International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 7; Issue 6(G); June 2018; Page No. 13542-13545
DOI: http://dx.doi.org/10.24327/ijcar.2018.13545.2425

Research Article

NICOTINE DEPENDENCE AND TOBACCO PRODUCT CONSUMPTION

Ashwini Dhopte., Giridhar S Naidu., Ramanpal Singh Makkad., Ravleen Nagi., Supreet Jain and Hiroj Bagde

New Horizon Dental College, Bilaspur - 495 001, Chhattisgarh, India

A R T I C L E I N F O

Article History:

Received 9th March, 2018
Received in revised form 16th April, 2018 Accepted 26th May, 2018
Published online 28th June, 2018

Key words:

Alkaloids, Fagerstrom Test, Nicotine, Smokeless tobacco, Tobacco

A B S T R A C T

Background: Tobacco is consumed in smoked, smokeless, e -cigarettes and various other forms. Tobacco is also used in combination with other psychotropic agents like areca. Nicotine dependence may vary amongst use of different types of tobacco products. This study aimed to evaluate Nicotine dependence and correlated it to the varied tobacco products and the nature of tobacco consumption amongst users in a hospital based population.

Materials and methods: The Cross-sectional observational questionnaire based study was conducted amongst 100 subjects with tobacco use in a dental hospital Out Patient Department. Subjects enrolled were divided into 3 groups smoke, smokeless and combination form. Tobacco dependence was evaluated using Fagerstrom test for nicotine dependence (FTND) and a detailed case record was made of the type and nature of tobacco consumed its duration, and frequency. Pearson correlation test was used for statistically analysis of collected data. p value <0.05 was considered as statistically significant.

Results: High addiction seen by FTND score was observed in 48% of smokeless tobacco users as compared to 22 % of smokers. Subjects on smokeless tobacco were likely to have high FTND score that ranged from 5.7 to 18.6 than subjects on smoked tobacco, FTND score ranged from 3.4 to 10.5. These differences were evident when the frequency of tobacco intake remained the same for both the groups. Further there were more subjects who consumed tobacco > 5 years in smokeless form than smoked form that shows more addictive potential for smokeless tobacco.

Conclusion: Thus the aim of the was to create awareness amongst individual and to put an end to the habit and reduce incidence of oral cancer. So, we as a dental professional, should evaluate nicotine dependence and plan strategies to reduce its use.

INTRODUCTION

Tobacco plant belongs to Solanceae family (Genus Nicotina) and tobacco products are prepared by curing them. Nicotine alkaloid present in tobacco acts as stimulant in subjects consuming it.[1] In India tobacco is consumed in different ways mainly smoke and smokeless tobacco and is more common among adolescents. Tobacco is smoked in form of cigarette, cigars, bidis, hookah and tobacco pipes. In some parts of India, Reverse smoking by use of chutta and dhumti is practiced and is one of the major risk factor for oral cancer whereas, tobacco is bitten as betel quid, khaini, gutakha, mishri and as an element of container masala Direct application of tobacco to gums by using gudakhu is also becoming a habitual practice. Smokeless tobacco use is more prevalent in females than males who abuse smoked tobacco more frequently.[2]

Nicotine in tobacco is main determinant of addictive potential, tobacco products are major cause of health problems such as cardiovascular diseases, pulmonary disease and infections, osteoporosis, reproductive disorders, gastric ulcers, diabetes, adverse postoperative events, delayed wound healing and it even cause death from cancer. According to World Health Organization (WHO 2008), tobacco is the world's single greatest preventable cause of death. [3] 1% to 1.3% of total population has quit smoking less than a year and 6.8 % to 9.9% people have quit it greater than a year. Relapse rate about 75% to 80 % has been reported for smoking habit. Cessation of tobacco usage is necessary for optimal health of an individual as it reduces the risk of malignant transformation of oral precancerous lesions.

The study aimed to identify tobacco in which form (smoking, smokeless and combination form) was causing more psychological dependence and it mainly depends on the variety, time and its amount consumed.

METHODOLOGY

A cross sectional questionnaire based study, conducted in the outpatient in Department of Oral Medicine and Radiology from June 2017 to November 2017, which has one hundred

Corresponding author:* **Ashwini Dhopte
New Horizon Dental College, Bilaspur - 495 001, Chhattisgarh, India

and thirty subjects where the age was more than 20 years. Study initiated was ethically cleared by the members of the committee. Subjects with psychologically sound mind and willing to participate were enrolled for the study. Patients were excluded if they were not willing to participate, had neurological disorders and were mentally retarded. After obtaining the informed consent, subjects were screened for tobacco consumption directly by questioning and by clinical examination. For clinical assessment, presence of stains of tobacco chewing and tobacco smoking over the teeth, and tobacco induced oral mucosal lesions was considered positive amongst those with habit of tobacco use. Out of 130, 100 eligible subjects were divided into three groups 1) Subjects with tobacco smoking habits (n=30) 2) Subjects with the use of smokeless tobacco (n=41) and 3) Subjects with combinations of other forms (n=29) (smoke + smokeless form) (Table 1).

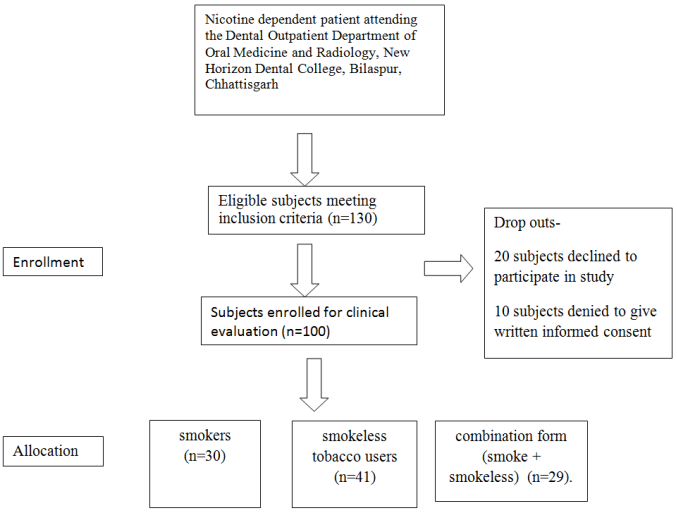

Table 1 Flow chart explaining study design.

Qfagerstorm test was taken into consideration for the dependency amongst the subjects and also the variety, time and amount consumton of the products was evaluated. The test score in cludd six questions in relation to the habits. The score was then calculated based on the points scored.

Interpretation of scoring

Score 1= 7-10: Person is highly dependent on nicotine and may benefit from a smoking cessation program based on treatment for nicotine addiction.

Score 2= 4-6: Person has low to moderate dependence on nicotine; however, this does not rule out a smoking cessation program based on treatment for nicotine addiction.

Score 3= Below 4: Person has low to moderate addiction, but is not likely to need nicotine replacement therapy.

Statistical analysis

Pearson correlation test was used for statistical analysis of inter group and intra group variables such as fagerstrom analysis, duration, frequency and various brands of products used among smokers and smokeless group. The significance value was set as ($p<0.05$) as significant.

RESULTS

One hundred and thirty individuals were included in the study based on the criteria, twenty individuals refused to participate in the trial and ten didn't give the informed consent for the same. Study finally enrolled 100 subjects (male=91, female=9). Gutkha chewing habit of brand rajshree (26.7%) and cigarette smoking of brand charm (36.6%) was more in smokeless and smoking group respectively as compared to other brands (Figure 1).

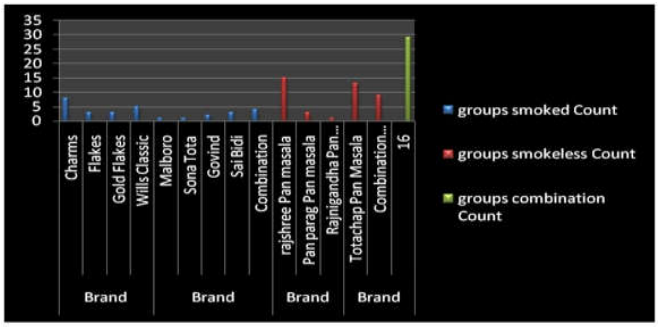

Figure 1 Distribution of brands among smoke and smokeless group

58.6 % of users had habit of chewing smokeless form of tobacco 1-5 times/day followed by 24.3%, 6-10 times/ day.($p= 0.000$) whereas 59.3% of users smoked cigarette 1-5 times/ day followed by 25.4%, 6-10 times/day ($p=0.000$) which is statistically significant. The frequency of tobacco user has similar score amongst both the groups (Table 2).

Table 2 Distribution of frequency of habit among the group

Groups	Frequency	Number of subjects	Percent	P value
Smokeless	1-5 times/day	41	58.6	
	6-10 times/day	17	24.3	0.000
	More than 10 times/day	12	17.1	
Smoke	1-5 times/day	35	59.3	
	6-10 times/day	15	24.4	0.000
	More than 10 times/day	9	15.3	

Duration of smokeless form of tobacco usage was more as compared to cigarette smoking 44.3% of users chewed tobacco for more than 5 years, 48.6% since 2-5 years and 7.1% less than a year. ($p= 0.281$). 30.5% of smokers smoked cigarette for more than 5 years, 52.5% since 2-5 years, and 16.9% less than 1 year($p=0.959$). There were less subjects in smoking tobacco group than those using smokeless tobacco over 5 years duration (Table3).

Table 3 Distribution of duration of habit among the groups

Groups	Duration	Number of subjects	percent	P value
Smokeless	Less than 1 year	5	7.1	
	2 to 5 years	34	48.6	0.281
	More than 5 years	31	44.3	
Smoke	Less than 1 year	10	16.9	
	2 to 5 years	31	52.5	0.959
	More than 5 years	18	30.5	

FNTD scoring was statistically significant amongst the groups (p=0.000). Smokeless group reported highest FTND score (>4) that ranged between 5.7 to 18.6 and lowest FTND score (<3) was observed for smokers that ranged between 3.4 to10.5. The results suggested that there was higher FTND score for smokeless tobacco users (Table 4).

Table 4 Distribution of Fagerstrom score among the groups

FTND score	Frequency Smokeless	Percent	Frequency smoke	Percent smoke
0.00	0		30	
1.00	4		2	
2.00	8	Not Addicted	3	Not Addicted
3.00	13		6	
4.00	12		5	
5.00	13		3	
6.00	8	n=33%	3	n=14%
7.00	2		2	
8.00	6		2	
9.00	1	n=15%	1	n=9%
10.00	3		2	

* P value in both groups found to be significant (p>0.005)

DISCUSSION

Every year million of tobacco consuming population tries to quit the habit, but relapse rate is 75% to 80%. In 2016-2017 Global Adult Tobacco Survey (GATS), demonstrates a lessening of tobacco utilization among population by 34.6% as compared to 2009-10 by 28.6%. Tobacco use amongst Indians reduced from 33% to12.4%. Nicotine has solid inclination modifying action, it acts as both a stimulant and a relaxant.[5] There is a release of glucose from the liver and epinephrine (adrenaline) from the adrenal medulla, which causes stimulation, and users usually have feelings of relaxation and calmness.[6]

When a cigarette is smoked, nicotine-rich blood goes from,

lungs

⇩

brain (inside seven seconds)

⇩

nicotinic acetylcholine receptors

⇩

inflammation.[7,8]

With such repeated exposure to nicotine, tolerance or neuro-adaptation develops. Chronic smokers encounters symptoms of craving and withdrawal during night or during non-smoking periods, to maintain nicotine plasma levels high they continue to smoke inspite of their continuous endeveours to quit habit. Nicotine is firstly metabolized in the liver and then converts into cotinine which has an apparent elimination half-life of approximately 24 hours. Smokeless tobacco products have lower nicotine content, both per pack and per gram of tobacco.[9,10]

Studies have been conducted by Surekha and Thorat *et al*. to see the level of utilization of tobacco among the country population [11,12] These studies are descriptive in nature, mainly focusing on the percentage distribution of tobacco utilization among the rural population. Total prevalence of arecanut usage among study participants was found to be almost one in every five children however this study was limited to one village. Jadhav K *et al* in a study recognized the variety as well as the dependence on various forms of tobacco amongst Indians and found that tobacco chewing was much more prevalent in young generations and also concluded that the habit didn't have any influence on the age group above fourty years. Mostly, people consumed tobacco in smokeless form as compared to smoked, due to cheaper tobacco chewing products such as gutakha, tobacco quid etc. or some individuals hide their habit of tobacco use by preferring tobacco biting rather than tobacco smoking.[4] John R M *et al* and Shah N *et al* in their study observed that users often abuse it more frequently than smoked tobacco products. Oral use of tobacco has an increased risk of squamous cell and verrucous carcinomas of oral cavity and pharynx.[13,14]

Advertisements of tobacco products by means of media, television, roadside banners attract the adolescents, which is an important factor in initiation of tobacco habit. Some tobacco companies continue to market "lights" and "low tar" cigarettes. Because of antagonistic wellbeing outcomes of tobacco dependence, it is important to start preventive measures to lessen tobacco consumption. WHO FCTC carries out various measures such as smoke free public places, effective mass media, restriction on tobacco advertising, tobacco warning on packets and increased taxes. [15] In our study smokeless group reported highest FTND score (n=15%) as compared to smoked group (n=9%). Standard counseling is most appropriate. Tobacco users having Score of 6 or higher should be planned for nicotine replacement therapy (gum or patch) to decrease nicotine withdrawal symptoms as an adjunct to standard counseling. [16] Whereas for those who's FTND Score is of 5 or less suggesting low to moderate nicotine dependency, most likely require less tapering and/or the prescription of any nicotine substitute treatment.

CONCLUSION

It is critical to remember that all tobacco products are deadly addictive regardless of their form or disguise. Present study is a questionnaire survey to identify which form of tobacco consumption (Smoking, Smokeless and combination form) is causing psychological dependence and correlating it to the type of tobacco consumed, duration and frequency. This could be a positive way for upcoming cessation centers to put an end to the habit and reduce incidence of oral cancer. So all tobacco users if decided can quit habit, we as a dental professional, should evaluate nicotine dependence and plan strategies to reduce its use.

References

1. *Richard R.* Tobacco: from the Encyclopedia of Psychoactive Substances. *Biopsychiatry. Little, Brown and Company (1998).*
2. Chadda R, Sengupta S. Tobacco use by Indian adolescents. Tobacco Induced Diseases. 2003; 1:8.
3. *Tobacco is the single most preventable cause of death in the world today.* World Health Organization.*2008:8.*
4. Kiran J, Dhanpal S. Assessment of psychological dependence among tobacco users: A survey held among the rural population of India to call for attention of tobacco cessation centers. *Dent Res J.* 2013; 10: 467-473.
5. Effective Clinical Tobacco Intervention. *Therapeutics Letter.1997; 21:1-4.*

6. Cormer A, Paas Y, Zini R, Tillerman J, Lagrue G et al Long term exposure to nicotine modulates the level and activity of acetylcholine receptors in smokers and model mice. Mol Pharmac.2004; 66: 1712-18.
7. Ovide F, Cynthia S. Neuroregulators and the reinforcement of smoking: Towards a biobehavioral explanation. *Neuro Bio Rev.* 1984; 8:503-513.
8. Ovide F, John R. Neuroregulatory effects of nicotine. *Psychoneuroendocrinology* 1989; 14: 407-23.
9. Dale LC, Hurt RD, Hays JT: Drug therapy to aid in smoking cessation. Tips on maximizing patients' chances for success. *Postgrad Med* 1998; 104:75-78,83-84.
10. Moyer TP, Charlson JR, Enger RJ, *et al*: Simultaneous analysis of nicotine, nicotine metabolites, and tobacco alkaloids in serum or urine by tandem mass spectrometry, with clinically relevant metabolic profiles. *Clin Chem* 2002; 48:1460-71.
11. Surekha K, Garg BS, Muzammil K. Tobacco addiction amongst adolescents in rural areas of district Wardha. *J Med Educ Res.* 2007;9:79-82.
12. Thorat RV, Panse NS, Budukh AM, Dinshaw KA, Nene BM, Jayant K. Prevalence of tobacco use and tobacco-dependent cancers in males in the Rural Cancer Registry population at Barshi, India. *Asian Pac J Cancer Prev*. 2009;10: 1167-70.
13. John RM. Tobacco consumption patterns and its health implications in India. *Health Policy* 2005; 71:213-22.
14. 14. Shah N, Sharma PP. Role of chewing and smoking habits in the etiology of oral submucous fibrosis (OSF): A case‐control study. *J Oral Pathol Med* 1998; 27:475‐9.
15. The WHO Framework Convention on Tobacco Control: an overview.2015; 1-5.
16. Wadgave U, Nagesh L. Nicotine Replacement Therapy: An Overview. International *Journal of Health Sciences*.2016; 10:425-435.

How to cite this article:

Ashwini Dhopte *et al* (2018) 'Nicotine Dependence And Tobacco Product Consumption', *International Journal of Current Advanced Research,* 07(6), pp. 13542-13545. DOI: http://dx.doi.org/10.24327/ijcar.2018.13545.2425

****