens CA, Giugliani ER, Duncan BB, Drachler Mde L, Vitolo MR. Long-term effectiveness of a nutritional program in reducing early childhood caries: a randomized trial. Community Dent Oral Epidemiol (2010) 38(4):324–32.

[3] Finlayson TL, Siefert K, Ismail AI, Sohn W. Psychosocial factors and early childhood caries among low-income African-American children in Detroit. Community Dent Oral Epidemiol (2007) 35(6):439–48.

[4] Dos Santos R.R., Nayme J.G., Garbin A.J., Saliba N., Garbin C.A., Moimaz S.A. Prevalence of malocclusion and related oral habits in 5-to 6-year-old children. Oral Health Prev. Dent. 2012;10:311–318.

[5] Mtaya M., Brudvik P., Astrøm A.N. Prevalence of malocclusion and its relationship with socio- demographic factors, dental caries, and oral hygiene in 12- to 14-year-old Tanzanian schoolchildren. Eur. J. Orthod. 2009;31:467–476.

[6] Khan M., Fida M. Assessment of psychosocial impact of dental aesthetics. J. Coll. Physicians Surg. Pak. 2008;18:559–564.

[7] Lew K.K., Foong W.C., Loh E. Malocclusion prevalence in an ethnic Chinese population. Aust. Dent. J. 1993;38:442–449.

[8] Gelgör I.E., Karaman A.I., Ercan E. Prevalence of malocclusion among adolescents in central anatolia. Eur. J. Dent. 2007;1:125–131.

[9] Garbin A.J.Í., Perin P.C.P., Garbin C.A.S., Lolli L.F. Malocclusion prevalence and comparison between the Angle classification and the Dental Aesthetic Index in scholars in the interior of São Paulo state Brazil. Dent. Press J. Orthod. 2010;15:94–102.

[10] Vachirarojpisan T, Shinada K, Kawaguchi Y, Laungwechakan P, Somkote T, Detsomboonrat P. Early childhood caries in children aged 6-19 months. Community Dent Oral Epidemiol (2004) 32(2):133–42.

[11] Wood NK, Goaz PW, editors. 5th ed. Missouri: Mosby-Elsevier; 2011. Differential Diagnosis of Oral and Maxillofacial Lesions; pp. 337–40. [Google Scholar]

[12] White SC, Pharoah MJ, editors. 5th ed. New Delhi: Mosby-Elsevier; 2005. Oral Radiology: Principles and Interpretation; pp. 419–22. [Google Scholar]

[13] Giraddi GB, Bimleshwar K, Singh C, Garg V, Anusha JS. Ameloblastoma: Series of 7 treated cases and review of literature. Arch Oral Sci Res. 2011;1:152–5

[14] More C, Tailor M, Patel HJ, Asrani M, Thakkar K, Adalja C. Radiographic analysis of ameloblastoma: a retrospective study. Indian J Dent Res. 2012 Sep-Oct;23(5):698.

[15] Balachandran P, Janakiram C. Prevalence of malocclusion among 8-15 years old children, India - A systematic review and meta-analysis. J Oral Biol Craniofac Res. 2021 Apr-Jun;11(2):192-199.

[16] Sofian MA, Setiawan AS, Hamdani AM, Pratidina NB, Suwargiani AA. Prevalence of Early Childhood Caries (ECC) in Children Aged 2-6 years in the Highlands and Lowlands of West Java. Clin Cosmet Investig Dent. 2025 Jan 28;17:77-83.