



Prevalence of Dental Caries and Oral Hygiene Status Among School Going Children: An Epidemiological Study

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ABSTRACT

Oral health is an important part of general health of body. Oral hygiene determines oral health status. Thus, oral hygiene is most important for good health in general. Poor oral hygiene can be source of many diseases. By maintaining the good oral hygiene, we can prevent occurrence of many disease. A survey was carried out to assess oral hygiene status and to find out caries prevalence rate among school going children of age 6 to 12 years. 957 healthy subjects including 567 boys and 390 girls from four different schools were examined in broad day light with the help of mouth mirror and explorer.

Keywords: Dental caries, Oral hygiene, Economic status, School children, Prevalence.

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INTRODUCTION

Oral health is an important part of general health of body. Accumulation of bacteria especially cariogenic *Streptococcus mutants*, diet oral hygiene and time play an important role in carious lesion. However, dental caries is not a typical classical infectious disease, it is rather a multifactorial disease where several risk factors are involved and it occurs because of the imbalance that is created in oral environment and association of other external factors. Unfortunately oral hygiene practice is very low in our society. Dental carries and periodontal problems are due to poor oral hygiene practices.^{1,2}

Dental caries is one of the oldest diseases since mankind. It occurs as a result of multiple factors which include genetic predisposition, diet, microorganisms, trace elements, tooth morphology, etc. Prevalence of caries is on the declining trend in the developed countries due to strict formulations

and regulations of various oral health related programs.³ But, in developing countries like India dental caries is still highly prevalent. The World Health Organization (WHO) recognizes dental caries as a pandemic and reports that the prevalence of dental caries among school aged children is 60 to 90%.⁴ In several industrialized countries the prevalence and severity of dental caries have declined substantially because of preventive oral health care programs and changes in living conditions and lifestyles.⁵

In developing countries, especially sub-Saharan Africa, the prevalence varies according to country population group and socioeconomic status.⁶ Risk factors for dental caries can be divided into oral and nonoral risk factors. Tooth anatomy and composition of dental plaque, previous infections, restorations, and oral hygiene are categorized under oral risk factors and nonoral risk factors include age, socioeconomic status, medical condition, medications, fluoride history, dietary habits, genetic predisposition, general health, dental visits and irregular tooth brushing.^{7,8}

The aims and objective of the study:

1. To determine caries prevalence rate oral hygiene index and tooth cleaning habit of school going children in Amravati district.
2. To study and compare oral hygiene status and caries prevalence rate in children of various age groups of different economic status.
3. To compare oral hygiene status and caries prevalence rate in males and females.

In past various studies were carried out to determine caries prevalence and for evaluating oral hygiene status among the people of different areas.

MATERIALS AND METHODS

Total of 957 unrelated healthy subjects including 567 boys and 390 girls belonging to various communities were examined in their school in broad day light with mouth

mirror, explorer and probe. For the sake of convenience entire population is divided according to their age, sex and economic status depending on their yearly income of each family from various sources into higher (>5 lakh/yr), middle (1-5 lakh/year) and low (below 1 lakh/yr) economic group as follows (Tables 1 to 3).

A detailed proforma has been filled in for each subject.

For recording debris index the surface area covered by debris is estimated by running side of the tip of an explorer across tooth surface facial surface of two maxillary first molars, lingual surface of mandibular first molar, facial surface of maxillary right and mandibular left central incisors are examined. Opposite side tooth is selected when either of the teeth is missing or has full crown or is reduced in height by severe caries or trauma.

Scores are recorded as follows:

- 0 No debris or stains present.
- 1 Soft debris covering more than 1/3rd of tooth surface or presence of extrinsic stains regardless of surface area covered.
- 2 Soft debris covering more than 1/3rd but not more than 2/3rd of exposed tooth surface.
- 3 Soft debris covering more than 2/3rd of exposed tooth surface.

DI index for an individual is calculated by adding score for each surface then by dividing by number of surfaces examined. DI for group can be calculated by adding score for each individual and then by dividing by total number of individual examined.

RESULTS AND DISCUSSION

Untreated oral diseases in children frequently lead to serious general health, significant pain, and interference with eating and lost school time.

DMFT Score

After comparing findings of present and previous study it was found those DMFT score in 5 to 10 years of age group in present study is approximately same as previous study. However, it was slightly raised in 9 years of age in present study where as in 11 to 12 years of age group DMFT score was very much high in previous study due to more number of missing and filled tooth as compared to present study. On an average 7.6% subjects has previous dental treatment in Udupi where as only 0.07% subjects had previous dental treatment in present study. It can be said that Amravati population give less attention to oral and dental health. In present study males have slightly higher caries prevalence as compared to females. Caries prevalence in higher economic status is low as compared to middle and low economic status.

Caries Free Individual

In present study 56.8, 50, 41, 37.3, 38.3, 65 and 58% individuals were found to be caries free from 6 to 12 years respectively. In present study 43.9% males and 47.6% females were found to be caries free. In 52.1, 37 and 45.9% subjects were caries free in higher, middle and low economic status respectively. The increased prevalence of caries in

Table 1: DMFT (Age wise)

Age	Decayed tooth/ subject	Caries free subject (%)	Missing teeth/ subject	Filled teeth/ subject	Total subject examined
6 years	(173) 1.58	(62) 56.8	–	(3) 0.02	109
7 years	(279) 1.89	(74) 50	(14) 0.09	(8) 0.05	149
8 years	(255) 1.83	(57) 41	(7) 0.05	(5) 0.03	139
9 years	(270) 2	(50) 37.3	(5) 0.03	(9) 0.06	134
10 years	(273) 1.71	(61) 38.3	(1) 0.006	(6) 0.03	159
11 years	(235) 1.75	(65) 42.2	–	–	154
12 years	(112) 1	(65) 58	–	–	112

Table 2: DMFT (Sex wise)

Sex	Decayed tooth/ subject	Caries free subject (%)	Missing teeth/ subject	Filled teeth/ subject	Total subject examined
Male	(971) 1.71	(249) 43.9	(7) 0.012	(12) 0.02	567
Female	(626) 1.6	(186) 47.6	(20) 0.05	(20) 0.05	390

Table 3: DMFT (Economic status wise)

Economic status	Decayed tooth/ subject	Caries free subject (%)	Missing teeth/ subject	Filled teeth/ subject	Total subject examined
High	(565) 1.49	(197) 52.1	(20) 0.05	(29) 0.07	378
Middle	(618) 1.94	(74) 50	(4) 0.012	(3) 0.009	318
Low	(414) 1.58	(120) 45.9	(3) 0.011	–	261

boys compared to girls confirms the view that there is a marked preference for sons regardless of the socioeconomic for the required growth in dental care facilities is the prevalence of dental diseases and their treatment need in the population. The prevalence of dental caries was high in the low socioeconomic status because of their poor oral hygiene practice, lack of awareness, improper food intake and family status.⁹

In other study 6 to 8 years age 41.7%, 9 to 11 years age 52.3%, in 11 to 13 years age 55.7% population was caries free¹⁰ and 46.5% and Borle et al study 39.03% subjects were found to be caries free.¹¹

It can be said that Amravati population in 6 to 8 and 11 to 12 years is more caries free than Odisha population. Amravati population is more caries free than Wardha and Sewagram population. It can also be stated that females and subjects from higher economic group pay more attention to oral and dental healthcare.

Missing and Filled Teeth

In present study missing tooth per subject ranged from 0.011 to 0.05 while as filled tooth in range of 0 to 0.7 which are insignificant as compared to decayed tooth per subject which is in range of 1.5 to 2. From these results it can be stated that people in Amravati still neglect oral and dental health.

Oral Hygiene Score

In present study debris index was found to be 0.5, 0.7, 0.7, 0.7, 0.6 and 0.7 for 6, 7, 8, 9, 10, 11 and 12 years respectively. It was 0.6 in both male and females. The score was 0.5, 0.7 and 0.7 for high, middle and low respectively. In Udupi it was 1.14 and 0.96 for male and female respectively. A study was carried out to assess oral health status of 511 school going children of Udupi from 8 different schools. They found that only 7.6% of children had previous dental treatment. The DMF and DF scores were quite high.^{12,13} Several authors carried out a study to determine caries prevalence in tribal school going children in Phulbani district of Odisha. The study reports that in age group of 6 to 14 years 48.6% children were affected by caries and major population use datum as cleansing aid.

Dental health among 11 to 15 years old children. The study reports that no sex predilection was found in caries experience and oral health status. 53.5% children were suffering from active caries and as the age increases caries prevalence also increases. Oral hygiene index was found to be low in children using toothbrush and paste as cleaning aid.¹⁴

Some authors found caries prevalence 60.97% in urban population in age group 6 to 14 years which was relatively more than rural and tribal population.¹⁵

CONCLUSION

It is concluded that oral hygiene awareness education and motivation are the basic steps for improving the oral hygiene practices among the school children. Thus, it can be stated that oral hygiene index of higher economic status is better than middle and low economic status. It can be said that a study with bigger population should be carried out to confirm findings of this study. Oral health awareness programs should be conducted by dental college and association to increase awareness of dental and oral health. The school health policy should be used to promote oral health by provision of oral health instructions and education on harmful dietary practices. Preventive practices, such as regular dental checkups should be advocated and promoted in schools.

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