

## Oral Health Status and Oral Health Behavior of School Children in Central Nepal

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**Abstract :** **Objectives:** To describe the oral health status and oral health behavior of school children in a region of central Nepal.

**Design:** Cross-sectional study of four age groups (3-5 yrs, 6-10 yrs, 11-13 yrs, and 14-16 yrs). The study consisted of clinical examinations based on WHO methodology as well as questionnaires.

**Participants:** The study took place in 4 village schools in a district in central Nepal. The number of participants was 829 children ages 3-16 yrs (411 males and 418 females, 3-5 yrs: 95, 6-10 yrs: 298, 11-13 yrs: 347, 14-16 yrs: 89).

**Results:** At age 3-5 yrs, 45.3% were affected by dental caries and mean dmft was 1.68. Mean DMFT varied from 0.32 for 6-10 yrs and 0.56 for 11-13 yrs to 0.80 for 14-16 yrs. The prevalence proportion of dental caries was 18.8% for 6-10 yrs, 30.5% for 11-13 yrs, and 34.8% for 14-16 yrs. The proportion of participants who felt tooth pain during the previous year was 43.2% for 3-5 yrs, 52.0% for 6-10 yrs, 42.1% for 11-13 yrs, and 32.6 % for 14-16 yrs. The majority of children in all age groups brush their teeth using toothpaste at least once a day. The proportion of children consuming sweets daily ranged from 13.5% to 45.3% depending on the age group. More than 80% of 6-13 year-olds were aware of the effectiveness of tooth cleaning as well as the harmful effect sweets have on dental health. Major oral health information sources were parents, teachers, and TV.

**Conclusion:** Systematic health education results in improvement the oral health of Nepali children, and primary schools provide the most effective setting for such oral health programs.

Key words : oral health behavior, oral health status, school children, Nepal

### Introduction

In most industrial countries, prevalence rates and mean dental caries in children have dramatically declined<sup>1, 2)</sup>. However, data from several studies supports the finding that dental caries are increasing in urban areas of developing countries where people have greater access to products containing sugar. In addition, community-based oral health programs have for the most part not been

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established in those countries<sup>3-11)</sup>.

The primary school years represent an important target age when it comes to promoting life-long health. WHO's Global School Health Initiative, launched in 1995, seeks to mobilize and strengthen health promotion and education activities at the local, national, regional and global level<sup>12)</sup>. In 2003, the World Health Organization stated that oral health promotion is an essential element of a health-promoting school, and published a document about oral health promotion through schools<sup>13)</sup>.

In Nepal, the community-based health promotion approach is a way to address problems such as poor oral health and untreated dental caries where human and financial resources are limited. The Nepal National Oral Health 'Pathfinder' survey 2004 was undertaken in order to improve oral health. However, little data is available on dental caries prevalence and oral health behavior of schoolchildren<sup>14)</sup>.

The objectives of this study are to describe the oral health status and oral health behavior of schoolchildren in a region of central Nepal.

## Methods

This study was designed as a cross-sectional study of four age groups (3-5 yrs, 6-10 yrs, 11-13 yrs, and 14-16 yrs). The study consisted of clinical examinations based on WHO methodology as well as questionnaires. The questionnaires were undertaken by interview for 3-5 year-olds and self-recording for 6-16 year-olds. The study took place in 4 village schools in a district in central Nepal in 2004. The number of participants was 829 children ages 3-16 years (411 males and 418 females, 3-5 yrs: 95, 6-10 yrs: 298, 11-13 yrs: 347, 14-16 yrs: 89).

## Results

At age 3-5 yrs, 45.3% were affected by dental caries and mean deft was 1.68 (Table 1). Mean

DMFT varied from 0.32 for 6-10 yrs and 0.56 for 11-13 yrs to 0.80 for 14-16 yrs. Mean FT for these age groups was 0, 0.01, and 0.02 respectively. These results indicate that the participants have very low access to dental treatment. The prevalence proportion of dental caries was 18.8% for 6-10 yrs, 30.5% for 11-13 yrs, and 34.8% for 14-16 yrs (Table 2).

Table 1 Prevalence proportion (PP) of dental caries and deft index of children

	Age group			
	3-5 yrs n=95	6-10 yrs n=298	11-13 yrs n=347	14-16 yrs n=89
PP	45.3%	65.8%	27.7%	2.2%
dt	1.68	2.41	0.65	0.06
et	0.00	0.01	0.01	0.00
ft	0.00	0.04	0.01	0.00
t	18.99	12.89	4.15	0.38
deft	1.68	2.46	0.67	0.06

Table 2 Prevalence proportion (PP) of dental caries and DMFT index of children

	Age group			
	3-5 yrs n=95	6-10 yrs n=298	11-13 yrs n=347	14-16 yrs n=89
PP	1.1%	18.8%	30.5%	34.8%
DT	0.01	0.32	0.54	0.76
MT	0.00	0.00	0.01	0.01
FT	0.00	0.00	0.01	0.02
PT	0.27	9.62	21.05	27.19
DMFT	0.01	0.32	0.56	0.80

Table 3 Percentage of children who responded in various ways to oral health related QOL questions

	Age group			
	3-5 yrs n=95	6-10 yrs n=298	11-13 yrs n=347	14-16 yrs n=89
Tooth pain during previous year				
Yes	43.2	52.0	42.1	32.6
No	38.9	44.6	56.5	66.3
No answer	17.9	3.4	1.4	1.1
Chewing function				
very good	16.8	27.2	38.3	28.1
good	6.7	39.6	32.6	57.3
average	14.7	19.5	13.0	2.2
poor	1.1	8.7	12.7	7.9
very poor	2.1	2.7	2.3	3.4
No answer	15.8	2.3	1.2	1.1
Teeth and mouth appearance				
very good	9.5	15.8	26.2	18.0
good	56.8	42.6	36.3	58.4
average	15.8	27.9	24.5	15.7
poor	1.1	9.4	11.8	6.7
very poor	0.0	1.7	0.3	0.0
No answer	16.8	2.7	0.9	1.1

Table 3 shows the percentage of children giving various responses to oral health related QOL questions, by age group. The proportion of participants who felt tooth pain during the previous year was 43.2% for 3-5 yrs, 52.0% for 6-10 yrs, 42.1% for 11-13 yrs, and 32.6% for 14-16 yrs. When asked whether they had poor chewing function, 3.2% to 15.0% of participants answered "yes", depending on age group. 1.1% to 12.1% of children indicated that they felt uncomfortable about the appearance of their teeth or mouth.

Table 4 shows the frequency of different types of oral health behavior, by age group. The majority of children in all age groups brush their teeth using toothpaste at least once a day. But the proportion of children brushing their teeth more than twice a day ranged from 16.9% to 30.5%. 21.0%-35.8% of children reported brushing their teeth every night. Approximately 30% of children had

never visited a dentist.

Table 5 shows the frequency of consumption of various sugary items, by age group. The most prevalent sugar intake behavior is taking tea with sugar; the proportion of children drinking it at least once a day was approximately 80% in all age groups. The percentage of children eating biscuits daily was around 50% for the 3-5 yrs, 6-10 yrs, and 14-16 yrs age groups. The proportion of children consuming sweets daily ranged from 13.5% to 45.3% depending on the age group. The lower age groups had markedly higher sweets intake.

Table 6 highlights the dental attitude and knowledge of children. In general, children of ages 6-16 years had a positive attitude toward oral health and caries prevention. More than 80% of 6-13 year-old children were aware of the effectiveness of tooth cleaning as well as the harmful effect sweets have on dental health. With respect to the

Table 4 Percentage of children with different types of oral health behavior, by frequency

	3-5 yrs n=95	6-10 yrs n=298	11-13 yrs n=347	14-16 yrs n=89
Tooth brushing				
seldom/never	4.2	1.3	0.6	0.0
2-3 times a month	1.1	3.4	2.3	1.1
once a week	0.0	2.7	1.4	2.2
2-3 times a week	3.2	6.4	6.1	1.1
once a day	53.7	55.7	66.9	77.5
two or more times a day	24.2	30.5	22.8	16.9
No answer	13.7	0.0	0.0	1.1
Tooth brushing at night				
seldom/never	40.0	55.0	67.4	47.2
2-3 times a month	0.0	0.7	3.7	5.6
once a week	4.2	2.0	1.4	2.2
2-3 times a week	5.3	3.0	1.7	11.2
once a day	35.8	34.9	22.2	30.3
No answer	14.7	4.4	3.5	3.4
Using toothpaste				
seldom/never	3.2	2.7	0.3	0.0
2-3 times a month	0.0	4.7	2.0	0.0
once a week	4.2	5.0	3.5	5.6
2-3 times a week	7.4	5.7	5.5	1.1
once a day	56.8	58.1	71.8	75.3
two or more times a day	13.7	22.8	16.7	16.9
No answer	14.7	1.0	0.3	1.1
Dental visit history				
no	36.8	33.2	36.0	14.6
once	12.6	32.6	28.0	28.1
2 times	27.4	19.1	19.6	12.4
3 times or more	5.3	13.4	16.1	44.9
No answer	16.8	1.7	0.3	0.0

questions on the relationship between gum bleeding and tooth brushing, 66.3% to 82.4% of children answered correctly. From 56.4% to 73.8% of children knew the effect of fluoride on dental caries. At age 3-5 yrs, approximately 60% of children agreed that tooth brushing prevents decay and sweets cause decay.

Table 7 shows the health information sources of each age group. Most children had been informed about oral health by parents and schoolteachers. However, only 40% of children ages 3-5 yrs and 6-10 yrs and less than 30% of children ages 11-13 yrs and 14-16 yrs got oral health information from their parents. Getting this information from parents tended to decrease with age. With regard to the influence of teachers, more than 70% of children were getting oral health knowledge from their teachers. The likelihood of getting this infor-

mation from the media increased with age. 23.6% of 14-16 yrs children answered positively about getting information via TV.

## Discussion

The study provides information about dental caries and oral health behavior of primary school children in Nepal. The survey was confined to schools under oral health education programs in the Kathmandu valley and therefore the data are not representative in pure statistical terms. However, the sampling of central Nepal may be indicative of the oral health situation and oral health behavior of children of different age groups.

The clinical examination procedure and diagnostic criteria were carried out according to the WHO methods, and some items of this questionnaire about oral health behavior were based on

Table 5 Percentage of children consuming sweet snacks, by frequency

	3-5 yrs n=95	6-10 yrs n=298	11-13 yrs n=347	14-16 yrs n=89
Tea with sugar				
don't take	7.4	8.1	5.2	6.7
2 or 3 times a month	0.0	1.7	2.3	1.1
once a week	7.4	4.4	1.7	5.6
2 or 3 times a week	1.1	4.7	6.6	4.5
once a day	50.5	61.7	67.4	52.8
two or more times a day	18.9	19.5	16.1	29.2
No answer	14.7	0.0	0.6	0.0
Biscuits				
don't eat	7.4	11.1	9.2	9.0
2 or 3 times a month	7.4	13.1	25.6	10.1
once a week	6.3	14.8	11.5	12.4
2 or 3 times a week	8.4	18.5	26.5	15.7
once a day	50.5	37.6	23.3	46.1
two or more times a day	6.3	4.7	3.5	6.7
No answer	13.7	0.3	0.3	0.0
Sweets (such as candy, chocolate, etc.)				
Don't eat	14.7	14.8	14.4	14.6
2 or 3 times a month	9.5	19.5	31.4	22.5
once a week	4.2	10.4	13.0	20.2
2 or 3 times a week	10.5	26.2	27.1	29.2
once a day	35.8	23.2	11.0	12.4
two or more times a day	9.5	5.4	2.6	1.1
No answer	15.8	0.7	0.6	0.0
Titaura (a local sweet snack)				
don't eat	48.4	31.5	21.9	22.5
2 or 3 times a month	8.4	21.5	25.4	24.7
once a week	3.2	12.1	14.1	14.6
2 or 3 times a week	10.5	18.8	17.0	19.1
once a day	10.5	12.8	18.7	16.9
two or more times a day	3.2	2.7	2.9	1.1
No answer	15.8	0.7	0.0	1.1

the published reports on the situation in China and Thailand<sup>4, 5)</sup>. Therefore comparisons with these other studies are possible. These findings are in agreement with another survey of DMFT in children of ages 12-13 years<sup>14)</sup>.

This survey's findings show that most children are practicing oral hygiene behavior and are aware of the preventive effects of tooth brushing and the harmful effects sweets intake on oral health. However, more than 30% of children are

eating sweets every day. This study demonstrates the need for oral health education of mothers and community people. In addition, one of the major oral health information sources of children was TV; therefore, a health literacy program promoting health information choice and understanding would need to be included in any school oral health approach<sup>15)</sup>.

In conclusion, systematic health education improves the oral health of Nepali children, and

Table 6 Percentage of children who responded in various ways to statements about the prevention of dental disease

	3-5 yrs n=95	6-10 yrs n=298	11-13 yrs n=347	14-16 yrs n=89
Decayed teeth make me look bad				
Agree	65.3	84.6	93.9	87.6
Disagree	0.0	7.0	1.7	3.4
Don't know	20.0	5.7	3.2	5.6
No answer	14.7	2.7	1.2	3.4
It is important to keep your teeth healthy				
Agree	67.4	94.3	99.1	97.8
Disagree	0.0	1.7	0.0	1.1
Don't know	16.8	1.3	0.0	0.0
No answer	15.8	2.7	0.9	1.1
Tooth brushing prevents tooth decay				
Agree	65.3	88.3	91.1	80.9
Disagree	3.2	6.4	5.8	13.5
Don't know	15.8	3.0	2.0	4.5
No answer	15.8	2.3	1.2	1.1
Tooth brushing prevents gum bleeding				
Agree	53.7	78.5	82.4	66.3
Disagree	3.2	6.0	8.1	12.4
Don't know	26.3	12.4	8.4	18.0
No answer	16.8	3.0	1.2	3.4
Sweet food causes tooth decay				
Agree	66.3	91.6	96.0	97.8
Disagree	1.1	1.7	1.2	1.1
Don't know	16.8	4.0	1.2	0.0
No answer	15.8	2.7	1.7	1.1
Sweet drinks cause tooth decay				
Agree	66.3	85.6	90.8	93.3
Disagree	1.1	4.0	2.0	2.2
Don't know	15.8	7.0	6.1	2.2
No answer	16.8	3.4	1.2	2.2
Fluoride prevents tooth decay				
Agree	32.6	56.4	73.8	70.8
Disagree	15.8	11.7	7.5	15.7
Don't know	16.8	22.8	15.3	11.2
No answer	34.7	9.1	3.5	2.2

Table 7 Percentage of children who get oral health information from various sources

	3-5 yrs n=95	6-10 yrs n=298	11-13 yrs n=347	14-16 yrs n=89
Parents	46.3	41.6	28.8	13.5
Teachers	56.8	65.1	74.6	36.0
TV	10.5	16.4	17.9	23.6
Radio	3.2	5.0	8.1	10.1
Books	3.2	6.4	4.6	7.9

primary schools provide the effective setting for such oral health programs.

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