

ORAL CLEANLINESS OF SCHOOL CHILDREN OF GHAZI TEHSIL, DISTRICT HARIPUR

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ABSTRACT

This study was done from 07-01-2008 to 28-02-2008 to compare the oral hygiene status and level of cleanliness of 11-15 year old children of the government and private schools at the Ghazi Tehsil, District Haripur of North Western Frontier Province of Pakistan. The data were recorded on a Proforma that included child's age, sex, school of attendance, Debris Index (DI) score, Calculus Index (CI) score, Simplified Oral Hygiene Index (OHI-S) score and the Level of Cleanliness (LOC). DI score and CI score were calculated and combined to obtain OHI-S score for each child. Based on the OHI-S, the LOC was categorized as Good, Fair or Poor. There were 1019, 11 to 15 year (mean age 13.3 years $SD \pm 1.41$) old children, among them 546 (53.6%) were boys and 473 (46.4%) girls. The mean OHI-S for boys was 2.71 and for girls was 2.65 and this was statistically significant ($P < 0.005$). Majority (75.3%) of the children had Fair LOC, 193 (18.9%) of the children had Poor LOC while only fifty nine (5.8 %) of the children had Good LOC. The LOC of children of both the government and private schools in the Ghazi Tehsil was considered as Fair.

Key words: Oral Hygiene Index, Level of cleanliness, NWFP, Pakistan, School children.

INTRODUCTION

Oral health and hygiene is an essential part of general health and quality of life as it contributes to the ability to eat, speak and socialize.¹ Caries and inflammatory periodontal disease are the most prevalent oral diseases, caused by the activity of dental plaque.² Dental plaque is a heterogeneous microbial community found on the tooth surfaces embedded in a matrix of polymers of bacterial and salivary origin. Plaque, if not properly removed, becomes calcified and is termed calculus or tartar.^{2,3} Removal of plaque is essential to maintain good oral hygiene, which can be easily achieved by using toothbrush and toothpaste.^{2,4}

There has been a marked improvement in the oral health of children in the last 20-30 years, nevertheless children hold the highest dental caries burden in the developing countries.⁵ Documentation of the oral hygiene status of young children plays a significant role in the development of oral health policies, strategic

plans, monitoring and surveillance systems for oral health. The simplified oral hygiene index (OHI-S) has been extensively used to assess the level of oral cleanliness in epidemiological studies as it is easy to use due to its objective criteria, rapid execution of dental inspection and a high level of reproducibility with minimum training requirements.⁶ Due to the lack of data on oral health issues in Pakistan there is a need to conduct more school based or community based surveys in this regard.^{7,8}

Therefore, the aim of this study was to compare the levels of cleanliness as a measure of oral hygiene status of 11-15 year old children of government and private schools in the Ghazi Tehsil, District Haripur of the North Western Frontier Province of Pakistan.

MATERIALS AND METHODS

This cross-sectional survey was conducted from 07-01-2008 to 28-02-2008 on the 11-15 years old school children of both the private and government schools at

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Ghazi Tehsil of District Haripur. The study population was selected from all the government and private schools in Tehsil Ghazi by simple random sampling technique. The school children in each of the age group were then selected at random by lottery system.

All children were examined by two qualified dental surgeons after obtaining prior informed verbal consent from the principle/headmaster of the schools. Children were examined on a surprise-visit to the schools to avoid any pre-emptive, over-efficient tooth brushing, leading to documentation of invalid data. Dental examination mirrors, explorers and a doctor's-pen-light were used for intra-oral examination. All instruments were brought back to the dental clinic, washed and sterilized in an autoclave. The data was recorded on a Performa that included child's age, sex, school of attendance, debris index (DI) score, calculus index (CI) score, simplified oral hygiene index (OHI-S) score and the level of cleanliness (LOC). DI and CI scores were estimated by running an explorer along the tooth surfaces. DI score and CI score were calculated and combined to obtain OHI-S score for each child. Based on the OHI-S, the LOC was categorized as follows: A score 0.0 to 1.2 was considered as Good. A score 1.3 to 3.0 was considered as fair. A score 3.1 to 6.0 was considered as Poor. Data were coded, entered

and analyzed on SPSS version 10.0. The mean OHI-S scores were compared and evaluated using the independent sample t-test for independent samples with the level of statistical significance set at 0.05.

RESULTS

Eight private and fifteen government schools in Ghazi Tehsil were surveyed. There were 1019, 11 to 15 year old (mean 13.3 SD $\pm$ 1.41) children, 793 (77.8%) at the fifteen government schools and 226 (22.2%) at eight private schools with 546 (53.6%) boys and 473 (46.4%) girls. The DI ranged from 0.50-3.00 (mean 0.97 SD $\pm$ 0.48). The CI score ranged from 0.00-2.10 (mean 0.97 SD $\pm$ 0.41). The OHI-S score ranged from 0.50-4.8 (mean of 2.68 SD $\pm$ 0.83). The mean OHI-S for boys was 2.71 and for girls was 2.65 and this was statistically significant ($P < 0.005$) [Table 1]. The trend of OHI-S varied mildly with age of the children, where the youngest had the highest OHI-S. This trend is summarized in Table 2. Majority (75.3%) of the children had Fair LOC, 193 (18.9%) of the children had Poor LOC while only fifty nine (5.8 %) of the children had Good LOC [Table 3]. The mean LOC of children of the government and private schools in the Ghazi Tehsil was 2.13 and 2.12 respectively. This was not statistically significant and both were considered as 'Fair'.

TABLE 1: MEANS OF DI, CI, OHI-S, LOC ACCORDING TO GENDER

Gender	Debris index (DI) Mean $\pm$ SD	Calculus index (CI) Mean $\pm$ SD	OHI-S Mean $\pm$ SD	Level of cleanliness	Total n=1019	
					No	Percent
Boys	1.78 $\pm$ 0.48	0.98 $\pm$ 0.41	2.71 $\pm$ 0.85	Fair	546	46.4
Girls	1.75 $\pm$ 0.48	0.95 $\pm$ 0.40	2.65 $\pm$ 0.82	Fair	473	53.6

TABLE 2: THE MEANS OF DI, CI, OHI-S, LOC ACCORDING TO AGE OF CHILD

Gender	Debris index (DI) Mean $\pm$ SD	Calculus index (CI) Mean $\pm$ SD	OHI-S Mean $\pm$ SD	Level of cleanliness	Total n=1019	
					No	Percent
11	1.82 $\pm$ 0.52	1.0 $\pm$ 0.45	2.82 $\pm$ 0.94	Fair	145	14.2
12	1.75 $\pm$ 0.50	0.96 $\pm$ 0.44	2.66 $\pm$ 0.86	Fair	164	16.1
13	1.76 $\pm$ 0.41	0.98 $\pm$ 0.38	2.69 $\pm$ 0.73	Fair	155	15.2
14	1.73 $\pm$ 0.48	0.94 $\pm$ 0.39	2.62 $\pm$ 0.82	Fair	253	24.8
15	1.77 $\pm$ 0.48	0.97 $\pm$ 0.40	2.69 $\pm$ 0.83	Fair	302	29.6

TABLE 3: LEVEL OF CLEANLINESS OF CHILDREN

S/No	Level Of Cleanliness (LOC)	Frequency n=1019	Percentage %
1	GOOD	59	5.8%
2	FAIR	767	75.3%
3	POOR	193	18.9%

DISCUSSION

The measurement of dental plaque is frequently used as a marker of overall oral health.⁹ Greene & Vermillion in 1960 developed the Oral Hygiene index as a method of classifying oral hygiene status.¹⁰ Later in 1964 Greene & Vermillion developed the Simplified Oral Hygiene Index (OHI-S) to reduce the number of decisions to be made as well as the time required for inspection.¹¹ Both the OHI and OHI-S have been used for more than 30 years in studies worldwide.¹²

Rashed and Taha in 1995 assessed the oral hygiene status of 1600 Egyptian school children from primary and preparatory schools aged from 9 to less than 13 years using the simplified oral hygiene index (OHI-S). They found that the mean DI score increased with age with the exception of age group 12 - 13 years. They did not find any significant difference in the mean DI scores between high and low socioeconomic levels. The mean DI scores were higher in boys than in girls. Calculus was scarce among 9 to 13-years-old children.¹³

We observed the DI score to have decreased from 11 years age to 14 years [Table no.2]. The calculus index score in our study ranged from 0.0 - 2.16 (mean 0.97 SD±0.41) with only 22(2.2%) of the children having a CI score of 0.0.

Yee and David in 2001 evaluated the oral cleanliness of private and government school children in the District of Sunsari, Nepal. A total of 324 males and 276 females in age group 12-13 years and 362 males and 238 females in age group 15-years were examined in 15 private and 15 government schools. They found the mean debris, calculus and OHI-S was higher in school children of government schools than in private schools. Males and females of 12-13-year-olds had a comparable mean OHI-S (1.24 and 1.17). The mean OHI-S was

higher in males (1.29) compared to females (1.11) in the 15-year-old age group. Children of government schools had the oral hygiene status rated as 'fair' compared to 'good' for children attending private schools. They attributed this difference to a higher standard of education and higher standard of living of children in private schools, respectively. They did not find any child in both private and government school of district Sunsari to have had poor oral hygiene.⁶

Unlike the school children of Nepal, 193 (18.9%) of the Pakistani children (152 in government and 41 in private school) of Ghazi Tehsil had 'Poor' level of cleanliness.

We did not find any statistically significant difference between the oral hygiene status of children of government and private schools of Ghazi Tehsil. The overall LOC of children of both government and private schools was 'Fair'. The mean OHI-S for boys was 2.71 and for girls was 2.65 and this was statistically significant ($P<0.05$) as shown in [Table 2].

Majority of the population of Pakistan reside in the rural areas where oral health care is practically absent. The mainstream of health professionals are located in the urban areas, resulting in a very low health professional to population ratio in rural areas. Most of the Rural Health Centers in Pakistan have no dental cover and many lack proper equipment while the few available facilities of oral health are often out of reach of the rural population.⁷

The focus of this study was the oral hygiene levels of the children of the private and public sector schools of Ghazi Tehsil which is situated in the North West Frontier Province of Pakistan and has a total population of 6,28,405 (with a female : male ratio of 1:1.01)¹⁴. There are only three dental surgeons in the entire Tehsil of Ghazi, with one at public sector (Tehsil Headquarter Hospital Ghazi) and only two qualified dental surgeons working in the private sector. To the best of our knowledge, no oral health survey or any related education program has ever been conducted in Ghazi. The consequences of negligence in this regard were evident when we observed only 5.8% of school children with Good oral hygiene.

School based oral health educational programs have a great impact on the oral health status of the

children, this has been proved by a good number of school based oral health education programs, conducted regularly world over.^{15,16,17,18,19} Unfortunately, the activity of school-based oral health education programs is not a routine in Pakistan. Most of the few are focused only on urban schools.²⁰ It will be reassuring and effective, if the school teachers and electronic media were to be utilized in imparting oral health education to children.²¹

In this study it was observed that the type of school (government or private) attended by the children had little effect on the level of their oral hygiene in rural areas. In order to improve the oral hygiene of these children, there is a need to shift the focus of oral health surveys and school / community based oral health education programs from urban to the rural areas of Pakistan which are in fact the most populous yet have largely been neglected and ignored.

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