

Dental Caries Prevalence among 3- to 14-Year-Old School Children, Uran, Raigad District, Maharashtra

Poonam Shingare, Vivek Jogani, Shrirang Sevekar, Sonal Patil, Mihir Jha

ABSTRACT

Schools remain an important setting offering an efficient and effective way to reach over 1 billion children worldwide and, through them, families and community members. This study is planned to assess the prevalence of dental caries in primary and secondary school students in rural area of Uran, so as to provide baseline data for planning intervention programs that will assist in reducing the prevalence of dental diseases. The study is designed to include 472 school children, which will be examined by basic examination instruments and scored according to World Health Organization criteria.

Keywords: Dental caries, Prevalence, School children.

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INTRODUCTION

Polarization of caries is occurring on a worldwide basis, where the prevalence of caries is declining in developed countries, increasing in less developed countries, and is epidemic in countries with emerging economies. This decline in caries prevalence in developed countries has been associated with a more sensible approach to sugar consumption, improved oral hygiene practices and several preventive programs.¹

Dental caries is a disease with multifactorial causes. The prevalence and incidence of dental caries in a population is influenced by a number of risk factors, such as age, sex, ethnic group, dietary patterns and oral hygiene habits. There is no doubt that dietary and oral hygiene habits are affected by income, education and social environment.¹

Voluminous literature exists on the status of the dental caries in the Indian population. In the year 1997, 22.7% of Indian population was estimated to be 5 to 14 years. This being such a high proportion of the population, the prevalence of dental disease among this age group needs to be assessed. It has been observed that during 1940 the prevalence of dental caries in India was 55.5%; during 1960 it was reported to be 68%. Overall, the general impression is that dental caries has increased in prevalence and severity in urban and cosmopolitan population over the last couple of decades. However, there is no definite picture as yet

regarding the disease status in rural and backward areas of country in the comparison where 80% of the population inhabits.^{2,3}

Oral health is now recognized as equally important in relation to general health. The major oral health problems around the world are generally considered to be dental caries and periodontal diseases. Previous studies show that most individuals seek dental care with complaints of pain mainly because of tooth ache related to dental caries.⁴ Determining the prevalence of dental caries in primary and secondary school students in Uran, Mumbai, will provide us with baseline data that is necessary for planning of intervention programs in schools. Preventing or reducing the prevalence of dental caries among students will assist in improving their quality of life.

MATERIALS AND METHODS

A study of prevalence of dental caries of school going children of Uran was undertaken by the Department of Pedodontics and Preventive Dentistry, MGM Dental College, Navi Mumbai.

The study was carried out in Uran, Raigad district of Maharashtra, India. Four schools were selected at random. A total of 472 children in the age group of 3 to 14 years were selected randomly and examined with the consent of teachers and parents. Among them, 229 were boys and 243 were girls. The children were examined in their respective schools seated on an ordinary chair in a broad day light facing away from direct sunlight; with the help of dental explorer and mouth mirror.⁵ All examinations were carried out by single qualified examiner. Using World Health Organization (WHO) diagnostic criteria, the number of decayed, missing and filled teeth (dmft/DMFT) were recorded⁶ and when the examiner was in doubt, no caries was recorded (D = 0). For the analysis, students were categorized according to their caries experience, those without caries experience (dmft/DMFT = 0; absence of decayed, missing tooth/teeth due to caries, or filled tooth/teeth) or those with a caries experience (dmft/DMFT ≥ 1; presence of 1 more decayed, missing tooth/teeth due to caries, or filled tooth/teeth).⁴

Children belonging to 3 to 6 years were classified under group I, 7 to 10 years under group II and 11 to 14 years under group III (Table 1).

For analysis, students were categorized according to their caries experience.⁴

1. Those without caries experience (DMFT/dmft = 0; absence of a decayed, missing tooth/teeth due to caries, or filled tooth/teeth).
2. Those with a caries experience (DMFT/dmft ≥ 1; presence of one or more decayed, missing tooth/teeth due to caries, or filled tooth/teeth).

RESULTS

Epidemiological survey was conducted for 472 school children of 3 to 14 years age. Out of the study population 107 (22.67%) belong to group I, 202 (42.80%) belong to group II and 163 (34.53%) belong to group III (Table 2, Graph 1).

Group I students (84) showed 78.5% of caries prevalence, group II (179) students showed 88.61% caries prevalence, group III (119) students showed 73% caries prevalence (Table 3, Graph 2).

In total, dental caries was observed in 382 students (80.92%) and 90 students were caries free (19.06%). The caries prevalence in boys was 39.62% (187) and in girls it was 41.32% (195; Table 4, Graph 3).

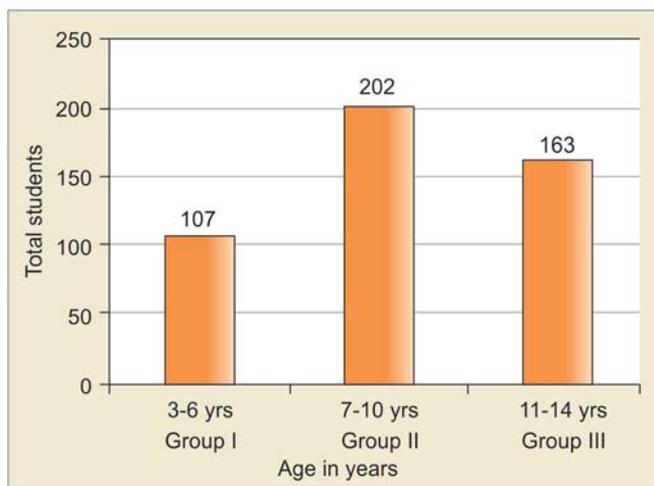
DISCUSSION

The high caries prevalence of 80.92% in the school children of Uran, Raigad district indicates enormity of oral health problems in rural areas of Uran. If remained unattended and untreated, the severity of the disease is going to increase in future. The data reflects on poor oral hygiene and low awareness about oral health.⁵

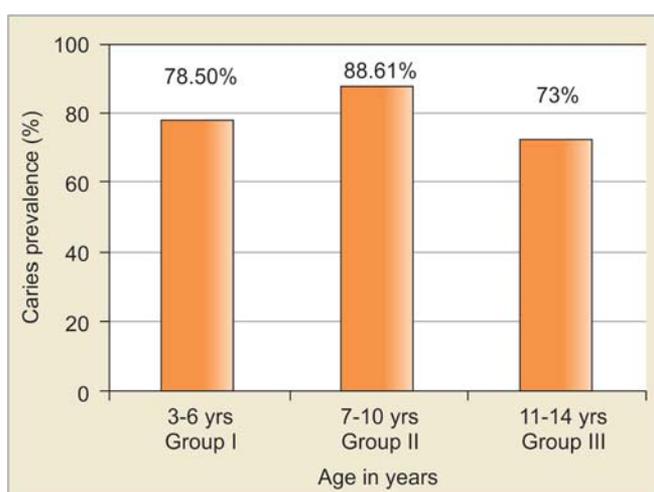
The present study reported the mean DMFT/dmft of 3.65 which is much higher than the WHO (Oral Health Goals 2010) target of mean DMFT/dmft of 1.5. The low mean DMFT/dmft reported could be the reflection of low economic status in rural region of Uran. The similar results have been shown in reported studies done in Tamil Nadu India,² Tanzania, and other countries in Africa.⁴

Group	Age in years	Total students
I	3-6	107
II	7-10	202
III	11-14	163

Group	Age in years	Total students	Distribution (%)
I	3-6	107	22.67
II	7-10	202	42.80
III	11-14	163	34.53



Graph 1: Distribution of sample



Graph 2: Prevalence of dental caries with age group

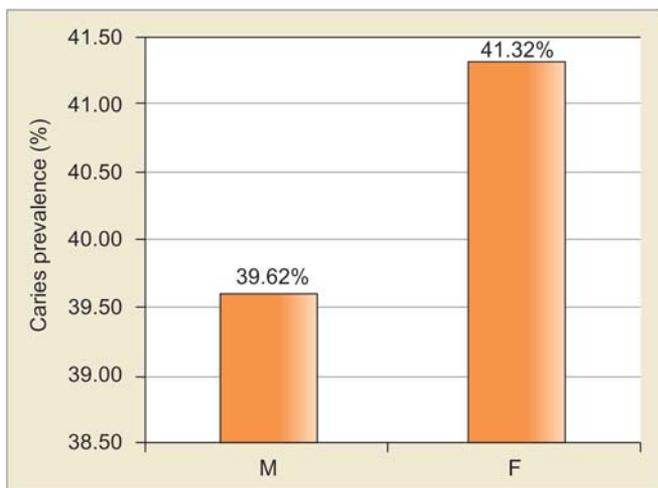
In this study, the prevalence of dental caries has increased with the age from group I (3-6 years, 78.5%) to group II (7-10 years, 88.61%), this in agreement with the studies by Dash et al,⁷ Dhar et al,⁸ Sarawanan et al,⁹ and Goyal et al.¹⁰ High caries prevalence with advancing age appears to be due to newly erupted teeth in oral cavity, thus there is increased exposure of the susceptible teeth to poor oral hygiene conditions. However, in this study, the caries prevalence has decreased from group II (7-10 years, 88.61%) to group III (11-14 years, 73%), this result is in direct contradiction to the studies by Rao et al.¹¹ and Gaikwad and Indurkar.¹² The reason suggested behind the decreased caries prevalence in group III is due to increase in the level of manual dexterity of the child improving the oral hygiene, increased awareness about oral health.⁵ Also as the tooth erupts into the oral cavity it undergoes the process of posteruptive maturation, which makes the tooth more resistant to caries as compared to immature tooth, though the exact mechanism is not fully understood saliva has been thought to play key role in this process.¹³

Table 3: Result showing students with and without caries with prevalence and mean DMFT/dmft

		Caries-free students	Students with caries	Prevalence of caries	Mean DMFT/dmft
Total	472	90	382	80.92%	3.65
Group I	107	23	84	78.5%	3.63
Group II	202	23	179	88.61%	4.47
Group III	163	44	119	73%	2.66

Table 4: Prevalence of dental caries in male and female students

	Total students, 472	Male students, 229	Female students, 243
Prevalence of dental caries	80.92%	39.62%	41.32%
Mean DMFT/dmft	3.65	3.68	3.63

**Graph 3:** Prevalence of dental caries with male/female distribution

In the present study, the caries prevalence of female (41.32%) was higher than caries prevalence of male (39.62%). Similar findings have been reported by Mishra and Shee et al,¹⁴ AJ Mwakatobe et al,¹⁵ HJ Mosha et al.¹⁶ Findings from this study portray that female carries biggest burden of dental caries that could be explained by their easy access to food supplies and their frequent snacking during food preparation. But this is in direct contradiction with the findings by Vacher,¹⁷ Aukland and Bjelkaroey¹⁸ and Gaikwad and Indurkar¹² who observed a higher caries experience in boys than in girls. However, Sudha P et al¹ observed no statistically significant difference in the caries prevalence between two sexes. The variation could be attributed to the different age groups and geographic locations studied in the survey.¹

The present study showed a high caries prevalence in school going children of Uran in both primary and permanent dentitions. Systematic approach to the control of this disease is needed. Due to scarcity of public resources for oral health care and keeping in mind the current incidence of dental caries, a national oral health policy that emphasizes prevention rather than curative care is more advantageous. The implementation of community-based oral health

promotion programs is a matter of urgency. In relation to children, such programs could be initiated through a health promoting school projects. The identification of risk factors specific to the children living in Uran may be quite useful in developing these preventive programs. Parents could also benefit from oral health education and should be advised regarding continuous dental follow-ups with dietary instructions to maintain good oral hygiene.

CONCLUSION

Majority of students in the school of Uran area has experienced dental caries.

The prevalence of dental caries was estimated in 472, 3 to 14 years school children in rural area of Uran. Following conclusions can be drawn from this study:

1. The prevalence of dental caries was highest in group II as compared to group I and group III.
2. Female showed higher caries prevalence than male though the difference was marginal.

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