

Original Research Article

Oral health problems among school children in rural area: a cross-sectional study

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ABSTRACT

Background: Students are the wealth of the nation as they constitute one of the important segments of the population. The foundation of good health and sound mind is laid during the school age period. During this period, they are vulnerable to various oral health problems. These conditions are the hurdles in their physical, mental, emotional, and social development. In view of this, a study was conducted to assess the oral health status of the school students in rural areas.

Methods: Cross-sectional study was conducted in rural area among school children in the month of March 2023. Standard proforma was used to record the data related to oral morbidity among the subjects. Data entry and statistical analysis was done with the help of Microsoft Excel. χ^2 and SE (p_1-p_2) tests were used to compare difference in categorical variables. The statistical level of significance was fixed at $p<0.05$.

Results: 432 students were examined. 226 (52.31%) subjects were having oral morbidity. 151 (66.81%) subjects in the age group of 5-10 years while 75 (33.19%) in the age group of >10-16 years were having oral health problems ($p<0.05$). 155 (59.73%) students from primary section and 71 (40.27%) students from secondary section were suffering from oral morbidity ($p<0.05$). Dental caries was observed among 194 (44.91%) subjects followed by mouth ulcers (09.72%). 143 (53.36%) underweight subjects were suffering from dental caries ($p<0.05$).

Conclusions: Common oral health problems found in school going children can be addressed with the implementation of school health program in effective way. These common infirmities can be prevented by actively involving parents and teachers in school health services.

Keywords: Oral morbidity, School children, Rural area

INTRODUCTION

Morbidity among school children is a major public health concern as this adversely affects their physical, mental, social, and spiritual growth and development. Poor health impairs both the growth and cognitive development of school children. There is growing evidence of the considerable burden of morbidity among school going children.¹ Healthy children are the foundation of a healthy nation. A nation's growth and development are depended

on the status of the children. School as a social institution has greater influence on the lives of the children apart from the family. Daily children spend a considerable amount of time interacting with their peers and teachers gaining knowledge, building attitudes and skills as well as developing behaviors. Since schools as useful platform to promote health and prevention of various diseases among school going children, Government of India has launched 'School Health Program' under Ayushman Bharat Scheme.²

In India, the first medical examination of school children was conducted in the city of Baroda in 1909. According to Bhore Committee, school health services in India were essentially non-existent in 1946 and where they did exist, they were substandard. In 1953, the secondary education committee emphasized the need of student medical examination and nutrition program. Investing in the health of children is a major priority of the 2017 National Health Policy. For many years, the WHO and its Global School Health Initiative have emphasized the significance of health promotion in schools, in addition to the Government of India. Early intervention is crucial in dealing with the rising frequency of communicable and non-communicable diseases among school going children. With the help of the WHO's Global School Health Initiative, the Government of India has directed several policies and programs to include health more fully into education.³ School Health Promotion is an international need with programs implementing across continents due to numerous documented benefits, to not just the individuals but to the community and country. Simple primary care interventions focusing on hygiene habits, such as oral hygiene and lessons of hand hygiene, have a vital role in health education and promotion.⁴

Oral health is a key indicator of overall health, well-being, and quality of life of the students. Poor oral hygiene, dental caries and other oral diseases constitute more than 50% of major public oral-health problem, among children and adolescents.⁵ Children are greatest asset of the nation. School children constitute around 25% of total population of India. They are more vulnerable to malnutrition, infections, and oral diseases than rest of the population.⁶ Dental caries is one of the leading health problems among school going children. Oral health problems including dental caries is a major public health problem in developing countries like India.⁷ Increasing myopia and poor dental hygiene denotes a changing morbidity pattern in private primary school of the urban area. School health services which include teaching to school children about health and among them promoting healthy behaviors is an important intervention to promote health of the school children.⁸

The health and well-being of children is a fundamental issue in education. Morbidity and physical defects constitute major health problems among school age children.⁹ School is acknowledged as the place where children gain knowledge from health education sessions on various aspects of personal hygiene, oral health, sanitation, and social customs. Health is one of the key factors determining the enrolment, performance, and continuation in school.¹⁰ In view of this, the study was planned to assess the status of oral health among the school students in rural area of Maharashtra.

METHODS

This is a descriptive cross-sectional study conducted in rural field practice area of a medical college in the month

of March 2023, among primary and secondary school children of an English medium private school which is selected by non-probability purposive sampling technique. Ethical committee clearance, permission from school authority and informed consent from the parents/guardian of the children who were also present at the time of study, was obtained before starting the study. Inclusion and exclusion criteria were developed. All the students present in the school at the time of study were included in the study using purposive sampling method. Pre-designed, pre-tested, semi-structured proforma was used to record the relevant data of the study subjects. A portable weighing machine, wall mounted height measuring scale, stethoscope, measuring tape, pen torch, tongue depressor, disinfectant, sanitizer etc. tools were used to conduct the study. Socio-demographic data of the students was recorded in the proforma. Thorough anthropometric and oral cavity examination of the subjects was performed in good day-light and the findings were recorded in the proforma. The nutritional status of the subjects was assessed to show the association between it and oral health problems. Data entry and statistical analysis was performed with the help of Microsoft Excel. The categorical variables were presented as numbers and percentages. Chi-square and standard error of difference between two proportions tests of significance were used to compare differences in categorical variables. The statistical significance level was fixed at $p < 0.05$.

RESULTS

Total 432 school students were examined for oral health problems of which 248 (57.41%) were boys and 184 (42.59%) were girls. 222 (51.39%) were in the age group of 5-10 years while 210 (48.61%) were >10-16 years. 228 (52.78%) were from primary and 204 (47.22%) were from secondary section. Almost half of the subjects i.e., 226 (52.31%) were having one or more oral health problems. Thus, the prevalence of oral morbidity among the subjects was 52.31%. 151 (66.81%) subjects in the age group of 5-10 years while 75 (33.19%) in the age group of >10-16 years were having oral health problems ($p < 0.05$). Total 135 (59.73%) boys and 91 (40.27%) girls were observed having oral morbidity. 155 (59.73%) students from primary section and 71 (40.27%) students from secondary section were suffering from oral health problems ($p < 0.05$). Age, gender, class, and oral morbidity wise distribution of the subjects is shown in (Table 1). Total 73 (16.90%) subjects were having more than one oral health problem. 194 (44.91%) subjects were suffering from dental caries, followed by mouth ulcers in 43 (9.72%). Thus, dental caries was the most prominent oral health problem among the subjects. The distribution of various forms of oral morbidity among the subjects is shown in (Table 2). Total 133 (68.56%) students from 5-10 years and 61 (31.44%) from >10-16 years age group were suffering from dental caries ($p < 0.0001$). Cheilitis was equally present among both the age groups. 19 (70.37%) students from 5-10 years and 08 (29.63%) from >10-16 years age group were having tonsillitis ($p = 0.054$).

Table 1: Age, gender, class, and oral morbidity wise distribution of the subjects (n=432).

Variables		Frequency		With oral morbidity (n=226, 52.31%)		Without oral morbidity (n=206, 47.69%)	
		N	%	N	%	N	%
Age (years)	5-10	222	51.39	151	66.81	71	34.47
	>10-16	210	48.61	75	33.19	135	65.53
P value				<0.05			
Gender	Boys	248	57.41	135	59.73	113	54.85
	Girls	184	42.59	91	40.27	93	45.15
P value				>0.05			
Class	Primary	228	52.78	155	68.58	73	35.44
	Secondary	204	47.22	71	31.42	133	64.56
P value				<0.05			

Table 2: Distribution of various oral health problems among the subjects (n=432).

Oral health problems	N	%
Dental caries	194	44.91
Cheilitis	12	02.78
Glossitis	24	05.56
Tonsillitis	27	06.25
Mouth ulcers	42	09.72

Table 3: Age, gender and class wise distribution of oral health problems among the subjects with oral morbidity (n=226).

Variables		Dental Caries (n=194)		Cheilitis (n=12)		Glossitis (n=24)		Tonsillitis (n=27)		Mouth ulcers (n=42)	
		N	%	N	%	N	%	N	%	N	%
Age (years)	5-10	133	68.56	06	50.00	15	62.50	19	70.37	26	61.90
	>10-16	61	31.44	06	50.00	09	37.50	08	29.63	16	38.10
P value		0.00		1.00		0.24		0.05		0.13	
Gender	Boys	118	60.82	04	33.33	11	45.83	09	33.33	25	59.52
	Girls	76	39.18	08	66.67	13	54.17	18	66.67	17	40.48
P value		0.00		0.29		0.69		0.10		0.23	
Class	Primary	136	70.10	06	50.00	15	62.50	20	74.07	29	69.05
	Secondary	58	29.90	06	50.00	09	37.50	07	25.93	13	30.95
P value		0.00		1.00		0.24		0.02		0.02	

Table 4: Association between nutritional status and oral health problems (n=432).

Oral health problems		Underweight (N=268, 62.04%)		Normal or overweight (N=164, 37.96%)		P value	Remark
		N	%	N	%		
Dental caries	Yes	143	53.36	51	31.10	0.00	Significant
	No	125	46.64	113	68.90		
Cheilitis	Yes	08	02.98	04	02.44	0.73	Not significant
	No	260	97.02	160	97.56		
Glossitis	Yes	14	05.22	10	06.10	0.70	Not significant
	No	254	94.78	154	93.90		
Tonsillitis	Yes	18	06.72	09	05.49	0.80	Not significant
	No	250	93.28	155	94.51		
Mouth ulcers	Yes	31	11.57	11	06.71	0.15	Not Significant
	No	237	88.43	153	93.29		

Mouth ulcers were more prevalent (61.90%) among 5-10 years age group compared to >10-16 years age group (38.10%). Total 118 (60.82%) boys while 76 (39.18%) girls were suffering from dental caries ($p=0.002$). Total 04 (33.33%) boys and 08 (66.67%) girls were suffering from cheilitis. 11 (45.83%) were boys and 13 (54.17%) girls were suffering from glossitis. Tonsillitis was more prevalent among girls (66.67%) while mouth ulcers were more prevalent among boys (59.52%). Total 136 (70.10%) students from primary classes and 58 (29.90%) students from secondary section were suffering from dental caries ($p<0.0001$). Cheilitis was equal among both the groups. Glossitis (62.50%) was more prevalent among primary school students. 20 (74.07%) students from primary section and 07 (25.93%) students from secondary section were suffering from tonsillitis ($p=0.027$). 29 (69.05%) students from primary classes while 13 (30.95%) students from secondary classes were suffering from mouth ulcers ($p=0.022$). Age, gender, and class wise distribution of oral health problems among the subjects with oral morbidity are shown in (Table 3).

Total 268 (62.04%) students were underweighting while 164 (37.96%) students were having normal or overweight ($p<0.0001$). 143 (53.36%) underweight subjects while 51 (31.10%) normal or overweight subjects were suffering from dental caries. The difference is statistically significant ($p<0.05$). There was no statistically significant difference between other oral health problems and the nutritional status of the subjects. The details are shown in (Table 4).

DISCUSSION

Total 432 school students were examined by us for oral health problems of which 248 (57.41%) were boys and 184 (42.59%) were girls. 222 (51.39%) were in the age group of 5-10 years while 210 (48.61%) were >10-16 years. 226 (52.31%) subjects had one or more oral morbidity. 151 (66.81%) subjects in the age group of 5-10 years while 75 (33.19%) in the age group of >10-16 years were having oral health problems ($p<0.05$). Total 135 (59.73%) boys and 91 (40.27%) girls were observed to have oral morbidity. 155 (68.58%) students from primary section and 71 (31.42%) students from secondary section were suffering from oral health problems ($p<0.05$). 133 (68.56%) students from 5-10 years and 61 (31.44%) from >10-16 years age group were suffering from dental caries ($p<0.0001$). Thus, in our study it is observed that total 194 (44.91%) subjects were suffering from dental caries. Anga et al in their study in Vijayawada observed, the most common morbidity among the subjects was dental caries (32.5%).¹ They also observed tonsil enlargement among 11.9% students and 81.8% students had one or the other morbidity. 12 (02.78%) subjects were suffering from cheilitis in our study. This oral health problem was equally present among both the age groups. 19 (70.37%) students from 5-10 years and 08 (29.63%) from >10-16 years age group were having tonsillitis ($p=0.054$). Mouth ulcers were more prevalent (61.90%) among 5-10 years

age group compared to >10-16 years age group (38.10%). Total 118 (60.82%) boys while 76 (39.18%) girls were suffering from dental caries ($p=0.002$). 04 (33.33%) boys and 08 (66.67%) girls were suffering from cheilitis. 11 (45.83%) were boys and 13 (54.17%) girls were suffering from glossitis. Tonsillitis was more prevalent among girls (66.67%) while mouth ulcers were more prevalent among boys (59.52%). Total 136 (70.10%) students from primary classes and 58 (29.90%) students from secondary section were suffering from dental caries ($p<0.0001$). Cheilitis was equal among both the groups. 24 (05.56%) subjects were suffering from glossitis. Glossitis (62.50%) was more prevalent among the primary school students compared to secondary school children. In the present study, we found 42 (09.72%) students were suffering from mouth ulcers. 29 (69.05%) students from primary classes while 13 (30.95%) students from secondary classes were suffering from mouth ulcers ($p=0.022$). 27 (06.43%) subjects were suffering from tonsillitis. 268 (62.04%) students were underweighting while 164 (37.96%) students were having normal or overweight ($p<0.0001$) in our study. 143 (53.36%) underweight subjects while 51 (31.10%) normal or overweight subjects were suffering from dental caries ($p<0.05$).

Singh et al examined 261 primary school students from urban and rural areas of eastern Haryana.² They observed, 80% students from urban school and 50% students from rural school were suffering from ENT problems. In our study in urban area, we observed 27 (06.25%) subjects were suffering from tonsillitis. 20 (74.07%) students from primary section and 07 (25.93%) students from secondary section were suffering from tonsillitis ($p=0.027$). Due to high prevalence and incidence of oral morbidity, school children have been a high priority population in many government policies and health programs.³ WHO has issued guidelines towards health promotional initiatives at schools as a part of Global School Health Initiative.⁴ Shree et al conducted study among students of seventh, eighth and ninth grades in Hooghly district, West Bengal.⁵ They observed more than half of the participants, that is 55.7% had bad oral health and rest 44.3% had good oral health. More than one-third, that is 42.4% had unhealthy teeth 65.1% were suffering from caries tooth, 33.7% had dental plaques, 7.2% had dental erosions, 35.6% had halitosis and 38.1% had unsatisfactory teeth alignment.

Kausar et al observed 60% of the children were having one or more morbidity among school children in their study in rural area of Jalna. 52.27% students were having nutritional deficiency diseases.⁶ Prevalence of morbidities among girls was more than boys. Sharma et al observed 48.68% prevalence of dental caries among secondary school children in Mumbai metropolitan region.⁷ Also observed that, of the 152 subjects examined, 137 (90.13%) were having one or more oral health problems. Mhaske et al in their cross-sectional study in urban area among private primary school children observed, 65.1% subjects were suffering from dental caries, 38.2% were suffering

from upper respiratory tract infections.⁸ Gokhale et al in their study among primary school children in tribal area observed, around 30% subjects were malnourished as per WHO weight-for-age standards.⁹ The teeth hygiene was most compromised and dental caries was commonest morbidity among these children studying in primary school in tribal area of Palghar district. Kar et al in their study in Odisha observed, 47.6% school children were suffering from dental caries (23.2%).¹⁰

CONCLUSION

Common oral health problems like dental caries, mouth ulcers and tonsillitis found among school going children can be addressed with implementation of school health program in effective way. These common infirmities can be prevented by actively involving parents and teachers in school health services. Effective implementation and monitoring of school health services is the need of the hour to promote, protect, and maintain oral health as well as overall health of the school going children.

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