ORIGINAL ARTICLE

FREQUENCY OF DENTAL CARIES AMONG SECONDARY SCHOOL CHILDREN OF NORTHWEST PAKISTAN AND THEIR TEACHERS' ORAL HEALTH KNOWLEDGE, ATTITUDE AND PRACTICES

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ASTRACT

Years of conflict in northwest Pakistan combined with earthquakes and floods had very harmful effect on the oral health of the children. The aim of this study was to evaluate the frequency of dental caries in children living in northwest region of Pakistan and the understanding of their teachers' towards dental care. Twelve schools with 1800 children aged between 10-16 years were randomly sampled. Children were examined and emphasis was given to their decayed, missed and filled teeth. One hundred and fifty teachers from 12 schools completed a validated questionnaire assessing their oral health knowledge. Frequency of DMFT, MDT and MMT were 1.75, 1.5 and 0.17 respectively. Among boys frequency of DMFT, MDT and MMT was (1.80, 1.50 and 0.10, p=0.05) .In girls it was (1.70, 1.4 and 0.25, p=0.05). However, in private and armed forces schools, the frequency of DMFT among girls was (1.80 and 1.83, p= 0.05) which was higher than boys (1.70 and 1.80, p=0.05). More than 95% of the teachers had reasonable amount of understanding of the concept of tooth decay. Around 71% of the teachers experienced some degree of sensitivity in their teeth and 86% of them had never been to a dentist for scaling. It was concluded that frequency was higher in boys than girls.

Key Words: *Calamity hit areas, Northwest region of Pakistan, Frequency of dental conditions*

INTRODUCTION

Years of conflict in the northwest region of Pakistan, combined with earthquakes and floods had produced harm to the oral health of general population and especially the children. Dental caries was the most prominent dental condition in children.[1] Tooth decay and the pain associated with it severely interfered with the daily activities of eating, sleeping, speaking, learning, playing, and going to school and work.[2] Various studies had been conducted on the incidence of caries in children in different parts of the world and almost every study showed high incidence of caries.[3-5]

School provides an effective place for promoting oral health because over 1 billion children and enrolled in schools globally.[6] Oral health massage can be reinforced throughout the school years, which is the most influential stage of children's lives, and during which lifelong beliefs, attitudes and skills are developed. Pakistan, a developing country, faces many challenges in oral health needs. The government is the major employer of dentists as well as a major provider of low cost oral health care for the population.

Oral health habits are formed early in life. The schoolteachers can play an important role in grooming healthy habits in their students.[7-8] In order to instill healthy preventive oral habits, the teachers themselves need to have a good knowledge and attitude towards oral health. There have been reports on the knowledge and attitudes of the intermediate and high school teachers towards prevention[9] but there are few published reports on dental caries prevalence and on the knowledge, attitude and practices of school teachers in Northwest areas of Pakistan.

This region of Pakistan is badly affected by the long standing conflicts and natural disasters in recent times that may have left negative psychological effects on oral hygiene practices.[10] Thus, this study was designed to assess the frequency of dental caries among school children and to determine oral hygiene habits and knowledge of school teachers.

MATERIALS AND METHODS

This study was carried out in two phases. In phase one, an oral examination of 1800 hundred school going children of age between 10-16 years were conducted to identify the presence of dental caries. In the sec-

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ond phase, a cross-sectional study using a validated, interviewer- administered questionnaire was carried out among the teachers in the same school from which children were selected for oral examination. A total of 12 schools were randomly selected for the study. Schools were divided into 3 major groups:

The three groups were further divided into two subgroups, Subgroup "A" girls school and Subgroup "B" boys school.

Before starting actual process, a pilot study was conducted among 30 students to over come any deficiencies in actual process. Students were recruited and examined for the presence of dental caries. The same procedure had been implemented which was designed for the actual study. The parameters including DMFT, MDT, MMT and MNT were assessed among the children selected for the pilot study.

The questionnaire used in the second phase of the study was also validated. The questionnaire was subjected to content validation which was done by distributing it to the senior dentists, educationalists and epidemiologists. The feedbacks were collected to improvise the questionnaire. The questionnaire was then piloted on the target population of school teachers. Twenty teachers from secondary schools in urban areas participated. A standardized validated form was used for documentation of history, socio-economic status, personal details, external and extra oral examinations, (DMFT) which were according to WHO manifesto.

A stratified random sampling was used in this study for selection of study sites. For the selection of children and teachers systematic random sampling was carried out where randomization was carried out by their school enrolment and staff numbers. The calculated sample size was 1750 using the formula $[z^2 * p(1-p)] / e^2$:

Where z = z-score , e = margin of error and p = standard of deviation

Sample size was based on estimated population of school going children in urban areas of the province.

The study team was divided into two groups and were named as Group A and B. Each group was further divided into 3 subgroups. Subgroup1 was assigned to take history and socio-demographics of the children using the standardized validated form. Subgroup 2 comprised of two members; where one had to examine the oral condition and other member recorded the information on missing and decayed teeth in form. Subgroup 3 members advised the students about oral hygiene and dental caries including advice on prevention and treatment of dental caries especially to those who required treatment. Before starting the study, lecture was delivered to the students in each school on oral hygiene and dental diseases where special emphasis were placed on dental caries.

Examiner checked soft & hard tissues but basic emphasis was on caries, missing & filled teeth. Gums were also examined for the presence of plaque & calculus as well as for gingivitis. Those who needed emergency treatment were asked to visit the nearest dental hospital. Tooth pastes, mouth washes & tooth brushes were given to those who maintained good oral hygiene as a token of appreciation for maintaining good hygiene and motivate other students to adopt good oral hygiene practices. Gloves and sterilized instruments were used for the clinical examination.

The school teachers were selected from the same school from where the children were recruited for oral examination. Study questionnaires were distributed among 150 school teachers from a total of 12 schools in urban areas of northwest province. Information on their oral hygiene practices, dental knowledge and attendance pattern to a dental service were assessed using ten different questions. The data on school teachers' knowledge and awareness was collected over a period of two weeks.

The participation in this study was purely on voluntarily basis and written or verbal consent was taken from the participants. The permission had been obtained from administration office of each school to conduct this study. The research was also approved by the research and ethics committee of University College of Medicine & Dentistry, The University of Lahore. The descriptive statistics were carried out using the Microsoft Excel. The frequency was evaluated using the frequency tables. The Mann-Whitney test was carried out to assess the difference between the study parameters.

RESULTS

The overall percentage prevalence of DMFT among the students was 1.75. The means decay teeth (MDT) were 1.5, mean missing teeth (MMT) were 0.17, and mean number of teeth were 25.5. Among the boys the overall percentage prevalence of DMFT, MDT and MMT in different schools were 1.80, 1.50 and 1.10 respectively. The percentage prevalence of DMFT, MDT and MMT among students in different girls schools were 1.70, 1.4 and 0.25 respectively. All the difference in parameters except for MMNT between boys and girls were statistically significant. The prevalence of DMFT, MDT, MMT and MNT are presented in Table1.

Overall the knowledge of teachers on oral hygiene practices was found to be satisfactory based on the correct responses. Majority of them (92%) believed that dental plaque is the cause of the tooth decay. More than half of the respondents (70%) had teeth which are sensitive to hot and cold. Majority of them (82.7%)

Group	Type of school	No. of school	No. of students participated
1	Armed Forces Funded Schools	4	600
2	Government Funded Schools	4	600
3	Private Funded Schools	4	600

TABLE 1: PREVALENCE OF DENTAL CARIES AMONG THE STUDY PARTICIPANTS (N=1800)

Variables	Boys students	Girls students	P value
Total samples	(n=900)	(n=900)	
%DMFT	1.80	1.70	p=0.001
MDT	1.50	1.40	p=0.001
MMT	0.10	0.25	p=0.001
MNT	25.5	25	p>0.05
Armed Forces Schools			
Total Sample	(n=300)	(n=300)	
%DMFT	1.80	1.83	p>0.05
MDT	1.50	1.72	p=0.001
MMT	0.20	0.35	p>0.05
MNT	27	20	p=0.001
Government School(n=600)			
Total Sample	(n=300)	(n=300)	
%DMFT	1.9	1.60	p=0.001
MDT	2.12	1.25	p=0.001
MMT	0.10	0.00	p>0.05
MNT	24	28	p=0.001
Private Schools(n=600)			
Total samples	(n=300)	(n=300)	
%DMFT	1.70	1.80	p=0.001
MDT	1.10	1.35	p=0.001
MMT	0.03	0.40	p=0.001
MNT	27.90	27	p>0.05

TABLE 2: THE RESPONSES OF TEACHERS TO QUESTIONS ASSESSING THEIR KNOWLEDGE N=150)

Questions	Yes n(%)	No n(%)
Does the dental plaque cause tooth decay?	138(92)	12(8)
Are your teeth sensitive to hot and cold?	106(70.7)	44(29.3)
Do u seek dental care regularly?	26(17.3)	124(82.7)
Have u ever got professional cleaning of your teeth done?	21(14)	129(86)
Have you ever done filling of your teeth?	51(34)	99(66)

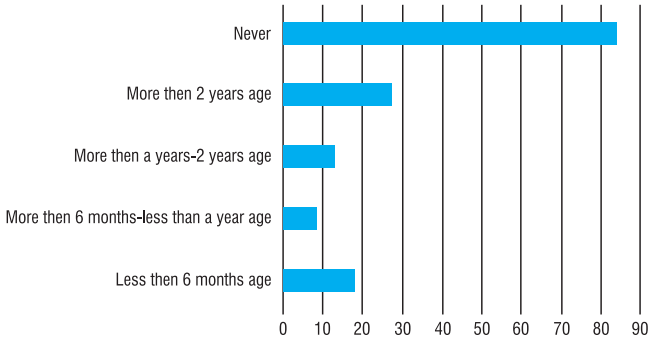

Fig 1: Frequency of visiting dentists (n=150)

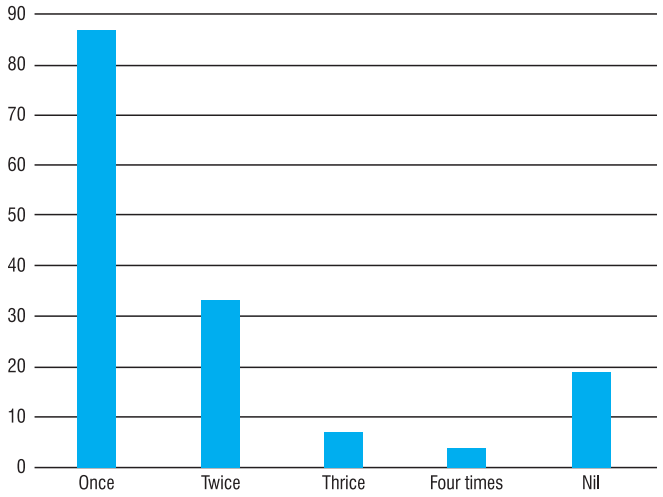

Fig 2: Frequency of cleaning the teeth (n=150)

did not visit the dentist on regular basis. Majority of them (58%) reported cleaning their teeth once a day. The response of study participants are presented in Table 2 and Figure 1 and 2.

DISCUSSION

Global research on dental caries is suggestive of the fact that dental caries is on the decline and is continuing to decline in populations [11,12]. Pakistan has always had a low caries index and the level of caries has been declining steadily, over the past few decades [13,14]. The results of this study confirm that dental caries is following the same trend i.e. it is on decline in northwest region of Pakistan.

The results of this study show that the DMFT score of participants was 1.75 which is less than the one reported in the national survey of oral health which reported the mean DMFT of 2.1 [15]. This finding is much lower than the International data where DMFT of 12-15 years old school children of UAE was 2.1,[16] but higher than in China, India and Nigeria where DMFT was 1.2, 1.1 and 1.0 respectively [17-19].

Among the study population caries was significantly more prevalent in males than in females, which suggest that dental caries show some gender variation. Similar finding has been reported in study conducted in Oregon.[20]

Results of this study confirm that teachers of selected schools had sufficient knowledge and positive attitude towards oral health. Evidence suggests that strong knowledge of oral health demonstrates better oral care practices (23). Similarly those with more positive attitude towards oral health are influenced by better knowledge in taking care of their teeth. Studies have showed that appropriate oral health education can help to cultivate healthy oral practice (24). The change to healthy attitude and practice can occur by providing adequate information, motivation and practice to the subjects (23).

The possible limitation of the study is use of the DMFT index instead of SIC and other Indices. However since DMFT has been widely used globally, using the DMFT makes comparison with other studies easier. One of the strengths of the study is the size of sample, which involved multiple schools and examined a sufficient number of school children in the region. Also all the examiners were well trained and calibrated before the study in order to enhance the precision of results and to reduce bias.

In conclusion the present study has provided important and useful baseline data for future comparisons of caries status of children in the northwest Pakistan. This study indicates a very high percentage of untreated caries which requires immediate attention. Water fluoridation or affordable fluoride tooth pastes have been proven in significantly reducing dental caries in previous studies and thus should be recommended in school children of northwest region for further reduction in caries. The teachers' knowledge regarding oral health in this study was satisfactory and their attitude towards oral health was positive. Furthermore, the caries prevalence and severity information would assist in the determination of treatment needs and preventive efforts required in this population. It is proposed that a school dental service may be initiated in the northwest region of Pakistan for accurate information on caries incidence.

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1 Muhammad Umair Dastgir Bhatti:	Review & Formatting of the article as whole, Data analysis, Materials & Methods, Results write up.
2 Humraz Malik:	Introduction, Discussion writing, Data Collection & Referencing.