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Original article

Prevalence of oral diseases among school children of Mysuru and Chamarajanagar districts, Karnataka, India

M. Shwethashree[a], Preetha Susan George[a,*], B. Prakash[a], M.C. Smitha[a], Nayanabai Shabadi[a], M.R. Narayana Murthy[b], Arun Gopi[b]

[a] Dept of Community Medicine, JSS Academy of Higher Education and Research Centre, Mysuru, Karnataka, India
[b] Department of Community Medicine, JSS Medical College, JSS Academy of Higher Education and Research, Mysuru, Karnataka, India

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ABSTRACT

Introduction: Oral diseases are the most common disease that affect people throughout their life time. The Global Burden of Disease Study 2016 estimated that oral disease affects at least 3.58 billion people worldwide. Indian Dental Associations (IDA) drafted the National Oral Health Programme to address the burden of dental diseases and to bring about 'optimal oral health' for all by 2020. With this background, this study intends to assess the prevalence of oral diseases among school children from 3 years to 14 years, from both urban and rural areas, of Mysuru and Chamarajanagar district of Karnataka state, India.

Methods: A cross sectional study was conducted in selected 44 schools of Mysuru and Chamarajanagar districts for a period of one academic year and a total of 9062 students were evaluated for oral diseases. Data was entered in Microsoft excel worksheet. Descriptive statistics like percentage was used. Inferential statistics were applied as needed using licensed version of SPSS 22. Inferential statistical test like Chi-square test was applied to find out the association and was expressed statistically significant at p-value less than 0.05.

Results: Among the 9062 children, 50.1% were males and 49.9% were females. Of the total students examined 61.9% were from rural area and 38.1% were from urban areas. There was no much difference in the prevalence of dental diseases among boys and girls and the prevalence of dental caries was high among the students attending urban schools (96.5%) as compared to rural area (86.1%), which was statistically significant. It was seen that aphthous ulcer (0.25%) constituted the most common oral comorbidities.

Conclusion: The total prevalence of oral diseases, especially dental caries and dental fluorosis were 27.40% and 1.8% respectively.

1. Introduction

Oral health in humans refers to that oral status in which all the associated structures are disease and pain free, along with which, are in a state of adequate functional activity for carrying out mastication and other oral functions. Maintaining oral health is as important as taking care of general health, for the well-being of an individual.[1] In developing country like India, because of the shift towards modernization, i. e a changing trend from traditional diet to more westernized diet has increased the level of sugar consumption, which eventually will lead to an increase in dental caries among the school children.[2]

In recent years, oral health has been recognized to be an integral part of general health. Poor oral health of children can have a negative impact on their over-all development and social well-being.[3] Among all other oral diseases, dental caries is the most common one. The prevalence of dental caries among school children, from the available studies ranges from 31.5% to 89%, in different part of the country.[4] Untreated caries can lead to permanent damage of the tooth as well as spread of infection throughout the body, which in turn will affect the quality of life of the children.[5]

Proper guidance is essential for the growing children regarding oral hygiene and it is proven that schools are the best centre for effectively implementing comprehensive health care programme, as children are easily accessible at schools.[4] Hence this study attempts to assess the prevalence of dental and oral comorbidities among school going children of Mysuru and Chamarajanagar districts of Karnataka, India.

* Corresponding author.
E-mail addresses: drmsshree@gmail.com (M. Shwethashree), drsusanbejoy@gmail.com (P.S. George), prakashdr90@yahoo.com (B. Prakash), smithamc@jssuni.edu.in (M.C. Smitha), nayanabaishabadi@jssuni.edu.in (N. Shabadi), mrnarayanamurthy@jssuni.edu.in (M.R. Narayana Murthy), arungek2008@gmail.com (A. Gopi).

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2. Methodology

The study design was cross-sectional and it was conducted for a period of one year in the academic year July 2018–March 2019. Schools running under the administration of JSS Mahavidyapeetha was selected for the study. A total of 44 schools were selected by convenience and visited as part of the study. The schools were located in both rural and urban localities of Mysore and Chamarajanagar districts. Institutional ethical committee clearance was obtained prior to the study and consent was obtained from respective school authorities. Consent was taken from respective class teachers for the age group from 3 years to 6 years and for students above 6years oral assent was obtained in the presence of their respective class teachers. Children from the age group of 3 years–14 years and who were present on the day of the survey were included in the study. A total of 9062 students, by convenience sampling, were assessed for oral diseases. Clinical examination for signs of oral diseases was conducted by junior residents who were trained for the same for a period of two week by the Department of Community Dentistry. Children were examined in the school premises under natural day light as per WHO criteria using mouth mirror and straight probe. Dental caries experience was assessed using DMFT index (WHO 1997). The tooth was considered carious if there was visible evidence of cavity. Appropriate treatment was advised for each child by the examiner such as oral prophylaxis, restoration, extraction etc. and those students who needed further care were referred to higher centre. The current scholastic year, rural or urban locality of the school, age and gender of the students were also collected. The information obtained was entered to the Microsoft Excel 2013 spread sheet and analysis was performed using a licensed SPSS version 23. The descriptive data were reported in percentages and chi-square tests were done to evaluate the association between the presence of oral diseases and various factors.

3. Results

Among the total 9062 school students, 4537 (50.1%) were males and 4525 (49.9%) were females with a mean age of 13 ± 3 years. Among the students examined, majority were from 9th standard (25%) followed by 10th standard (22.7%) as shown in Table 1. Majority of the schools were located in rural area (61.9%).

Out of the 9062 children examined, 2499 (27.4%) showed evidence of dental caries as shown in Fig. 1 and 167 (1.8%) had dental fluorosis.

The most common oral cavity morbidity condition included Apthous ulcer (0.25%), malocclusion (0.05%), angular stomatitis (0.02%) and glossitis (0.01%).

The caries prevalence was found to be similar in both males (13.6%) and females (13.8%) as shown in Table 2.

On statistical analysis, there was a significant association between the grade/class of the students and dental comorbidities as shown in Table 3. The prevalence of dental fluorosis was also relatively high among high school children.

The prevalence of dental caries was high among the students attending urban schools (96.5%) as compared to rural area (86.1%) and the association between the locality of the schools and dental comorbidities were statistically significant as shown in Table 4.

Table 1
Distribution of study subjects based on Gender, Grade and locality (n = 9062).

Factors:	Frequency	Percentage (%)
Gender		
Male	4537	50.1
Female	4525	49.9
Age group		
Pre- primary	374	4.1
Lower primary	1252	13.8
Upper primary	3121	34.4
High school	4315	47.6
Locality		
Urban	3452	38.1%
Rural	5610	61.9%

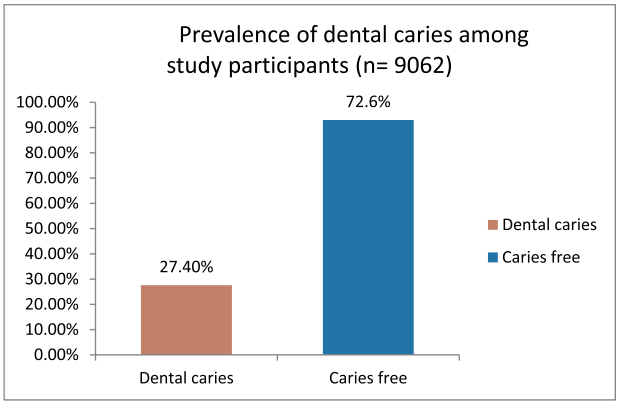

Fig. 1. Prevalence of dental caries among study participants (n = 9062).

Table 2
Gender wise distribution of Oral diseases. (n = 9062).

Dental/Oral conditions	Total number affected	Males	Females
Dental caries	2499 (27.4)	1240 (13.6)	1259 (13.8)
Dental fluorosis	167 (1.8)	91 (1.0)	76 (0.83)
Aphthous ulcer	23 (0.25)	6 (0.06)	17 (0.18)
Malocclusion	5 (0.05)	3 (0.03)	2 (0.02)
Angular stomatitis	2 (0.02)	0 (0.00)	2 (0.02)
Glossitis	1 (0.01)	1 (0.01)	0 (0.00)
Total	2697 (29.7)	1341 (14.7)	1356 (14.9)

4. Discussion

According to World Health Organization, dental caries is a pandemic and reported prevalence to range from 60 to 90%. In the present study the prevalence of dental caries was found to be 27.6% which is below the prevalence noted in other studies by P Sudha et al.,[6] Karunakaran et al.[7] Lower prevalence in the present study is mainly because, most of the deciduous teeth have been exfoliated, which are less resistant to caries compared to permanent teeth and premolars have not been in the oral cavity long enough for caries to set in. The annual school health screening programme also must have sensitized parents, children and teachers regarding maintaining good oral hygiene practices.

In the present study, caries prevalence were almost similar in both genders and there was no statistical significant difference in caries prevalence between the two gender. This finding was similar to the study done by P Sudha et al.[6] and Shetty and Tandon.[12] On the contrary, few other studies have shown higher caries prevalence in females. It was seen that the caries prevalence declined progressively as the age advanced, which could be due to an increased awareness of oral hygiene and their capability of taking care of good oral hygiene by themselves as age advances and also the permanent teeth are more resistant to caries as compared to immature tooth. This finding was similar to the study done by Sudha et al.[6] This result was statistically significant.

The prevalence of dental fluorosis was also less in our study as compared to other studies.[13] This can be attributed to the fact that Mysuru city does not belong to endemic zone of fluorosis.[11] A study done by Chitta R Chowdhury et al. documents the mean fluoride concentration of drinking water in Mysuru district as 0.75, which is below the optimal concentration range of 0.8–1.5 ppm.[13] This finding is also self-explanatory for higher prevalence of dental caries in the present study.

Table 3
Association between the grade of the students and Oral diseases. (n = 9062).

Class/grade	Dental caries present	Dental caries absent	P value	Dental fluorosis present	Dental fluorosis absent	P value
Pre- primary	257 (68.7%)	117 (31.3%)	< 0.001*	2 (0.5%)	372 (99.5%)	0.029
Lower primary	418 (33.4%)	834 (66.6%)		17 (1.4%)	1235 (98.6%)	
Upper primary	852 (27.3%)	2269 (72.7%)		72 (2.3%)	3049 (97.7%)	
High school	972 (22.5%)	3343 (77.5%)		76 (1.8%)	4239 (98.2%)	

*p-value was found to be significant.

Table 4
Association between locality of schools and Oral diseases (n = 9062).

Locality of school	Dental caries present	Dental caries absent	P value	Dental fluorosis present	Dental fluorosis absent	P value
Urban	1882 (54.5%)	1570 (54.5%)	< 0.001*	68 (2%)	3384 (98%)	0.481
Rural	617 (11%)	4993 (89%)		99 (1.8%)	5511 (98.2%)	

*p-value was found to be significant.

It was shown that there was a significant association between the locality of the school and dental diseases. Children from urban area showed a higher prevalence of dental caries as they are more exposed to junk foods.Thus dental caries occurs as a result of dissolution of minerals from the tooth surface by the organic acid formed by the fermentation of sugars by bacteria.[14]

5. Conclusion

The prevalence of oral diseases, namely dental caries and dental fluorosis were 27.40% and 1.8% respectively. The caries prevalence was found to be similar in both males and females. The prevalence of dental caries was high among the students attending urban schools as compared to rural area. The prevalence of dental caries was high among pre-primary school children and showed a decrease in the prevalence of dental caries as age advanced. In comparison to other studies,[6,7] the present study showed a lower prevalence of oral diseases, which could be attributed to the continuous care with yearly screening. There was no significant difference in the prevalence of dental fluorosis among students attending urban and rural schools.

6. Recommendations

Due emphasis should be given to oral health and oral health promotion activities should be continued. Mobile dental clinic service should be utilized to provide necessary treatment procedures those in need, then and there. Dental caries is not only a medical problem, but also a social disease, as their formation is associated with dietary, behavioural and socioeconomic factors. Awareness among students can be increased by school teachers and parents as they are the role models for the students. Parents should be advised regarding regular dental follow ups with dietary instructions to maintain good oral hygiene. Society should be made aware about the importance of fluoride ion in drinking water and tooth paste in order to mitigate dental caries. Above all integrating oral health into general health makes it more acceptable to the society.

Declaration of competing interest

None.

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