

# Prevalence and treatment needs of dental caries in school-going children attending dental outpatient department of a tertiary care centre in western region of Nepal

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## ABSTRACT

**Background:** Dental caries is one of the commonest oral problems affecting children globally involving the people of all region and society. It can be seen in all age groups of children involving both deciduous and permanent teeth. Treatment of dental caries involves restorative or pulp therapy which is not only expensive but also painful and demanding for the child. Considering these factors prevention of caries seems to be the most acceptable and desirable option.

**Methods:** A descriptive study was conducted on department of Dental Surgery, Manipal teaching Hospital, Fulbari, Pokhara. Total of 3174 school going children attending Dentaloutpatient department, from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2009, from the age group of 5-14 years were included in the study. Assessment was carried out using World Health Organization (1997) criteria. Data was compiled and subjected to analysis using SPSS version 12.0.

**Results:** Prevalence of Dental caries in study population was found to be 47.1%. Caries prevalence in the age group 5-7, 8-10 and 11-14 years were 20.7%, 48.2% and 52.46% respectively. Mean Decayed missing and filled teeth (DMFT) in the age group 5-7, 8-10 and 11-14 years were 1.96, 2.43 and 1.84 respectively. The treatment requirement in age groups of 5-7years, 8-10 years and 11-14 years children were 87.2%, 85.3% and 71.4% respectively. Most cases required single surface filling.

**Conclusion:** The prevalence of dental caries was highest in age group of 11-14 years; mean DMFT was highest in age group of 8-10 years and the treatment need was highest in age group of 5-7 years.

**Keywords:** Dental caries; prevalence; treatment needs

carbohydrates such as sucrose, fructose and glucose. Two groups of bacteria are responsible for initiating caries: *Streptococcus mutans* and *Lactobacillus*, if left untreated, the disease can lead to pain, infection and tooth loss.<sup>2</sup>

The presentation of caries can be variable; though the risk

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## Background

Dental caries is an infectious microbiologic disease of the teeth that results in localized dissolution and destruction of calcified tissues.<sup>1</sup> Specific types of acid producing bacteria cause destruction in the presence of fermentable

factors and stages of development are similar. Initially, it appears as a small chalky area which gradually develops into large cavitations. Sometimes caries may be directly visible; however other methods of detection such as radiographs are used for less visible areas of teeth and to judge the extent of destruction.

Tooth is in a constant state of back-and-forth demineralization and remineralization between the tooth and surrounding saliva. When the pH at the surface of the tooth drops below 5.5, demineralization proceeds faster than remineralization causing decay. Various treatments can be used to restore teeth to proper form, function, and aesthetics. The preventive prophylactic measures, such as regular oral hygiene and dietary modifications, helps to reduce dental caries.<sup>3</sup>

Dental caries is an important Dental Public Health Problem and is also the most prevalent oral disease among children and adults in the world. The prevalence of dental caries was of great interest for long and is a principal subject of many epidemiological researches being carried out all over the world. This significant but a preventable public health problem interferes with normal food intake, speech, self esteem and routine activities affecting overall health status of the children.

This high morbidity potential has brought this disease into focus of dental health professionals. The prevalence pattern of dental caries varies with age, sex, socio economic status, race, geographical location, food habits and oral hygiene practices. It is important to know the prevalence of dental caries as it may help to plan programs for prevention of dental caries by spreading awareness of oral hygiene in school going children. The prevalence to dental caries has been studied in some developing countries, however to the best of our knowledge no such study has been conducted in the western region of Nepal till date.

The available epidemiological data clearly reflects a marked increase in prevalence of dental caries in many developed and developing countries.<sup>4</sup> Therefore, this study was conducted to find the prevalence and treatment needs of dental caries in school going children visiting outpatient department of tertiary care centre in western region of Nepal. This was also carried out in a motive to provide information to the health care authorities so that they can provide and plan appropriate preventive and treatment programs for school children.

#### **Methods:**

A hospital based cross sectional descriptive study was carried out. A total of 3174 school going children from the age group

of 5 to 14 years, who attended the outpatient department of department of dental surgery of Manipal Teaching Hospital Pokhara from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2009 were included in the study. Approval from the institutional ethics committee was obtained before beginning the study and Informed consent was obtained from the guardian of the children.

The children were examined by dental surgeons. Teeth which were decayed or filled with decay were counted as carious and in case of missing teeth only those missing due to caries were considered. Individually World Health Organization (WHO) indices were used for recording caries. All the data was compiled in a predesigned proforma and subjected to statistical analysis using SPSS 12.0.

#### **Results:**

A total of 3174 children were examined. The gender distribution of the patients is shown in Table 1.

**Table 1: Gender distribution of patients**

Sex	Number of patients	percentage
Male	1654	52.1%
Female	1520	47.8%

Among them, 376, 1174 and 1624 children belonged to the age groups of 5-7 years, 8-10 years and 11-14 years respectively

Overall caries prevalence in study population was found to be 47.1% {Decayed missing and filled teeth (DMFT)= 2.07} Caries prevalence in the age group 5-7, 8-10 and 11-14 years were 20.7% (DMFT= 1.96), 48.2 % (DMFT=2.43) and 52.4% (DMFT= 1.84) respectively. The difference in prevalence of caries in different age groups was statistically significant ( $P<0.001$ ) with caries prevalence being highest in Age group of 11-14 years and the mean DMFT was highest in the age group of 8-10 years (Tables 2 and 3).

**Table 2: Distribution of caries in different age groups**

Age groups	caries		Chi value	df	P value
	present	absent			
I (5-7 years)	78	298			
II (8-10 years)	566	608	124	2	<0.001
III (11-14 years)	852	772			

**Table 3: caries prevalence / Decayed missing and filled teeth (DMFT)**

Age groups	Total patients	Decayed	Missing	Filled	Mean DMFT
I (5-7 years)	376	672	44	22	1.96
II (8-10 years)	1174	2656	86	114	2.43
III (11-14 years)	1624	2902	30	60	1.84

A total of 78.44% children required treatment. In age groups of 5-7 years, 8-10 years and 11-14 years children who required treatment were 87.23%, 85.34% and 71.42% respectively. The difference in treatment needs between the age groups was statistically significant ( $P < 0.001$ ) with the treatment need being highest in the youngest age group (Table 4).

**Table 4: Treatment requirement according to age groups**

Age groups	Treatment required		Chi value	df	P value
	yes	no			
I (5-7 years)	328	48			
II (8-10 years)	1002	172	124	2	<0.001
III (11-14 years)	1137	487			

The treatment requirement of different age groups has been summarized in Table 5.

**Table 5: Types of treatment required**

Age groups	Teeth requiring treatment	Sealant one surface filling	Two or more surface filling	Crown	Pulp care	Extraction	others
I (5-7 years)	1433	712	577	7	72	22	43
II (8-10 years)	4327	1604	2292	32	184	87	128
III (11-14 years)	3655	413	2738	45	148	85	226

Most cases required single surface filling followed by sealant care, two or more surface filling, other care, pulp care, extraction and crown.

## Discussion:

Oral health is the part of general health and affects the overall wellbeing of an individual. Dental caries is the commonest dental problems encountered. The prevalence of dental caries was observed in many studies. As the age advances there was rise in proportion affected by caries. Both male and females were equally affected by caries, with slightly higher prevalence among males. The children were divided in age groups of 5-7 years, 8-10 years and 11-14 years. The

overall caries was found to be 47.1% in the present study. Higher caries prevalence was found with the increase in age, similar findings were obtained in other studies.<sup>5-7</sup>

Higher DMFT was found in age group of 8-10 years especially due to increased exposure of teeth to poor oral hygiene conditions. DMFT was less in group of 11-14 years due to presence of newly erupted permanent teeth. Although not significant statistically, prevalence being higher in 11-14 years age group indicated more children in this group had caries; however, a greater number of teeth were carious, missing or filled for each child in the age group of 8-10 years. In the present study, no significant difference was recorded in caries prevalence among males and females as recorded in another study.<sup>8</sup>

Higher treatment needs was found among children in age group of 5-7 years because of higher need of sealants due to newly erupted molars, followed by age groups of 8-10 years having maximum DMFT. There was also need for other care which mainly comprised of space management. The intra-analysis of DMFT in these subjects revealed that about 94.6% comprised decayed teeth, whereas missing and filled components were only about 5.4%.

The majority of subjects showed decayed teeth with no fillings or missing teeth as the result of caries, thereby indicating lack of awareness about and motivation for good oral health among the younger generation or barriers to access to dental services. Although many of the students reported brushing their teeth two times daily, a significant association between caries experience, calculus, and frequency of tooth brushing was evident.

The majority of these students reported consuming sugary foods such as chocolate, candy, jellies, soft drinks, etc. approximately 3-5 times daily, which may be considered one of the most important factors in high caries experience in this group. The majority of subjects free of caries (DMFT=0) reported brushing their teeth twice or more daily, and they had healthy dietary and lifestyle habits, highlighting the role of maintenance of oral hygiene and good lifestyle habits in prevention of caries.

This study gives an overview of the existing caries prevalence in school going children of Kaski district of Nepal and helps in implementing programs to achieve optimal oral health care for children. This indicates that there are still shortcomings in the areas of both preventive and curative dental care. More oral health education programs in

community and schools must be carried out for the control of oral diseases, these approaches should be combined with family and community-directed preventive programs.

**Conclusion:**

Overall prevalence of dental caries in a school going children, attending in Dental OPD of Manipal Teaching Hospital, was found to be 47.1%. Caries prevalence in the age group 5-7, 8-10 and 11-14 years were 20.7%, 48.2% and 52.4% respectively. Mean DMFT in the age group 5-7, 8-10 and 11-14 years were 1.96, 2.43 and 1.84 respectively. The treatment requirement in age groups of 5-7 years, 8-10 years and 11-14 years children were 87.2%, 85.3% and 71.4% respectively. Most cases required single surface filling followed by sealant care, two or more surface filling, other care, pulp care, extraction and crown.

Prevalence of dental caries in school going children should be assessed at regular intervals of time to ascertain the spread of disease and need of preventive and restorative care. Such studies would help us in planning the prevention of dental caries and promote oral health strategies.

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**Conflict of interest:** none**References:**

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