ORIGINAL ARTICLE

Comparison of Oral Health Problems in Children: A Cross Sectional Survey in Pakistan

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ABSTRACT

Aim: To determine and compare the oral health, in term of oral health, community periodontal and DMFT index, of primary and elementary school children.

Subjects and method: In this study 694 students were examined for oral health. 347 students were from primary school whereas other half were from elementary school. The sample population was selected via a purposive sampling technique. Data was collected using Simplified oral health index (OHI-s), community periodontal index (CPI) and decay missing Filled tooth (DMFT).

Results: in the study 39(11.2%) of primary school students and 49(14.1%) of elementary school students have poor oral hygiene. Similarly among primary school students 62(17.9%) have bleeding gums and 30(8.6%) of the students have calculus teeth. Among elementary school students 74(21.3%) have bleeding gums and 40(11.5%) of the students have calculus teeth.

Conclusion: In primary and elementary school students simplified oral health index and community periodontal index was satisfactory and no difference was observed whereas on the basis of decay missing Filled tooth index primary school students have low average score.

Keywords: Oral health, school, children, cross sectional survey

INTRODUCTION

Oral health has significant impact on physical [1-3], as well as on, psychological and social well-being[4]. Literature reveals that risk of dental diseases among children aged 11-14 years is high. There are many associated factors like maternal oral health, socioeconomic status, sugar consumption and low vitamin D level, etc which leads to low oral hygiene. [5-7] Children's oral health is crucial to their entire well-being, and to ensure long-term dental health, basic oral hygiene habits must begin at an early age[6,7]Because oral health is a vital element of overall health, ignoring it will have detrimental health and societal effects.[7]

Recently a cross sectional study has documented the association between oral hygiene index and sense of coherence. Sense of coherence encompasses cognition, psychomotor capability and confidence.[8] School going age has significant impact on personality development and upbringing.[8] In this age healthy habits can be inculcated. Brushing one's teeth especially in children after a main meal is not universally practiced.[9] In comparison to industrialized countries, developing countries have seen an increase in tooth decay in children and adolescents over the last two decades.[9] As a result, oral health is a widespread concern in developing nations, and various studies have revealed the need for interventions to increase oral health knowledge and preventive practices.[9,10]

This study was conducted to determine the frequency of oral health issues among primary and elementary school going children in Islamabad as well as categorize the class in which oral health education should be practice and to make any necessary treatments easier to obtain, and to raise oral health awareness among children and parents.

METHODS AND MATERIALS

This descriptive cross-sectional study was carried out over two months, from January 2021 to March 2021 in Islamabad. The study conformed to STROBE guidelines for cross-sectional studies.[11] The sample population was selected via a purposive sampling technique. After seeking permission from respective institution, 694 students were selected from the school going population of 4000 students. Male and female children with aged 9 to 14 years were included in this study. Children with mental and physical disabilities were excluded from the study. Among them 347 students were studying in primary school (4th and 5th class) and other half of the sample were selected from elementary school (7th and 8th class). Sample size was calculated using WHO software 2.0 for sample size calculation[12] considering level of significance 0.05 and OHIS score 1.27±0.84[2].

In this study oral hygiene index simplified (OHI-S by John C. Greene, Jack R. Vermillion in 1964), Community Periodontal Index (CPI, WHO, 1997) and decayed-missing filled teeth (DMFT) index (by Henry T Klein, Knutson JW, Carrole E Palmer in 1938 with modified criteria given by WHO in 1986) were used. An examination was conducted using a dental mirror in natural sunlight on the World Health Organization (WHO) Assessment Form 2013.

Numerical data like age is presented in mean and standard deviation whereas categorical data like OHI-S and CPI are presented in frequency and percentages. Chi square test is applied to determine the differences/ Association between study variable and school group. P-value of less or equal to 0.05 was considered significant.

RESULTS

In this study 330(47.6%) students were male and 364(52.4%) students were female. Mean age of the primary school students was 10.58±0.84 and elementary school going children was 1.175±0.063 years. Among primary school students 164(47.3%) and among elementary school students 160(46.1%) never visited any dentist. On the other hand all most all of the students were brushing regularly as shown in Table 1.

Among primary school students, in 160(46.1%) prompt treatment including scaling was needed, in 39(11.2%) Immediate treatment was needed and 6(1.7%) students were referred for comprehensive evaluation. On the other hand in elementary school student in 164(47.3%) prompt treatment including scaling was required, in 29(8.4%) Immediate treatment was needed and 3(0.9%) students referred for comprehensive evaluation. A statistically significant difference existed between intervention urgency and group of students (p-value <0.001). Among primary school students trauma was statistically significantly lower than elementary school students (p-value <0.001).

Table 1: Comparison of basic information regarding oral hygiene

Basic Information		School		Total	p-value
		Primary	Elementary		
Gender	Male	170(49.0%)	160(46.1%)	330(47.6%)	0.247
	Female	177(51.0%)	187(53.9%)	364(52.4%)	
Dentist Visit	Never	164(47.3%)	160(46.1%)	324(46.7%)	<0.001*
	Once in 2 years	98(28.2%)	73(21.0%)	171(24.6%)	
	0-6 times	21(6.1%)	57(16.4%)	78(11.2%)	
	7-12 times	64(18.4%)	57(16.4%)	121(17.4%)	
Brushing Frequency	Never	1(0.3%)	0(0.0%)	1(0.1%)	<0.001*
	Once a day	179(51.6%)	197(56.8%)	376(54.2%)	
	Twice a day	166(47.8%)	130(37.5%)	296(42.7%)	
	More than once a day	1(0.3%)	19(5.5%)	20(2.9%)	
	Occasionally	0(0.0%)	1(0.3%)	1(0.1%)	
Fluorosis	Normal	344(99.1%)	324(93.4%)	668(96.3%)	<0.001*
	Questionable	2(0.6%)	14(4.0%)	16(2.3%)	
	Very mild	0(0.0%)	8(2.3%)	8(1.2%)	
	Mild	0(0.0%)	1(0.3%)	1(0.1%)	
	Moderate	1(0.3%)	0(0.0%)	1(0.1%)	
Dental Erosion	No sign of erosion	347(100.0%)	346(99.7%)	693(99.9%)	1.000
	Enamel lesion	0(0.0%)	1(0.3%)	1(0.1%)	
Intervention Urgency	No treatment needed	49(14.1%)	42(12.1%)	91(13.1%)	0.367
	Preventive treatment needed	93(26.8%)	109(31.4%)	202(29.1%)	
	Prompt treatment including scaling	160(46.1%)	164(47.3%)	324(46.7%)	
	Immediate treatment needed	39(11.2%)	29(8.4%)	68(9.8%)	
	Referred for comprehensive evaluation	6(1.7%)	3(0.9%)	9(1.3%)	
Trauma	No sign of injury	342(98.6%)	310(89.3%)	652(93.9%)	<0.001*
	Treated injury	0(0.0%)	11(3.2%)	11(1.6%)	
	Enamel fracture only	1(0.3%)	17(4.9%)	18(2.6%)	
	Enamel and dentine fracture	0(0.0%)	5(1.4%)	5(0.7%)	
	Pulp involvement	4(1.2%)	3(0.9%)	7(1.0%)	
	Missing tooth due to trauma	0(0.0%)	1(0.3%)	1(0.1%)	

*p-value significant at 0.001

Table 2: Frequency distribution of students regarding study variables and student's category

Category		School		Total	p-value
		Primary	Elementary		
Simplified Debris Index	No debris or stain present	126(36.3%)	119(34.3%)	245(35.3%)	0.913
	Soft debris covering not more than one third of tooth surface being examined	171(49.3%)	174(50.1%)	345(49.7%)	
	Soft debris covering more than one third but not more than two thirds of the exposed tooth surface	48(13.8%)	51(14.7%)	99(14.3%)	
	Soft debris covering more than two thirds of the exposed tooth surface	2(0.6%)	3(0.9%)	5(0.7%)	
Simplified calculus index	No calculus present	240(69.2%)	234(67.4%)	474(68.3%)	0.456
	Supra-gingival calculus covering not more than one third of the exposed tooth surface being examined	77(22.2%)	73(21.0%)	150(21.6%)	
	Supra-gingival calculus covering more than one third but not more than two third of the exposed tooth surface	30(8.6%)	40(11.5%)	70(10.1%)	
Oral Hygiene Index	Excellent	122(35.2%)	112(32.3%)	234(33.7%)	0.632
	Good	101(29.1%)	105(30.3%)	206(29.7%)	
	Fair	85(24.5%)	81(23.3%)	166(23.9%)	
	Poor	39(11.2%)	49(14.1%)	88(12.7%)	
Community Periodontal Index	Healthy	255(73.5%)	233(67.1%)	488(70.3%)	0.177
	Bleeding	62(17.9%)	74(21.3%)	136(19.6%)	
	Calculus	30(8.6%)	40(11.5%)	70(10.1%)	

P-value significant at 0.001

Average DMFT score of Primary school students was 2.10±1.99 and elementary school students was 2.48±2.43. (Figure: 1)
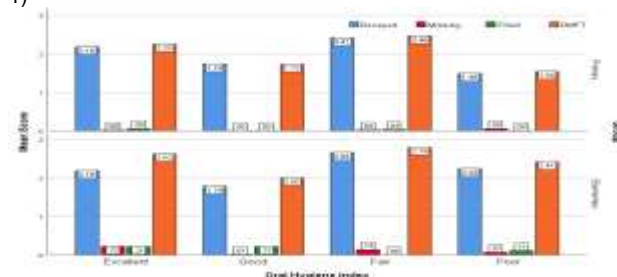

Figure: 1 Average DMFT of School going children.

Oral hygiene (p-value 0.632) and community periodontal index (p-value 0.177) were statistically significantly independent from school category.

DISCUSSION

In the current study the frequency of girls was higher than boys. Habit of brushing was common among all students. But proper brushing, replacing duration of tooth brush, different type of tooth pastes has different impact. [13] Most tooth paste contains fluorine which can cause fluorosis.[5] In our study the fluorosis was common among elementary school students as compared to primary school students. But the frequency was not significant.

In the studied age group the subjects remain mostly physically active and to fulfill the energy requirements sugar consumption is high. In this regard irregular brushing patrons may

leads to plaque accumulation and caries.[14] In our study more than half of the students in both groups required scaling or treatment. Over results regarding caries are in contrast to recently conducted study in Pakistan but is comparable with international literature. On the other hand DMFT score of Amna Fakhar et al. 2016 was comparable with our results.[6]

Current study was conducted in urban and suburban areas therefore in contrast to studies conducted in rural areas defected enamel was not frequent. Other reason could be the low frequency of male students. [15, 16] In both study groups the differences in OHI-s Score and CPI score were not statistically significant. In primary school students Average DMFT of poor OHI-s category was lower than other groups whereas in elementary group DMFT score was similar among all OHI-s categories.

The study reveals that on the basis of oral health index score, community periodontal index and DMFT score overall there are satisfactory situation in the school going boys and girls. But there are certain areas which can be improved by giving awareness regarding proper brushing. Parents should also involved in the oral hygiene related awareness programs.

CONCLUSION

In primary and elementary school students simplified oral health index and community periodontal index was satisfactory and no difference was observed whereas on the basis of decay missing Filled tooth index primary school students have low average score.

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