Original Research Article

Oral health status of 6-12 year old children attending a Government Hospital in Kashmir

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Abstract

Background: Dental caries is an irreversible disease, with a likelihood of new lesions that continue to affect humanity Dental caries or tooth decay is an acquired chronic infective disease process caused by the acidic by-products of bacteria inhabiting organized dental plaque or oral bio-film that, if left undisturbed, can dissolve or demineralise the enamel surfaces of the teeth.
Aim: The aim of this study was to determine the oral health status of school children visiting Department of Pedodontics in Government Dental College, Srinagar.
Materials and methods: A cross-sectional study involving 543 schoolchildren attending Department of Pedodontics, Government Dental College, Srinagar was conducted in 2015. Oral examination was performed in 543 children to check decayed, missing and filled teeth (deft/DMFT) index and simplified oral hygiene (OHI-S) score. Data were collected via clinical examination.
Results: Mean caries experience in deciduous dentition was 3.52 ±4.63. Males presented a higher caries prevalence of 1.59 ±2.05 than the female counter parts who had 1.1±1.17 ($p < 0.001$) which was lower than the caries experience seen in males of the similar age group. Mean defs of the male

subjects of age 6 was 4.09±5.32 which was much higher than females in similar age group ($p < 0.001$). It was also observed that there was a statistically significant difference in the decayed component of the primary dentition in males and females. ($p < 0.005$)

Conclusion: Caries experience was significantly higher in male students as compared to their female counterparts.

Key words

School children, Dental caries, Oral hygiene status, Calculus, Plaque.

Introduction

Oral hygiene is the most effective measure to prevent caries and periodontal disease [1]. Dental caries is an irreversible disease, with a likelihood of new lesions that continue to affect humanity Dental caries or tooth decay is an acquired chronic infective disease process caused by the acidic by-products of bacteria inhabiting organized dental plaque or oral bio-film that, if left undisturbed, can dissolve or demineralise the enamel surfaces of the teeth. Despite marked improvements in the oral health of children in many developed countries in the last 20-30 years, evidence suggests that a small proportion of children in such nations carry the highest dental caries burden [2]. It was long argued that certain races (such as Africans & Asians) enjoy greater caries-resistance (compared to Europeans and Americans). However, today it is believed that an environment with its typical culture, socioeconomic status, life style and dietary pattern can have a greater impact on caries resistance or development than the so-called inherent racial attributes [3, 4].

Approximately 70% of the countries in the world have succeeded in achieving WHO goal of decayed, missing and filled teeth (DMFT) index '3' for 12 year-olds [5, 6]. The result of National survey in Brazil, conducted in 2003, showed a significant drop in caries prevalence in 12 year olds from 8.3 to 2.8 [7]. DMFT index (1991) in French children at the age of 12 was 2.59 in a similar survey [8]. Data from the World Health Organization, surveys (1990–1995) in developed countries revealed very low DMFT scores, ranging from 0.8 to 1.9 in 12 year olds [9]. A cross-sectional study in Belgaum, India (2005) has shown a mean DMFT of 2.41 in 13–15 year old school children [10]. A recent study conducted in Tehran (2006) revealed that the DMFT index in 12-year-old students dropped from 1.67 (1993–194) [11].

The present study was done in order to access the oral health status of the available children population coming to a Government hospital.

Material and methods

The present cross sectional study was carried out in the Department of Pedodontics and Preventive dentistry of Government Dental College and Hospital Srinagar, Jammu and Kashmir, India. The study was carried out in two months, November and December of year 2015. Clearance for examination of subjects was taken from the Immediate In-charge of the Department of Pedodontics and Preventive dentistry and a verbal informed consent was acquired from the subjects prior to the examination. All those subjects who were not able to give a consent for themselves because of age and cognition, a proxy consent was acquired from the attendant or accompanying person. A convenience sampling method was utilized for collection of the samples. All those subjects who visited the departmental OPD in the study time frame were included in the study. Inclusion criteria comprisedof a positive consent by the subjects, subjects without any physical or mental disability. The children with a history of trauma, or patients wearing orthodontic appliances or any prosthesis were excluded from the study.

A total of 543 subjects were included in the study out of which 293 subjects were males and 250

subjects were females. After parental informed consent, each subject was examined. Subjects were assessed for dental caries using deft/defs for Primary and DMFT/ DMFS for permanent dentition. Dental examination was done in the Department of Pedodontics by dental diagnostic sets (mouth mirror, sickle explorer), personal protective barriers (gloves, masks) and cotton roll. Examination for dental caries was carried out with a plane mouth mirror & a sickle explorer in a systematic orderly fashion using the FDI tooth-numbering system, hence proceeding from one tooth or tooth space to another, starting at upper right 17 in upper arch around to upper left 27, then beginning the lower arch at lower left 37 around to lower right 47. The Periodontal health status was assessed using OHI(S) index for Debris and Calculus. The index chosen to assess oral hygiene in this study is the Simplified Oral Hygiene Index (OHI-S).

Descriptive statistics and frequencies using the SPSS 16 were conducted so as to analyze the data. Statistical analysis was done by using Chi square test and student t-test. The level of significance for all tests was set at $p<0.1$.

Results

A total of 543 subjects below the age group of 12 years were screened in the department of Pedodontics and preventive dentistry, Government dental College Srinagar. The subjects included 293 male children and 250 female children. Fur groups in ≤6 and subjects 7-12 years of age. Subjects who were ≤6 years of age comprised of 82 males and 85 females with total 167 subjects. Within 7-12 years included 211 males and 165 female subjects.

Frequency distribution of subjects was as per **Table - 1**, according to prevalence of dental caries in primary dentition in ≤6 years and permanent dentition in 7-12 year old in relation to gender. Results show that the primary dentition has higher caries prevalence than permanent dentition, primary dentition had a caries prevalence of 59.28% in comparison to the 39.9% seen in the permanent dentition. In the studied population males presented higher caries prevalence than the female counterparts in both the dentitions. The total caries prevalence of 45.48% was recorded in the screened population.

Table - 1: Frequency distribution of subjects, according to prevalence of dental caries in primary dentition in ≤6 years and permanent dentition in 7-12 year old in relation to gender.

Age in years	Total (n=543)			Males (n=293)			Females (n=250)		
	Total	*With caries*	*% prevalence*	*Total*	*With caries*	*% prevalence*	*Total*	*With caries*	*% prevalence*
≤6	167	99	59.28	82	50	61.6	85	48	56.8
7-12	376	148	39.36	211	55	26.3	165	26	15.7
Total	543	247	45.48	293	105	39.92	250	74	29.6
χ^2				***62.931***					
P				***<0.001***					

Mean dental caries experience in primary (deft/defs) and permanent (DMFT/DMFS) dentitions in study subjects according to gender were as per **Table - 2**. Mean caries experience in deciduous dentition was 3.52 ±4.63 males presented a higher caries prevalence of 1.59 ±2.05 than the female counter parts who had 1.1±1.17 ($p<0.001$) which was lower than the

caries experience seen in males of the similar age group. Mean defs of the male subjects of age 6 was 4.09±5.32 which was much higher than females in similar age group (p <0.001). It was also observed that there was a statistically significant difference in the decayed component of the primary dentition in males and females. (p <0.005)

The caries experience of the permanent dentition in the age of 7-12 years mean DMFT was recorded as 1.75 ±1.85with higher mean DMFT in females 2.15±2.22 while it was 1.35±1.49 for males in similar age group, a significant difference was recorded in the two (p <0.004) as per **Table - 2**. Similarly females present a mean 3.39±5.88 carious surfaces which were higher than males in any age group. The table also showed that there was higher D component in both deciduous as well as permanent dentition and F component showed least value.

Table - 2: Mean dental caries experience in primary (deft/defs) and permanent (DMFT/DMFS) dentitions in study subjects according to gender.

Variables	Males (n=293)		Females (n=250)		t-value	p –value
	Mean	Std. Dev.	Mean	Std. Dev.		
I. Teeth wise						
Dt	1.04	1.69	0.98	1.03	2.814	0.005
Et	0.45	0.9	0.12	0.53	3.231	0.001
Ft	0.1	0.09	0	0	0.841	0.401
deft	1.59	2.05	1.1	1.17	3.811	<0.001
	1.34±1.61					
II. Surface wise						
Ds	1.62	2.51	0.66	1.27	3.134	0.002
m/e	2.43	3.99	0.88	2.59	3.142	0.002
Fs	0.04	0.38	0	0	1.132	0.259
Defs	4.09	5.32	1.53	2.95	3.96	<0.001
	3.52 ±4.63					
III. Teeth wise						
DT	1.24	1.35	1.53	1.53	-1.007	0.315
MT	0.1	0.41	0.54	1.23	-3.849	0
FT	0.01	0.12	0.08	0.42	-1.82	0.07
DMFT	1.35	1.49	2.15	2.22	-2.17	0.004
	1.75 ±1.85					
IV. Surface wise						
DS	1.41	1.71	1.89	1.95	1.563	0.119
MS	0.53	1.86	1.37	5.13	2.6	0.01
FS	0.01	0.12	0.13	0.66	2.085	0.038
DMFS	1.95	2.6	3.39	5.88	2.958	0.003
	3.91 ±4.24					

The oral hygiene status of the screened population was as per **Table - 3**. Oral hygiene was good in highest number of subjects ie: 42.8 % or 232 subjects while 156 subjects had poor oral hygiene. Though there was no significant difference in the males and females in respect to the oral hygiene, however it was seen that higher number of subjects presented good oral hygiene. It can also be seen that male subjects presented poor oral hygiene in comparison to the females

in present study. 127 female subjects had good oral hygiene in comparison to 102 male subjects.

Table - 3: Percentage distribution of subjects according to oral hygiene status in relation to gender.

Oral Hygiene status	Males (n=293)		Females (n=250)		Total (n=543)	
	N	%	N	%	N	%
Good	102	41.1	127	43.6	232	**42.8**
Fair	85	29.0	69	27.3	155	**28.5**
Poor	81	27.4	79	31.6	156	**28.7**
χ^2=2.582 (df=2); p=0.275						

Discussion

This descriptive cross sectional study was done using a convenience sampling method in Government Dental College, Srinagar Jammu and Kashmir. The selected samples were all those who reported to the Department for treatment of dental conditions. Subjects were within age group up to 12 years. After taking consent the subjects were screened for caries and periodontal conditions which included Debris and Calculus.

The present study revealed that caries prevalence was higher in primary dentition than permanent dentition and males had much high caries prevalence than females. Previously, Bali, et al. (2004) reported that caries prevalence of 5 year old children was 50% and caries prevalence of 5 years old children in Jammu and Kashmir State was 50.9% [12] which is similar to the current population under study. Dhar and Bhatnagar (2009), Dixit, et al. (2013) and de-Aalmeida, et al. (2003) have reported caries prevalence of 51.53%, 52% and 46.9% for similar age in Udaipur, Nepal and Portuguese children respectively [13-15]. Furthermore, the caries prevalence for boys was found to be more in comparison to the girls for 6 years as well as for age group 7-11 years. Similar results have been obtained in Jammu and Kashmir State in 6 year age group as reported in 2002–2003 which shows lesser caries prevalence in girls as compared to boys [12].

The mean recorded deft of subjects ≤6 years of age was 1.34±1.61. Similar findings have been reported in 5-6 year old children in Nepal who had mean dft of 1.59 [14] while low caries (0.70) was demonstrated by institutionalized street children of Andhra Pradesh [16]. On the contrary higher mean caries experience in primary dentition of 7-10 years old children has been reported as 2.43±2.57 in rural areas of Tamil Nadu, [17] 2.87± 2.31in 8 to 12 year schoolchildren of Rohtak [18] and in many other previous studies [19, 20]. However, the deft in the present study group was lesser than the mean dmft value of 5 year old children of the whole nation (1.8) as well as for 5 year old children of Jammu and Kashmir State (1.8) [12].

The results from the present study depict that the caries experience was largely made by decayed (d) component. Mean 'd' component for boys was more than of girls for subjects ≤6 years as well as for subjects 7-12 years of age. This is in accordance with the results of previous studies [21, 22]. Significant difference in the filled component 'f' was recorded which was higher in boys than the girl counterparts. This is in accordance with the results of previous studies done by Srinivas, et al. (2012) [16]. These findings suggest high prevalence of disease and lack of dental care in boys within these age groups.

The present study also reported a decrease in caries prevalence in primary dentition with increasing age, i.e., from ≤ 6 to 7-12 years, a trend also seen within the same gender. The exfoliation of deciduous teeth in the older age group might explain the cause [23]. Other reason

can be attributed to increase in the level of manual dexterity and increase in the awareness and knowledge of the subjects [24].

Oral hygiene status assessment was done according to the criteria of simplified oral hygiene index by Greene and Vermilion (1964) [25]. In the present study 42.8% subjects presented good oral hygiene. This can be due to the fact that most of the children were performing daily tooth brushing, while reason for the poor oral hygiene status in 28% subjects could be attributed to poor oral hygiene practices, use of sticks/ miswak and use of finger instead of tooth brush and tooth paste being substituted with tooth powder, whereas availability and affordability of tooth brushes and tooth pastes can also be a contributing factor [24].

In the present study proportion of boys with good and fair oral hygiene was higher as compared to girls while the number of boys with poor oral hygiene was higher than girls. Similar findings were reported for children of Nigeria and Chennai [26, 27]. Overall in the present study high number of girls presented good oral hygiene as compared to boys and this variation between genders may be attributed to behavioral differences which could lead to better oral hygiene in girls. A possible explanation for this may be the fact that girls mature earlier than boys and become more interested in their appearance and also due to grooming habits [28, 29].

Conclusion

The present study concluded that there is high caries prevalence and around 56% of the population presented average or poor oral hygiene. Thus, it is recommended that health promotion approach should be considered in order to reduce the burden of disease on children population which has an effect on the psychological well-being as well as quality of life.

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