

## Original Research Article

# Evaluation of oral health status of 15 years old school going children in district Indore, Madhya Pradesh, India

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## ABSTRACT

**Background:** Dental caries and Gum diseases are the major public health problem in developed and developing countries both and the prevalence is more during the childhood specially in lower socioeconomic strata of our society so present study was conducted to find out the prevalence of dental and gum diseases among the 15 years of age school going children.

**Methods:** This study was conducted among 15 years old children of government rural schools in the catchment area of Sri Aurobindo Institute of Medical Sciences, District Indore after getting ethical approval from institutional ethical committee, 400 students were included till the required sample size was achieved. Oral cavity examination was done by a team of evaluated for oral health status by a trained examiner who took training in department of community dentistry and Pedo-odontology. Data was entered and analysed by using SPSS.

**Results:** Present study reveals that 38% of participants had dental decay out of which was more there in boys and found statistically significant  $<0.05$ . Majority of participants (70%) had normal gums only 4% had bleeding gums. 9% of the the participants had hypoplastic enamel.

**Conclusions:** The current study explores that the dental decay is the major oral health problem followed by calculus. Oral health education and oral cavity examination should be done at a regular interval study.

**Keywords:** Caries, Children, Community periodontal index, Decay missed and filled teeth

## INTRODUCTION

Dental caries can be traced to be as old as civilization with its evidence seen even in skeletal remnants of prehistoric humans.<sup>1</sup> Dental caries is the most prevalent dental affliction of childhood. In spite of credible advances in dentistry, the disease continues to be a major public health problem. Untreated oral diseases in children frequently lead to serious general health problems, significant pain, interference with eating, and lost school time. The children suffering from poor oral health are twelve times more likely to have restricted activity days as compared to their healthy counterparts.<sup>2</sup> According to

the national oral health survey, dental caries prevalence in India was 51.9, 53.8, and 63.1% at ages 5, 12, and 15 years, respectively.<sup>3</sup>

Oral health status is often determined by the amount deposited on the surfaces of teeth and poor oral hygiene introduced as a predisposing factor to periodontal diseases and in contrast, healthy oral behaviours reduce the amount of deposits particularly plaque on the surfaces of teeth.<sup>4-6</sup>

School age is regarded as the phase of childhood during which a child acquires the knowledge of the norms and

values of a society and emerges as a contributing member to the community. Hence it is an influential stage in people's life when lifelong sustainable oral health related behaviors, beliefs and attitudes can be established with longer lasting impact. Moreover, the messages can be reinforced throughout the school years.<sup>7</sup> Decreased prevalence of dental caries in developed countries can be attributed to changing lifestyle and behavior patterns, fewer intakes of refined sugars, and widespread use of fluoridated toothpaste and utilization of the dental care services. Contrary to this, increase dental caries in developing countries can be related to factors, such as economic development, changing living standards, rapid urbanization, and changing of dietary patterns to more refined carbohydrates.<sup>6</sup> In India, oral health status of children has been documented by various investigators. National oral health survey, 2003 reported a prevalence of 53.8% caries experience in 12 years old, India, a developing country, faces many challenges in rendering oral health needs. The majority of Indian population resides in rural areas.<sup>7</sup> India, a developing country, faces many challenges in rendering oral health needs. The majority of Indian population resides in rural areas.<sup>8</sup> The appropriate policies and programs will facilitate in improving awareness and knowledge of the general public about the preventive and promotive aspects of oral health as well as, to create the required services and train the necessary dental manpower to meet these needs.<sup>9</sup>

] Children <18 years constitute about 40% of the Indian population.<sup>10</sup> There is lack of organized school health programs in our country. The children in schools are relatively easily accessible, compared to any other population groups for any health promotion programs aimed at effecting the lifestyle changes. School health programs have proven effective in promoting health in many developed countries.<sup>11,12</sup> The New Zealand school dental nurse program implemented in the early part of the 20th century to combat the oral health problems of the school going children reflects the benefits of organized school dental programs.<sup>13</sup> The schools remain an important setting, offering an efficient and effective way to reach children worldwide and through them to families and community. School age is an influential stage in people's life when lifelong sustainable oral health related behaviours as well as beliefs and attitudes are being developed, children are receptive during this period and earlier the habits established the long-lasting impact. Moreover, the messages can be reinforced regularly throughout the school life.<sup>14</sup> The purpose of the current study was to assess the oral health status of children within the rural area of District Indore.

## METHODS

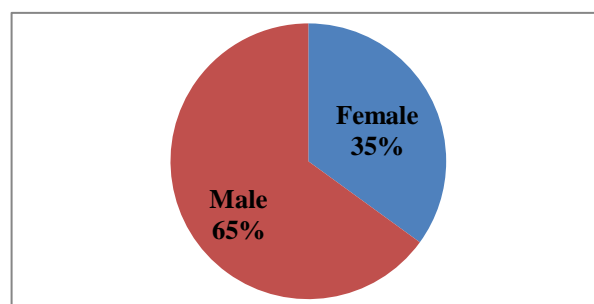
This study was conducted among 15 years old children of government rural schools in the catchment area of Sri Aurobindo Institute of Medical Sciences, District Indore from August 2011 to November 2012. After getting the ethical approval from the institute ethical committee, list

of schools was obtained from the office of District Education Officer of District Indore. The schools were stratified into primary, middle, high school and of which middle and high schools were selected. A pilot study was conducted to get the prevalence of dental caries and on this basis sample size was calculated by using 4pq/L2 where prevalence of caries 52.3% was used and sample size came 400. Sample was collected by including 15 yrs of student from the schools and the age of students was verified by school records. Inclusion criteria was the children present on the day of examination and whose parents were given the consent to participate, their wards were included and Exclusion criteria was the students who were absent on the day of examination and the students whose parents did not give consent were excluded. The selected students were then evaluated for oral health status by a trained examiner who took training in department of community dentistry and Pedodontology.

All the children were examined under adequate illumination in the school premises. WHO criterion was used for evaluation of dentition status and treatment needs. The criterion recommends examination for dental caries using mouth mirror and community periodontal index (CPI) probe. The examination was conducted with a plain mouth mirror and CPI probe as given by the WHO 1997. The examination proceeded in an orderly manner from one tooth or tooth space to the adjacent tooth or tooth space. Clinical examination included the assessment of dento-facial anomalies according to the WHO Oral Health Assessment form (1997)<sup>10</sup> by recording: Enamel hypoplasia Development defects of Enamel Index<sup>10</sup>, Dental fluorosis Index Modified criteria, Dental Aesthetic Index (DAI). Oral Hygiene Index Simplified (OHIS)<sup>11</sup> was used to assess oral hygiene. The school authorities were requested to inform all the parents/guardians so that children could be taken to dental hospital for availing free treatment through the referral cards given to them at the time of study and data was entered in Microsoft excel sheet and later on data was analyzed using chi-square in SPSS.

## RESULTS

Figure 1 depicts that out of 400 participants, 35% of the participants were female and 65% were male.



**Figure 1: Distribution of participants.**

**Table 1: Association of DMFT with gender.**

Variables	Gender		Total	Chi-square value	p value
	Girls	Boys			
Decay Teeth					
Present	40(34.08%)	112(36.05%)	152(38%)	4.3	<0.05
Absent	100(65.92%)	158(63.95%)	258(62%)		
Missing Teeth					
Present	3(2.23%)	4(1.5%)	7(1.67%)	0.19	>0.05
Absent	137(97.77%)	256(98.5%)	393(98.33%)		
Filled teeth					
Present	8(5.71%)	27(10.38%)	35(8.75%)	2.4	>0.05
Absent	132(94.29%)	233(89.62%)	365(91.25%)		
Traumatic Teeth					
Present	3(2.15%)	20(7.08%)	23(5%)	3.7	=0.05
Absent	137(97.85%)	240(92.02%)	377(95%)		

**Table 2: Distribution of 15-year-old students by status as per CPI score and Sex.**

Status as per CPI Score	Sex		Total
	Girls	Boys	
Healthy	132(47.1%)	148(52.85%)	280(70%)
Bleeding	3(75%)	1(25%)	4(1%)
Calculus	34(29.3%)	82(70.7%)	116(29%)
Total	169(42.5%)	231(57.7%)	400(100%)

Chi-square value=12.46, p-value<0.05

Table 1 depicts that out of 400 participants 152 (37.5%) had decay teeth and of which 40(34.08%) were female

and 112 (36.5%) boys. decay teeth were more in male than female and the difference was found statistically significant. Above table describes that 35(8.75%) of participants had filled teeth and filled teeth was found more in males than females but the difference was not statistically significant. Table shows that 19(4.75%) of participants had decay teeth and decay teeth was found more in boys than girls but the difference was not statistically significant and also describes that only 7 (1.67%) of participants had filled teeth and filled teeth was found more in males than females but the difference was not statistically significant. Above table depicts that 20(5%) of participants had trauma teeth and teeth was found more in males than females but the difference was statistically significant.

**Table 3: Association of developmental defects of enamel with sex.**

Sex	Developmental defect of enamel				Total
	Healthy	Hypoplasia	Diffuse opacity	Demarcated Opacity	
Female	107 (84.9%)	17(7.64%)	16(4.14%)	1(.32%)	140(100%)
Male	221(84.98%)	26(10.09%)	9(3.65%)	3(1.29%)	260(100%)
Total	328(82.25%)	36(9.00%)	15(3.75%)	4(1%)	400(100%)

Chi square value=10.5, p value <0.05

Table 2 shows that majority of children (70%) had healthy gums only 1% of participants had bleeding gums and 29% had calculus. Healthy gums and calculus were more among boys than the girl’s participants and bleeding gums were more in female participants, the difference between the two was found statistically significant p<0.05.

Table 3 describes that boys has more developmental enamel defects and hypoplastic enamel was found 10.09% among the boys than the girls 7.64% and prevalence of diffuse opacity was slightly more in girls

(4.14%) than the boys (3.65%), demarcated opacity was found more among boys (1.29%) than the girls (0.32%) and this difference was found statistically significant.

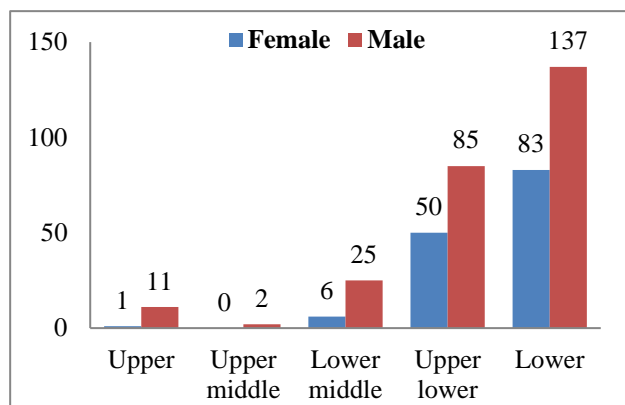
Table 4 describes that 97.25% of the participants had normal mucosal condition and 2.5%, 0.25% of participants had ulcerated mucosa and abscess respectively. Association of Oral mucosal conditions and sex was not found statistically significant.

Majority of participants were from the upper lower and lower socioeconomic status (Figure 2).

**Table 4: Association of oral mucosal condition with sex.**

Sex	Oral mucosal condition			Total
	Normal	Ulcerated	Abscess	
Female	136 (97.45%)	3 (1.91%)	2 (0.62%)	140 (100%)
Male	253 (97.42%)	7 (2.58%)	1 (0%)	260 (100%)
Total	389 (97.25%)	10 (2.5%)	1 (0.25%)	400 (100%)

Chi square value=1.4, p-value>0.05



**Figure 2: Distribution of participants according to socio-economic class.**

## DISCUSSION

Present study was conducted in Government middle schools of District Indore the catchment area of Sri Aurobindo Institute of Medical Science, Indore. 400 participants were included in the study out of which 140 were females and 260 males. Similar findings were found in a study conducted by Halwai et al.<sup>15</sup> MThe prevalence of dental caries was high in the low socioeconomic status because of their poor oral hygiene practice, lack of awareness, improper food intake, and family status. This finding is similar to the study conducted by Moses et al.<sup>16</sup> also found that majority of the children were from lower socio-economic class. Prevalence of decay teeth was found 38% among the participants. Study conducted by Thakur et al, found that the prevalence of decay teeth was 35.2% in rural schools. Decay of teeth were more in boys compared with girls and the difference was found statistically significant.<sup>17</sup> Prevalence of Missing teeth was 1.67% and filled teeth was 4.75% similar finding was found in a study by Zafer Azizi.<sup>18</sup> Majority of children had healthy gums (70%) and similar findings were observed in study conducted by George and Mulamoottil in Kerala. In present study 24% of girls in the age group of 12 years suffered from gingival problems which was less (50.8%) compared to a study conducted in Chennai. 27% percent of boys in the same age group suffered from gingival problems which was lower (51.7%) compared to school children in Chennai.<sup>19</sup>

This study observed that 82.25% Of children had normal, 9% hypoplastic, 3.75% diffuse opacity and 1% had demarcated opacity in enamel. Hypoplastic enamel was dominant type of developmental enamel defects. Enamel defects author were dominant in girls than boys and this difference was found statistically significant. Similar finding has observed in a study conducted by Fabiana Vargas and Ferreira.<sup>20</sup>

Limitations of Present study was carried out during the school hours so detailed gingival assessment was not done using plaque index and the factors determining the dental health problems were not taken out.

## CONCLUSION

The current study explores that the dental decay is the major oral health problem followed by calculus. Oral health education and oral cavity examination should be done at a regular interval study. As author are more following the western dietary habits so policy makers should develop oral health programme/school health programme including the public health expert, dental specialist and a paediatrician, ophthalmologist to screen and create awareness the among the school going children about the general and oral health.

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