A Comparative Study of Dental Caries Status and Oral Health Practices Among Six Years Old Children of Private and Government Schools in Siliguri City, West Bengal

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Abstract: Oral health has a significant impact on physical, social and mental well-being of an individual. Very few studies have been conducted in relation to caries experience and oral hygiene practices among 6-years-old school children in Siliguri city. The purpose of this study was to compare the caries status and oral health practices among 6-years-old schoolchildren studying in private and government schools in Siliguri city, West Bengal. Five hundred and twelve (256 private and 256 government) 6-years-old schoolchildren were selected through multistage random sampling procedure. Clinical conditions recorded were caries, using dmft/dmfs and DMFT/DMFS index. The mean dmft/dmfs (3.44±3.07/9.22±10.35) and DMFT/DMFS (0.56±1.10/0.77±1.76) among government school children was higher than the private school children dmft/dmfs (2.75±2.79/6.72±8.32) and DMFT/DMFS (0.28±0.69/0.37±0.98) and the difference was found to be statistically significant. The survey also showed that, 87.1% of the government and 92.6% of the private schoolchildren brushed their teeth regularly (twice a day) with tooth brush. The information obtained from the study can be used for oral health program planning for children. In addition, to preventing oral disease and promoting oral health, the local health authorities should give priority to school-based community-oriented oral health care services. Parents and school teacher's involvement should be considered in oral health program for children. Local health authorities should give priority to school-based community-oriented oral health care services.

Keywords: school children, dental caries, six-years-old, government schools, private schools, oral health

INTRODUCTION

Health is multifactorial, influenced by factors like genetics, lifestyle, environment, socioeconomic status (SES) and much others (1). Oral health is an integral part of the general health, rather oral cavity can rightly be called gateway of the body. Poor oral health has a detrimental effect on children's performance in school and their success in later life. Children who suffer from poor oral health are more likely to have restricted activity days, including missing school (2).

Dental caries is a disease in which cultural and hygienic habits are decisive, so prevalence found in different habitats and different moments could be strongly related with these factors. On the other hand, determining the factors associated with the appearance of caries is of greater interest, given that these factors present high geographical and temporal stability (3).

The increase in the prevalence of dental caries has been attributed to factors such as high sugar consumption, a shift to a westernized diet, poor socioeconomic status and the rate of urbanization (4). Many industrialized countries have experienced a dramatic decline in dental caries which can be attributed to improved socio-economic conditions, changing lifestyles, self-care practices, use of fluorides, and effective use of preventive oral health services (5).

India, a developing country, faces many challenges in rendering oral health needs. Despite credible scientific advances and the fact that caries is preventable, the disease continues to be a major public health problem.

In India, dental caries has been consistently increasing both in prevalence and severity for last five decades. About 80% of children and 60% of adults suffer from dental caries (6).

Siliguri is a city in the Indian state of West Bengal which spans across the Darjeeling and Jalpaiguri districts. Information on studies of caries experience and oral health practices of 6 years old school children in Siliguri city is sparse. The purpose of this study was to compare the caries status and oral health practices among 6-years-old children studying in private and government schools in Siliguri city, West Bengal, India.

MATERIALS AND METHODS

The study was carried out in Siliguri city, West Bengal, India scheduled over a period of 3-months from September 2022 to November 2022. Six years old children, attending private and government schools in Siliguri city were chosen by the principle of representative sample regarding social, economic and cultural communities, in order to attain a realistic view of the condition of the oral health of the target group.

A list of all the schools, with the children aged 6 years, situated in Siliguri city was obtained from District Inspector of Schools and a map of Siliguri city was also obtained. In order to collect the representative sample, a multi stage sampling procedure was executed. At first stage, the city was divided into four zones- North, South, East and West. Later at second stage, four largest schools were selected randomly from each zone. At third stage, cluster of sixth standard students were selected from each of the selected schools. Subsequently, all the 512 (256 private and 256 government) 6 years old schoolchildren who were present in the school on the day of examination constituted the sample size for the present study.

Prior to the start of the study, informed consent was obtained from the parents of the selected 6 years old children in the schools. Only children whose parent gave their consent were included in the study. None of the children refused to participate. The calibration of the examiners was undertaken by means of a pilot study of 50 children during a one-week period. The method of examination and scoring was standardized in the Department of Public Health Dentistry, North Bengal Dental College and Hospital, until inter and intra- examiner reliability of 85 per cent was achieved. Before the dental examination, questionnaires were administered to evaluate the oral hygiene practices through the effects of regular brushing, dental visits etc. The structured questionnaires were translated into local language, pre-tested on 100 children of Siliguri city in order to assess the validity of the questionnaire. Only those children were examined who filled the questionnaire completely. Questionnaires were administered in the class rooms by the examiner and the questions were read aloud giving time for children to fill in the questionnaires. The participants were encouraged to approach the examiner whenever they needed clarification at any point. School staff was placed under an obligation not to enter the class rooms where the children filled the questionnaire, as children tend to answer the questionnaire in favor of socially acceptable behaviour. The children were also informed that their teachers would not look at the scripts and they would be processed away from the school. One class period (approx. 45 minutes) was provided to fill the questionnaire. Students were assured that the information they provided would remain confidential and thus were encouraged to be truthful in their responses. They were informed that their participation was completely voluntary and they could quit at any time. A reference number was given to each questionnaire.

Data were collected in the school premises by means of clinical examination. One calibrated researcher, assisted by a recorder examined all the 512 children under artificial light using plane mouth mirrors. Clinical conditions recorded were caries, using dmft / dmfs and DMFT / DMFS index (7). The names of children who needed dental treatment were given to the class teacher who informed the parents. All children who needed dental treatment were referred to the North Bengal Dental College and Hospital, for treatment. Oral health education and correct tooth brushing technique was given to all the children examined. Processing and analysis of data were carried out by means of the statistical package for the social sciences (SPSS – PC version 18.0, statistical Analysis Software) t-tests were used for the comparison of means. The level of significance was set at $p<0.05$.

RESULTS

All the 512, 6-years-old children from the private and government schools were examined. The dental caries experience of the children according to the schools they attended is shown in Table 1 and Figure 1. The mean dmft in private school children was found to be 2.75±2.79 while in government school children it was 3.44±3.07. It is evident from the table and graph that, mean dmft among government school children was higher than the private school children, and the difference was statistically significant (p=0.0075).

Table 1: Dental caries experience of 6 years old school children according to school type

Variables	Private school		Government school		t-value	p-value
	Mean	Std.Dev.	Mean	Std.Dev.		
I. Teeth wise						
Dt	2.48	2.42	3.15	2.66	-2.9744	0.0031*
mt	0.23	0.65	0.28	0.93	-0.7732	0.4398
Ft	0.04	0.35	0.01	0.14	1.0030	0.3164
dmft	2.75	2.79	3.44	3.07	-2.6826	0.0075*
II. Surface wise						
Ds	5.53	6.22	7.82	8.04	-3.6094	0.0003*
ms	1.10	3.20	1.38	4.62	-0.7787	0.4365
Fs	0.09	0.89	0.02	0.28	1.1367	0.2562
dmfs	6.72	8.32	9.22	10.35	-2.9318	0.0035*
III. Teeth wise						
DT	0.27	0.69	0.56	1.10	-3.6624	0.0003*
MT	0.00	0.00	0.00	0.00	--	--
FT	0.01	0.19	0.00	0.00	1.0000	0.3178
DMFT	0.28	0.69	0.56	1.10	-3.6624	0.0003*
IV. Surface wise						
DS	0.36	0.98	0.77	1.76	-3.2616	0.0012*
MS	0.00	0.00	0.00	0.00	--	--
FS	0.01	0.19	0.00	0.00	1.0000	0.3178
DMFS	0.37	0.98	0.77	1.76	-3.2616	0.0012*

*p<0.05

Figure A: - Dental caries experience of 6 years old school children, according to school type

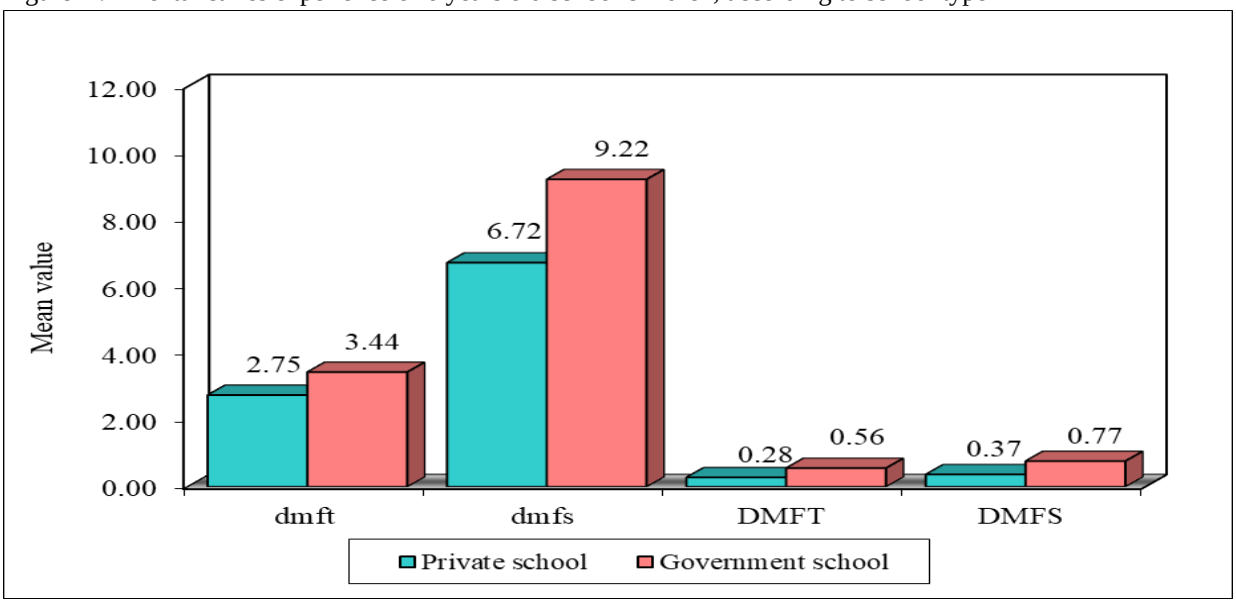

Table 2: Percentage distributions of 6 years old school children, according to various oral health practices in relation to school type and gender

Factors	Private school	%	Govt. School	%	Boys	%	Girls	%	Total
I. Frequency of brushing									
Once a day	2	66.7	1	33.3	3	100	0	0.0	3
Twice a day	237	51.5	223	48.5	259	56.3	201	43.7	460
Weekly or occasionally	17	34.7	32	65.3	30	61.2	19	38.8	49
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	0
II. Method of cleaning									
Tooth brush	245	50.3	242	49.7	278	57.1	209	42.9	487
Finger	11	44.0	14	56.0	14	56.0	11	44.0	25
Others	0	0.0	0	0.0	0	0.0	0	0.0	0
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	0
III. Use of materials to clean teeth									
Tooth paste	236	50.0	236	50.0	268	56.8	204	43.2	472
Tooth powder	20	50.0	20	50.0	24	60.0	16	40.0	40
Others	0	0.0	0	0.0	0	0.0	0	0.0	0
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	0
IV. Dental visits									
Never been	222	48.5	236	51.5	262	57.2	196	42.8	458
Had been to dentist 1-2 times in last 12 months	30	65.2	16	34.8	23	50.0	23	50.0	46
Had been to dentist >2 times in last 12 months	4	50.0	4	50.0	7	87.5	1	12.5	8
Don't remember	0	0.0	0	0.0	0	0.0	0	0.0	0
Total	256	50.0	256	50.0	292	57.0	220	43.0	512

DISCUSSION

The present study provides information on a comparative evaluation of dental caries experience and oral health practices in a representative sample (n = 512) of 6 years old private and government school children from Siliguri city, West Bengal, India.

School going children were targeted because of the ease of availability. Moreover, various focal points were chosen for the study in order to collect data from the heterogeneous city population, particularly with respect to private and government schools of the city. In Siliguri city, schools are classified as either private or government depending on the source of their funding. Government schools are funded by the government and tuition fees are subsidized while private schools are funded by individual and high tuition fees are charged. School children of first standard had been selected for the present study considering that the children of the first grade would be 6 or 7 years of age. However, the WHO recommended index ages are 5 and 12, although it has been suggested by WHO that ages 6 or 7 can be used in countries like India where school entry is late. The reason for recommending 5 years is that it is the age of interest in relation to caries in the primary dentition which may exhibit changes over a shorter time span and it is the age when children begin primary school.

The caries status of primary teeth was higher for 6 years old school children studying in government schools than children studying in private schools and this statistically significant difference in caries experience as shown in [Table 1] and [Figure A] may partly be explained by differences in dental care habits, social norms and dental attitudes in harmony with the previous studies (8,9,10,11,12,13).

Substantial proportions of private schoolchildren of Siliguri city performed regular oral hygiene; in particular oral hygiene practices were infrequent in government school children as shown in [Table 2]. This variation in oral hygiene practices according to school type has been observed in many of the previous

studies (14,15,16) that can be ascribed to the cultural differences between the private and government school children. The high decayed components for 6 years old government school children indicate the need for dental care and inadequate availability of dental services.

CONCLUSION

As parents and schoolteachers are important informants in oral health, their involvement should be considered in oral health education programme for children. The school may serve an effective platform for promotion of oral health in relation to children as well as families. In addition, to preventing oral disease and promoting oral health the local health authorities should give priority to school-based community-oriented oral health care services.

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