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Original Research Paper

Dental Science

PREVALANCE OF DENTAL CARIES AND DENTAL FLUOROSIS AMONG 18 -22 YEAR OLD ADULTS AND THEIR ASSOCIATION- A HOSPITAL BASED CROSS-SECTIONAL STUDY.

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ABSTRACT

OBJECTIVE: The aim of this study is to assess the prevalence and association between dental caries and dental fluorosis among 18 to 22 year-old adults

METHODOLOGY: A total of 500 patients reporting to dental OPD of Karpagam Hospital Coimbatore, out of which 367 males and 133 females were included in this Cross sectional study. Simple random sampling was done from list of patients. The diagnosis of dental caries was done according to WHO criteria (Decayed Missed Filled Teeth index-DMFT) and Dental fluorosis was assessed by Dean's fluorosis index. The collected data was analyzed statistically by chi square test using SPSS 16 along with Cross tabulation of variables with those of each other to find out any clinical relevance.

RESULTS: The overall prevalence of dental caries and fluorosis was 43.6% and 14% respectively. The mean DMFT score was 1.03 and statistically significant correlation was found with lesser degree of dental caries in flourosis patients

CONCLUSION: This study shows moderate prevalence of dental caries in 18 to 22yr old adults with lesser degree of dental caries in flourosis patients, indicating protective effect of fluoride for dental caries.

KEYWORDS :

Introduction:

The etiology of Dental caries is multifactorial, primarily depends on host, agent and environmental factors. It is formed by the interaction between acid producing bacteria and fermentable carbohydrate. Adolescence is the period in the human life when the connection between biological, behavioral, socioeconomic, and psychological conditions have a very strong effect on etiology of dental caries[1]. The American Academy of Pediatrics divides adolescence into three phases: early adolescence (11- to 14-year-old), middle adolescence (15- to 17-year-old), and late adolescence (18- to 21-year-old)[2]. Out of which, Late adolescence is very important for oral health because individual's personality, diet-related choices, oral hygiene habits and motivations formed during this period usually last into adulthood.

Fluoride is the protective agent for dental caries[3], which necessitates its addition in tooth pastes, varnish etc. A high level of fluoride in drinking water is a public health problem in India and Tamilnadu is one of the 19 states endemic for fluorosis[4]. This study was aimed at determining the prevalence of dental caries and dental fluorosis among young adults reporting to karpagam hospital, Coimbatore, Tamilnadu and to find the degree of dental caries in fluorosis affected patients.

Materials and Methods:

This cross-sectional study was carried out among 18 to 22 yrs old adults reporting from Coimbatore and its surrounding districts to dental OPD of Karpagam Hospital, Coimbatore, Tamilnadu. Simple random sampling was done from list of patients with time period of six months. Precautions were taken to make sure that sample depicts the whole population. Sample size was calculated using the formula S=4PQ/L2 and considering the existing prevalence of dental caries and fluorosis around 50% & 30%. Final sample of 396 rounded to 500 was derived. Consent was obtained from the patients with inclusion criteria of age between 18 to 22 yrs. Previous history of trauma, orthodontic treatment and psychiatric disorders were excluded from the study. The patients who comply with the inclusion criteria would fill the consent form along questionnaire for oral hygiene habits.

Clinical examination was performed by three trained examiners with patient seated on dental chair with illumination by using mouth mirror and probe. The diagnosis of dental caries was be done according to WHO criteria (Decayed Missed Filled Teeth index-DMFT)[5] and patients were categorized based on caries experience into presence or absence of one or more decayed , missed or filled teeth. Dental fluorosis was assessed by Dean's fluorosis index[5] and categorized into presence or absence of fluorosis.

The collected data was analyzed statistically by chi square test using SPSS 16 along with Cross tabulation of variables with those of each other to find out any clinical relevance.

RESULTS

In our cross sectional study, a total of 500 18-22yrs old adults were enrolled out of which 367 were males and 133 were females. The mean age was 18.9 yrs. The overall prevalence of dental caries and fluorosis were 43.6% and 14% respectively. The mean dmft score was 1.03 and distribution of dental caries with respect to gender is given in Table 1. Prevalence of dental caries in male and females were 41.7% and 48.8%.

Out of 70 patients affected by fluorosis , there was no incidence of dental caries in 58 patients (Table 2 The prevalence of dental caries in fluorosis affected patients) with statistically significant correlation (p value <0.001) indicating protective effective of fluoride for dental caries .

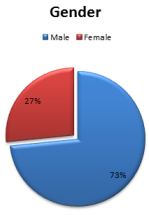

Figure 1: Gender wise distribution of Samples

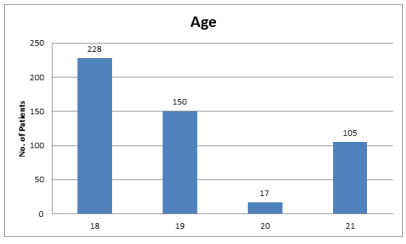

Figure 2 : Age wise distribution of Samples

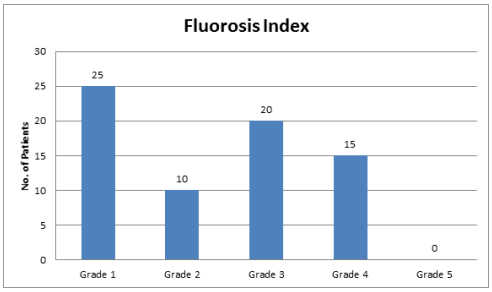

Figure 3 Dean's Fluorosis index distribution

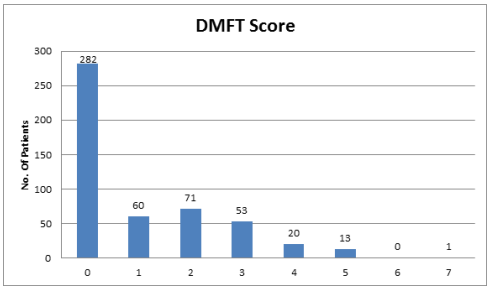

Figure 4 DMFT Score

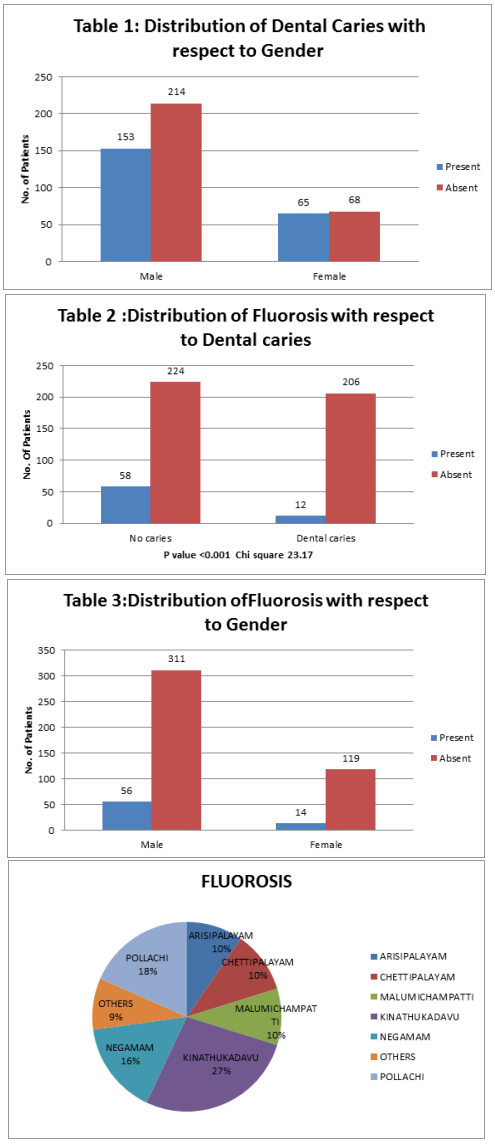

Figure 5 Distribution of Fluorosis among different regions of Coimbatore

Discussion

Late adolescence is the stage were the individual lays the foundation for oral health, the environmental factors, parental care, socioeconomic status, dietary habits are the elements which shapes the individuals attitude towards oral hygiene and treatment needs.

In India, over 19 states are endemic for fluorosis and Tamilnadu is one among them[4]. The fluoride concentration in ground water of Coimbatore and its surrounding districts ranges from 0.1 to 2.5 mg/L[6]. According to WHO 1.0 to 1.5 mg/L is the desirable limit of fluoride in drinking water[7], low levels may cause dental caries and high levels might cause dental fluorosis. With wide variation in fluoride levels in different regions of Coimbatore and its surrounding district and multifactorial etiology for Dental caries, this study aimed at finding the association between dental caries and fluorosis among young adults.

Nearly half of the world population experience ailment from dental conditions, with untreated carious tooth as most prevalent condition affecting around 34.1%[8]. In our study the prevalence of dental caries was 43.6 % which is lesser in comparison with one study among 18yr old Lithuanian adolescents where the prevalence of dental caries was 78.3%[9]. Similarly an oral health survey indicates 61.4% prevalence of dental caries among adolescents in rural and urban areas of tamilnadu[10].

In India about 62 million people are affected by fluorosis because 90% of rural Indian population depends on ground water for domestic purposes[11]. Prevalence of fluorosis in our study was 14% (Fluoride concentration range 0.1 to 2.5 mg/dl) in comparison with a study by SL Choubisa[12] on endemic fluorosis in southern Rajasthan, where the maximum prevalence of dental fluorosis (77.1%) was found in the age group of 17- 22 yrs (Fluoride concentration range 1.5 to 4ppm). There was a positive association between dental caries and fluorosis in our study with 83% fluorosis affected patients have no incidence of dental caries(P value <0.005). Similar findings were reported by P.V Kotecha et al[13], in a study done in Gujarat where the risk of dental fluorosis was higher in areas showing more fluoride content in drinking water with lesser degree of dental caries. In another study done in kanyakumari district of Tamilnadu by JK Baskaradoss et al[14] where 65% patients with fluorosis had no incidence of dental caries (p <0.001).

It is convincing that the life course theories put forward for general health also apply to oral health, especially to dental caries - a highly preventable disease irrespective of fluoride levels in ground water. The results of this study should serve as a baseline for oral health awareness program and intervention of caries affected tooth in late adolescence thereby improving the quality of life.

Conclusion

Our study done at a region where there is wide variation of fluoride levels (0.1 to 2.5 mg/L) in drinking water establishes lesser degree of dental caries in fluorosis affected young adults indicating protective effect of fluoride for dental caries. Although the prevalence of fluorosis was 14% in our study, limitations regarding ground water fluoride concentration in different regions and prevalence of fluorosis and dental caries in high and low fluoride regions should give a better insight to the results.

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