ORIGINAL ARTICLE

DENTAL CARIES STATUS AMONG PUBLIC AND PRIVATE SCHOOL CHILDREN IN HYDERABAD DISTRICT — SINDH

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ABSTRACT

Although there are reports of decrease in caries prevalence in developed countries, however prevalence remains high in developing countries. Increased consumption of cariogenic food and compromised oral hygiene affects child dental health. Aim of this study was to provide updated data regarding caries prevalence to concerned authorities and decision makers of dental health sector to enable them to improve the strategies for preventive oral health. Multistage random sampling technique was used to reach the targeted sample size 395. In Latifabad town, Hyderabad district, 2 public and 2 private schools were selected. Data was collected using WHO criteria.

The overall caries prevalence was 194(49.7%) in public and private schools. About 94(24.1 %) students were caries free and 101(25.8%) accounted for missing teeth and 1(0.3%) filled teeth. Caries affected males 114(58%) and females 80(41%) and was more prevalent in age group 9-11 years 43.5%. In public schools caries prevalence was high (55%) as compared to private school (45%).

It was concluded that prevalence of caries was too high. Schools administration should focused on oral hygiene maintenance, strictness on cariogenic food items and regular professional dental check-ups to obtain future healthy population.

Key Words: *High prevalence of Dental Caries, Oral hygiene habits, Control on Cariogenic food.*

INTRODUCTION

There are reports of declining caries prevalence in developed countries, however prevalence remains high particularly in developing countries.[1] Improved nutrition, water fluoridation, the introduction of fluoride containing dentifrices, greater dental awareness, dental health services and preventive program are more established in developed countries thus, reduced caries prevalence.[2,3] However, children from minority in those countries categorized as high levels of dental diseases.[4,5]

Dental caries has been recognized as the chronic local destruction of teeth by the activity of oral bacteria. Acid produced by the fermentation of dietary carbohydrates causes the initial lesion of dental caries (i.e. demnineralized white spot of tooth enamel). The highest priority risk group is between 8-14 years of age.[1,6,7]

Pakistan is a developing country with more than 180 million population. The people living here with different cultures, decline in economic situations and demographic changes influence on daily food consumption. Recent trend of food intake consists on greater consumption of cariogenic foods and beverage products. Additionally, compromised oral hygiene and unguided teeth brushing deteriorate the condition. These factors are likely to affect child dental health.[8-10]

Aim of this study was to provide updated dental caries status to concerned authorities and decision makers of dental health sector enabling them to make plans and policies to improve oral health problems of school children in Hyderabad District, Sindh.

METHODOLOGY

It was descriptive cross-sectional study conducted in public and private schools in Hyderabad District, Sindh. Study duration was two months from August to September 2016. The prevalence of 45.9% was taken as reference caries prevalence among 6-12 year old children with 5% margin of error, 95% confidence interval and 80% Power of test and sample size was rounded off to include 390 participants.[11] Multi stage random sampling technique was used to recruit participants

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in the study after taking informed consent from the school administration and parents. At first Latifabad town was selected from four towns of Hyderabad district. At second stage schools were randomly selected from the list of schools obtained from Latifabad town office. At third stage students from class 1 to class 6 were recruited in the study of both genders. Those students who were not willing to participate and showed some signs of sickness were excluded. The WHO dental caries diagnostic criterion DMFT (D= Decayed, Missing=M, T=Teeth) was used to measure the dental health status. Data were collected by trained dentists to maintain the reliability of the data. Information was collected regarding demographics (name, age, gender, class, school name) and dietary habits, tooth brushing habits/ frequency and teeth cleaning materials. No radiographic examinations were performed. Diagnosis of caries was based on the detection of carious lesion at the cavitation stage. The SPSS version 20.0 was used for data analysis. Results presented as mean ± Standard Deviation (SD) for DMFT and dft. Descriptive statistics (frequencies and percentages) applied for categorical variables. The association of dental caries with gender and age group was assessed by applying Chi-Square test at 5% significance level.

RESULTS

Details of results can be seen in Tables1-3.

DISCUSSION

In present study caries prevalence was 49.7% that is considerably high as compared to another study conducted in Khairpur district, Sindh that was 14%.[12] However, only permanent teeth were included in the study. Another study conducted in Karachi district of Sindh Province concluded with 51% prevalence, however the study recruited pre-school children.[8] A study conducted in Sargodha district of Punjab province showed caries prevalence was 45.9%. Moreover, in present study revealed 45% caries in private school and 55% prevalence in public school.[11] Other study conducted in low socio economic schools of Lahore showed the caries prevalence was 71%.[10] In Peshawar, KPK caries prevalence was 45.6% prevalent. The probable cause of dissimmilarties was sample distritbution of age, urban and rural settings and dietray factors.[13]

TABLE 1: DISTRIBUTION OF PARTICIPANTS WITH CARIES STATUS ACCORDING TO AGE AND GENDER IN PUBLIC AND PRIVATE SCHOOLS

Caries status	Age Groups (Years)			p -value	Gender		P-value
	6-8	9-11	12		Boys	Girls	
Public School	n%	n%	n%		n%	n%	
Caries Free(n=38)	14 (38)	17(46)	7(16)		19(50)	19(50)	
Caries present (n=107)	40(37)	48(45)	19(18)		64(60)	43(40)	
Missing Teeth (n=50)	8(16)	22(44)	20(40)	0.01*	27(54)	23(46)	0.32**
Total No of sample(n=195)	62(32)	87(45)	46(23)		110(56)	85(44)	
Private School							
Caries Free (n=56)	12(21)	20(36)	24(43)		28(50)	28(50)	
Caries Present (n=87)	29(33)	37(43)	21(24)	0.05*	50(57)	37(43)	0.66*
Missing Teeth (n=51)	10(20)	26(51)	15(29)		27(55)	24(45)	
Total No. of sample (n=195)	51(26)	83(43)	60(31)		105(54%)	90(46)	

*Using Chi-Square Test. The result is significant at $p < 0.05$.
**Using t- Test. The result is not significant at $p < 0.05$.
n=number of study participants

TABLE 2: DISTRIBUTION OF PARTICIPANTS WITH MEAN DMFT, DFT, AND ACCORDING TO GENDER AND AGE GROUPS

Schools	DMFT	dft	Male n=215	Female n=175	*Age group-I n=113	**Age group-II n=171	***Age group-III n=106
Public n=107/195	3.5	3.5	DMFT =2.61 dft= 2.27	DMFT=1.11 dft=1.22	DMFT=3.4	DMFT=4.4	DMFT=2.2
Private n=87/195	2.8	1.9	DMFT=1.47 dft=1.19	DMFT=0.98 dft=0.79	DMFT=3.5	DMFT=4.1	DMFT=1.6
Mean	3.15±0.4	2.74±0.6					

*Group-I=6-8 years **Group-II=9-11 years ***Group-III=12 years

TABLE 3: DESCRIPTIVE STATISTICS OF TEETH BRUSHING AND DIETARY HABITS IN PUBLIC SCHOOL AND PRIVATE SCHOOL

	Publis School		Private School	
	n	%	n	%
Dietary Habits	(n=195)		(n=195)	
Chocolate	32	(16.4)	33	(16.9)
Once	2	(6.2)	15	(45.4)
Twice	28	(87.5)	10	(30.3)
>Thrice	2	(6.2)	5	(15.1)
Toffees	32	(16.4)	20	(10.2)
Once	10	(31.2)	1	(5)
Twice	20	(62.5)	17	(85)
>Thrice	2	(6.2)	2	(10)
Biscuits	12	(6.1)	9	(4.6)
Once	9	(75)	8	(88.8)
Twice	3	(25)	1	(11.1)
>Thrice	0	0	0	
Cake	2	(1.02)	2	(1.02)
Once	2	(100)	2	(100)
Twice	0		0	
>Thrice	0		0	
Chips	22	(11.2)	27	(13.8)
Once	18	(81.8)	20	(74.0)
Twice	4	(18.1)	6	(22.2)
>Thrice	0		1	
Butter	3	(1.5)	15	(7.6)
Once	3	(100)	14	(93.3)
Twice	0		1	(6.6)
>Thrice	0		0	
Bubblegum	14	(7.1)	6	(3.0)
Once	11	(78.5)	1	(16.6)
Twice	3	(21.4)	5	(83.3)
>Thrice	0		0	
Beverages	8	(4.1)	42	(21.5)
Once	0		20	(47.6)
Twice	8	(100)	21	(50)
>Thrice	0		1	(2.3)
Honey	2	(1.02)	1	(0.5)
Once	2	(100)	1	(100)
Twice	0		0	
>Thrice	0		0	
Jam	1	(0.5)	3	(1.5)
Once	1	(100)	3	(100)
Twice	0		0	
>Thrice	0		0	
Ice cream	6	(3.0)	28	(14.3)
Once	5	(83.3)	25	(89.2)
Twice	1	(16.6)	3	(10.7)
>Thrice	0		0	
Tea	19	(9.7)	2	(1.02)
Once	5	(26.3)	2	(100)
Twice	14	(73.6)	0	
>Thrice	0		0	
Milk	2	(1.02)	5	(2.5)
Once	2	(100)	1	(20)
Twice	0		4	(80)
>Thrice	0		0	
Betel nuts	40	(20.5)	5	(2.5)
Once	5	(12.5)	5	(100)
Twice	32	(80)	0	
>Thrice	3	(7.5)	0	
Brushing Habits				
Type of Teeth Brushing				
Brushing	98	(50)	195	(100)
Miswak	19	(10)		
Finger	78	(40)		
Frequency of Teeth Cleaning				
Once	137	(70)	39	(20)
Twice	58	(30)	156	(80)
Thrice	0		0	
Material Used				
Toothpaste	127	(65)	166	(85)
Tooth powder	39	(20)	29	(15)
Manjan	29	(15)	0	

n= number of study participants

The present study revealed high levels of untreated caries with mean DMFT recorded as 3.15 that was considerably high as compared to Pakistan National DMFT (1.39). Nevertheless, underreporting and lack of large population oral health survey question the available statistics.[14,15] A comparative study reported DMFT in India was 3.2 and in Pakistan it was 2.5 showing high values consistent with current study findings.[16] In parallel with this finidng other countries showing same trends. In Zimbabwe caries prevalence

was 59.5% with DMFT 1.8 among children.[17] Similarly, in Saudia Arabia 73% caries prevalence in children age 6-12 years was reported.[18] An oral health survey done in Qatar revealed 49% caries prevalence, however there was considerable decrease in the prevalence since last two decades.[19] A study in Philippine on same age group reported 69% caries prevalence. It shows developing countries demonstrate high prevalence of dental caries partially due to less priority given to oral health and increase consumption of sugar diet.

In present study males had more caries than females. This finding is consistent with other studies conducted in Karachi, Lahore, India, Saudia Arabia and Philippine. However, Khairpur, Peshawar and Qatar studies reported caries were more prevalent in females.

In current study tooth brushing was regular in private schools where as in public schools use of finger for teeth cleaning. Increase in caries rate due to lack of proper tooth brushing, use of tooth cleaning powder without fluoride and utilization of high sugary diet.[4,6] Nevertheless, processed food was more frequently affordable and accessible to schools and in the residential premises in the city which adversely increase the tooth decay.

In private schools majority of school going children had chocolates, toffees, and beverages where as in public school betel nuts, toffees and tea with sugar was included in their diet. Although researchers reported that betel nut have protective effect against caries however, it has been established that there is no difference in caries prevalence in betel nut users and non-users.[20] Thus, dietary habits and oral hygiene should be reoriented and reinforced in the positive direction.

CONCLUSION AND RECOMMENDATION

According to results caries prevalence was high. This study proposes that considerable proportion of children both among younger and older age categories had dental caries. Children of public schools experienced more dental decay. The findings indicate a need for social action by policymakers. Furthermore, a change in the oral health preventive strategy is proposed to meet the needs of children in risk of caries, and appropriate oral health-promotion programs should be organized.

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CONTRIBUTIONS BY AUTHORS

1 Wardah Ahmed: Support in data analysis and interpretation and drafting of the manuscript.
2 Faryal Manzoor: Main concept, questionnaire designing, data collection and data analysis.
3 Umer Khayyam: Critically revised the final draft and support in data collection and data analysis.