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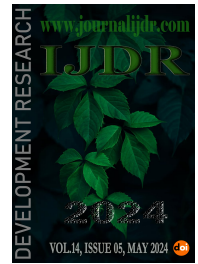
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RESEARCH ARTICLE

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PREVALENCE OF DENTAL DISEASE IN 5 -14-YEAR-OLD SCHOOL CHILDREN IN RURAL AREAS OF AHMEDNAGAR DISTRICT, MAHARASHTRA

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ABSTRACT

Background: This initiative is a consequence of the absence of any information on any study being conducted in the past on the prevalence of dental diseases in the Ahmednagar district of Maharashtra. Oral health an essential component of health throughout life. Hardly any information is available on the oral health status of children. Thus, the study was conducted among 5-year-old and 14-year-old children in schools in rural areas of Ahmednagar District. **Aims:** To assess the prevalence of gingivitis, fluorosis, malocclusion, and dental caries in school-going children with different age groups and genders in rural areas of district Ahmednagar. **Materials and methods:** A total of 800 school-going children comprising 400 boys and 400 girls were examined. A total of 300 children were in the age group of 5–7 years. A total of 294 and 206 children were in the age groups of 8–10 and 11–14 years, respectively. **Statistical Analysis:** A chi-square test was used for deriving results. **Results:** The prevalence of gingivitis, fluorosis, and malocclusion was 40.7%, 81.8%, and 100.0 %, respectively in males and 59.3%, 18.2% and 0.0% seen in females. The difference in dental caries was equally significant in both boys and girls.

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INTRODUCTION

India is a developing nation with difficulty curing a wide range of medical and dental conditions. In rural India, oral health maintenance has attracted the most focus because of financial constraints and a lack of education. Planning and implementing oral health initiatives in a given population requires the use of epidemiological research to assess the incidence and severity of dental illnesses [1]. The dental conditions that plague people most often are fluorosis, malocclusion, and gingivitis. There have been several reports of higher oral disease prevalence in emerging nations like India [2]. The quick reversal of this trend may be attributed to the development of school-based preventative programs, dietary modifications, enhanced dental hygiene practices, and effective fluoridation techniques. It's critical to comprehend the prevalence and distribution of oral health problems as well as people's dental health activities. These kinds of data are necessary to create oral health-related programs and policies [3]. Around 40% of Indians are under the age of 18. Dental caries is the most common dental sickness, thus it's critical to diagnose the condition, treat it as needed, and spread awareness about how to prevent it.[4]

Gingivitis is a common oral condition that first appears in early childhood and becomes more severe as people become older. Microbial biofilm accumulation is the main cause of gingivitis, and wearing orthodontic bands, smoking, having advanced carious lesions, and having poor manual dexterity are risk factors for the condition. Gingivitis has the potential to progress into a severe type of periodontal disease if left untreated [5]. Our study aims to evaluate the periodontal health and prevalence of tooth decay in school-age children in rural Ahmednagar district who are between the ages of 5 and 14. Analyze the prevalence of the aforementioned illnesses in various age and gender groups.

MATERIAL AND METHODS

The cross-sectional study was conducted by the Department of Oral Medicine and Radiology, SMBT Dental College and Hospital, Sangamner, Ahmednagar district, Maharashtra, India. The study was carried out in the year 2023. A sample size of 800 school-going children from three schools located in the rural areas of district Ahmednagar was examined. Institutional ethical permission was

obtained from the Committee on Ethics, SMBT Dental College, Sangamner (via certificate no. SMBT /1084/2023). These schools were randomly selected by a computer-generated list. Written permissions were obtained from the school authorities. Only children who were permanent residents of that area were included in the study. The precise socioeconomic level of these children could not be determined because the majority of the youngsters were unable to provide reliable information about their dads' earnings and line of work. The kind of school and its location served as a proximate measure of a child's socioeconomic status. Given that all three of the schools were government-run in the same district's rural districts, the socioeconomic Status was viewed as being uniform. a similar approach was used in evaluating the socioeconomic condition of an earlier study. Children were examined in their respective schools on pre-decided dates. An examination was carried out in broad daylight. Children were seated on an ordinary chair in an upright position. Intraoral examinations were made using a mouth mirror and an explorer. Instruments were disinfected with an antiseptic solution after every use. The children were examined by a single examiner who was trained to record the WHO oral health assessment form to avoid inter-examiner variations. The age and sex of each child were recorded [1]. Among children, 238 were in the age group of 5–7 years. A total of 277 and 321 children were in the age groups of 8–10 and 11–14 years, respectively. The total number of boys and girls was 430 and 406, respectively. The Loe and Silness index was used for recording gingivitis and WHO indices were used for recording fluorosis and malocclusion. DMFT index used for evaluation of dental caries among children. Recording of data was done by a trained person who assisted the examiner throughout the study. The observations recorded were subjected to statistical analysis using a chi-square test. Inclusion criteria consist of only children with permanent residents included in the study, the age group of 5-14 years of age in government schools located in rural areas of the same district. The exclusion criteria include children not of permanent residence, age group beyond 14 years of age, Children with cleft lip and cleft palate, and Physically challenged school children. Data will be analyzed using SPSS version 21. A chi-square test will be performed for the significance of the study [1].

RESULTS

A total of 800 children were examined in this study out of whom 400 were boys and 400 girls. The prevalence of gingivitis, fluorosis, and malocclusion was 40.7%, 81.8%, and 100.0 %, respectively in males and 59.3%,18.2%and 0.0% seen in females [Table 1].

Of them, 300 children belonged to the age group of 5–7 years, and 294 and 206 to the age groups of 8–10 years and 11–14 years, respectively [Table 2]. The difference between age groups for the prevalence of gingivitis was highly significant and was higher among girls as compared to boys. An increase in the prevalence of fluorosis was highly significant with age. The difference in fluorosis was insignificant between boys and girls. The difference in dental caries was equally significant in both boys and girls [Table 3].

DISCUSSION

A healthy mouth enables an individual to speak, eat, and socialize without the feeling of any discomfort or embarrassment. Schools provide a platform for promoting health and oral health not only for the students, but also for the staff, families, and members of the community as a whole. School-going children were targeted in this study because of the ease of accessibility.[3] Sukhabogi et al undertook to assess and compare the oral health status of children from government and private schools which may be a proxy for children from different socioeconomic backgrounds.[3] According to Shailee et al.'s study [4], 97% of participants used toothbrushes. Nevertheless, the gingivitis that most schoolchildren have is a reflection of their inconsistent brushing habits, which may be brought on by insufficient brushing time, poor brushing technique, or both. It's also likely that some of the kids didn't brush as much as they claim. Children attending government and private schools in Shimla, Himachal Pradesh, India, provided the data.[4] In their study, Kaur A. et al. found that, among children in the 5-year age group, a maximum of 21% in rural areas and 7% in urban areas brushed once in a while, while 64% in rural areas and 79% in urban areas brushed once a day.[5] According to the Prasad M. et al. [6] study, the age group of 11–14 years old (56.04%) had the highest prevalence of dental abnormalities. A study of 14–17-year-olds in the Panchkula area of Haryana found that 29.8% of the participants had at least one dental abnormality. The Grewal H. et al study found a 52.3% prevalence of dental caries, which is nearly identical to the National Oral Health Survey's finding of a 53.8% prevalence of caries in India.[7] The high frequency of gingivitis may have resulted from the Bhayya D et al. study, which was carried out in the early 1990s. Recent research also suggests that the prevalence of periodontal disorders may have decreased recently. The prevalence of dental caries, according to a research by Nasser et al.[9], is 23.75%, which is comparable to findings from studies by Mulu et al. and Gupta et al. conducted in Chennai City, Tamil Nadu, India.

Table 1. Comparison of Gender and Disease distribution in the population

			Diseases		
			Gingivitis	Flurosis	Malocclusion
Gender	Male	Count	264	72	64
		% within Diseases	40.7%	81.8%	100.0%
	Female	Count	384	16	0
		% within Diseases	59.3%	18.2%	0.0%
Total		Count	648	88	64

Chi-square value =15.23. Level of significance p≤0.01*

Table 2. Comparison of Age and Disease distribution in the population

			Diseases		
			Gingivitis	Flurosis	Malocclusion
Age	5-7 yrs	Count	320	88	64
		% within Diseases	49.4%	100.0%	100.0%
	8-10 yrs	Count	328	0	0
		% within Diseases	50.6%	0.0%	0.0%
Total		Count	648	88	64

Chi-square value =16.30. Level of significance p≤0.01*

Table 3. Mean comparison in caries experience between males and females

	Gender	N	Mean	Std. Deviation	F-Value	p-Value
Dental caries	Male	400	1.6327	1.88960	0.63	0.17
	Female	400	1.1400	1.72627		

The test applied an Independent t-test.
Level of significance p≤0

There was also a greater requirement for restorative care, according to Dash et al. [17], Dhar et al. [18], and Saravanan S et al. [19]. Preventive and fissure sealants are more necessary for those between the ages of 9 and 12, according to an analysis of treatment needs across various age groups. According to Shwethashree et al.'s study [10], there was no statistically significant variation in caries prevalence between the two genders and the prevalence of caries was nearly comparable in both. Gingivitis prevalence was 78.35% overall, and it rose with age, according to findings by Jose et al. [20], Kumar et al. [21], and Dhar et al. [2]. Hormonal alterations may be the cause of the higher number of affected females. This is based on Saha and Sarkar's findings. Rao and Kumar et al. [21] on the other hand, reported opposing findings. 34.09% of individuals had malocclusion overall. Malocclusion was high in the 11–14 age range, which is consistent with Bhalaji's findings.[22] Graber and Lucker found that the permanent dentition had a much higher rate of malocclusion than the primary dentition.[23] There was a statistically significant difference in mean DMFT between the government and private schools, according to a study by Shailee et al. [23]. Children from government schools who were 12 years old and 15 years old had a frequency of dental caries of 70.3% and 66%, respectively.4 The current study may be considered a pilot study in the state of Maharashtra. A more extensive study is needed to validate the current investigation's findings on a statewide level. Decision-makers will find this research useful in considering the implementation of effective school-based prevention programs in schools that have higher needs, if not simultaneously in all schools.

CONCLUSION

The study results showed that dental caries, gingival health, and oral health were all lower in government school pupils. However, all children must have access to oral health care services. The approaches we recommended be used at the school level were:

- It is important to reinforce information by including chapters on oral health and oral hygiene in school textbooks. Oral health promotion through well-structured oral health education programs can promote positive change in awareness for special groups like school children. Programs for training teachers can also guarantee ongoing reinforcement.
- Establishing school preventative dental health initiatives, such as fluoride mouthwash and tooth brushing campaigns.
- Frequent interval screening programs to evaluate schoolchildren's oral health and treatment needs, with treatment provided as needed; preventive services should be prioritized and initiated early to target primary dentition and future caries in permanent dentition.
- Students in government schools typically give preference to those from lower socioeconomic backgrounds. Given the limited resources, oral health treatments are especially targeted at high-risk youth, and their protection is crucial.

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