

# Oral Health Status and Treatment Needs Among Government and Private Primary School Teachers in Mathura City

Haloi R<sup>1</sup>, Ingle NA<sup>2</sup>, Roy BK<sup>3</sup>, Kaur N<sup>4</sup>, Gupta R<sup>5</sup>

## ABSTRACT

**Objectives:** To assess the oral health status and treatment needs among Government and Private primary school teachers in Mathura city.

**Materials and Methods:** This cross-sectional study was conducted upon 650 primary school teachers who were randomly selected from the 5 zones of Mathura city. The oral health status and treatment needs were recorded using standard WHO proforma 1997 (modified).

**Results:** The mean DMFT was found to be higher in Government school teachers than the Private school teachers. It was seen that among Government school teachers, 12.6 percent and among the Private school teachers 18.5 percent had healthy periodontal tissue (code 0). Majority of the school teachers both from Government and Private schools showed the prevalence of shallow pockets.

**Conclusion:** In conclusion the results of the study showed the increased prevalence of gum diseases, periodontitis and dental caries in Government schoolteachers as compared to Private schoolteachers. Regular dental check-ups and practice of routine oral hygiene procedures will enable them to lead a healthier life.

**Keywords:** Oral health status, Primary school teachers, Dental caries, Periodontal disease

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<sup>1</sup> Post Graduate Student  
Department of Public Health Dentistry  
Kanti Devi Dental College and Hospital,  
Mathura, Uttar Pradesh, INDIA

<sup>2</sup> Professor & Head  
Department of Public Health Dentistry  
Kanti Devi Dental College and Hospital,  
Mathura, Uttar Pradesh, INDIA

<sup>3</sup> Professor & Head  
Department of Orthodontics  
Regional Dental College,  
Ghaziabad, Uttar Pradesh, INDIA

<sup>4</sup> Reader  
Department of Public Health Dentistry  
Kanti Devi Dental College and Hospital,  
Mathura, Uttar Pradesh, INDIA

<sup>5</sup> Senior Lecturer  
Department of Public Health Dentistry  
Kanti Devi Dental College and Hospital,  
Mathura, Uttar Pradesh, INDIA

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## Contact Author

Dr. Ramen Haloi  
drramenhaloi@gmail.com

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## INTRODUCTION

Oral health is an essential and integral component of general health (1) representing far more than simply a healthy mouth, a pleasing smile, and freedom from pain and infection (2). It contributes positively to self esteem and personal success. Oral cavity being an important aspect of the human body, any impairment of oral health can manifest not only in the oral cavity but also elsewhere in the body (1,2).

Dental caries and periodontal diseases have historically been considered the most important global oral health

burdens among the children and young adults (2,3). Changes in oral health status are most often ascribed to the population's living conditions and life styles, effective use of oral health services, the implementation of preventive oral care programmes and finally the development of regular self care practices (4-7).

We must acknowledge the obvious fact that with respect to health care, children are essentially non-ambulatory. They must have someone with the desire, time, money and means to take them to health care providers. Since many children lack that caregiver, they do not receive preventive and curative health care, even if it is free. Child education begins long time before the dentist meets him directly. The best place for the information is in the schools, combining the good practices in their homes (8).

According to Nyswander, "The child cannot be helped to assume responsibility for his health through campaigns carried out by specialists. Sound attitudes can only be developed through unified teaching and through one source of instruction-the teacher". Teacher is the keystone of the arch of dental health education (9). School teachers have traditionally been considered as potentially important primary agents of socialization, with a capability of influencing the future knowledge, attitude and behaviour of school children (10,11). Children are the future generation of a community. School teachers can play important role in oral health activities and improving the oral health of the children. Classroom teachers are the most effective instructors for school-based oral health education and can incorporate simple, accurate elements of oral health education into routine teaching activities. School teachers in India constitute one of the biggest organized forces. Schoolteachers have an internationally recognized potential central role in school-based dental education. Considerable

importance has therefore been attributed to their dental knowledge. Teachers have the unique potential of preparing a future generation of correctly informed health care consumers and decision makers (1,11).

By virtue of their training and opportunity to influence large numbers of children and their parents, teachers form a group of particular interest in the planning and implementation of oral health preventive programs (12). Increasing the oral health knowledge of primary schoolteachers provide an opportunity to educate their students that has access to large populations of young people. They shape the future of the country and prepare the young ones for life. Teachers cannot assist in developing well-informed students, if they themselves remain misinformed. Thus the school teachers need to be enabled for the task in terms of improving their deficient knowledge on oral health and relative effectiveness of measures to prevent various oral problems (13).

Inadequate knowledge, skills and motivation for teachers to provide oral health education has shown unfavorable repercussions on pupil's oral health (14). Surveys conducted in Minnesota, USA, among future school teachers (15) and in Michigan, USA, among elementary school teachers (16), established that oral health knowledge of these important populations were often inadequate and inaccurate. The subjects were ill-informed and held inconsistent opinions about basic oral health related concepts. Studies in Romania, China and Saudi Arabia have reported positive attitudes among school teachers towards school based dental health education and a willingness to be involved in oral health promotion (17-19). A higher level of dental knowledge was revealed among Kuwaiti school teachers than among parents, and teachers reported a positive attitude towards the prevention of dental diseases (20). Among Tanzanian

school teachers low levels of oral health knowledge were found, accompanied by a poor attitude towards becoming involved in dental health education (11,21).

Proper and adequate oral health knowledge and practice is the key to a perfect oral health status. Oral health habits are formed early in life. The school teachers, especially primary school teachers, can play an important role in grooming healthy habits in their students. In order to instill healthy preventive oral habits, the teachers themselves need to have a good knowledge and attitude towards oral health. Thus, the more knowledgeable and conscious the school teachers become about their own oral health maintenance the more they can practice it in their life and can gradually bring a sea change in the oral health status of the society or peer group through positive oral health promotion (18,19,22).

Schools all over the world can be broadly divided in two major categories- Government and Private. The difference between these two can be attributed to the variation in funding and the organization behind the two sectors. The lack of proper teaching aids, time, lack of supervision and the low funding are the main drawbacks in the government schools. Hence the purpose of the study was to assess the oral health status and treatment needs among Government and Private primary school teachers in Mathura city.

## MATERIALS AND METHODS

According to the list obtained from Basic Shiksha Adhikaari office there were 167 primary schools in Mathura city of which 125 were Private and 42 were Government. The total strength of primary school teachers in Mathura city was found to be 1700 including both Government and Private schools. Mathura city was divided into 5 geographical zones – central, north, south, east and west. Area representing each zone were - Goverdhan chauraha,

Krishna-nagar, Goverdhan road, Dhoulipyaou and Vrindavan respectively.

**Inclusion Criterion**

- All the available subjects who were in the age range of 15-64 years and willing to participate in the survey.

**Exclusion Criterion**

- Subjects not willing to participate in the survey and those who were absent on the day of examination.
- Subjects suffering from major systemic illness.

**PILOT STUDY**

A pilot study was conducted to estimate the prevalence of dental caries and periodontal disease among the study participants of five schools, one school from each zone were selected randomly. A total of 100 primary school teachers were examined following a random sampling method.

Based on the prevalence for dental caries obtained from the pilot study sample size was estimated and it was found to be 600 as the minimum sample size with 5% acceptable margin of error and 95% confidence interval. A slightly higher sample size of 650 was selected to compensate for any kind of permissible error and to increase the accuracy of the study.

**SAMPLING METHODOLOGY**

In order to cover the total sample size of 650, 130 primary school teachers from each of the five zones were randomly selected out of which 65 teachers were from Government primary schools and 65 teachers from private primary schools. The selected subjects were examined according to WHO Basic Oral Health Assessment (1997) (23). Plain mirror and WHO probe were the only instruments utilized for recording the oral health under natural light.

All the collected data was entered in the Microsoft Word Excel Sheet 2007 version and processed using the SPSS 17 Version for the descriptive analysis and statistical tests of significance. Chi-Square, student t-test, ANOVA test were applied.

**RESULTS**

The age of the School teachers from both Government and Private schools ranged from 21-55 years, with mean age of Government and Private school teachers were 31 years and 27 years respectively (Table 1) In total 173(53.2%) were males and 152(46.8%) were females among the Government school teachers. Among the Private school teachers 48(14.8%) were males and 277(85.2%) were females.

Among the Government school teachers, 212(65.2%) were postgraduate, 107(32.9%) were graduate; and 6(1.8%) were having education up to high school. While the maximum number of Private school teachers i.e. 267(82.2%) were postgraduates and 58(17.8%) were graduate (Table 2).

The maximum Government and Private school teachers i.e.52.6% and 65.8% respectively had an experience of 0-5 years (Table 3).

**Periodontal status among Government and Private primary school teachers**

Among the Government school teachers, 41(12.6%) had healthy periodontal tissue (code0), 63(14.4%) had bleeding (code 1), 117(36%) had calculus (code2), 140(43.1%) had shallow pockets (code3) and 58(17.8%) had deep pockets (Table 4).

Among the Private school teachers, 61(18.5%) had healthy periodontal tissue (code0), 86(26.5%) had bleeding (code 1), 94(28.9%) had calculus (code2), 125(38.5%) had shallow pockets (code3) and 36(11%) had deep pockets (Table 5).

**SAMPLE SIZE ESTIMATION**

**Statistical analysis**

Table 1: Distribution of the study subjects according to age among Government and Private school teachers

Age	Government	Private	Total
20-30yrs	144 (44.3%)	204 (62.8%)	348(53.5%)
31-40yrs	151 (46.5%)	102 (31.4%)	253(38.9%)
41-50yrs	29 (8.9%)	16 (4.9%)	45(6.9%)
51 yrs and above	1 (0.3%)	3 (0.9%)	4(0.6%)
<b>Total</b>	<b>325 (100%)</b>	<b>325 (100%)</b>	<b>650(100%)</b>

Table 2: Distribution of the study subjects according to Level of Education among Government and Private school teachers

Education	Government	Private	Total
Post graduate and above	212 (65.2%)	267 (82.2%)	479(73.6%)
Graduate	107 (32.9%)	58 (17.8%)	165(25.3%)
High school	6 (1.8%)	0	6(0.9%)
<b>Total</b>	<b>325 (100%)</b>	<b>325 (100%)</b>	<b>650(100%)</b>

Table 3: Distribution of the study subjects according to Level of Education among Government and Private school teachers

Teaching experience	Government	Private	Total
0-5 years	171 (52.6%)	214 (65.8%)	385(59.2%)
5-10 years	104 (32%)	80 (24.6%)	184(28.3%)
10-15 years	39 (12%)	21 (6.5%)	60(9.2%)
15-20 years	11 (3.4%)	10 (3.1%)	21(3.2%)
<b>Total</b>	<b>325 (100%)</b>	<b>325 (100%)</b>	<b>650(100%)</b>

**Table 4: Distribution of the study subjects according to CPI Score among Government and Private school teachers**

CPI Score	Government	Private	Total
Healthy	41 (12.6%)	61 (18.5%)	102(15.6%)
Bleeding	63 (14.4%)	86 (26.5%)	149(22.9%)
Calculus	117 (36%)	94 (28.9%)	211(32.4%)
Shallow pocket	140 (43.1%)	125 (38.5%)	265(40.7%)
Deep pocket	58 (17.8%)	36 (11%)	94(14.4%)
Total	325 (100%)	325 (100%)	650(100%)

**Table 5: Distribution of the study subjects according to loss of attachment among Government and Private school teachers**

Loss of attachment	Government	Private	Total
Loss of attachment (0)	202 (62.2%)	216 (66.5%)	418(64.3%)
Loss of attachment (1)	136 (41.8%)	122 (37.5%)	258(39.6%)
Loss of attachment (2)	55 (16.9%)	35 (10.7%)	90(13.8%)
Loss of attachment (3)	4 (1.2%)	0	4(0.6%)
Total	325(100%)	325(100%)	650(100%)

Maximum number of school teachers of which 286(88%) from Government schools and 255(78.5%) from Private schools were found to have gum problems.

Among the Government school teachers, 202(62.2%) had loss of attachment of 0-3 mm (code0), 136(41.8%) had loss of attachment of 4-5mm (code1), 55(16.9%) had loss of attachment of 6-8mm (code2) and 4(1.2%) had loss of attachment of 9-11mm (code3) (Table 5).

Among the Private school teachers, 216(66.5%) had loss of attachment of 0-3 mm (code0), 122(37.5%) had loss of attachment of 4-5mm (code1) and

35(10.7%) had loss of attachment of 6-8mm (code2) (Table 5).

**Dental caries experience of Private and Government school teachers**

Among the Government school teachers the prevalence of dental caries was found to be 55.3%, prevalence of missing teeth were 10.7% and 13.2% were having filled teeth, where the mean number of decayed teeth was 1.84 (Table 6).

Among the Private school teachers the prevalence of dental caries was found to be 32.9%, prevalence of missing teeth were 7% and 13.2% were having filled teeth. Also the mean number of

**Table 6: Distribution of the study of the study subjects according to Mean DMFT and dental caries experience among Government and Private school teachers**

Mean DMFT		Dental caries index	Government	Private
Government	Private	Decayed (D)	180 (55.3%)	107 (32.9%)
1.8	1	Missing (M)	35 (10.7%)	23 (7%)
		Filled (F)	43 (13.2%)	43 (13.2%)

**Table 7: Treatment Needs of the study subjects among Government and Private school teachers**

Types of school	No. of teeth examined	One surface restoration	2 or more surface restoration	Pulp therapy	Extraction	Other care
Government	8775	1388(28.6%)	1572(32.4%)	213(4.4%)	1397(28.8%)	282(5.8%)
Private	9100	922(30.8%)	910(30.4%)	119(4%)	859(28.7%)	182(6.1%)

decayed teeth was 1.08 (Table 6).

**Distribution of the study subjects according Treatment Needs of Government and Private school teachers**

Treatment Needs of the study participants has been illustrated in table 7.

**Comparisons among different type of schools**

ANOVA test showed that there was a significant difference between the presence of gum disease and decayed teeth with the type of school i.e. Government and Private schools but no significant difference was found between the presence of periodontitis with the type of school (Table 8).

**DISCUSSION**

In Mathura, there were no data available assessing the oral health status of Government and Private primary school teachers. Therefore, an epidemiologic survey was conducted to assess the oral health status of Government and Private primary school teachers in Mathura city. The final sample consisted of a total of 650 study subjects out of which 325 were from Government primary schools and 325 were from Private primary schools.

**Distribution of the study subjects according to age among Private and Government school teachers**

In our study, among the Government schools, the maximum number of school teachers i.e. 151(46.5%) were from the age group 31-40 years and 204(62.8%) study subjects from Private school teachers were from 20-30 years of age. In the study conducted by Shodan M Raj et al (10) the school teachers had a mean age of 40.1 years with 69% of them being between the

**Table 8: Comparison among different types of school**

Dependent Variables	SV	F	p-value	Sig.
GUM DISEASE	Between Groups Within Groups Total	5.281	.022	S*
PERIODONTITIS	Between Groups Within Groups Total	1.865	.173	NS
DECAYED	Between Groups Within Groups Total	25.345	.000	S*

\*Significant (p≤0.05)

ages of 31-40. According to Harold D et al (11) the average age was 35.2 years and the maximum teachers were of between 36-40 years. In the study conducted by Benley George et al (1) the maximum teachers i.e. 37.5% were of between 30-39 years. According to Syed Yawar Ali Abidi et al (24) the maximum teachers i.e. 82% belongs to the age group of 20-40 years. In the study conducted by Ali Hossein Mes Garzadeh et al (25) the maximum teachers (41.8%) were 41-50 years of age. In the study conducted by Marianna Virtanen et al (26) the maximum teachers were 51-55 years of age. In the study conducted by Nazeer Khan et al (27) the maximum teachers belonged to the age group of less than 30 years.

**Distribution of the study subjects according to gender among Private and Government school teachers**

In our study among the total study subjects of 650, 221 were males and 429 were females. Among the Government schools maximum school teachers (53.2%) were males while in the Private schools maximum teachers were females (85.2%). In the studies conducted by Syed Yawar Ali Abidi et al (24) , Marianna Virtanen et al (26) , Shodan M Raj et al (10), Benley George et al (1), Harold D et al (11) and Paul Lang et al (16), most of the school teachers were females. On the contrary, according to Ali Hossein Mes Garzadeh et al (25) the maximum teachers (52%) were males.

**According to the education among Private and Government school teachers**

In our study, most of the teachers of the Private schools were found to be post graduates, few graduates but none of the teachers had an education level only up to high school which was similar to the findings of the study conducted by Benley George et al (1). On the other hand, among the Government school teachers, most of them were post graduates, few graduates and only some had a qualification up to high school. On the contrary, studies conducted by Shodan M Raj et al (10) and Ali Hossein Mes Garzadeh et al (25) showed that most of the study subjects were graduates. According to years of experience among Private and Government school teachers.

In our study among the total study subjects of 650, the maximum school teachers from both Government and Private schools had an experience ranging from 0 to 5 years which was in accordance to the study conducted by Syed Yawar Ali Abidi et al (24). On the other hand according to Harold D et al (11), in the median of the years of experience was found to be 9.5 years. According to Paul Lang et al (16), the median years in teaching of most of the school teachers were found to be 19 years while in the study conducted by Ali Hossein Mes Garzadeh et al (25) the years of experience for maximum study subjects (90%) was found to be 10-20 years.

**PERIODONTAL STATUS**

Our study revealed that the maximum study subjects showed signs of gum disease rather than periodontal disease. The result of this study revealed that periodontitis was more prevalent among the males. The high prevalence of periodontitis among males might be attributed to cultural practice of the betel chewing (with tobacco) in various forms like gutkha, panmasala and betel with tobacco and lime.

Our study results revealed that gum diseases and periodontitis were more prevalent among Government schoolteachers as compared to Private schoolteachers. This might be due to the fact that most of the Private schoolteachers were post graduates. On the other hand Government schoolteachers showed a mix education level comprising of post graduates, graduates and there were some teachers who had education up to high school level. This difference in education level resulted in lack of awareness towards oral health among the Government schoolteachers. Another reason might be due to the low utilization of dental services by the Government schoolteachers. Dental services had been provided to the people of Mathura city by the one and only dental college which is situated in the heart of the city. The Government schools are situated away from the main township especially in the interior areas of Mathura city as compared to the Private schools. Thus, dental care services become less accessible to the Government schoolteachers as compared to Private schoolteachers. According to the dental caries experience of Government and Private school teachers.

This study revealed that the Government schoolteachers had more decayed, missing teeth and higher mean DMFT as compared to the Private schoolteachers. The two main reasons for increase prevalence of caries experience among Government schoolteachers might be because of the difference in education

level between Government and Private school teachers and lesser utilization of dental services. This difference in education level resulted in lack of awareness which added with personal negligence of oral health might have increased the mean DMFT, DT and MT in the Government schoolteachers compared to Private schoolteachers. According to the Treatment Needs of the study participants among Government and Private school teachers By assessing the treatment needs for dental diseases, the greatest need was for both one and two surface filling followed by extraction, other care and pulp restorations among Government and Private school teachers.

**SUMMARY AND CONCLUSION**

The aim of the study was to assess the oral health status and treatment needs among Government and Private primary school teachers of Mathura city. From the results of the study it was concluded that

- Majority of the Government schoolteachers i.e. 286(88%) showed the evidence of gum diseases combined with high prevalence of bleeding and calculus as compared to Private schoolteachers i.e. 255(78.5%). This difference in prevalence of gum disease between Government and Private school teachers when compared was found to be statistically significant.
- The prevalence of loss of attachment was higher in Government schoolteachers as compared to Private schoolteachers. Thus the prevalence of periodontitis was more among the Government school teachers as compared to Private schoolteachers but the difference when compared was not found to be statistically significant.
- The mean DMFT score of Government and Private school teachers was found to be 1.4 and 1.08 respectively. This difference in mean for Government and Private school teachers when compared was found to be highly statistically

significant.

- In conclusion the results of the study showed that Periodontal disease and dental caries were found to be the major public health problems among the Government and Private schoolteachers in Mathura city which need immediate attention. Regular dental check-ups and practice of routine oral hygiene procedures will enable them to lead a healthier life. Increased exposure to dental health education through dental professionals will help them improve their knowledge on oral health care.

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