

DENTAL CARIES PREVALENCE AND DENTAL CARE KNOWLEDGE AND PRACTICE AMONG SCHOOL CHILDREN IN KIRTIPUR MUNICIPALITY*

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ABSTRACT

Dental caries prevalence is very high (69.6%) with mean DMFT 1.89 among the school children in Kirtipur Municipality. Boys have more prevalence of dental caries than that of the girls (71.9% and 66.4% respectively). Majority of the students have fairly satisfactory knowledge about dental care in terms of caries prevention but show very poor care practice.

INTRODUCTION

Dental caries, a chronic irreversible disease of teeth that affects people of all ages, is highly prevalent in all countries of the world. During last several years, in most developed countries, as a result of prevention programs, which stress the optimum use of fluoride and adoption of healthy oral habits, oral health status of the people remarkably improved; however, situation is worsening in many developing countries including Nepal. In 1981, World Health Organization accepted and adopted first global indicator of oral health status at the age of 12 years not more than 3 mean DMFT index by the year 2000⁵.

In Nepal, national level epidemiological study on oral health has not been carried out so far. But the results of several micro level studies done by some researcher have revealed that the dental caries status among Nepali people is progressively increasing. The rapid rate of urbanization causing the change of dietary habits as well as easy access to refined and junk foods even in rural places without improvement in oral hygiene practice among the people could be the main reason for increased dental caries trend.

This study was intended to estimate the caries status as well as to assess knowledge and care practices among the school children of Kirtipur

Municipality regarding dental care. The study was conducted among the school children of age 12 and 15 years in Kirtipur Municipality, Kathmandu. A total of two hundred and seventy six students were observed in this study. Among them, 160 were boys and 116 were girls. Age wise, 112 were of age 12 years and 164 of 15 years.

LITERATURE REVIEW

A study done by the United Mission to Nepal (UMN), Oral Health Unit, in Palpa district showed the prevalence of caries among age group 6, 12, and 15 years in 1985 were 20.35%, 26%, 45.5% respectively and, after ten years (1995), it reached up to 52.08%, 62.53% and 65.57% respectively².

A study conducted in 1994 on oral health status of 12 year old children, from some randomly selected schools of capital city, two urban settings outside the capital and four randomly selected villages in rural Nepal covering all three geographical regions - Himalayan, Hill and Terai showed, overall caries experience within the country was 36 % with mean DMFT value 0.9. The study also reported that the greatest proportion affected in Terai (40 %) and the lowest in Himalayan region (30 %). In Kathmandu the caries prevalence was 28 % and in Pokhara 45%³.

Program review report of UMN's Oral Health Program in some urban and rural schools of

Lalitpur district showed, average caries prevalence among 12-13 and 15-19 year olds age group in 1994 was 61%, which was 33% in 1986. Among the boys, caries prevalence was 35 % in 1986 and 58 % in 1994. In girls, it was 29 % in 1986 and 64 % in 1994⁴.

According to a study done in Pokhara in 1995 on dental caries status of higher secondary school children, 46.9% of the subjects were found to be affected, and sex-wise, 51.9 % girls and 43.2 % boys possess dental caries ($P = 0.1753$). The study showed that there was no statistically significant association between students' knowledge and dental caries prevalence ($P = 0.2456$) but the association between students' practice on oral hygiene and caries was found to be significant ($P = 0.0141$)¹.

OBJECTIVE

The general objective of this study was to identify the dental caries status and behaviors of the school children of Kirtipur Municipality regarding oral health care.

METHODOLOGY

This was a descriptive, cross sectional study, based on clinical observation and questionnaires. The study was done on the school children of age 12-year-old and 15-year-old of five randomly selected schools (out of 24 schools) of Kirtipur Municipality.

Sample size was calculated using the formula:
 $n = 4pq/L^2$

Prevalence rate of caries was fixed as 28 % taking reference from one previous study done in Kathmandu, and accepted error was 20 percent. In total, 276 students were studied. Data was collected using dental instruments. Clinical oral observation was done to estimate caries prevalence and mean DMFT index and structured and semi

structured questionnaires to assess knowledge and care practices regarding dental care. The students were informed about objectives and process of the study.

There were some limitations in the study such as: the age of the students were verified only from the date of birth registered in the school (actual age may not be compatible with it in some cases); practice of the students was assessed only on the basis of students' response to the questionnaires; and dental caries, being a chronic and irreversible disease, on a cross sectional study, existing caries and students' knowledge and practice regarding dental care may not be correlated in some cases.

RESULT

1. Caries prevalence:

The prevalence of caries in age group 15 was found higher than in age group 12 years, and caries prevalence in boys was found to be more than that in girls. But both the differences were statistically not significant (P value 0.7625 and 0.4377 respectively). The mean DMFT index was to be found 1.89.

Out of the total of 276 students, 69.6% were found to be caries positive. Among 112 students of 12 years, 67.0% were caries positive, and out of 164 students of age group 15, 71.3% were found with dental caries. Likewise, among 160 boys, 71.9% were caries positive and among 116 girls, 66.4% were found with dental caries (Table 1).

Table 1:
Prevalence of dental caries

Age Group	Caries				Total Positive	Total Negative
	Boys		Girls			
	Positive	Negative	Positive	Negative		
12 years	38	16	37	21	75 (67.0%)	37 (33.0%)
15 years	77	29	40	18	117 (71.3%)	47 (28.7%)
Total	115 (71.9%)	45 (28.1%)	77 (66.4%)	39 (33.6%)	192 (69.6%)	84 (30.4%)

2. Knowledge on oral health

Regarding cause of tooth decay (Daant kirale khanu), most of the students (81.2%) had responded, as improper teeth cleaning is the cause of tooth decay. But some had responded as chewing hard food, over brushing, smoking as the causes of tooth decay. Two hundred twenty nine students had responded proper tooth brushing is the way of prevention of tooth decay. Out of all, sixty five percent students had responded proper tooth brushing and mouth rinsing after sweet foods are the best ways of prevention of tooth decay.

Out of 229 students who had responded, proper teeth brushing is the best way of prevention of tooth decay, 67.7% of them were found with tooth decay compared to 78.7% having tooth decay who had responded as other ways than proper brushing. However the difference is not significant statistically ($P = 0.1341$).

Two hundred seventy students have responded that food affects in developing tooth decay. Out of 276 students, 94.1% students have responded that sweet food affects in development of tooth decay.

Two hundred fifty-one students had responded that one reason of tooth cleaning is to prevent tooth decay, and regarding best time of cleaning, 146 students responded that the best time of teeth cleaning is after every morning and evening meals (Table 2).

3. Practice of dental care

Most of the students (83.0%) take chocolates sometimes only and a very few (5.8%) take chocolates daily. Regarding mouth rinsing, 13.1% had responded that they always rinse mouth after taking chocolate. Regarding taking bakery products, most had responded that they take bakeries sometimes only and only 13.4% had responded that they always rinse mouth after taking bakeries.

Caries percentage difference between those students who usually take chocolate more than three times in a week and those who take sometimes was not significant ($P = 0.1160$). Similarly, no significant difference was found between those who take bakery products more than three times in a week and who take sometimes only ($P = 0.2669$).

Two hundred thirty six (85.5%) students had responded that they brush their teeth every day, and 32 students say that they usually brush their teeth. Regarding time of brushing teeth, most of the students (67.9%) brush their teeth at early morning and only 33 students responded that they brush after morning and evening meals (Table 3). Among the students who had responded as they brush their teeth usually or everyday (268 students), 69.8% were found caries positive.

Table 2:
Response regarding best time tooth brushing

Best time of teeth cleaning	Sex		Total (N=276)	Percent
	Boys	Girls		
After morning and evening meal	96	50	146	52.9
Early morning	34	44	78	28.3
After morning meal	17	11	28	10.2
At bed time	7	3	10	3.6
Early morning and after morning meal	3	6	9	3.2
Early morning and at bedtime	3	2	5	1.8

Table 3:*Teeth cleaning practice of the students in term of cleaning time.*

Teeth cleaning time	Sex		Total	Percent
	Boys	Girls		
Early morning	106	81	187	67.9
After morning meal	27	12	39	14.1
After morning and evening meal	20	13	33	11.9
Early morning and after morning meal	4	3	7	2.5
At bed time only	3	2	5	1.8
Early morning and at bed time	0	5	5	1.8
Total	160	116	276	100

DISCUSSION

The study found that 69.6% students have problem of dental caries with mean DMFT 1.89. The prevalence found was much higher than expected prevalence for this study i.e. 28.0% for Kathmandu, reference adopted from a study done in 1994 in 12-year school children³. Caries prevalence in girls was found 66.4% and in boys, 71.9%. Here, though the difference was not significant statistically ($P = 0.4377$) prevalence in boys was found higher than in girls in contrary to some previous study reports^{1,4} in which it was high in girls. Mean DMFT among 12 year children was 1.80 which is within the limit of WHO's worldwide objective, no more than 3 DMFT index at age 12 for any country by the year 2000⁵ but higher than WHO Global Data Bank 2000's report, for Nepal which was 0.9⁶.

Overall knowledge of the students regarding dental care is above the average, such as 81.2% have knowledge about the main cause of tooth decay, 83.0% know about the way of prevention of tooth decay and 58.3% know about the best time of cleaning in term of decay prevention (at least one before going to bed in this study). It shows that most of the children have satisfactory knowledge about the dental care. But, the caries prevalence between those having satisfactory knowledge and those who do not have was not

much different. It shows, just having knowledge at the time of observation is not enough. It also depends on since how long one is having that knowledge and whether he/she has practiced, as he/she knows. Moreover, as dental caries is a chronic and irreversible disease; knowledge gained after development of caries does not make any difference in existing caries. One study done in Pokhara among secondary school students also found no statistically significant relation between existence of knowledge about dental care and

caries status¹.

Though knowledge of the students regarding proper time of brushing (at least once before going to bed in this study) is more than average (58.3%), practice is found poor (15.5%). Almost all students (97.1) brush their teeth at least once a day but the time of brushing is not appropriate in terms of prevention of tooth decay. High prevalence of caries may be due to this type improper practice (the way of brushing was not observed). Again, even adoption of proper brushing practice does not affect in already existed caries.

Although, many studies have proved use of fluoridated toothpaste significantly reduce in occurrence of tooth decay, only three students in this study had responded as they use fluoridated toothpaste and 40 students have just heard about it.

Finally, dental caries problem is very high among school children of Kirtipur Municipality. Oral health education in school regarding dental care should be promoted and the school children are needed to encourage regularly for adequate brushing practice with regular monitoring system. In order to avoid untimely losing of tooth, the students having decayed teeth should be intervened as soon as possible. Since almost all

people in Kirtipur Municipality use pipeline water for drinking, survey for fluoride ion concentration in drinking water will be worthwhile.

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REFERENCES

1. Joshi H., Bhattarai, P., Dental Caries Status in Higher Secondary School Students in Pokhara, Journal of the Institute of Medicine, 1996, Apr.-Jun./Jul.-Sept., Vol. 18, No. 2&3.
2. McDonald, Neil, Dental Caries in Nepal: A 10-Year Comparison Study, Journal of Nepal Dental Association, 1995, Sept. Vol. 2, No.1.
3. Milsom K. M., Rijal K., Lennon M., Oral Health Status of 12-Year-Old Children in Nepal in 1994, International Dental Journal, 1997, Vol. 47, No. 2.
4. Stringer, Ronald B., Oral health Assessment and Program Review in the Lalitpur District of Nepal, School of Public health, University of Hawaii at Mona, 1994.
5. WHO Global Oral Data Bank, Oral Health Unit, WHO, 1994.
6. WHO Global Oral Data Bank, Oral Health Unit, WHO, 2000.