

Prevalence of Dental Caries Among 6-12 Years old Tibetan Children Residing in Nepal

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ABSTRACT

Background: Dental caries is the most common oral disease affecting worldwide with people of all age, race, and gender. It is not only discomforting but also causes severe pain, which affects the quality of life and well-being of a person eventually leading to financial burden. The objective of this study was to assess the prevalence of dental caries among 6-12 years old Tibetan children residing in Nepal. **Methods:** A cross-sectional study was conducted among 6-12 years old Tibetan children living in different Tibetan Refugee Settlements in Pokhara, Nepal. A total of 142 children were examined to record the dental caries status using deft index and DMFT index for deciduous dentition and permanent dentition respectively. The association between dental caries status and gender was assessed using student t-test ($p < 0.001$) while the association between dental caries status among different age group was assessed using chi-square test ($p < 0.001$). **Results:** The prevalence of dental caries was found to be 66.90% in deciduous dentition 29.57% in permanent dentition. The mean deft and DMFT was 2.32 and 0.66 respectively. There was a statistical significant difference in caries status in different age groups on both permanent and deciduous dentition. **Conclusion:** The prevalence of dental caries in deciduous dentition among 6-12 years old Tibetan children was found to be above the goals recommended by the World Health Organization (WHO).

KEYWORDS: deft, dental caries, DMFT, prevalence, Tibetan children

INTRODUCTION

Dental caries is one of the most common oral health problem affecting all age groups including the children. The World Health Organization (WHO) has pointed that dental caries is still a major public health problem globally, despite having great improvements made in oral health.¹ The experience of pain, discomfort, problems with eating, chewing, smiling and even speech due to missing, decay or discolored teeth have a major burden on the general health of the people, their quality of life, and their psychosocial wellbeing.¹ The distribution and severity of dental caries vary in different parts of the world and within the same country or region because of various etiology. It is affecting nearly 60-90 percent of school children globally.¹

Dental caries is a complex and a dynamic process where the multitude of factors influence and initiate the progression of its disease. For the entire process of the development of dental caries, there must be few requirements such as cariogenic bacteria, bacterial plaque, stagnation areas, fermentable bacterial substrate (sugar), susceptible tooth surface, and time.²⁻⁴

Eruption of permanent dentition and exfoliation of primary dentition begins during the age of 6 years and both these processes usually complete by the age of 13 (except third molars).⁵ Hence, it is logical to do a comparative observation for dental caries experiencing

both the deciduous and permanent dentitions, particularly among those between the ages of 6-12 years. Besides, during mixed dentition period, the oral hygiene is poor due to frequent intake of refined sugar and sticky food.⁶

Tibetans are living in various parts of Nepal where one of the oldest and the largest refugee populations resides in Pokhara, Nepal. Many epidemiological studies have been conducted in Nepal to define the magnitude of oral diseases but still lack an appropriate data on the oral health status of Tibetan population. This study will assess the prevalence of dental caries among 6-12 years old Tibetan children which will account in planning preventive programs and to evaluate the need of dental care services that will be an effort for mankind. Beside, this study will provide a reference criterion for further studies in the field of oral disease.

MATERIALS AND METHODS

A descriptive cross-sectional epidemiological study was conducted among 6-12 years old Tibetan children residing in four different Tibetan Refugee Settlements of Pokhara Valley, Nepal. Children were selected through a random sampling. All the examinations were carried out by three trained dentists. The calibration procedure was done prior to the study among 15 children, and inter-examiner variability was found to be acceptable (Cronbach's alpha 0.68). The schedules of the visit to the settlements were prepared only after obtaining permission from the concerned authorities.

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A total of 142 children were examined after the consent received from the parents of the participants and the school headmaster. The study protocol was approved by the Institutional Review Committee, Kantipur Dental College Teaching Hospital and Research Center. The children were examined in their respective settlement community hall on plastic chairs under the adequate daylight with the help of mouth mirror and dental explorer. The DMFT/deft indices were recorded according to WHO oral health assessment form (1997).⁷ The tooth was considered decayed (D- for permanent tooth/d- primary tooth) if a visible cavity was present and filled a tooth with decay. The missing component (M-permanent tooth/e-primary tooth) includes tooth indicated for extraction or tooth extracted due to caries. Any missing tooth due to any other reason was not considered. The filled component (F-permanent tooth/f-primary tooth) includes filled tooth. No radiographs were taken during the study. Structured questionnaires were formulated to record the children's socio-demographic factors and their case history.

The data was recorded and analyzed using SPSS version 17.0. The descriptive statistics was assessed and independent sample t-test ($p < 0.001$) and chi-square test ($p < 0.01$) were carried out to compare difference in dental caries status between gender and different age groups on both dentitions respectively.

MATERIALS AND METHODS

A total of 142 Tibetan children were examined where, 75 were male, and 67 were female. It was observed that 23 children belonged to the age group of 6-7 years while the other 32 and 87 belong to the age group of 8-9 years and 10-12 years respectively. (Table 1)

Age Group	Gender		Total
	Male	Female	
6-7 years	16	7	23
8-9 years	13	19	32
10-12 years	46	41	87
Total	75	67	142

Table 1: Gender distribution in different age groups

The mean DMFT and deft among 6-12 years old Tibetan children were 0.66 and 2.32 respectively. Dental caries prevalence in permanent dentition was 29.57%, whilst deciduous dentition was 66.90%. It was also observed that the mean DMFT among male and female were 0.65 and 0.67 respectively while mean deft among male and female were 2.49 and 2.13 respectively. No significant difference in dental caries status was observed between male and female both in permanent and deciduous dentition. (Table 2)

It was also observed that the component of caries index was higher in the age group of 10-12 years in permanent dentition whereas, in deciduous dentition, the component was higher in the age group of 6-7 years. The mean DMFT among different groups were 0.08 ± 0.41 (6-7

years), 0.18 ± 0.64 (8-9 years), 0.98 ± 1.57 (10-12 years) and deft were 4.78 ± 2.90 (6-7 years), 3.59 ± 2.35 (8-9 years) and 1.20 ± 1.71 (10-12 years) (Table 3 and 4). Table 5 and 6 depicts that there was a difference in caries status in different age groups on both permanent and deciduous dentition which was statistically significant. ($P < 0.001$)

Dentition	Gender	DMFT/deft (Mean±SD)	Total DMFT/deft (Mean±SD)	P value	Prevalence of Dental Caries
Permanent Dentition	Male	0.65±1.56	0.66±1.34	0.42	29.57%
	Female	0.67±1.05			
Deciduous Dentition	Male	2.49±2.69	2.32±2.53	0.23	66.90%
	Female	2.13±2.36			

Table 2: Comparison of DMFT/deft between male and female

Age Groups	Decayed (DT) (Mean±SD)	Missing (MT) (Mean±SD)	Filled (FT) (Mean±SD)	Total DMFT (Mean±SD)
6-7 years	0.08±0.41	0.00	0.00	0.08±0.41
8-9 years	0.18±0.64	0.00	0.00	0.18±0.64
10-12 years	0.83±1.23	0.02±0.21	0.12±0.71	0.98±1.57

Table 3: Components of DMFT in different age groups

Age Groups	Decayed (dt) (Mean±SD)	Missing (et) (Mean±SD)	Filled (ft) (Mean±SD)	Total deft (Mean±SD)
6-7 years	4.17±2.63	0.26±0.54	0.34±1.02	4.78±2.90
8-9 years	3.37±2.23	0.15±0.44	0.06±0.24	3.59±2.35
10-12 years	0.91±1.34	0.21±0.81	0.06±0.29	1.20±1.71

Table 4: Components of deft in different age groups

Age Group	Caries Status		P value
	Present	Absent	
6-7 years	1	22	0.000
8-9 years	3	29	
10-12 years	35	52	
Total	39	103	

Table 5: Distribution of caries status on permanent dentition in different age groups

Age Group	Caries Status		P value
	Present	Absent	
6-7 years	21	2	0.000
8-9 years	29	3	
10-12 years	38	49	
Total	88	54	

Table 6: Distribution of caries status on deciduous dentition in different age groups

DISCUSSION

Children who are between the ages of 6-12 years old have mixed dentition. As a result, dental caries prevalence, deft and DMFT scores were collected for both the dentitions and compared it to the other studies. Dental caries prevalence among sampled Tibetan children in this study was comparable to the study conducted by Bhagat *et al.*, where caries prevalence in deciduous dentition was lower (60.3%).⁸ The mean DMFT (0.37±0.87) was also found to be lower than the present study.⁸ It was also observed that the mean DMFT was higher than the study conducted by Dixit *et al.*⁹ The prevalence of dental caries was 29.57% and 66.90% in permanent and deciduous dentition respectively which was lower compared to Tin Oo *et al.* and mean deft and DMFT was also found to be lower in the present study.¹⁰ Sudha P *et al.* reported that the mean dmft were 2.91 in the age group of 5-7 years, 2.66 for 8-10 years and 1.04 for 11-13 years respectively which is higher in the present study.¹¹ KS Havaldar *et al.* also reported that the mean deft and DMFT were 1.67 and 0.83 respectively which was lower compared to this study.¹² The mean DMFT in the present study in the age group 10-12 was 0.98 which was higher than the other study.¹³ A study conducted in Campeche, Mexico among 6-9 years old schoolchildren revealed that the prevalence of dental caries was 52.1% in deciduous dentition and 18.4% in permanent dentition which is lower as compared to this study. In the same study, mean deft and DMFT were also lower.¹⁴ In the present study, no significant difference was noted in dental caries status among male and female which was similar to Tin Oo *et al.* but was not similar to Bhagat *et al.*^{8,10} The difference in prevalence of dental caries in different age group which was statistically significant was similar to the study conducted by Adhikari RB *et al.*¹⁵ The reason behind the similarities between this study and others might be because of the similar characteristics of sample size, food habits and environment while dissimilarities might be due number of sample size or due to the fact children are deprived of oral health education programs.

CONCLUSION

Dental caries is a major public health issue globally. The result of this descriptive cross-sectional epidemiological study showed a higher dental caries prevalence in deciduous dentition among 6-12 years old Tibetan children. Therefore, oral health awareness, preventive and promotional school and community oral health programs, counseling and encouraging both parents and children for regular dental visits can add up an effort to achieve the oral health goals recommended by WHO.¹⁶

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