

Prevalence of dental caries, cystic lesion of jaws and peri-implantitis in a known population.

Dr. Sanjukta Bagchi¹, Dr. shaik Mohammed Arif², Dr. Rekha Sharma³, Dr. Juhi Puri Desai⁴, Dr. Ojas Basavaraj Hanchanale⁵, Dr. Nasir Gulzar Mugloo⁶

¹Assistant Professor, Department of Public Health Dentistry, Burdwan Dental College and Hospital.

²H.O.D, Department of conservative dentistry and endodontics care dental college
Guntur Andhra Pradesh.

³MDS, Oral and Maxillofacial Pathology and Oral Microbiology, Private Practitioner

⁴Associate Professor, Department of Oral and Maxillofacial Surgery, College of Dental Sciences, Amargadh

⁵Reader, Department of Conservative Dentistry and Endodontics, Tatyasaheb Kore Dental College and Research Centre New Pargaon 416113

⁶Dr. Nasir's Dental care and implant centre, Jammu & Kashmir INDIA

Corresponding author

Dr. Sanjukta Bagchi

Assistant Professor, Department of Public Health Dentistry Burdwan Dental College and Hospital

Cite this paper as: Dr. Sanjukta Bagchi, Dr. shaik Mohammed Arif, Dr. Rekha Sharma, Dr. Juhi Puri Desai, Dr. Ojas Basavaraj Hanchanale, Dr. Nasir Gulzar Mugloo, (2025) Prevalence of dental caries, cystic lesion of jaws and peri-implantitis in a known population... *Journal of Neonatal Surgery*, 14 (32s), 9230-9233.

ABSTRACT

Background: This study was conducted to assess the prevalence of dental caries, cystic lesion of jaws and peri-implantitis in a known population.

Material and methods: This study was conducted in 100 school going children of Bardhaman city from January 2025-March 2025. All the parents of the children were asked to give consent for the study after being explained the procedure of the study. All the subjects underwent oral clinical examination. The prevalence of dental caries, cysts and peri-implantitis was assessed. The findings were tabulated and compared. Statistical analysis was conducted using SPSS software.

Results: In this study, there were total 100 subjects of which 41 had dental caries, 32 had cysts and 27 had peri-implantitis. Group 1 comprised of 41 subjects with dental caries. Group 2 comprised of 32 subjects with cysts. Group 3 comprised of 27 subjects with peri-implantitis. There were total 68 males and 32 females in this study. There were 33 males and 8 females in group 1. There were 16 males and 16 females in group 2. There were 19 males and 8 females in group 3.

Conclusion: From the results of this study, it can be concluded that the prevalence of dental caries, cysts and peri-implantitis among school children was 41%, 32% and 27%, respectively. There were a greater number of males than females

Keywords: Dental caries, Cysts, Peri-implantitis, Prevalence

1. INTRODUCTION

A cyst is an epithelial-lined cavity. The epithelial lining of odontogenic cysts arises from the odontogenic epithelium, which includes reduced enamel epithelium (REE), the epithelial cell rest of Serres, and Malassez (ERM).¹

The REE is the epithelium that surrounds the developing crown of the tooth. The rest of the Serres are remnants of the degeneration of the dental lamina, which is responsible for initiating tooth formation during the sixth week of embryonic life. The ERM is residual cells from the disintegration of Hertwig's epithelial root sheath, which initiates root formation. Ultimately, these rests become entrapped within the maxillary and mandibular gingiva and the alveolar bone.²

Periapical cysts are inflammatory and are the most common odontogenic cysts. They develop at the root apex of a non-vital tooth due to inflammation caused by dental caries or trauma. This inflammation causes the activation and proliferation of the ERM, located around the apex of the affected tooth. As a result, there is an increase in osmotic pressure, which causes cyst expansion. Frequently, the ERM is not activated, and only granulation tissue develops at the apex of the affected tooth. This granulation tissue is termed a periapical granuloma and, as such, histologically lacks an epithelial lining. Some have considered the periapical granuloma a precursor of the periapical cyst.³

Dental caries represents the most widespread chronic illness among children, significantly affecting individuals, families,

and society at large. Despite being largely preventable, over 530 million children globally are afflicted with dental caries in their primary teeth, with a majority of the decayed teeth remaining untreated.⁴ The American Academy of Pediatric Dentistry characterizes "early childhood caries" (ECC) as the occurrence of one or more decayed (whether non-cavitated or cavitated lesions), missing (due to caries), or filled surfaces in the primary teeth of a child under the age of 6. A recent systematic review indicated that the global combined prevalence of ECC stands at 48%, derived from various studies employing WHO criteria for assessing ECC prevalence.⁵

In China, the prevalence rates of ECC among children aged 3, 4, and 5 years are reported to be 50.8%, 63.6%, and 71.9%, respectively, according to the latest National Oral Health Survey (5). The prevalence of dental caries in 5-year-olds has increased by 5.8% compared to a decade ago, with rural areas exhibiting a higher prevalence rate than urban areas. ECC continues to pose a significant challenge for children in China.⁶ The consequences of untreated ECC extend beyond oral health, critically impacting children's overall well-being. It can result in localized pain, infections, premature loss of primary teeth, malocclusion, as well as eating and speech disorders, along with developmental delays. Therefore, the early prevention of dental caries in preschool children is of utmost importance.

2. MATERIAL AND METHODS

This study was conducted in 100 school going children of Bardhaman city from January 2025-March 2025. All the parents of the children were asked to give consent for the study after being explained the procedure of the study. All the subjects underwent oral clinical examination. The prevalence of dental caries, cysts and peri-implantitis was assessed. The findings were tabulated and compared. Statistical analysis was conducted using SPSS software.

Results

Table 1: Prevalence of dental caries, cysts and peri-implantitis

Prevalence	Number of subjects	Percentage
Dental caries	41	41
Cysts	32	32
Peri-implantitis	27	27
Total	100	100

In this study, there were total 100 subjects of which 41 had dental caries, 32 had cysts and 27 had peri-implantitis.

Table 2: Group-wise distribution of subjects

Groups	Number of subjects	Percentage
Group 1 (Dental caries)	41	41
Group 2 (Cysts)	32	32
Group 3 (Peri-implantitis)	27	27
Total	100	100

Group 1 comprised of 41 subjects with dental caries. Group 2 comprised of 32 subjects with cysts. Group 3 comprised of 27 subjects with peri-implantitis.

Table 3: Gender-wise distribution of subjects

Groups	Number of males	Number of females
Group 1 (Dental caries)	33	8
Group 2 (Cysts)	16	16
Group 3 (Peri-implantitis)	19	8

There were total 68 males and 32 females in this study. There were 33 males and 8 females in group1. There were 16 males

and 16 females in group 2. There were 19 males and 8 females in group 3.

3. DISCUSSION

Peri-implant mucositis is recognized as an inflammatory condition that solely impacts the soft tissues surrounding dental implants. In contrast, peri-implantitis involves both soft and hard tissues and is marked by a progressive reduction in alveolar bone.⁷ There is an increasing interest among researchers to explore peri-implant diseases, which encompass both peri-implant mucositis and peri-implantitis, due to their rising prevalence.⁸

The onset of peri-implant diseases is triggered by microbial dental biofilm, akin to the mechanisms observed in periodontal diseases such as gingivitis and periodontitis. Existing literature indicates that successful management of periodontal diseases can be achieved with relative ease; however, once the supporting tissues around implants are compromised, the regeneration of both soft and hard tissues becomes unfeasible. Consequently, the prevention of peri-implant diseases is deemed more crucial than treatment, as it significantly enhances the long-term success rate of dental implants.⁹

In this study, there were total 100 subjects of which 41 had dental caries, 32 had cysts and 27 had peri-implantitis. Group 1 comprised of 41 subjects with dental caries. Group 2 comprised of 32 subjects with cysts. Group 3 comprised of 27 subjects with peri-implantitis. There were total 68 males and 32 females in this study. There were 33 males and 8 females in group 1. There were 16 males and 16 females in group 2. There were 19 males and 8 females in group 3.

Li N et al¹⁰ investigated the incidence and prevalence of developmental odontogenic cysts in children and adolescents and compare the features of the two most common types, dentigerous cyst and keratocystic odontogenic tumor (KCOT). A retrospective review in a series of 369 patients with all histological diagnoses of developmental odontogenic cysts in children (≤ 12 years) and adolescents (13-18 years) was conducted. Among these, 361 (97.8%) patients were diagnosed as dentigerous cyst ($n = 281$) and KCOT ($n = 80$), with the male-to-female ratios of dentigerous cyst and KCOT both being 2:1. The average age of the patients with KCOT was older than that of those with dentigerous cyst (14.7 years vs 11.8 years, $p < 0.001$). Dentigerous cyst (59.1%) was more common in children, but KCOT (78.8%) was more common in adolescents ($p < 0.001$). Dentigerous cyst (57.6%) predominantly located on the maxilla, but KCOT (60.3%) predominantly located on the mandible ($p = 0.010$). Adolescent patients with lesions located on the mandible would favor KCOT over dentigerous cyst. This study aids in better knowledge of the prevalence of developmental odontogenic cysts in a large pediatric population, and shows that a well-supported early diagnosis is indispensable for a more adequate treatment.

Aljalloud AAA et al.¹¹ This research aimed to assess the prevalence of peri-implant diseases and to analyze variables of the probable risk at the patient level associated with the occurrence of peri-implant diseases in Syrian patients. A cross-sectional study has been carried out on 142 patients with 380 dental implants placed between 2015 and 2021. Patients were invited by phone to return to Damascus University's Periodontology Department for clinical and radiological examination. A descriptive statistical analysis was implemented for the prevalence of peri-implant diseases at the level of the patients. Also, the peri-implant diseases' factors of risk were determined by the multivariate analytical model. The prevalence rate of peri-implant mucositis and peri-implantitis in patients was 58.5% and 25.4%, respectively. Peri-implant disease is associated with multivariate risk indices, gender female (peri-implant mucositis [OR = 0.269; 95% CI: 0.131-0.552] and peri-implantitis [OR = 0.561; 95% CI: 0.561-0.216]), diabetes (peri-implant mucositis [OR = 3.4; 95% CI: 1.73-12.73]), periodontitis (peri-implant mucositis [OR = 2.409; 95% CI: 1.760-2.613], peri-implantitis [OR = 10.445; 95% CI: 4.097-26.629]). Peri-implant diseases are common in the Syrian community. Several patient-level variables (gender female, diabetes, and periodontitis) are associated with peri-implant disease.

Chen J et al.¹² This cross-sectional study aimed to examine the prevalence of dental caries and its associated factors among 3- to 5-year-old children in Huizhou, Guangdong Province, China. They recruited children from 21 kindergartens adopting multistage sampling method. Two examiners performed oral examination. They assessed children's dental caries experience following the World Health Organization criteria. Children's dental caries activity, malocclusion, tonsil size and pH value of saliva were evaluated. Parental questionnaires collected child's sociodemographic background and oral-health-related behaviors. Data were analyzed by univariate analysis and logistic regression using SPSS. This study invited 1,485 children and recruited 1,348 (53.2% boys) (response rate: 90.8%). Dental caries prevalence rate was 58.2% for 3-, 70.7% for 4-, 80.5% for 5-year-old and 72.9% for all recruited children. The mean dmft score ($\pm$ SD) was 3.38 ($\pm$ 4.26) for 3-, 4.75 ($\pm$ 4.96) for 4-, 5.81 ($\pm$ 5.71) for 5-year-old and 4.99 ($\pm$ 5.02) for all children. Age, family status (singleton or not), monthly family income, mother and father's education level, tonsil grading score, spacing in dentition, Cariostat score (reflecting the caries activity), dental plaque index, duration of breastfeeding, dental visit experience, tooth brushing habits and sugary snacking before sleeping were statistically related to the prevalence of dental caries ($p < 0.050$) in univariate analysis. These factors were further analyzed in the regression model. The results of the final model indicated dental caries were associated with age ($p < 0.001$), Cariostat score ($p < 0.001$), spacing ($p < 0.001$), tonsil grading score ($p = 0.013$), singleton or not ($p = 0.002$), sugary snacking habit before bed ($p < 0.001$) and breast-feeding duration ($p = 0.050$). Dental caries was prevalent among 3- to 5-year-old preschool children in Huizhou, China. Children's age, caries activity, tonsil size, malocclusion, family background, sugary snacking habit and breast-feeding habit were related to the prevalence of dental caries. More emphasis should be placed on prevention targeting the risk factors from early life.

4. CONCLUSION

From the results of this study, it can be concluded that the prevalence of dental caries, cysts and peri-implantitis among school children was 41%, 32% and 27%, respectively. There were a greater number of males than females.

REFERENCES

- [1] Rioux-Forker D, Deziel AC, Williams LS, Muzaffar AR. Odontogenic Cysts and Tumors. *Ann Plast Surg*. 2019 Apr;82(4):469-477.
- [2] Bilodeau EA, Collins BM. Odontogenic Cysts and Neoplasms. *Surg Pathol Clin*. 2017 Mar;10(1):177-222.
- [3] de Souza LB, Gordón-Núñez MA, Nonaka CF, de Medeiros MC, Torres TF, Emiliano GB. Odontogenic cysts: demographic profile in a Brazilian population over a 38-year period. *Med Oral Patol Oral Cir Bucal*. 2010 Jul 01;15(4):e583-90.
- [4] Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJ, Marcenes W. Global burden of untreated caries: a systematic review and metaregression. *J Dent Res*. (2015) 94(5):650–8.
- [5] GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the global burden of disease study 2017. *Lancet*. (2018) 392(10159):1789–858.
- [6] American Academy on Pediatric Dentistry Council on Clinical Affairs. Policy on early childhood caries (ECC): unique challenges and treatment option. *Pediatr Dent*. (2008) 30(7 Suppl):44–6.
- [7] Berglundh T, Armitage G, Araujo MG, Avila-Ortiz G, Blanco J, Camargo PM, et al. Peri-implant diseases and conditions: consensus report of workgroup 4 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. *J Periodontol*. 2018;89(Suppl 1):S313–S3S8.
- [8] Wada M, Mameno T, Onodera Y, Matsuda H, Daimon K, Ikebe K. Prevalence of peri-implant disease and risk indicators in a Japanese population with at least 3 years in function-a multicentre retrospective study. *Clin Oral Implants Res*. 2019;30(2):111–120.
- [9] Vignoletti F, Di Domenico GL, Di Martino M, Montero E, de Sanctis M. Prevalence and risk indicators of peri-implantitis in a sample of university-based dental patients in Italy: a cross-sectional study. *J Clin Periodontol*. 2019;46(5):597–605.
- [10] Li N, Gao X, Xu Z, Chen Z, Zhu L, Wang J, Liu W. Prevalence of developmental odontogenic cysts in children and adolescents with emphasis on dentigerous cyst and odontogenic keratocyst (keratocystic odontogenic tumor). *Acta Odontol Scand*. 2014 Nov;72(8):795-800.
- [11] Aljalloud AAA, Dayoub S, Tolibah YA. Prevalence and risk factors of peri-implant diseases at patient-level: A cross-sectional study in Syria. *Clin Exp Dent Res*. 2023 Oct;9(5):783-790.
- [12] Chen J, Chen W, Lin L, Ma H, Huang F. The prevalence of dental caries and its associated factors among preschool children in Huizhou, China: a cross-sectional study. *Front Oral Health*. 2024 Aug 30;5:1461959. .