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Original Article

Oral Health Status of Elementary School Aged Children in Rawalpindi, Islamabad, Pakistan

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ABSTRACT

Dental caries among Pakistani's school children continue to increase. To identify treatment needs, current epidemiologic data are needed. Such statistics are currently not available for elementary school children. **Objectives:** To determine the oral status of school children using Decayed, Missed, Filled, Teeth index. To identify treatment need by using Community Periodontal Index of Treatment Needs index. **Methods:** An analytical cross-sectional study was performed on 385 elementary school children aged between 13 to 17 years. A simple random sampling method was performed. The participants were both from government and private schools of Rawalpindi, Islamabad, Pakistan. Data were collected by modified WHO questionnaire. Oral examinations were performed in accordance to WHO guidelines. After taking permission from school, informed consent from parents, and assent from students, oral examinations were done by undergraduate and DMFT and CPITN index were assessed. **Results:** Mean DMFT and CPITN score among school children came 1.17±2.182 and 1.04±0.910 respectively. More than a one-third of the elementary school students needed high level dental care. **Conclusions:** Oral health status of elementary school aged children is relatively unsatisfactory. There is a need to introduce dental camps and oral hygiene awareness programs in educational settings.

INTRODUCTION

Pakistan is 5th most populous country of world [1]. There are 23 major cities having population of 2 million or above. The rural areas have 400 villages with population of about six thousand or above. There are about 37 million school aged children (5-16years old) out of which total 25 million are enrolled in schools [2]. Oral health is reflection of general wellbeing of human beings. WHO define oral health as Oral health is a key indicator of overall health, well-being and quality of life. It encompasses a range of diseases and conditions that include dental caries, periodontal (gum) disease, tooth loss, oral cancer, oro-dental trauma, noma and birth defects such as cleft lip and palate [3]. The seriousness of disease rates that dental diseases influence 3.5 billion people in the world and more than 530 million children experience from caries of primary teeth and 2 billion people hurt from caries of permanent teeth [3].Pakistan is a developing country and burden of oral disease among students is highest, 56% of male students

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and 44% of their female are attending schools in Pakistan [4]. The burden of dental caries among primary teeth of elementary class aged children in Pakistan was reported as 44.7% [5]. Dental caries has not been removed in children although it has been preferred under consideration in some countries. More than 60-90 % of elementary aged children have dental caries in modernized countries [6]. The WHO Path Finder Survey in 2003 revealed that the burden of oral disease is low in the country but the adversity of the disease keeps on accelerating [2]. The DMFT score of 12-year-olds children increases from 1.59 to 2.26 within 3 years. An alarming finding of all previous surveys has been that above 90% of all teeth affected by caries are untreated. Only 28% of 12-year-olds in Pakistan had satisfactory oral health but 21% of these children required emergency scaling. This proportion will increase to 29% in 3 years [7]. Schools provide a good atmosphere for the student, by giving oral awareness programs [8]. And oral health education must be an important part of schooling academic syllabus. We have selected knowledge, attitude and behavior for oral hygiene practices and CPITN and DMFT index for oral health status, that was part of Khan, et, al 2004 research [7]. Despite the public health problems there has been little epidemiologic research in the data of oral health in elementary school aged adults of Pakistan.

METHODS

This Analytical cross-sectional study was conducted in both government and private schools of Rawalpindi, Islamabad region, Pakistan. The government and private schools were point out and required sample was fulfilled by simple random sampling. Sample size determination was done with WHO calculator since no data is available, we took prevalence as 50%. The Final sample size was 385. All participants of the study were given detailed study information, aims, objectives, and explanations and all were asked to sign informed consent before start of study. Inclusion Criteria includes participants of elementary classes having permanent dentition completed with no deciduous tooth present and who gave informed consent. Exclusion Criteria include participants with previous history of, trauma, tooth loss due to trauma, family dental history, psychological history, and previous orthodontics treatment. The study was reviewed by Ethical Committee of CMH Rawalpindi, Pakistan and granted ethical clearance. Also, permissions were taken from students, parents and school administration. For data collection tool a modified WHO questionnaire was used for assessing the knowledge attitude, behaviors of participants. The questionnaire consists of 17 variables, 2 were related to attitude of participants, tooth cleaning is a part of general body cleanliness, is it easy for you to clean your tooth before going to bed. 8 were related to Knowledge, number of milk and permanent teeth, age 1st molar erupts, most important mineral in tooth paste, cause and 1st sign of gum diseases, cause and prevent measures of tooth decay, time for brushing. Last 7 variables were related to behavior, time and frequency of brushing, use of toothbrush and toothpaste during brushing, use of saunsapari, meetha pan, use of tobacco(smoking), dental visits every 6 months, use of toothpick or dental floss, pattern of tooth brushing that was evaluated by direct examination. Study participants were interviewed, variables were assessed as, point 1 for correct answer, and 0 for wrong. Variables marks were added for individual group. CPITN or Community Periodontal Index for Treatment Needs measuring the presence or absence of gingival bleeding on probing, supra or subgingival calculus and periodontal pockets by using a 0.5 mm ball tip WHO probe. CPITN may be used as a general indicator of bleeding and pocket depth [9]. CPITN index were marked (0 for Healthy, 1 for Bleeding Gums, 2 for Calculus, and 3 for Pocketing). DMFT is the sum of the number of decayed, missing due to caries, and filled teeth in the permanent teeth. DMFT index, values were distributed as, score 0 means healthy or no caries, score 1 explain mild caries and DMFT values 1 to 7, score 2 moderate caries experience and DMFT value 8 to 14, score 3 severe caries and DMFT value 15 to 21 and score 4 very severe caries level of respondents and DMFT value 22 to 28. For data collection procedure a modified questionnaire was used and trained dentists interviewed the participants and their responses were reported and entered in SPSS. For oral examination fresh dentist were trained to record findings on oral examination. WHO probe community Periodontal Index probe and Instruments were used for periodontal status that were double sterilized before and after procedure, oral examination was done under daylight and visual tactile sensation and patient was seated on school chair. A pilot study was conducted earlier on 30 participants to check validity and reliability of questionnaire. Kappa statistics was used and found to be 0.84. For statistical analysis SPSS version 22.0 was used descriptive analysis was done, Mean and Percentage were calculated DMFT values of 0.0-1.1 is very low, 1.2-2.6 low, 2.7-4.4 moderate, 4.5-6.5 high, >6.6 very high.

RESULTS

All the 385 participants successfully completed the questionnaires. This study included 385 participants out of which 49.1% were Male and 50.9% were female. Gender distribution can be seen in Table 1.

Table 1: Gender distribution of respondents

Variables	Percentage
Male	49.1%

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Female	50.9%
Total	100%

Figure 1 explains, 1st group of 13 years of age had 154 (40%) respondents, 2nd group of 14 years of age had 166 (43.1%) respondents. 3rd group was of 15 years of age had 50 (13%) participants, 4th group was of 16 years of age had 9 (2.3%) and last was 17 years of age had 6 (1.6%) of respondents.

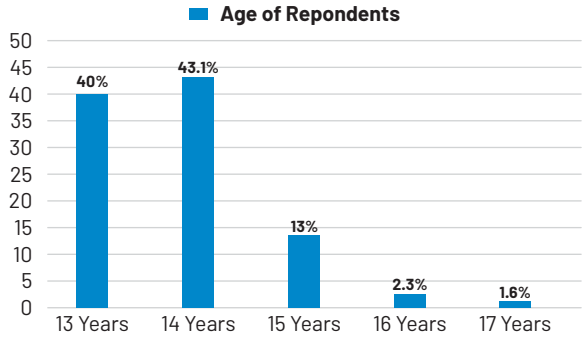

Figure 1: Age distribution of respondents

Out of total 168 individuals (43.6%) were from class 7th, and 217 (56.4%) participants were from class 8th. For attitude two variables and cumulative score 0 indicated poor attitude, score 1 satisfactory attitude, score 2 good attitudes. None of them had poor attitude, 17 (4.4%) had satisfactory attitude and maximum students 368 (95.6%) had good attitude. Similar pattern was adopted for knowledge and oral health behavior with 8 variables each score 0 indicated very poor, score 1 poor, score 2 below satisfactory, score 3 satisfactory, and score 4 above satisfactory, score 5 and 6 good and score 7 and 8 indicated very good knowledge, none of them had very poor knowledge, 53 (13.8%) had poor knowledge, 44 (11.4%) had below satisfactory knowledge, 61 (15.8%) had satisfactory knowledge, 59 (15.3%) had above satisfactory knowledge, 124 (32.2%) had good knowledge, and 44(11.4%) had very good knowledge. Similarly for oral health behavior, 12 (3.1%) had below satisfactory behavior, 59(15.3%) had satisfactory behavior, 168 (43.6%) had above satisfactory behavior, 138(35.9%) had good behavior and 8 (2.1%) had very good behavior. CPITN and DMFT index was used for evaluation of oral health status.Table 2 explains results as, 128 (33.2%) were Healthy, 147 (38.2%) had Bleeding Gums, 82 (21.3%) had Calculus, 28 (7.3%) had Pocketing, more than half of the students had poor oral health status.

Table 2: CPITN Index for respondents

Code	CPITN index	Frequency (%)
0	Healthy	128 (33.2%)
1	Bleeding Gums	147 (38.2%)
2	Calculus	82 (21.3%)
3	Pocketing	28 (7.3%)
	Total	385 (100%)

Table 3 explain results as 230 (59.7%) were healthy, 127 (33%) had score 1, 28 (7.3%) had score 2.

Table 3: DMFT index values of respondents

Code	DMFT index score	Frequency (%)
1	Healthy	230 (59.7%)
2	1 to 7	127 (33%)
3	8 to 14	28 (7.3%)
4	15 to 21	0 (0%)
5	22 to 28	0 (0%)
	Total	385 (100%)

Table 4 demonstrates, mean value for DMFT and CPITN index is 1.17±2.182 and 1.04±0.910 respectively. More than a one-third of the elementary school students needed high level dental care.

Table 4: Mean and standard deviation values for DMFT and CPITN indices

Index	Frequency	Mean ± SD
DMFT index	385	1.17±2.182
CPITN Index	385	1.04±0.910

DISCUSSION

This study was conducted on 385 elementary class school going students of Rawalpindi/ Islamabad. The overall burden of oral disease in school children of was 40.3%. These results were in accordance to study conducted in 6 to 12 years old school students of Karachi, Pakistan where findings of tooth decay were found to be more than a 1/3rd of sample but they were unable to determine oral health status of age between 13-17years [10]. Our study was not in accordance to a study carried out in 15 cities of Pakistan by Abdul Aleem to determine the 12 years old oral status where DMFT score was found to be 0.9 [11]. A similar study was carried out in India and Pakistan with to evaluate the oral health status between age 12-15 years school children of India and Pakistan, our results were also in accordance to this study where Pakistani Mean DMFT was found to be 1±1.57 [12]. But no clear data for oral health status of 13-17 years of age in Pakistan region was available. The high burden of caries index in this age is because of high intake of sugary product because 79.9% had no knowledge about positive association between them. Similar research was conducted to observe the positive relationship between sugar consumption and tooth decay and a high association was found between them [13]. A study carried in Addis Adaba also proved that A high rate of caries was discovered in students of high sweets intake [14]. Our results were also in accordance to a study carried out in India where mean DMFT score was found to be 1.34±1.832 for age group 14-15 years of age [15]. Our results were also in accordance to a research carried out in China to evaluate burden of oral diseases of same aged children where prevalence was found to be 41.15% [16]. Lack of oral health education, awareness program, dentist checkup every 6 months can

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be a main problem. Our results were not in accordance to a study carried out in Germany to evaluate oral health behaviors where 80.3% have dental checkups every 6 months but in our study only 9.1% visits every 6 months. The same study proved that 77.7% respondents had knowledge about proper brushing technique but in our study only 85.5% had no knowledge about that [17]. Our results were not in accordance to a similar study which was conducted in Nigeria to evaluate the impact of oral hygiene practices on in-school oral health-related quality of life where 60.3% clean their teeth twice but in our case only 12.5% clean their teeth twice [18]. Our results were not in accordance to a study carried out in Saudi Arabia where 33.1% use dental floss when something stuck in their teeth but in our case 1% use dental floss [19]. High CPITN index might be due to poor oral hygiene and practices, less dental services, lack of oral health knowledge. Since school children are at risk for dental illnesses, including dental caries and gingival disease, oral health education and promotion is seen as a priority [20]. Our results were not related to a study carried out in Palestine where DMFT score at age 16 was found to be 1.7 [21]. Intensive Dental health education programs must be introduced in school for good oral hygiene [22]. Our results were also in accordance to a study carried out in Uganda where poor oral hygiene and high plaque prevalence in school children was related to lack of oral hygiene practices [23]. Our results were also related to research carried out in Portugal where 52.9% prevalence was seen in school children [24]. Our results were also in accordance to a research carried out in suburban Nigeria where oral health status of school children ages 13-16 years was poor and report poor school performance [25]. More than 1/3rd of elementary school aged children required emergency level of dental treatment.

CONCLUSIONS

The study population was young school children but they had good attitude towards cleaning tooth and oral hygiene. But unsatisfactory knowledge and behavior concerning periodontal health among young Pakistani school students living in Rawalpindi/ Islamabad are in need of improvement. Poor dental caries, gingival health, and oral hygiene status among research participants may be a result of their lack of oral health knowledge. It is advised to implement proper and efficient health education to stop issues at the primary level. The inclusion of dental health education in the school curriculum should be mandated.

Conflicts of Interest

The authors declare no conflict of interest.

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