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# Patterns of Oral Health Conditions among Children attending Paediatric Dental Department at a Tertiary Care Centre in Nepal

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## ABSTRACT

**Introduction**: Presentation of dental disease varies depending on different cultural practices, conditioning, awareness, and a person's attitude towards seeking oral health care services. Lack of oral hygiene practices, feeding at will, and excessive consumption of sweets lead to early tooth decay.

**Objective**: To assess pattern of distribution of various oral health conditions among children.

**Methods**: This hospital-based, analytical, cross-sectional study was carried out among 431 children from one week to 14 years old in the department of Paedodontics and Preventive Dentistry, Universal College of Medical Sciences, Siddharthanagar from 2025 January to June after obtaining institutional ethical clearance. Informed consent and assent were obtained from parents and children before enrolment in this study. Participants were selected using convenience sampling method and divided into two groups: group I included 211 children aged one week to six years and group II ranged from seven years to 14 years of age comprising of 220 children. Distribution of disease depending upon presenting complaints was recorded over a period of six months. The data collected were tabulated and subjected to statistical analyses using SPSS v.20 Descriptive statistics were obtained and frequency distribution were calculated. Chi-square test was used for the analysis.

**Results**: Out of total study population,166 (38.5%) children showed presence of dental caries, 105 (24.4%) had dentoalveolar abscess. Children presented with retained deciduous were 49 (11.4%), whereas 36 (8.4%) complained mobility, 24 (5.6%) cases were of trauma, and 14 (3.2%) malocclusions followed by 13 (3%) gingivitis, 12 (2.8%) developmental anomalies, seven (1.6 %) pericoronitis, four (0.9 %) precocious teeth, and one (0.2%) tongue tie as their chief complaint

Conclusions: The present study highlights that dental caries and dentoalveolar abscess were most frequently reported oral health problems among children, particularly in younger age group. Male children showed higher prevalence of traumatic dental injuries.

**Keywords**: Caries; dentoalveolar abscess; malocclusion; precocious teeth; pericoronitis; traumatic injuries.

## INTRODUCTION

Awareness and acceptance of oral health practices and services, as well as the patient's or parent's attitude towards seeking oral health care, play an important role in the presentation of dental diseases.[1] The higher prevalence and significant social impact make oral diseases one of the major health problems among the general population.[2]

During childcare visits, oral examinations can play a crucial role in the diagnosis and prevention of dental and orofacial diseases.[3] Deciduous teeth are often neglected, even in the presence of pain or other symptoms. According to the Global Burden of Oral Disease, dental caries remains a major health problem in most industrialised countries, primarily affecting school-aged children (60–90%) and the vast majority of adults.[4] In developing and underdeveloped countries, dental caries in the primary dentition remains a significant public health concern.[5] Untreated dental lesions can lead to premature loss of teeth, resulting in malocclusion and potentially contributing to nutritional deficiencies. It has been estimated that 51 million school hours per year are lost due to dental-related illnesses alone.

This study aimed at assessing the pattern of distribution of various oral health conditions among children from ages one week to 14 years, visiting Paediatric Dental Department.

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## METHODS

This hospital-based, analytical, cross-sectional study was carried out among 431 children attending Department of Paedodontics and Preventive Dentistry, Universal College of Medical Sciences-College of Dental Surgery (UCMS-CODS) outpatient department (OPD), Siddharthanagar, Rupandehi, Nepal for a period of six complete months (from 2025 January to 2025 June). Children of age group one week to 14 years, attending Paediatric Dental OPD for first time were enrolled in the study. Ethical clearance was taken from the institutional review committee (UCMS/IRC/05/25). An informed consent and assent were obtained from parents and children of age seven years and above before enroling in the study. The sample selection was done using non-probability convenience sampling method. Children were divided into two age groups, group I: from one week to six years of age (211 children) for primary dentition and group II: from seven to 14 years of age for mixed and permanent dentition (220 children).

Children with mental disabilities, speech impairments, hearing and visual difficulties, and parents who declined to participate were excluded from the study.

Using Cochrane equation, the estimated sample size was calculated as follows: $n = Z^2pq/e^2$; Where, n = required sample size; Z = 1.96 at 95% confidence level; p = 0.5 (estimated prevalence of patients attending department of paedodontics as 50%); q = 1-p; e = 0.05 (taking 5% margin of error).

Based on the above formula the minimum estimated sample size at 95% confidence level and 5% error was calculated to be 384.16 ≈ 385. As more patients met the inclusion criteria, the total sample size taken in final analysis was 431.

The chief complaint was recorded as the main reason for the visit in the hospital. The patients reported with complaint of dental caries, retained deciduous teeth, mobility of primary tooth, orofacial swelling, dentoalveolar abscess, trauma, malocclusion, inflammation of gingiva, and routine dental check-up. Investigations were carried out for the required cases with the consent of the parents. All positive findings like precocious teeth, supernumerary teeth, enamel defects, developmental anomalies of teeth, etc. were also recorded.

Confidentiality of the recorded data was maintained. The data collected were tabulated and subjected to statistical analyses using IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were obtained and frequency distribution were calculated. Chi-square test was used for the analysis.

## RESULTS

The study was carried out among 431 children. Among all participants 211 (49%) children were of group I (primary dentition) and 220 (51%) children were of group II (mixed and permanent dentition). Out of all children, 229 (53.1%) were males (Figure 1, Table 1).

Out of total study population,166 (38.5%) children showed presence of dental caries, 105 (24.4%) had dentoalveolar abscess. Children who presented with retained deciduous were 49 (11.4%), whereas 36 (8.4%) complained mobility, 24 (5.6%) cases were of trauma, and 14 (3.2%) malocclusions followed by 13 (3%) gingivitis, 12 (2.8%) developmental anomalies, seven (1.6 %) pericoronitis, four (0.9 %) precocious teeth, and one (0.2%) tongue tie as their chief complaint (Table 2). Pattern of oral diseases according to different age groups has been tabulated (Table 3).

Distribution of dental diseases according to sex shows that mostly male patient were suffering from dental caries (89, 53.6%), abscess (53, 50.5%), trauma (17, 70.8%), malocclusion (11, 78.6%), developmental anomalies (9, 75%), pericoronitis (6, 85.7%), followed by natal/ neonatal teeth (4, 100%) in comparison to that of females. The problem of retained deciduous (31, 63.3%) and gingivitis (9, 69.2%) was more commonly observed in females (Table 4).

**Table 1: Groupwise distribution of children, (N= 431).**

| Groups | Frequency (%) |
|---|---|
| Group I | 211 (49.0) |
| Group II | 220 (51.0) |
| Total | 431 (100) |

**Table 2: Distribution of children according to oral diseases, (N = 431).**

| Disease | Frequency (%) |
|---|---|
| Caries | 166 (38.5) |
| Abscess | 105 (24.4) |
| Retained deciduous | 49 (11.4) |
| Mobility | 36 (8.4) |
| Trauma | 24 (5.6) |
| Malocclusion | 14 (3.2) |
| Gingivitis | 13 (3.0) |
| Developmental anomalies | 12 (92.8) |
| Pericoronitis | 7 (1.6) |
| Natal / Neonatal | 4 (0.9) |
| Tongue tie | 1 (0.2) |
| Total | 431 (100) |

**Table 3: Pattern of oral diseases with different age groups, (N = 431).**

| Diseases | Groups, n (%) | | p-value |
|---|---|---|---|
| | Group I | Group II | |
| Caries | 104 (62.7) | 62 (37.3) | <0.001 |
| Abscess | 64 (61) | 41 (39) | 0.005 |
| Retained deciduous | 5 (10.2) | 44 (89.8) | <0.001 |
| Mobility | 12 (33.3) | 24 (66.7) | 0.05 |
| Trauma | 14 (58.3) | 10 (41.7) | 0.344 |
| Malocclusion | - | 14 (100) | <0.001 |
| Gingivitis | 2 (15.4) | 11 (84.6) | 0.021 |
| Developmental anomalies | 4 (33.3) | 8 (66.7) | 0.272 |
| Pericoronitis | 1 (14.3) | 6 (85.7) | 0.216 |
| Natal / Neonatal | 4 (100) | - | 0.207 |
| Tongue tie | 1 (100) | - | 0.49 |

**Table 4: Distribution of oral diseases in different sexes, (N = 431).**

| Diseases | Sex, n (%) | | p-value |
|---|---|---|---|
| | Female | Male | |
| Caries | 77 (46.4) | 89 (53.6) | 0.874 |
| Abscess | 52 (49.5) | 53 (50.5) | 0.531 |
| Retained deciduous | 31 (63.3) | 18 (36.7) | 0.015 |
| Mobility | 18 (50) | 18 (50) | 0.694 |
| Trauma | 7 (29.2) | 17 (70.8) | 0.074 |
| Malocclusion | 3 (21.4) | 11 (78.6) | 0.06 |
| Gingivitis | 9 (69.2) | 4 (30.8) | 0.156 |
| Developmental anomalies | 3 (25) | 9 (75) | 0.15 |
| Pericoronitis | 1 (14.3) | 6 (85.7) | 0.032 |
| Natal / Neonatal | - | 4 (100) | 0.377 |
| Tongue tie | 1 (100) | - | 0.469 |

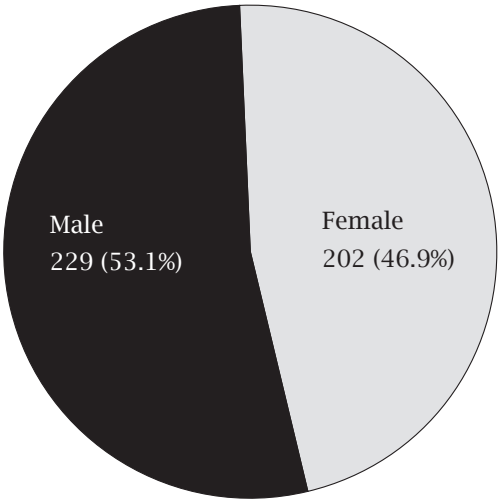


**Figure 1: Distribution of the children in different sexes, n (%).**

## DISCUSSION

In a list of 291 diseases of children below five years, dental caries is placed at 12th position and in children below 12 years, it is placed at fifth position.[6,7] World Health Organisation and World Dental Federation established goals to achieve 50% of children aged five-six years to be caries free and global average of decayed, missing, and filled teeth (DMFT) not to be >three for 12 year old children.[8] It had been concluded that the prevalence rate of caries in Nepali children is very high, above 50% in most of the documented studies.[4]

The present study result showed that 166 (38.5%) children reported with dental caries. In contrast to this study, two different studies done in children showed higher prevalence of dental caries that were 147 (58.3%), 313 (80.6%).[9,10] In the present study also, the prevalence of dental caries was somewhat similar among males (89, 53.6%) and females (77, 46.4%), whereas, younger children showed different presentation. Younger children showed (104, 62.7%) dental caries which was significantly higher in older children (62, 37.3%). This difference is highly

statistically significant and was in accordance with a study conducted by Khanal et al.[10]

Out of all the reported cases 105 (24.4%) were dentoalveolar abscess and majority (64, 61%) were seen in younger age group. Untreated caries is most prevalent health condition affecting the global population with approximately 2.4 billion people affected worldwide.[11]

Retained deciduous teeth were mainly seen radiographically in older age group with a total of 44 (89.8%) whereas five (10.2%) were seen in younger age group. Higher female predilection (31, 63.3%) was seen which was similar to the study conducted by Sharmin et al.[12] The prevalence of physiological mobility of the tooth was 36 (8.4%) out of total reported cases.

Traumatic injuries to dentition can occur as single or as combination of different types of soft and hard tissue injuries, where both teeth fracture and any type of luxation injuries occur concomitantly.[13,14] Among all the study population 24 (5.6%) cases were of trauma and younger children were mostly affected with traumatic injuries 14 (58.3%). This can be explained as more indoor activities in younger age group, which is gradually attained as the age increases. This difference between the presence of traumatic injuries in both the study groups was statistically significant which was similar to a study reported by Khanal et al.[10] It was observed in present study that 17 (70.8%) male children were affected by traumatic injuries, which was higher than seven (29.2%) females. This finding was supported by a prevalence study on traumatic dental injuries conducted by Shah et al. where 18 (58.1%) males and 13 (41.9%) females presented with traumatic dental injuries.[15] The higher incidence of traumatic dental injuries in male children could be due to their increased participation in vigorous physical activities and outdoor sports, which predispose them to a greater risk of trauma.

Aetiology of malocclusion is multifactorial and it could occur due to hereditary factors, environmental factors or the combination of these two in the affected individuals, among which dental diseases contribute a lot.[16] A total of 14 (3.2%) patients reported to the hospital for treatment of malaligned teeth, and all 14 (100%) cases were seen in older study group with majority of 11 (78.6%) males.

In this study 13 (3%) out of total cases were of gingivitis which was majorly 11 (84.6%) seen in older age group with female predilection of nine (69.2%). Out of total seven (1.6%) reported cases of pericoronitis, six (85.7%) were seen in 7-14 years. Gingival diseases have a wide prevalence and these can affect all the age groups. However, the common understanding is that gingival diseases affect only adults.[17]

In the present study children were also presented with other oral problems such as developmental anomalies like supernumerary teeth, amelogenesis imperfecta and fusion, which comprised of 12 (2.8%) out of total reported cases. Out of all the 12 cases reported for developmental anomalies six (50%) were of supernumerary teeth, in which only mesiodens were seen with male predominance. In a prevalence study of supernumerary teeth done by Upadhyay et al. out of total 32 patients 30 (93.75%) were male showing same sex predilection as in the present study.[18] Cases of amelogenesis imperfecta were three in numbers comprising (25%) of total cases of developmental disturbances. Fusion of primary mandibular central and lateral incisors were also three (25%) in number out of total 12 reported cases of developmental disorders. Only one case of tongue tie was reported incorporating 0.2% of all reported cases.

Four participants presented with pre-deciduous teeth during the study duration out of which three (75%) were natal and one neonatal tooth. Natal teeth are more common than the neonatal teeth with an incidence of 1:2000 to 1:3500.[19] Not all of these patients were aware and concerned regarding these developmental anomalies. However, these were the data from the patients of study period of six months only, and this pattern may vary in different study period. Other than cases of dental caries and dentoalveolar abscess which are always reported in majority, pattern of other dental diseases varies time to time.

This was a single centre study and larger studies are needed to generalise the results to a larger population.

## CONCLUSIONS

The present study highlights that dental caries and dentoalveolar abscess were the most frequently reported oral health problems among children, particularly in the younger age group. Male children showed a higher prevalence of traumatic dental injuries, while conditions such as retained deciduous teeth, gingivitis, and malocclusion was more common in older children. These findings reflect a pattern of delayed dental visits and neglect of early oral health care. Regular dental check-ups, improved parental awareness, and reinforcement of preventive oral hygiene practices are essential to reduce the burden of dental diseases and to promote better oral health outcomes among children.

**Conflict of interest:** None.

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