

Original Article

## Oral Health status of 9 to 12 year old school going children in Urban Meerut

Sharma S<sup>1</sup>, Parashar P<sup>2</sup>, Srivastava A<sup>3</sup>, Bansal R<sup>4</sup>

<sup>1</sup>JR-III, <sup>2</sup>Professor, <sup>3</sup>Assistant Professor, <sup>4</sup>Professor & Head, Community Medicine, Subharti Medical College Meerut.

**Background:** Oral health is an integral part of general health. Oral Health status has a direct impact on general health and conversely, general health influences oral health. It has also become clear that causative and risk factors in oral diseases are often the same as those implicated in the major general diseases. Hence this study was done to estimate the prevalence, type and degree of oral diseases in the study area.

**Materials and Method:** It is a cross-sectional study design conducted among schools in , Multan Nagar which is the field practice area of department of Community Medicine, SMC (Subharti Medical College), Meerut. A total of 534 school going children aged 9 to 12 years old were examined using standard WHO Oral Health Survey methods.

**Results:** One third of the study population (34.3%) had good oral hygiene according to oral hygiene index simplified. The overall prevalence of gingivitis among children was 53.4 percent. The prevalence of dental caries among 9 to 12 year old school going children was 60.1 %. The mean DMFT score of the study population was 0.89. The index study findings revealed a strong relationship between oral health status and socio economic status and mother's educational status.

**Conclusion:**

The overall prevalence of dental caries was high in the study subjects. Mother's educational status has a significant role in improving the oral health status of children.

**Key Words:** Oral Health; Children, Socioeconomic Conditions.

### Introduction:

Oral health is an integral part of general health. Oral Health status has a direct impact on general health and conversely, general health influences oral health. Children who suffer from poor oral health are 12 times more likely to have restricted-activity days than those who do not.<sup>1</sup>

More than 50 million school hours are lost annually because of oral health problems which affect children's performance at school and success in later life.<sup>2</sup>

Moreover globally oral disease is the fourth most expensive ailment to treat in most industrialized countries and investment in preventive oral care have been shown to lead to savings in long term cost and reduction in prevalence of oral diseases.<sup>3</sup>

The high prevalence of Oro-dental problems in children in urban India clearly advocates the disease burden with prevalence of dental caries ranging from 45 to 55 percent. We have high prevalence of dental caries which can be attributed to shift in diet pattern towards more refined food, lack of appropriate knowledge about oral hygiene and causation and prevention of common oro-dental problems.<sup>4</sup>

In order to assess the magnitude of the preventive task it is necessary to know the extent and severity of the disease. Schools are the best center for effectively implementing any comprehensive health care programme as children are easily accessible at school and they represent a larger population. Hence the current study was planned to provide the base line data regarding oral health status and the factors affecting it.

### Materials and Methods:

A Cross-sectional study was conducted in urban slum , Multan Nagar, Meerut , the field practice area of department of Community Medicine, SMC (Subharti Medical College), Meerut. School going children aged 9 to 12 years were chosen as the study subjects . Study was done between September 2011 to August 2012 including development of study tools, compilation of data, analysis & presentation of the findings. According to the WHO multicentric oral health report 2006 , Prevalence of dental caries in Lucknow was found to be 43.3 % . Accordingly the sample size was calculated as 534 with 10 percent relative error.

**Address for Correspondence:**

Saurabh Sharma, Junior Resident , Department of Community Medicine, Subharti Medical College, Meerut, U.P.  
E-mail: ssharmadoc@gmail.com

The required sample was taken using Simple Random Sampling method. There are a total of 12 schools in Urban area of Multan Nagar which is the field practice area of the Department of Community Medicine, SMC, Meerut. 8 schools gave consent for the survey. A total 723 children aged 9-12 years were enlisted from the 8 schools and by using simple random table method 534 children were selected from the list. A total survey of 534 children aged 9-12 yrs old was done. Each study subject was examined by a qualified dentist from the Department of Community Medicine. All the intraoral examinations were done according to WHO Oral health survey methods using mouth mirror, explorer, and natural illumination, after seating the subjects on a chair. Chemical method of disinfection of instruments was followed by using Dettol diluted by adding 1 part to 9 parts of potable water. School children requiring treatment were referred as and when required to Subharti Dental College, Meerut.

Modified WHO Oral health assessment form and KAP questionnaire Designed by WHO Oral Health Survey Methods were used for assessing the oral health status of study subjects.

The dental indices used for assessing the oral health status are as follows : OHIS – Oral Hygiene Index Simplified, DMFT (DECAYED MISSING FILLED TOOTH)- Dental Caries Index in Permanent Dentition and deft Index - (decayed extracted filled tooth)-Dental Caries Index for primary dentition. Modified Kuppuswamy's scale(2007) was used for assessing socio economic status of subjects under study. The educational status of parents and their monthly income were obtained from the school records.

Data was analysed in SPSS 19.0 version and the results were expressed in proportions using Chi-square test and if the cell frequency was less than 5, Fischer Exact test was used. Quantitative data was analysed using Analysis of Variance test as the independent variable had more than 2 categories .

## RESULTS

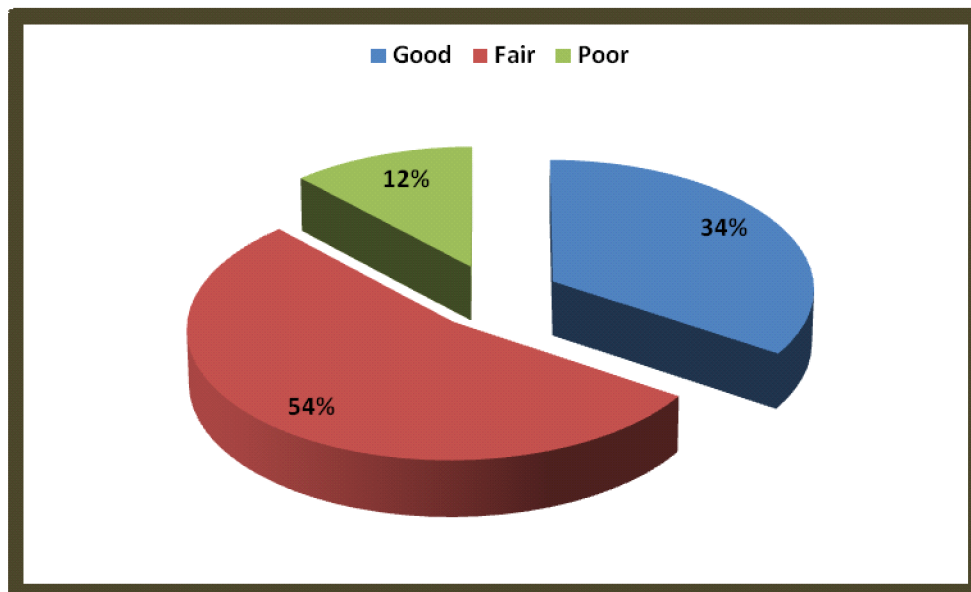


Fig.1 Oral Hygiene Status Of Study Population

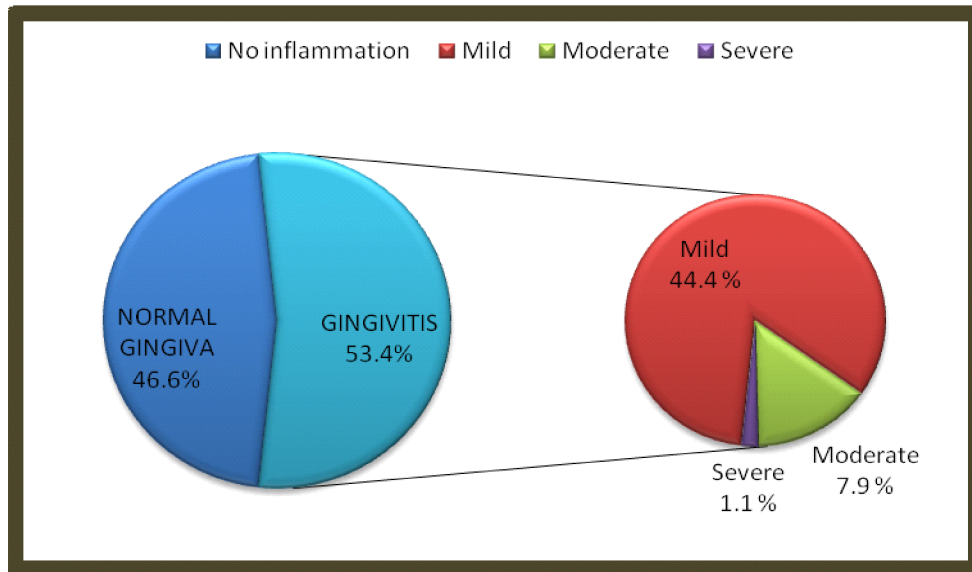


Fig. 2 Distribution Of Study Population According To Severity Of Gingivitis

About one third of the study population (34.3%) had good oral hygiene according to oral hygiene index simplified. Only 12 % of the study population had poor oral hygiene. The overall prevalence of gingivitis among children was 53.4 %. The prevalence of mild gingivitis was maximum (44.4%). Only 1.1 % of the study population was suffering from severe gingivitis.

The mean DMFT score of the study population was 0.89. The major contribution in DMFT score was by Decayed teeth with mean score of 0.87 with standard deviation of 0.874. The mean missing due to caries score and filled score was very low ,0.03 and 0.01 respectively. The mean 'def' score primary dentition was 0.50 in which the major contribution was by decayed tooth i.e.0 .46 with standard deviation of 0.73.

Table-1 Distribution of DMFT and def scores of the study population

DMFT Scores for Permanent dentition	Mean	Standard Deviation
Decayed Teeth	.87	.87
Missing Teeth	.03	.16
Filled Teeth	.01	.09
DMFT Score	.89	.89
def Scores for Primary dentition		
decayed	.46	.73
extracted	.04	.20
filled	.00	.00
def score	.50	.77

Table-2 Relationship between Mean DMFT Scores of children and their mother's educational status .

Mother's Education	Number	Mean DMFT scores	Standard Deviation
Illiterate	198	1.23	.922
Primary school	199	.87	.928
Middle school	60	.65	1.005
High school	31	.35	.551
Intermediate/graduate/Post graduate	46	.57	.720
Total	534	.92	.939

Sum of squares = 39.85, df =2, p value = 0.001

Table No.2 depicts a strong association between mean DMFT scores and educational status of mother. The table clearly shows that there was a steady decline in mean DMFT scores of children with increasing mother's educational status which was highly significant ( $p = 0.001$ ). Among children with illiterate mothers, the mean DMFT score was 1.23 whereas among clubbed literate class which includes intermediate, graduate and post graduates the mean DMFT was much lower (0.57). Analysis of variance test was used to find statistical significance.

**Table-3** Relationship between Mean DMFT Scores and socio economic status of the study population

Socio economic status	Number	Mean DMFT scores	Standard Deviation
Upper/Upper middle	145	.55	.716
Lower middle	217	.83	.850
Upper lower/Lower	172	1.35	1.046
Total	534	.92	.939

Sum of Squares = 52.893,  $df = 2$ ,  $p$  value = 0.001

Table No.3 depicts a highly significant association between socio economic status and mean DMFT scores. There is a gradual increase in DMFT scores with decreasing socio economic status. The mean DMFT among children belonging to upper lower and lower class was 1.35 as compared to 0.55 in upper and upper middle class category which was statistically significant ( $p$  value – 0.001). Analysis of variance test was used to find statistical significance.

### Discussion:

In the present study about one third of the study population (34.3%) had good oral hygiene according to oral hygiene index simplified. These observations were almost similar to findings by Bhayya P et.al(2010)<sup>5</sup> in which good oral hygiene was reported in 30 percent of the children.

Sogi et al. (2001)<sup>6</sup> in their study in Davangere among 13-14 years students showed similar oral hygiene status. Contrasting observations were seen by Mahesh P et.al (2005)<sup>7</sup> on oral health status of 5 years and 12

years school going children in Chennai city. Above 80% students were having good oral hygiene status and 20% poor oral hygiene.

In the present study the overall prevalence of gingivitis among children was 53.4 percent. The prevalence of mild gingivitis was maximum (44.4%). Only 1.1% of the study population was suffering from severe gingivitis whereas 7.9 percent were having moderate inflammation.

Singh et.al (2011)<sup>8</sup> in their study on school children in Barabanki district, Uttar Pradesh among 8–10 year olds, reported a higher prevalence of gingivitis (74.36%). However the percentage of severe gingivitis among children was 1.1 percent which was in accordance with the present study (2.52%). The prevalence of moderate gingivitis was almost same in both studies (7%). Contrasting results were seen in study by Patel et.al (2011)<sup>9</sup> among 12 years in which gingivitis was seen in 12.23% of the population. Considering severe gingivitis, Bhayya P et.al (2010)<sup>5</sup> also showed almost similar findings (1.1%). However the prevalence of moderate gingivitis in the present study was much lower 7.9% vs 64% as reported by Bhayya P et.al(2010)<sup>5</sup>

The findings in our study showed a steady decline in mean DMFT scores of children with increasing mother's educational status which was highly significant. Venugopal T. et al (1998)<sup>10</sup> also found an inverse association between dental caries and mother's literacy status.

These results show striking similarity with studies done by Gladwell et.al (2012)<sup>11</sup> in Kenya among 12 year old children in Nairobi. Children who had illiterate mothers had higher caries prevalence than children whose mothers had secondary and above level of education. Similar findings were seen by Kiwanuka et.al (2004)<sup>12</sup> in Uganda. Mothers with no formal education may lack access to literature on caries prevention and oral health in general.

In the index study there was a strong inverse association between socio economic status and dental caries. The mean DMFT scores showed a gradual increase with decreasing socioeconomic status. This pattern was also seen by Witt M.C.R. (1992)<sup>13</sup>.

The DMFT scores was high in the low socio-economic status because of their poor oral hygiene practice, lack of awareness, improper food intake and poor family status.

Similar findings were seen by Sogi et.al (2002)<sup>6</sup> among school children in Davangere Karnataka. This findings

were supported by a prevalence study in Chidambaram by Moses et.al (2011)<sup>14</sup> in which among higher class the mean (+SD) value of dmft/DMFT for males were 1.91±2.75, and among males belonging to middle class the mean Dmft scores was 2.57±3.12.

An Australian dental research report among 12 year old children by Diep Ha et.al (2011)<sup>15</sup> found similar results. Children from the lowest SES areas had more decay than those from the highest SES areas (53.1% compared with 37.1%, respectively). Taani et.al (2002)<sup>16</sup> in Jordan observed no statistical association between socio economic status and dental caries.

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