

# CORRELATION BETWEEN ORAL LESIONS AND PSYCHOLOGICAL FACTORS IN PSYCHOACTIVE SUBSTANCE USERS

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## ABSTRACT:

**Aim:** To evaluate and intercompare quantitatively, the prevalence of habitual psychoactive substance users alcohol, nicotine and betel nut in the individuals and to evaluate and intercompare clinically, the prevalence of oral mucosal lesions in habitual psychoactive substance users.

**Methodology:** A total of 81 subjects in the age range 25 to 55 years, who were being habitual psychoactive substance users like Alcohol, Nicotine, and Betel-nut were selected, and psychological factors mainly anxiety and depression were assessed with standard questionnaire format of Hospital Anxiety and Depression Scale.

**Results:** The various degrees of dependency of nicotine and betel nut which corresponds to anxiety level showed statistically significant results ( $P \leq 0.05$ ) when compared to alcohol use. The various degrees of dependency of alcohol, nicotine correspond to depression level showed statistically significant results as compared to betel nut users. Betel nut users showed a statistically highly significant result with oral lesions when compared to alcohol and nicotine users.

**Conclusion:** Higher levels of anxiety and depression as well as oral lesions were associated with psychoactive substances use.

**Key words:** Oral lesions, psychoactive substances, Anxiety, Depression



## INTRODUCTION:

The oral cavity is regarded as the gateway to the human body. It is therefore an area of the body where contact with exogenous material, microorganism and harmful agents are particularly intense. Its contact with exogenous material means the likelihood of attack from microorganism (parasite, fungi, bacteria, viruses) on the one hand and exposure to

micro-trauma, irritants, toxins and carcinogens on the other.<sup>[1]</sup>

Habitual Psychoactive substance (PS) use is the repeated use of PS despite the knowledge of its negative health consequences. As a result of repeated abuse, a patient may become physiologically and or psychologically dependent on PS leading to a state of 'addiction'. It was found that 91% of psychoactive substance users had one or

more oral lesions and most patients were not aware of their oral lesions.<sup>[2]</sup>

The risk of developing common lesions like dental caries, periodontal conditions and mucosal lesions as stated before is high in PS users and studies comparing PS users with non-PS users in a general population are sparse and the relative risk of such oral lesions are not clearly defined.<sup>[3]</sup>

The association of psychoactive substances like alcohol, smoked and smokeless forms of tobacco and areca nut with PMDs and OSCC is well known and the burden OSCC on a person, his family and the society is enormous. To treat any lesion satisfactorily, pathogenesis has to be defined but etiopathogenesis of PMDs is not yet clearly understood. Though many studies have proven the role of PS in the etiology of PMDs but degree of dependency on such substances, and dose of such substances and its direct association with appearance of PMDs in people consuming such substances is debated and it is still unclear.<sup>[3]</sup> It has been postulated that the oral lichen planus, the recurrent Aphthous stomatitis and the burning mouth syndrome would constitute entities that deserve to be investigated as psychosomatic diseases. It is also observed that not all people consume PS experience or develop PMD which later on transform into OSCC.<sup>[2]</sup>

So the purpose of this study was to identify the psychoactive substance users, to associate psychological factors mainly anxiety, depression and to correlate the

prevalence of the oral lesions among them.

## **MATERIAL AND METHODS:**

### **Source of Data:**

Subjects included in the present study were randomly selected from the Out-Patient Department of Oral Medicine and Radiology, Darshan Dental College and Hospital, Udaipur, Rajasthan. Study was conducted on habitual psychoactive substance users residing in and around Udaipur city, Rajasthan state.

### **Inclusion criteria:**

Male Individuals using psychoactive substances like alcohol, nicotine, and betel nut.

### **Exclusion criteria:**

Individuals without any habitual use of psychoactive substances.

### **Sample size and design**

The present study comprised of total 81 subjects in the age range 25 to 55 years, who were being habitual psychoactive substance users like alcohol, nicotine, and betel-nut.

### **Ethical Clearance and Data Collection**

Ethical clearance and permission letter for the study was duly signed by the ethical committee of Darshan Dental College & Hospital. Detailed information regarding psychoactive substances like alcohol, nicotine and betel nut were obtained. The degree of dependency on such substances was measured using 'Alcohol Use

Disorders Identification Test<sup>[4]</sup>, 'Fagerstorm Test for Nicotine Dependence'<sup>[5]</sup> and 'Betel Nut Dependence Severity Test'<sup>[6]</sup>.

### Statistical Analysis

Descriptive Statistical analysis has been carried out in the present study ANOVA test was used to find the significance of study parameters on continuous scale between groups and within groups. Post Hoc test was used to find the significance of study parameters on categorical scale between two or more groups to predict oral lesions with different variables.

### RESULTS:

The intercomparison between alcohol, anxiety and depression in psychoactive substance users showed a statistically nonsignificant association with anxiety ( $p > 0.05$ ) whereas a statistically significant relation with depression ( $p < 0.05$ ) (Table 1)

Whereas, the intercomparison between the various degrees of dependency of nicotine showed a statistically significant association with anxiety ( $p = 0.019$ ) and a non-significant relation ( $p = 0.44$ ) with depression. (Table 2 )

Table 3 shows that there was no statistically significant difference between the various degrees of dependency of betel nut with anxiety and depression ( $p > 0.05$ ) Graph 1 shows the intercomparison between alcohol and oral lesions with majority of cases with leukoplakia, OSMF, tobacco pouch,

chronic generalized gingivitis and chronic generalized periodontitis.

Similarly on comparing nicotine and oral lesion leukoplakia, tobacco pouch keratosis, OSMF, chronic generalized gingivitis and chronic generalized periodontitis were seen (Graph 2) whereas Leukoplakia, tobacco pouch keratosis and chronic generalized periodontitis were the major oral findings with betel nut. (Graph 3)

### DISCUSSION:

The use of alcohol in India is spoken of in literatures belonging to 2000 B.C. Tobacco was introduced to the Indian sub-continent in the 15<sup>th</sup> century by the Portuguese as a barter good for Indian spices whose usage spread from royal societies to the commoners.<sup>[7]</sup>

It is known that use of betel nut as a mild stimulant and digestive agent in India dates back to centuries. As the years rolled on, these psychoactive substances have grown from small cottage industry products to huge commercial industries and are available easily and cheaply in the market for the common man.<sup>[8]</sup>

The present study, first of its kind, was carried out on individuals with habitual uses of psychoactive substance users like alcohol, tobacco, and betel nut who are at a higher risk to developing pre-malignant and malignant lesions. Effort was to find the prevalence of gingivitis, periodontitis, dental caries and all oral mucosal lesions and to understand the association with psychological factors mainly anxiety and depression in those individuals.<sup>[9]</sup>

When nicotine, anxiety and depression were intercompared the values were statistically significant with anxiety and with depression were statically non significant. Shah N et al<sup>[10]</sup> conducted a community based study in the city of Delhi, where there was a positive correlation between oral habits and dental caries experience and it was statistically significant ( $p < 0.001$ ). Babu S, et al<sup>11</sup> analyzed variables like age, gender, socio-economic status, periodontal-loss of attachment and dental caries which did not increase the risk of development of OSMF. However with only the variable of habit being strongly associated with increased risk of OSMF. V Singh et al<sup>[12]</sup> obtained similar results obtained in randomly selected schools in Jaipur. There are multiple and interacting determinants that affects smoking including personal characteristics, cognition, and skills and other concurrent habits.

When Betel nut and Anxiety were inter compared, the values were non-significant statically. Axell T et al<sup>[13]</sup> obtained similar results.

When betel nut and depression were inter compared, the values were non-significant statically. Babu S et al<sup>[14]</sup> obtained similar results.

When betel nut and oral lesions were inter compared, the values were highly significant statistically. Ahmad M. S. et al<sup>[15]</sup> obtained similar results in cases of OSMF done in Patna Bihar. They observed that OSMF developed on one side of the buccal vestibule where they kept the quid and other side was normal. Bhavana J

Dave et al<sup>[9]</sup> analyzed similar results Statistically significant increase in the frequencies of sister chromatid exchanges and chromosome aberrations in peripheral blood lymphocytes was noted. Tobacco contains specific nitrosamines plays a major role in development of oral cancer. Jahanfar Jahanbani et al<sup>[16]</sup> obtained similar results. There was highly significant association between oral lesions and age, gender and smoking. Histochemical stains and RNA extraction studies showed that these structures are probably abnormal forms of keratohyline granules and ribosome.

M Rani, et al<sup>[17]</sup> studied similar results. The prevalence of smoking and chewing also varied widely between different states and had a strong association with individual's socio cultural characteristics. Jolán Bánóczy et al<sup>[18]</sup> obtained the similar results. Evaluation of the keratinization pattern revealed a significant increase in keratinized cells in the epithelium of the tongue of smokers compared with non smokers.

Kallischnigg G et al<sup>[19]</sup> obtained the similar results. Periodontal and gingival diseases: Two of four studies report a significant association of snuff with attachment loss and four out of eight with gingival recession. Snuff is not clearly related to gingivitis or periodontal diseases. Limited evidence suggests chewing tobacco is unrelated to periodontal or gingival diseases. Tooth loss: Swedish studies show no association with snuff, but one US study reported an association with snuff, and another with chewing tobacco.

Dental caries: Evidence from nine studies suggests a possible relationship with use of smokeless tobacco, particularly chewing tobacco, and the risk of dental caries.

Sujatha D et al<sup>[20]</sup> obtained the similar results. Males had a higher prevalence

and comprised of the sample. The commonest habit in this study sample was smoking followed by smokeless tobacco use. Of the mucosal changes leukoplakia was the commonest. The duration and frequency of habits has a significant effect on the development of oral lesions which can be noted.

## REFERENCES:

1. Greenberg MS, Glick M. Burkett's Oral Medicine. Diagnosis and treatment. 10th ed. India: Elsevier; 2003.
2. Thavarajah R, Rao A, Raman U, Rajashekar ST, Joshua E, Hemlatha R et al. Oral lesions of 500 habitual psychoactive substance users in Chennai, India. Archives of Oral Biology 2006; 51:512-19.
3. Narayan TV. The times they are 'a' changing-A perspective on oral precancer and cancer prevention. E-Journal of Dentistry Jan 2011; 1:3-4
4. Babor TF, Higgins JC, Saunders JB, Monteiro MG. Alcohol use disorders identification test. Guidelines for use in primary care. 2nd ed. Geneva; Department of Mental Health and substance dependence, World Health Organization 2001.
5. Vink JM, Willemsen G, Beem AL, Boomsma DI. The Fagerstrom Test for Nicotine Dependence in a Dutch sample of daily smokers and ex-smokers. Addictive Behaviors 2005; 30:575-579.
6. Chandra PS, Carey MP, Carey KB, Jairam KR. Prevalence and correlates of areca nut use among psychiatric patients in India. Drug and Alcohol Dependence 2002; 10:1-6.
7. Sharma HK. Sociocultural perspective of substance use in India. Subst Use Misuse 1996; 31(11): 1689-714.
8. Mehta FS, Hammer JE. Tobacco related oral mucosal lesions and conditions in India. 1st Ed. New Delhi; Jaypee Brothers Medical Publishers; 1993.
9. Dave BJ, Trivedi AH, Adhvaryu SG. Role of areca nut consumption in the cause of oral cancers. A cytogenetic assessment. Cancer 1992; 70(5):1017-23.
10. Shah N, Sundaram KR. Impact of socio-demographic variables, oral hygiene practices, oral habits and diet on dental caries experience of Indian elderly: a community-based study. Gerodontology 2004; 21: 43-50.
11. Babu S, Bhat RV, Kumar PU, Sesikaran B, Rao KV, Aruna P, Reddy PR. A comparative clinic-pathological study of oral sub mucous fibrosis in habitual chewers of pan Masala and

- betel quid. J Toxicol Clin Toxicol 1996; 34(3):317-22.
12. V Singh R Gupta Prevalence of Tobacco Use and Awareness of Risks among School Children in Jaipur JAP VOL. 54 August 2006
13. Axell T, Henricsson V. Leukoedema, an epidemiological study with special reference to the influence of tobacco habits. Community Dent Oral Epidemiology 1981; 9:142-146.
14. Babu S, Bhat RV, Kumar PU, Sesikaran B,Rao KV, Aruna P, Reddy PR.A comparative clinic-pathological study of oral sub mucous fibrosis in habitual chewers of pan Masala and betel quid. J Toxicol Clin Toxicol 1996; 34(3):317-22.
15. Ahmad MS, Ali SA, Chaubey KK. Epidemiological and etiological study of oral sub mucous fibrosis among Gutkha chewers of Patna,Bihar, India. J Indian Soc Pedod Prev Dent 2006; 24(2):84-89.
16. Jahanfar Jahanbani, Leiv Sandvik, Torstein Lyberg and Eva Ahlfors. Evaluation of Oral Mucosal Lesions in 598 Referred Iranian Patients .The Open Dentistry Journal, 2009, 3, 42-47
17. M Rani, S Bonu, P Jha, S N Nguyen, L Jamjoum Tobacco Control 2003; 12:edition4
18. BanoczyJ, Gintner Z, Dombi C. Tobacco use and oral leukoplakia. J Dent Educ 2001; 65(4): 322-7.
19. Kallischnigg G, Weitkunat R, Lee PN. Systematic review of the relation between smokeless tobacco and non-neoplastic oral diseases in Europe and the United States.BMC Oral Health 2008; 1: 8-13.
20. D Sujatha, Pragati B Hebbar, Anuradha Pai. Oral Lesions among Tobacco Smokers,Tobacco Chewers, areca nut and alcohol users. Asian Pacific Journal of Cancer Prevention, Vol 13, 2012

**TABLES:**

**Table 1:** The intercomparison between alcohol, anxiety and depression in psychoactive substance users

ALCOHOL	ANXIETY				DEPRESSION			
	Norm	Mild	Mod	Sev	Norm	Mild	Mod	Sev
Low	20	19	10	07	03	29	22	02
Medium	00	04	03	04	00	01	20	00
High	05	01	05	03	00	10	01	03
p value	0.067 (NS)				0.001 (S)			

Norm – Normal, Mod- Moderate, Sev – Severe, NS- Nonsignificant,S- Significant

**Table 2 :** The intercomparison between nicotine, anxiety and depression in psychoactive substance users.

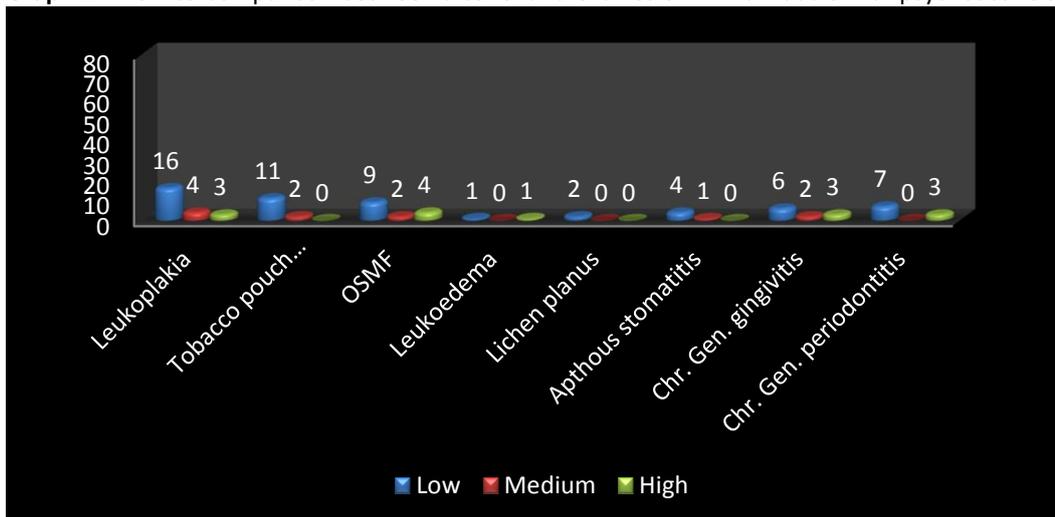
NICOTINE	ANXIETY				DEPRESSION			
	Norm	Mild	Mod	Sev	Norm	Mild	Mod	Sev
Very Low	06	05	06	07	01	09	12	02
Low	06	08	07	02	02	12	09	00
Med	02	01	00	03	00	03	01	01
High	06	10	05	02	00	11	10	02
Very High	05	00	00	00	00	05	00	00
p value	0.019(S)				0.442(NS)			

**Table 3:** The intercomparison between betel nut anxiety and depression in psychoactive individuals

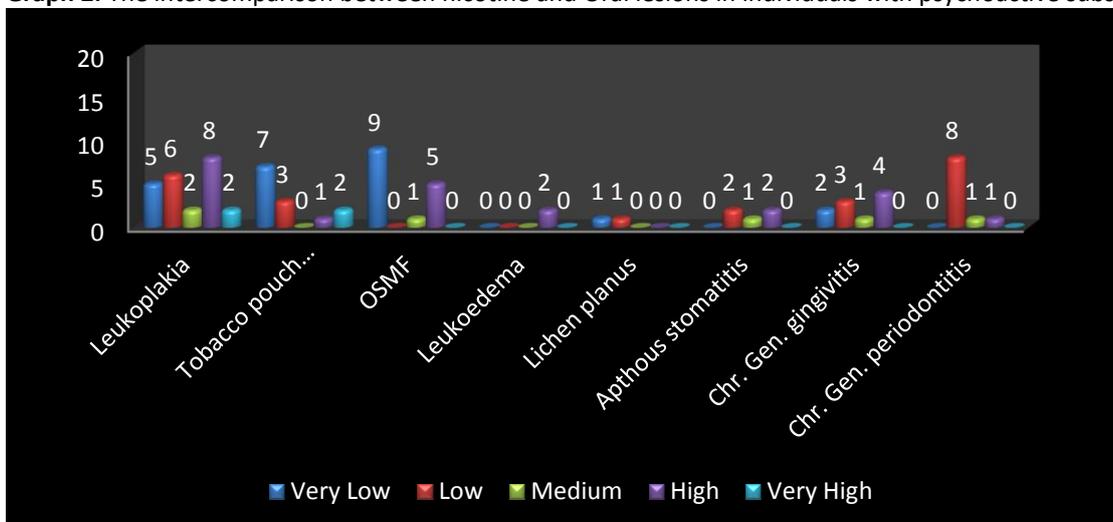
BETEL NUT	ANXIETY				DEPRESSION			
	Norm	Mild	Mod	Sev	Norm	Mild	Mod	Sev
Very Low	04	07	03	05	00	10	07	02
Low	04	02	04	03	00	04	09	00
Med	03	02	04	01	00	06	03	01
High	08	07	03	04	01	12	08	01
Very High	06	06	04	01	02	08	06	01
pvalue	0.76(NS)				0.55(NS)			

**GRAPHS:**

**Graph 1:** The intercomparison between alcohol and Oral lesion in individuals with psychoactive substance users.



**Graph 2:** The intercomparison between nicotine and Oral lesions in individuals with psychoactive substance users.



**Graph 3:** The intercomparison between betel nut and Oral lesions in individuals with psychoactive substance users

