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Research Article

PREVALENCE OF DENTAL CARIES AND TREATMENT NEEDS OF 6-13 YEAR OLD SCHOOL CHILDREN OF EASTERN NEPAL

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ABSTRACT

Caries prevalence in the school children of various socio-economic status in the eastern region of Nepal of age group 6-13 years was determined. Aims: The study was carried out with the aim to identify and establish the prevalence of dental caries and treatment needs in children aged 6-13 year old. Methods and materials: The study was undertaken in the eastern region of Nepal with a sample population of 2,500 children in the age group of 6-13 years. Caries prevalence was recorded using DMFS/dmfs and treatment need index. WHO indices were used for recording caries and treatment needs. Results: The caries prevalence in the 6-9 years age group was found to be 76.35% whereas in age group of 10-13 years was 64.55%. In male to female ratio in relation to dental caries, prevalence was higher in males. High socio-economic group children suffered more from carious lesion as well as those residing in the urban areas. Conclusion: The present study concludes prevalence of dental caries is high in 6-9 year age group at age of 7 year as is compared to 10 year in 10-13 year age group. Children in high socio-economic status showed higher prevalence of dental caries. Upon investigating treatment needs among these children, they showed need of one surface restoration followed by two-surface restoration, crown, pulp therapy and extractions.

Keywords: Dental caries, Eastern Nepal, Prevalence, Treatment needs.

INTRODUCTION

Eastern developmental region of Nepal is one of the parts of the Federal Democratic Republic of Nepal out of five developmental regions. Caries data on children at 12 years of age in the 1980's revealed that the level of dental caries is low, ranging from a mean DMFT of 0.2 to 1.1. A series of cross sectional surveys conducted on school children by the United Mission to Nepal Oral Health Program between the period of 1999 and 2000 in Central and Western Nepal shows that the caries prevalence for 5-6- and 12-13 year-olds was 67% and 41%.² Scanty information is available concerning caries prevalence on a national & district level in the eastern development region. This prompted us to undertake present study with an aim of establishing the data for caries prevalence & knowledge, attitude, practice of oral health habits in children of eastern development region.

MATERIALS AND METHODS

Eastern developmental Region of Nepal comprises of sixteen districts¹. The distribution of the study population significantly

varies each other. Out of sixteen districts, seven districts are in the foothills of the Himalayas and it covers >80% of the study population. Out of seven districts, four districts of Terai were selected according to random selection and out of nine hill districts; one district was selected from hill. Therefore for this method population proportionate stratified simple random sampling was used.

The study population was selected from government schools and private (boarding) schools from five districts of Eastern Development Region. One government school and one private school were selected at random from each district. Children belonging to the low socio-economic groups were those studying in the government schools and the high socio-economic group comprised of children studying in private schools.

Prior to the starting of main study, a pilot study was conducted for 200 students from the sub-metropolitan city of Biratnagar in the eastern development region of Nepal. The study was conducted in two schools, one being government & other being private school. The result of the pilot study indicated the prevalence of caries to be high.

The study was undertaken in the eastern region of Nepal. The sample population consisted of 2500 school children from high and low socio-economic status of the age group 6-13 yrs. The sample size was calculated using the formula $N = z^2 P * q / l^2$
Where,

N =sample size, Z = tabulated value, P = prevalence of disease in Eastern Developmental Region according to previous study (25%= 0.25)

Therefore $Q = 1 - p = 0.75$

L^2 = estimating error.

Before the commencement of the study, an informed consent from the principal of the school as well as the parents of the students participating in the study was obtained. Caries prevalence & treatment needs was recorded using DMFS/dmfs & treatment needs index. All examinations were carried out in the school courtyard or in a well-lit classroom. Recording of data was done by a trained person who assisted throughout the study. Prior to the examination for plaque and dental caries, a questionnaire was filled by the subject to find out the personal data and oral hygiene habits. The children were examined by a single examiner who was trained to record the WHO oral health assessment form to avoid inter-examiner variations. WHO indices were used for recording caries and treatment needs.

RESULTS

A study of Prevalence of caries and treatment needs of children aged 6-13 yrs was conducted in the Eastern Developmental Region of Nepal. The caries prevalence was calculated using DMFT/dmft and treatment needs index. The data was analyzed using the statistical package SPSS version 11.5.

Table 1 depicts the findings describing the dental caries experience of the 2,500 school children examined in the age group of 6-13 years in eight specific age groups 6 (76.71%), 7 (86.78), 8 (74.01%), 9 (73.96), 10 (73.41), 11 (59.90%), 12 (67.64%) & 13 (58.72%) years of male (57.4% and 50.4% in 6-9 & 10-13 years respectively) and female (42.6% & 49.6%) of high (51.7%) and low (48.3%) socio-economic status.

Out of 2500 children examined, 1338 (53.5%) were males and 1162 (46.5%) were females. 332 (28.57%) females and 401 (29.97%) males did not have any type of carious lesions whereas 829 (71.34%) females and 937 (70.02%) males had one or other type of carious lesions. (Table 1)

Out of 2,500 children examined, 1,293 (51.72%) belonged to high socio-economic status and 1,207 (48.28%) belonged to low socio-economic status. Out of 1,293 high socio-economic children 391 (30.23%) and 342 children out of 1,207 from low socio-economic population had no carious lesion. 902 (69.76%) children from high socio-economic group and 865 (71.66%) low socio-economic children had more than one carious tooth. (Table 1)

In the 6-9 years age group 77.1% of children needed one surface restoration, 76.59% needed two surface restorations, 36.87% needed extraction, 26.49% needed pulp therapy and 33.6% needed crown whereas in 10-13 years age group 68.51% needed one surface restoration, 73.5% needed two surface restorations, 26.05% needed extraction. (Table 2)

DISCUSSION

Despite of quantum leap about the lifestyle across the globe regarding the general and oral health awareness, still dental caries is the disease which needs systematic preventive programs and its implications stringently across the globe and certainly in underprivileged and underdeveloped countries for which enquiry into the status of the disease is the vital part of the survey in the eastern region of Nepal. The present study, caries prevalence has been recorded from the age group of 6-13 years children. Initially we observed in all the age groups, and then a division was made among early mixed dentition (6-9 years) and late mixed dentition (10-13 years). Studies which have been conducted in Nepal, they have recorded prevalence of dental caries at 5-6 years for primary and 12-13 for permanent². This division may show variation among occurrence of carious lesion as child advanced in age. Yee and McDonald² observed caries prevalence to be 67% in 5-6 year old children and 41% in 12-13 years in the central and western Nepal. In the present study, the caries prevalence in the 6-9 years age group was 76.35%. At the age of 7 years caries prevalence was found to be highest i.e. 86.78% which is in concurrence with the findings of Dragheim et al.,³ who found the prevalence of dental caries at 7 year age to be 83.8%. This may be an indication of an upward trend in caries prevalence in developing country like Nepal due to pouring in of the western culture, maybe consumption of refined carbohydrates and poor level of oral hygiene practices. Goel et al⁴ observed a caries prevalence of 81.25% whereas Rao et al⁵ observed a caries prevalence of 75.3% in the same age group.

The prevalence of dental caries among the age group of 10-13 years in the present study is 64.55% which correlates with prevalence of Goel et al⁴ 59.60% in the 12-13 years. Chopra et al⁶ reported 61.88% in 11-13 years and Damle and Patel⁷ reported 83% in 12-16 years which is similar to the results of the current study. When male to female ratio in relation to age group of 6-9 and 10-13 years, prevalence of dental caries in the 6-9 years was found to be 72.64% females and 82.5% males had caries as compared to 58.23% females and 57.25% males in 10-13 years age group. Rao et al⁵ in 1999 in their study had found caries prevalence to be higher in males (77.4%) as compared to females (76.5%). Vacher, Aukland and Bjelkaroev⁸, and Gaikwad and Indurkar⁹ observed a higher caries experience in boys than in girls. In contrast to this study Cleaton-Jones et al¹⁰ found that white males had significantly lower DMFS than white females. In the 10-13 years age group no striking difference has been made in DMFT of males and females.

Treatment needs

By assessing the treatment needs for Dental disease, among 6-13 years the greatest need was for one surface restoration followed by two surface restorations, pulp restorations, extractions and crowns. Similar to this Mehajabean et al¹¹, and Dhar et al¹², found in their studies that one surface restoration was the highest treatment need followed by caries arresting care, two surface restorations, pit and fissure sealants, crowns, pulp therapy, extraction and space maintainer. In accordance with the present study, Dash et al¹³, reported that majority of

children needed one, two or three surface restorations followed by extraction and other treatment.

CONCLUSION

The prevalence of dental caries is high in age of 7 year of 6-9 year age group as compared to 10 year in 10-13 year age group. Children in high socio-economic status had higher prevalence of dental caries. The treatment needs revealed the following sequence, need of one surface restoration followed by two-surface restoration, crown, pulp therapy and extractions

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Table 1: Prevalence of Dental Caries according to Age, Sex and Socio-economic status

Age group	Sex		Socio-economic status		Dmft/ DMFT	
	Male	Female	High	Low	n	%
6-9 years	82.5%	72.6%	81.59%	69.73%	1108	76.35%
10-13 years	57.25%	58.23%	58.89%	55.11%	1392	64.55%

Table 2: Type of treatment Needed

Age	Treatment types				
	One surface	Two surface	Crown	Pulp therapy	Extraction
6-9	77.18%	76.59%	36.87%	47%	32.71%
10-13	68.51%	73.50%	26.05%	64.92%	32.27%

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