

## Prevalence of Dental Caries Among School Children in Age Group of 5-15yrs in Block Tangmarg- A Suburb Area of Kashmir Province

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**Abstract:** Dental caries is the most common and prevalent disease among all oral problems. According to World Health Organisation DMFT index of any region should be less than 3. The aim of this study was to determine the prevalence of dental caries in among school children of age group 5-15yrs in a suburb area of Kashmir province. This survey was done in 19 government schools of Tangmarg Block of Kashmir valley, which is a suburb area. A total of 1011 students of these 19 schools were screened for dental caries. The age ranged between 5 years to 15 years in primary dentition, mixed dentition and permanent dentition were screened for dental caries and water from drinking source of these schools was collected and sent to laboratory for checking the amount of fluoride and other minerals. The mean DMFT was 3.93 and 3.03 in males and females respectively and the mean deft was 4.20 and 3.47 in males and females respectively. It means that DMFT/deft index is more in males of both the groups. Our data shows a high prevalence of dental caries among males and school children with age <12 years from rural areas of Tangmarg block of Kashmir. This particular data can be used in planning of oral health prevention and treatment programs in upcoming time particularly implementation of oral health maintaining plans in school system.

**Keywords:** Dental caries, disease, oral problems, DMFT, Kashmir.

### INTRODUCTION

Oral health is an important component of general health and is extremely essential for overall well-being. The most common disease among all oral problems is dental caries that is preventable non-communicable diseases.

Despite implementation of various preventive measure programme by Indian government, it is still considered as major public health burden in developing countries, affecting approximately 60%-90% of school children and even adult population [1,2]. In the National Oral Health Survey conducted in 2002, the caries prevalence in the 12-year-old school children was 52.5% [3]. Geographical location plays a great role in caries prevalence; it varies with the change in location. According to the National Oral Health Survey Report 2004, caries prevalence in India was 51.9%, 53.8%, and 63.1% at ages 5, 12, and 15 years, respectively, in different parts of India [4].

The age range between 6-12 years in children is always a subject for several epidemiological studies conducted around the world [5]. The main reason behind more prevalence of caries in age group of 6-12yrs is because of shifting dentition from primary to permanent and children of this age group love to eat sweet things more than other age group. Moreover the sample data can be easily acquired simply from schools

and spectrum of dentition can be examined that is data of primary, mixed and even permanent teeth can be recorded.

This survey was conducted to assess the oral health status (DMFT/deft), correlation with oral pH, fluoride concentration, prompt treatment needs and effect of oral health education among children of Tangmarg Block of Kashmir, Jammu and Kashmir.

### MATERIALS AND METHOD

This survey was done in 19 government schools of Tangmarg Block of Kashmir valley, which is a hill station near to the famous tourist spot tangmarg after obtaining institutional ethical clearance from Government Dental College & Hospital, Srinagar, Block Medical officer, Tangmarg and Zonal Education department, Tangmarg from July, 2011 to September, 2011 (BMOT/293-95, Comm/dent/GDC1212).

A total number of 1011 students of these 19 schools were examined. The age ranged between 5

years to 15 years in primary dentition, mixed dentition and permanent dentition. For simplicity sake we divided into two groups. Group A included those students who were having permanent dentition with a total number of 617 children and Group B were having primary and mixed dentition with total count of 394. DMFT were recorded in Group A and deft were recorded in Group B. These group were further divided according to Gender.

Litmus paper test done in total no. of 1001 children in order to determine the oral pH and t-test were applied to estimate the significance between normal pH and acidic oral pH children. The sample of drinking water from each of 19 schools were collected and sent to laboratory to estimate fluoride content and statistically carried out correlation between DMFT and deft with fluoride concentration.

We also took a sample of 200 children from whom we recorded their frequency of dental visit in

past and decision of going for dental visit in future after delivering oral health education in order to estimate whether oral health education have positive impact on them or not.

**STATISTICS**

Students t- test were carried out according to gender in both groups and also Levene's Test for Equality of Variances and t-test for Equality of means were calculated in order to confirm the homogeneity of DMFT/deflt in the taken sample .

**RESULTS**

Out of 1011 students, Group A had a total amount of 617 children in which 294 were males and 323 were females with mean DMFT was 3.93 and 3.03 respectively where as in group B included 394 candidates, out of them 201 were males and 193 were females with mean deflt was 4.20 and 3.47 respectively as shown in table 1. It means that DMFT/deflt index is more in males of both the groups.

**Table-1: Mean and Std. deviation of DMFT/deflt**

	sex	Number	Mean (DMFT)/ (deflt)	Std. Deviation	Std. Error Mean
Group A	Male	294	3.93	1.962	.114
	Female	323	3.03	1.812	.101
Group B	Male	201	4.20	2.693	.190
	Female	193	3.47	2.665	.192

**Table-2: P-value of DMFT/deflt**

	sex	N	Mean caries index	Std. Deviation	Std. Error Mean	p-value
GROUP A	Male	123	5.78	1.290	.116	0.073
	Female	83	5.43	1.450	.159	
GROUP B	Male	82	6.89	1.721	.190	0.927
	Female	52	6.92	2.432	.337	

The calculated values of only caries index in children of both the genders from both the groups were estimated statistically which showed that males were having more dental caries than females in both the groups but were not statistically significant as shown in

table 2. Therefore it is clear that out of total examined males from group A ,123 no. of males and 83 no. of females require immediate dental treatment and out of total examined males from group B, 82 no. of males and 52 no. of females require immediate dental treatment.

**Table-3: Levene's Test for Equality of Variances**

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	p-value	Mean Difference	Std. Error Difference
GROU P A	Equal variances Assumed	2.647	.104	5.929	615	<b>.000</b>	.901	.152
	Equal variances not assumed			5.907	597.068	<b>.000</b>	.901	.152
GROU P B	Equal variances Assumed	1.401	.237	2.694	392	<b>.007</b>	.728	.270
	Equal variances not assumed			2.695	391.634	<b>.007</b>	.728	.270

In order to estimate the homogeneity in sample as it was mentioned earlier, we came to the result that in

both the groups the data was not statistically significant across the sample but tests for equality in means of both

groups were found highly significant( $p < 0.05$ ) as shown in table 3. Hence it means that homogeneity is seen

across the sample in term of their means.

**Table-4: Std. Deviation and p-value of Oral pH**

	Oral pH	No.	Mean	Std. Deviation	Std. Error Mean	p-value
GROUP A	Normal	544	3.44	1.937	.083	0.670
	Acidic	73	3.55	1.944	.228	
GROUP B	Normal	316	3.73	2.498	.141	<b>0.001</b>
	Acidic	68	4.93	3.159	.383	

Table 4 showed numbers of children with normal pH of oral cavity and acidic pH in both the groups. Out of total 617 in Group A , 544 showed normal pH on litmus paper and 73 showed acidic nature of saliva where as in group B, out of 384, 316 showed

normal pH on litmus paper and 68 showed acidic pH. Only in group B the statistically significant data were found between normal ph and acidic PH children which means young children are more prone to caries and need immediate intervention.

**Table-5: Cor-relation of Flouride and DMFT/deft**

		PH	Flouride Conc	DMFT (group A)	Deft (group B)
PH	Pearson Correlation	1	0.111	0.346	-0.051
	Sig. (2-tailed) p-value		0.661	0.206	0.841
Flouride Conc.	Pearson Correlation		1	<b>-0.559*</b>	-0.189
	Sig. (2-tailed)			<b>0.030</b>	0.439
DMFT (group A)	Pearson Correlation			1	-0.119
	Sig. (2-tailed)				0.672
Deft (group B)	Pearson Correlation				1
	Sig. (2-tailed)				
Total No.					19

The correlation between PH, Fluoride concentration, DMFT (group A) and deft (group B) were carried out. **Table 5** showed that there is significant correlation is achieved between flouride and DMFT (GROUP A), this means if flouride decreases DMFT increases and vice versa.this table also displayed that flouride in drinking water have more impact on permanent teeth as compared to primary dentition.

**Table-6: Effects of oral health education on the children**

		Visted Dentist			Total
		Never	sometime	regularly	
Number	Befor e visit	89	11	0	100
	After visit	2	14	84	100
Total		91	25	84	200

**Table-7**

	Value	df	P -value
Pearson Chi-Square	167.536 <sup>a</sup>	2	<b>.000</b>
Likelihood Ratio	223.736	2	<b>.000</b>
Linear-by-Linear Association	166.489	1	<b>.000</b>
N of Valid Cases	200		

Table 6 and 7 showed that there is positive effects of oral health education on the children. More than 80% students had never visited a dentist before this survey. But after the oral health education more than 80% students decide to visit for dental checkup in future.

**DISCUSSION**

In this study children with age >12 years had mean DMFT of 3.93 and 3.03 males and females respectively where as in children having age <12 years had mean deft was 4.20 and 3.47 in males and females respectively. This showed that DMFT/deft index is

more in males of both the groups which means males are more vulnerable to dental caries.

Our study also conducted caries index in study sample which showed that 123 males and 83 females from group A and 82 males and 52 females from group B are more prone to caries and require immediate dental treatment.

The study done by Chandrashekar Janakiram *et al.* 2018 found that five-year-old children had mean deft of 2.36 (95% CI 2.3 - 2.42) which means the proportion of the children affected is nearly 50%.<sup>[6]</sup> According to Anand Hiremath *et al.* 2016 that overall mean dmft was 2.97 and DMFT was 0.17[7]. The mean dmft in girls were 2.88 and boys were 3.15. A study by Ingle *et al.* found a higher mean DMFT of 7.61[8]. Similar results were found in studies conducted in India by Saravanan S and Bhaskar DJ [9, 10].

Reddy *et al.* 2017 [5] calculated the overall mean deft of primary dentition in both male and females was 1.49+/- 1.56 but not significant between gender. Mean male deft was 1.51+/- 1.57 and mean female deft was 1.47+/- 1.54. The overall mean DMFT (adults) values for both males and females were 0.57 ± 1.235. The difference between males and females were statistically significant. The total mean DMFT values in males are 0.610 ± 1.50, in females are 0.57 ± 1.28. However study conducted Jain A *et al.* [11] reported a much higher prevalence of dental caries (82.62%) in 3–14 years old group. Similar findings were reported by Moses *et al.* Joshi *et al.* [12, 13] Ramachandran Karunakaran *et al.* [14] conducted a similar study in 460 male school going children of Namakkal district of Tamil Nadu and found the prevalence of dental caries to be 69.57% with the mean dmft score of 2.89.

Demineralization of the enamel is caused due to damaged hydroxyapatite tooth enamel which is the main component of enamel due to chemical processes. In present study 73 children from Group A and 68 children from Group B showed acidic pH and statistically significance between normal pH and acidic pH was found in group B only which means young children are more prone to caries and need immediate intervention. Research done by Nurelhuda NM, Tayab T and Sanchez-Garcia S had proved that saliva takes part in the process of mineralization and demineralization of the hard tooth tissues [15-17].

In the present study significant correlation showed between fluoride concentration and DMFT which means if fluoride concentration decreased dental decay and provides more protection to permanent teeth as compared to primary dentition and is in agreement with the study of Budipramana *et al.* [18] found the prevalence of dental caries to be more in either below optimal and high fluoride areas than in optimal fluoride areas. Another study by Shekar C *et al.* [19] also

concluded that the highest caries prevalence was noticed in below optimal fluoride area (71.3%) followed by very high fluoride area (68.1%) in a study done by Oral health education also played a positive role in changing mind set of children which resulted that more than 80% students decide to go for oral health examination in future.

## CONCLUSION

Our data shows a high prevalence of dental caries among males and school children with age <12 years from rural areas of Tangmarg block of Kashmir. This particular data can be used in planning of oral health prevention and treatment programs in upcoming time particularly implementation of oral health maintaining plans in school system. This study is helpful in raising general oral health awareness among the children so that they adopt and learn healthy oral habits in their early period of life.

## Limitations

Our study only included 19 schools of block Tangmarg of Kashmir. Other schools should have been included so that oral problems of entire children can be recorded and further preventive steps should have been taken.

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