

PREVALENCE OF DENTAL CARIES AMONG PRIMARY SCHOOL CHILDREN OF HALDWANI: A CROSS SECTIONAL STUDYP. D. Garkoti¹, Rajesh Kumar Singh², C. M. S. Rawat³, Shubham Pandey⁴**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: INTRODUCTION: Dental caries is an important public health problem in developing countries. It is a common chronic disease in children of age 6 to 11 years and in adolescents. It is largely a preventable disease. The present study was conducted with the objective of assessing the burden of disease in primary school children. **MATERIAL AND METHODS:** A cross sectional study was conducted in primary schools of Haldwani block of Nainital district of Uttarakhand. Students studying in class I to V were assessed for presence of dental caries and asked about socio-demographic characteristics with the help of predesigned questionnaire. **RESULTS:** A total of 385 students were included in the study and the overall prevalence of dental caries was found to be 58.18%. The prevalence of dental caries has shown a declining trend with age and this difference was found to be statistically significant ($P = 0.01$). **CONCLUSION:** The prevalence of dental caries is high in primary school children. Awareness regarding oral hygiene habits should be generated among students and their parents for prevention of dental caries. Regular screening programmes should be conducted in schools for early diagnosis and prompt treatment.

KEYWORDS: Dental caries, Prevalence, Cross-sectional study.

INTRODUCTION: Poor oral health impacts the quality of life of children, adults, and the aged. It affects children nutrition, growth, and development as well as attendance at school.^[1] Dental caries or cavities, more commonly known as tooth decay, are caused by a breakdown of the tooth enamel.^[2] Dental caries results from complex interactions among three factors—bacteria, diet and host susceptibility. Bacteria and plaque must be present on tooth surface; these plaque bacteria produce acid by fermenting ingested refined carbohydrates, especially sugars. This acid causes localized demineralization of the enamel surface and if the process is not checked it will result in progressive destruction of the tooth. Dental caries eventually leads to pain and tooth loss if untreated. Effective control can only be achieved through an approach based on prevention.^[3]

The prevalence of dental caries shows large differences in various areas of world. In industrialized countries reduction in prevalence of dental caries has occurred whereas in developing countries prevalence continues to increase.^[3]

Although dental caries are largely preventable, they remain the most common chronic disease of children aged 6 to 11 years and adolescents aged 12 to 19 years.^[2] It interferes with normal nutrition intake, speech, self-esteem and daily routine activities, because the caries pain adversely affects the normal food intake. This results in underweight children with abnormal cognitive development.^[4] Knowledge of the prevalence of dental caries helps in planning awareness and preventive services. The present study was conducted with the objective of knowing the burden of dental caries among primary school children.

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MATERIAL AND METHODS: A cross sectional study was conducted in primary schools of Haldwani block of Nainital district of Uttarakhand. Sample size was calculated using the formula $Z^2 p (1-p) / d^2$, where prevalence was assumed to be 50% and absolute error (d) was taken as 5% with 95% level of significance. So using this formula sample size came to be 384. Haldwani block was divided into four zones – east, west, north and south. One school was randomly selected from each zone of Haldwani. Students belonging to class I to V from these school were randomly selected. Permission from the school authorities was taken prior to conduct of study.

The children were examined in their respective schools by the dentists from department of Dentistry of Government Medical College, Haldwani in an ordinary chair in broad day-light facing away from sunlight for oral hygiene and dental caries. Sensitization of children regarding personal hygiene and oral hygiene was carried by a team of doctors and paramedical workers from department of community medicine of Govt. Medical College, Haldwani. Information related to socio-demographic characteristics and oral health status was recorded in a predesigned questionnaire.

Data was entered in excel and analyzed using Epi info 7. Chi-square was used as a test of statistical significance.

RESULTS:

| Age groups (Years) | Frequency | Percent |
|--------------------|------------|----------------|
| 5-7 | 97 | 25.19% |
| 8-10 | 203 | 52.73% |
| 11-13 | 85 | 22.08% |
| Total | 385 | 100.00% |
| Sex | Frequency | Percent |
| Female | 172 | 44.68% |
| Male | 213 | 55.32% |
| Total | 385 | 100.00% |
| Class | Frequency | Percent |
| 1 | 70 | 18.18% |
| 2 | 80 | 20.78% |
| 3 | 90 | 23.38% |
| 4 | 70 | 18.18% |
| 5 | 75 | 19.48% |
| Total | 385 | 100.00% |

Table 1: Socio-demographic characteristics of students

As shown in Table 1, majority of students were 8-10 years old (52.7%) followed by 5-7 years and 11-13 years old representing 25.19% and 22.08% respectively. 55.32% of the students were males and 44.68% were females. Out of 385 students included in the study, 23.38% were in studying in class III, 20.78% in class II, 19.48% in class V and 18.18% in each class I and class IV.

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| Dental Caries | Frequency | Percent |
|----------------------|------------------|----------------|
| Absent | 161 | 41.82% |
| Present | 224 | 58.18% |
| Total | 385 | 100.00% |
| Oral hygiene | Frequency | Percent |
| Fair | 134 | 34.81% |
| Good | 209 | 54.29% |
| Poor | 42 | 10.91% |
| Total | 385 | 100.00% |

Table 2: Status of dental caries and oral hygiene among participants

As per Table 2, out of 385, 224 (58.18%) students had caries on clinical examination. 54.21% of the students had good oral hygiene while fair and poor oral hygiene was observed in 34.81% and 10.91% of the students respectively.

| Variables | Dental caries | | Total No. (%) | P value |
|---------------------|------------------------|-----------------------|----------------------|----------------|
| | Present No. (%) | Absent No. (%) | | |
| Age groups | | | | |
| 5-7 | 66(68.04) | 31(31.96) | 97(100) | 0.010 |
| 8-10 | 119(58.62) | 84(41.38) | 203(100) | |
| 11-13 | 39(45.88) | 46(54.12) | 85(100) | |
| Sex | | | | |
| Female | 96(55.81) | 76(44.19) | 172(100) | 0.397 |
| Male | 128(60.09) | 85(39.91) | 213(100) | |
| Oral hygiene | | | | |
| Fair | 110(82.09) | 24(17.91) | 134(100) | 0.000 |
| Good | 77(36.84) | 132(63.16) | 209(100) | |
| Poor | 37(88.10) | 5(11.90) | 42(100) | |

Table 3: Association of dental caries with demographic and clinical parameters

Table 3 presents prevalence of dental caries according to certain demographic and clinical parameters. About one-third (68.04%) of students in age group of 5-7 years had dental caries whereas 58.62% and 45.88% students in the age group of 8-10 years and 11-13 years had caries respectively. Thus the prevalence of caries has shown a declining trend with age and this difference was found to be statistically significant ($P=0.01$). It was observed that 60% of boys had dental caries as compared to 56% girls having the same problem. However, this difference was not significant statistically. 88% of the students with poor oral hygiene and 82% students with fair oral hygiene had dental caries whereas only 37% of students with good oral hygiene had dental caries. This difference was found to be highly significant ($P = 0.000$).

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DISCUSSION: According to world health organization, dental caries is still a major health problem as it affects 60-90% of school-aged children.^[5] In the present study the prevalence of dental caries was found to be 58.18% among primary school children of Haldwani. The study by Bhatia et al.^[6] reported the prevalence of dental caries among 3-15 years old children to be 51.46% which is almost similar to finding in the present study. Ahmad et al.^[7] conducted a study among 5-18 years old school children and they found that the prevalence of dental caries was 30.9% which is far below the prevalence in the present study. The studies by Joshi et al.^[8] among primary school children and Dhar et al.^[9] among 6-10 years old school children reported the prevalence of dental caries to be 77% and 63.2% respectively which is higher than reported in the present study.

Present study revealed the prevalence of dental caries in age groups of 5-7 years, 8-10 years and 11-13 years to be 68.04% 58.62% and 45.88% respectively. Sudha et al.^[10] in their study observed a much higher prevalence of dental caries in similar age groups which was 94.3% (5-7 years) and 82.5% (8-10 years & 11-13 years). The current study also revealed a declining trend in prevalence of dental caries with age and similar findings were observed in study by Sohi et al.^[11] where prevalence of dental caries was more in 5 years age group (48.3%) in comparison to 12 year age group (30.52%).

In our study, the prevalence of dental caries was higher in boys (60%) than in girls (56%). Joshi et al.^[8] also reported a higher prevalence among boys (80%) than in girls (73%) although the overall prevalence in their study was much higher than in present study.

In the present study poor oral hygiene was observed in 10.91% of the students which is similar to findings of Sharma et al.^[12] where poor oral hygiene was seen in 12% in school children of age 9-12 years.

CONCLUSION: High prevalence of dental caries is seen in primary school children. Poor oral hygiene levels significantly increased the children's risk of developing caries. Good oral hygiene can help prevent tooth decay and hence there is need of creating awareness among general public and school children. Regular screening programmes should be conducted in schools for early diagnosis and prompt treatment.

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