Original Article

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DENTAL CARIES IN TOBACCO ABUSERS

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ABSTRACT:

Dental caries and periodontal diseases are two most commonly seen oral diseases showing striking geographic variations, socioeconomic patterns and severity of distribution all over the world. They are rapidly emerging oral health problems amongst the young generation of developing countries like India due to changing life styles and dietary patterns.

The aim of the present study was to evaluate the effect of different psychoactive substance use in dental caries. This was a hospital based cross-sectional study with 100 participants which comprises of 50 participants in study group (50 cases of patients using any form of alcohol, tobacco & areca nut) and 50 in control group. This study also evaluated the relationship of oral health status by using OHI-S and dental caries in psychoactive substance abusers as well as in apparently healthy individuals. Mean DMFT index score as well as Oral Hygiene Index was higher in tobacco-users as compared to no habit group.

Keywords: Dental caries, DMFT, Tobacco abusers.

INTRODUCTION:

Dental caries is the most common disease, which if left untreated, can result in substantial morbidity due to pain, dysfunction, poor appearance, and possibly problems with speech development.[1] Dental caries can result from the complex interaction of diet, the normal bacterial flora & the host. The mutans streptococci species are most common implicated in the cause of this disease. It is a complex and dynamic process where a multitude of factors initiate and influence the progression of disease. Irrespective of effective methods known for prevention and management of dental caries, it is a major health problem with manifestations persisting throughout life despite treatment.[2]

Hence, it is especially important to identify modifiable risk factors for caries.[1] Habitual 'psychoactive substance (PS) use' is defined as the repeated use of a 'psychoactive substance' despite the knowledge of its negative health consequences .While ''psychoactive substance abuse' is referred to a pattern of 'psychoactive substance' use that causes damage to physical or mental health.[2] The common 'psychoactive substance' use that is of interest to a dentist in India includes alcohol, tobacco and areca nut.[3,4]

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It is considered that frequent chewing of areca nut confers a protection against dental caries. Areca nut by itself lacks ingredients that have cariostatic properties. The extrinsic stain formed by the chronic habit acts as a laminate preventing adherence and colonization of the cariogenic microbes.

The caries experience varies greatly among countries and even within a country. The most commonly employed method to measure the extent of previous damage to permanent dentition is by a measure known as DMF index. The designation DMF (T) is used to denote decayed, missing, & filled teeth. It is an arithmetic index of the cumulative caries attack in a population.

Dental services have traditionally been concerned only with the treatment aspect. Nowadays, dentistry has a more preventive focus in many countries. Such a trend is to be encouraged, as global problem of oral disease will never be adequately controlled by treatment alone. Attempts at changing the behaviour at later stage of development may be difficult because of earlier indoctrination at home. Therefore, high risk group adults should be identified as early as possible

Dental caries whether increases or decreases with the use of psychoactive substances such as tobacco, alcohol, areca nut is not yet clear. This study was planned to find out the difference in dental caries pattern if any, in participants who use these substances as compared to those who are not using any of these substances.

This study also evaluated the relationship of oral health status by using OHI-S and dental caries in psychoactive substance abusers as well as in apparently healthy individuals.

This was a hospital based cross-sectional study with 100 participants which comprises of 50 participants in study group (50 cases of patients using any form of alcohol, tobacco & areca nut) and 50 in control group.

The study was conducted after Institutional Ethical Committee's approval was obtained. All the patients in the age range of 20 to 50 yrs with the use of any psychoactive substance daily and having minimum 28 teeth in oral cavity were enrolled for the study.

MATERIAL AND METHODS:

The participants were informed about the nature of the study, its importance and written consent the same in language understood by the participant was obtained.

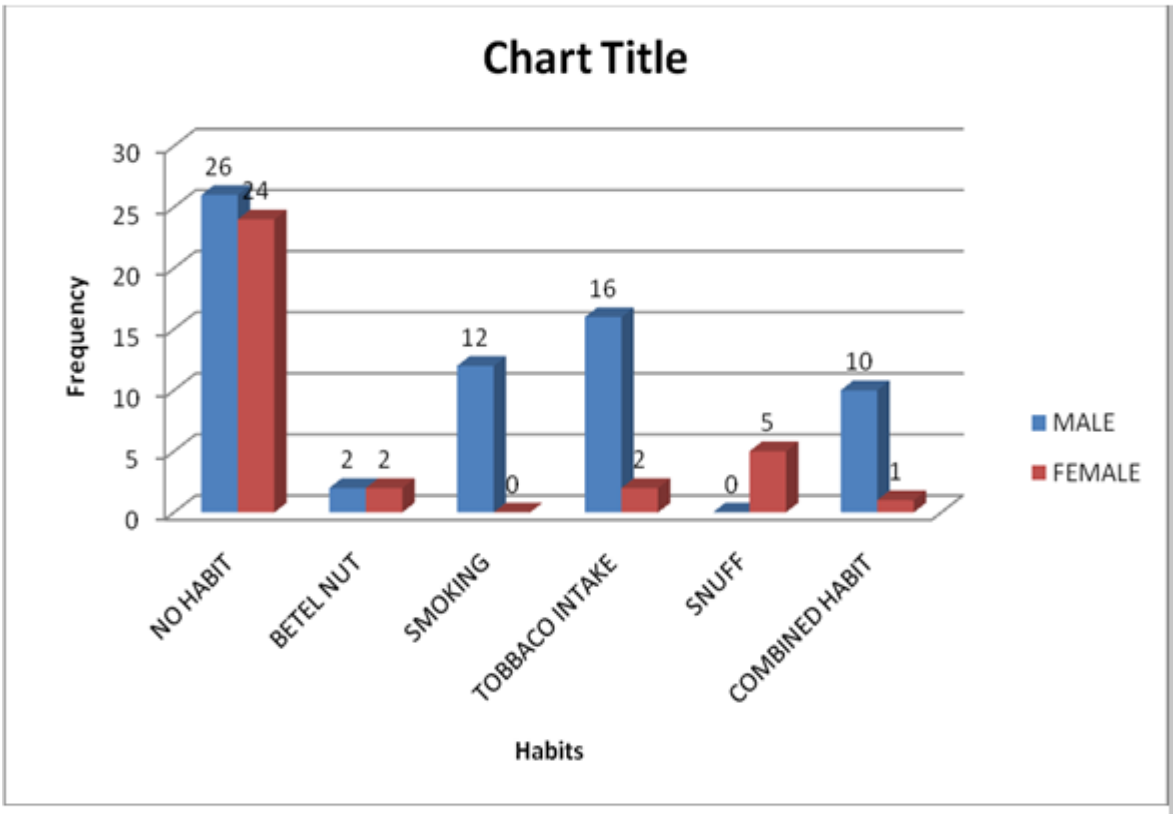
Those patients who had fulfilled the above inclusion criteria were screened for caries under natural light using mouth mirror and explorer. Caries status of each individual was scored by using decayed, missing, filled teeth index (DMFT) and oral hygiene status was scored by using Oral Hygiene Index (OHI-S). Clinical findings were recorded in a predetermined format, which included detail recording of the patients' habits (alcohol and tobacco (with/without areca nut)) as per earlier published protocols. Presence of attrition

and extrinsic stain (< two-thirds of any surface in any teeth) was also noted.

RESULTS:

Participants with the habits were more common in 4th and 5th decade where as participants of no habits group were seen more in 3rd decade.

Chart 1: Gender wise distribution of different habits

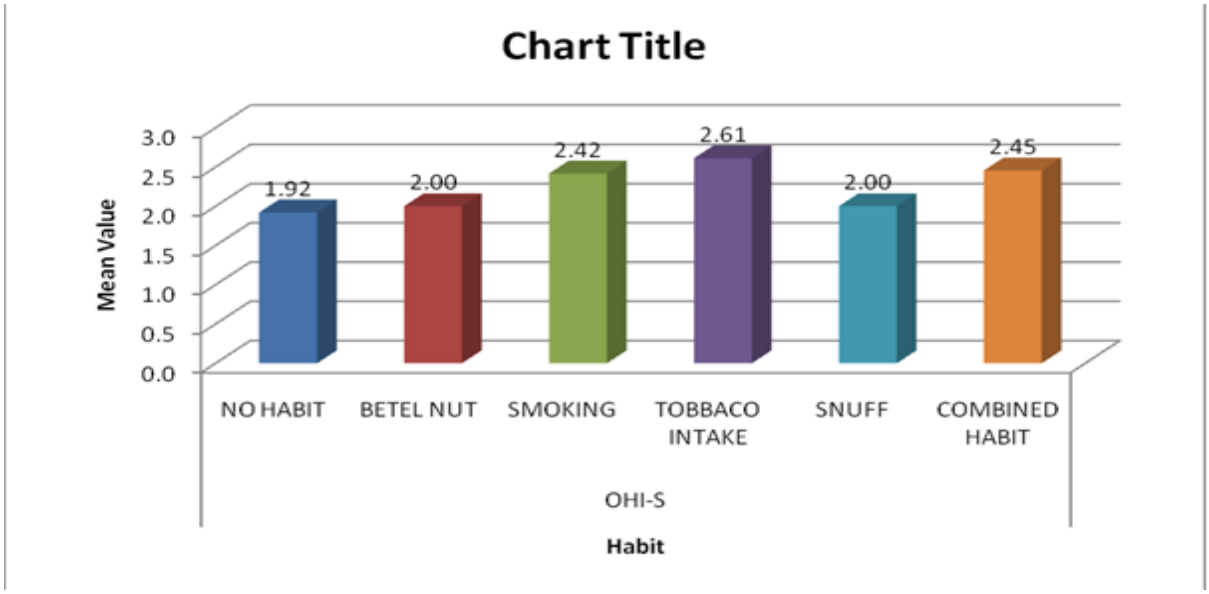


In Case of no habit group males and females were equally distributed where as in psychoactive substance abusers, there was male predominance over females. Use of tobacco, smoking and combined habits were more in male where as snuff use was more in females.

Mean DMFT index score was higher in tobacco-users as compared to no habit group. Among psychoactive substance abusers, betel nut chewing and snuff application was equal i.e.3 and higher followed by 2.67 in smokers, 2.61 in tobacco users and less 2.27 in combined habits.

Mean OHI-S index in no habit group was less 1.92 as compared to psychoactive substance abusers. It was highest 2.61 in tobacco chewers followed by 2.45 in combined habit and 2.42 in smoking habits.

Chart 2: Mean OHI-S index among psychoactive substance abusers.



Mean decayed score in study group was more stastically significant ($p<0.05$) as compared to control group followed by smokeless (4.83) and users (8.25) and mixed habits (3.91).

decayed teeth	Sum of Squares	df	Mean Square	F	Anova P Value
Between Groups	92.423	5	18.485	2.814	.021
Within Groups	617.417	94	6.568		
Total	709.840	99			

The mean of missing teeth was higher in psychoactive substance abusers as compared to no habit group. It was highest in snuff users followed by 3.39 in tobacco users 3.25 in smokers. The mean score of filled teeth was higher in PSA as compared to no habit group. It was highest in betel nut abusers (2.50) followed by tobacco chewers (2.22) and smokers (1.25).

DISCUSSION:

Ideally, the best way to demonstrate an association between a hypothesized factor and disease is an experimental study in which the investigator has control over as many experimental and confounding factors as possible and can determine the frequency and duration of the exposure. A clinical trial to study the relation between psychoactive substance

abuse and dental caries has obvious ethical limitations since the use of psycho active substance use is potentially harmful and addictive to subjects in the experimental group. It was therefore necessary to use a non experimental study design.

Dental caries is a multifactorial, microbial, universal disease affecting all geographic regions, races, both the sexes and all age groups. It is unique not only in terms of pathologic meachanism. Other aspects social and economic are also worthy of note.[5,6]

This study shows that out of 100 participants examined, 50 participants were non-tobacco users and 50 participants were tobacco users. In non users, males and females were equally affected where as in PSA, males predominated over females. It was in accordance to study by Rooban et al[2]. Reports of DC among PSA from various parts of the globe had basically alcohol abusers but in our study no alcohol abusers were found.

Mean age and DMFT in our entire participants was coinciding 39.80 yrs and 2.54±0.53.These were in accordance to those reported by Rooban et al[2] i.e. 38.49 and 3.49±3.93. DMFT reported by Rooban et al was more as compared to that found in our study.

It was higher and not coinciding with the study reported by Sgan-Cohen HD [7] et al where the average DMFT level found was 8.49±4.95.Untreated caries (according to the D component of DMFT) was 2.25±2.90 and significantly higher among males. Caries was more extensive among those who smoked, than that of non-smokers.

It was also coinciding with reports of Shenkin JD et al [8] Vellappally S [9] and Tanaka K et al [10] found an association between tobacco smoke and teeth caries for the middle age group and overall. Use of tobacco or areca nut in various forms and its interaction is known to cause abnormality in salivary pH, flow rate and oral microflora thereby influencing the initiation and progression of DC.

Mean DMFT index score was highest in betel nut chewing(3) and snuff application(3) than followed by 2.67 in smokers, 2.61 in tobacco users , 2.46 in non habitual and less 2.27 in combined habit.

Mean DMFT index was not coinciding with the study of Dasnayake AP et al [11] who reported total DMFT around 16–18. According to Dasnayake [11-13] the D component of the caries experience among alcoholics was significantly lower compared to those who abused both alcohol and drugs. Their multivariate analysis also confirmed that the alcohol and drug abusers in south London had a higher risk of having decayed teeth compared to “alcohol only” group. Alcoholics and substance abusers were known to have poor oral health in other populations. In a survey of hospitalized alcoholic patients in Wyoming, USA, alcoholics had a three times higher permanent tooth loss than the national average for corresponding ages. A smaller group of alcoholics in Maryland also had a

higher number of missing teeth [11]. In a case-control study of 85 volunteer Finnish alcoholics, there were significantly fewer teeth and more remaining teeth with caries.[11]

PS use has been documented to have DC experience varying with various type of PS. However, the DC experience has not been studied in detail, in those reports in relation with tobacco and smoking.

Also, in the present study there was a significant statistical difference when DC, DMFT and OHI-S were compared across the various types of PS abusers. This indicates that the type of PS abuse would probably influence the DC experience and oral hygiene status.

Also, OHI-S was statistically highly significant and different in PS users and non users. It was also more in our studies as compared to those reported by Rooban et al[2]. Limitations of this study includes history of psychoactive substance use were based on the participants self-reported information. This carries an inherent potential for bias. Also use of cross-sectional data in this study, establishes the temporal sequence of exposure and DC— that is, use of chewing tobacco preceded DC development is practically impossible.

CONCLUSION:

This study was planned to evaluate the occurrence of dental caries among psychoactive substance users and those of non-abusers in a hospital-based population. There was higher DMFT index in substance abusers as compared with the general population without any habits and hence, emphasizes the need for regular dental assessments in these patients.

Patients had dental caries that needed dental treatment, and most patients were not aware of their carious teeth. Also in the present study, poorer OHI observed among PS users indicated the physical neglect of oral hygiene measures and warrants a detailed exploration of the phenomenon. DMFT of dental caries indicated the fact that dentists should be a part of the team that treats the PS abuse and this would help the patients to greatly improve their quality of life after successful cessation of PS abuse.

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