



A SURVEY BASED ON TOBACCO USERS ' DEPENDENCE ON NICOTINE

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ABSTRACT **Aim:** The purpose of this study was to evaluate nicotine dependence and awareness of labeling policies for tobacco users in the Department of Public Health Dentistry.

Materials & Methods: Cross sectional survey carried out in the outreach programs of the department. Material and Methods: In the months of July – August 2017 the study was conducted. A total of 263 subjects were enrolled in the study. A questionnaire consisted of Fagerstrom Test for Nicotine Dependence (FTND Revised Version) and smokeless form of tobacco (FTND-Smokeless Tobacco) prepared in the local language was administered.

Results: Prevalence of tobacco usage in any form was found to be 46.6%. Out of 263 subjects, 99(37.6%) were smokers and 164(62.4%) were tobacco chewers with mean FTND scores of 3.56 ± 2.115 and 4.52 ± 2.478 respectively. The difference in FTND score across the age groups was not significant among both the groups ($F = 0.776$ for smokers and 0.34 for chewers).

Conclusion: The Smokeless form of tobacco caused more nicotine dependence than the smoked form, according to results of the present study. Prevalence of tobacco usage was found to be highest in the 15-35 years age group.

KEYWORDS :

INTRODUCTION

"Nicotine addiction is like an itch, if you itch, it's nice to scratch it. But better to have no itch at all. -Dalai Lama"

Tobacco is an agriculture product produced from the fresh leaves of plants in the genus "Nicotina" of Solanaceae family (nightshade family) out of which. Nicotina tabacum is most commonly grown. Nicotianarustica contains up to nine times more nicotine than common species of Nicotiana such as N. tabacum. Tobacco products are made entirely or partly of leaves of tobacco as raw material which are intended to be smoked, sucked, chewed or snuffed. All contain the highly addictive psychoactive ingredient nicotine. Nicotine is responsible for causing psychological dependency.¹

According to WHO 2008 report on Global Tobacco Epidemic, 5.4 million deaths occur every year due to tobacco usage.

Unless urgent action taken:

- By 2030, there will be more than 8 million deaths every year.
- By 2030, more than 80% of tobacco deaths will be in developing countries.
- One billion estimated deaths during the 21st century.²

According to WHO 2009 report tobacco consumption is growing at a rate of 2% to 5% per annum. It is approximated that 3 million deaths per year due to tobacco will increase to 70 million per year by 2025.

It was evident from national survey reports in India i.e. from 1993 to 2002 there is increasing trend in overall prevalence of tobacco use. It has increased from 51.3% to 55.8%. Another nationwide household survey, reported that prevalence of both forms of tobacco i.e. smoking and smokeless form is significantly higher in rural, poorer, and uneducated population as compared to urban, wealthier and more educated populations both in men and women.³

According to 2007- 2008 survey report of Rajasthan, (Non-communicable risk factor survey) 38 % of population of Rajasthan smoked tobacco daily, while 39% of population used smokeless tobacco and 47% of population used tobacco in any form. The prevalence was 68% among males and 23% among females. The mean age of initiation of tobacco use among younger age (15-34 years) people was 19 years for male smokers, and 20 years for male

smokeless tobacco users. The mean number of bidis smoked was marginally higher among rural respondents (13 per day) as compared to urban respondents (10 per day).⁴

Now a day's tobacco usage is common in younger generation. Many youth have a misconception that tobacco is good for health. Peer pressure and easy availability of nicotine containing products have added to this problem. More over the influence of sources of entertainment such as television and cinemas where smoking is depicted as being cool cannot be under estimated. Initiation to use tobacco products before the age of 10 years is increasing. Although most youth do not become nicotine dependent until after 2-3 years of use, addiction can occur after smoking as few as 100 cigarettes. Tobacco use is common in those adolescents who are mostly suffering from or having characteristics like low self-esteem, low aspiration, depression/anxiety, and sensation seeking.⁵

An epidemiological study on physical and psychological nicotine dependence in Greeks also reported that younger people were less prone to developing physical dependence.⁶

A survey among the rural population of Maharashtra reported that subjects above 40 years of age are psychologically highly dependent on tobacco smoking as compared to tobacco chewing. Tobacco chewing is more common among younger population of Loni, Maharashtra and type of habit does not have any influence over psychological dependence below 40 years of age.⁷

There are seven self-report measures developed to assess the construct of cigarette induced nicotine dependence. Nicotine dependence is a hypothetical construct that is designed to explain and predict societally important outcomes, such as an inability to quit smoking, heavy use, and other problems occasioned by smoking or tobacco use.⁸

Dental team has a very important role in tobacco cessation counseling. After implementation of program using 5A model in patient who had come to the Department of Public Health Dentistry of Vyas Dental College, Jodhpur, Rajasthan, there was 32% reduction in prevalence of tobacco use.⁹

Billions of tobacco users attempt to quit every year, but only few

percent are successful for more than just a month. This is because attempts are not directed to change the psychology of tobacco users. Outreach programs are important tools for bringing health education and screening services directly to community members and serve to contribute in reducing health disparities. Assessment of the problem is an important aspect to plan preventive and curative measures. In the current literature, there is no information about the nicotine dependency of tobacco users in the catchment areas of outreach programs of the Dept. of Public Health Dentistry, Vyas Dental College, Jodhpur. As it is well said "A problem well stated is a problem half solved". Keeping in mind the above reasons, present study was conducted with an attempt to measure the nicotine dependence among the tobacco users in outreach programs from the age 18-75 years.

AIM:

To assess the nicotine dependence among tobacco users in outreach programs of the Department of Public Health Dentistry, Vyas Dental College, Jodhpur, Rajasthan.

OBJECTIVES:

1. To determine and compare the nicotine dependence among the two types of tobacco users - smokers and nonsmokers.
2. To assess the dependency of tobacco users in various age groups.
3. To assess the awareness about labeling policies among the tobacco users.

METHODOLOGY

The present study was conducted in both urban and rural areas of Jodhpur city.

Study Period: The study was conducted in the months of July – August, 2017 and it was of 2 months duration.

The study was questionnaire based prospective cross-sectional survey. All the tobacco users present on the day of examination were included.

Inclusion criteria:

1. Subjects with a psychologically sound mind and willing to participate in the study after explanation.
2. Subjects aged more than 15 years.

Exclusion criteria:

1. Subjects who were uncooperative.
2. Subjects not willing to sign the informed consent.

Precaution: Written informed consent was obtained from the participants.

The study protocol was discussed and ethical approval was taken from the ethical committee of the Rajasthan University.

The survey was conducted during the regular dental checkup camps of the college. Total 7 camps were conducted and initially nearly about 560 subjects were screened for the presence of tobacco consumption habit. During these health checkup camps, the tobacco consumption habits were assessed by direct questioning and by clinical examination. For clinical assessment, presence of stains of tobacco chewing and tobacco smoking over teeth, and oral mucosa was considered positive for the presence of tobacco consumption habit.

Questionnaire

A standard questionnaire format of Fagerstrom Test for Nicotine Dependence (FTND Revised Version) for smoking given by Heatherton *et al.* and smokeless form of tobacco given by Ebbert *et al.* (2006) was administered to each subject. These questionnaires were translated in local language for better understanding and effective answering.

The questionnaire consisted of 20 questions:

- Questions on dependency of smoking form of tobacco - 6
- Questions on dependency of smokeless form of tobacco - 6

Each question carried some point/score based on the answer. The subjects were asked to answer the questions as per their experience of tobacco consumption. The total score was the sum of scores of all questions. Minimum score was 0 and the maximum score was 10. Remaining 6 questions assessed awareness regarding labeling policies among the tobacco users.

Interpretation of scoring:

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

Below 4: Person has low to moderate addiction, but is not likely to need nicotine replacement therapy.⁷

Total time taken to complete the questionnaire was 5-10mins.

RELIABILITY ANALYSIS:

The questionnaire was translated into local language. It was then tested and validated in a pilot study. Reliability of the tool was established by administering the questionnaire to 20 subjects with tobacco habit and calculated Cronbach's alpha (reliability coefficient 0.92).

The purpose of the study was described and participants were asked to fill the questionnaire with honesty. In cases where the patient was low-literate or illiterate questions were read for the patient by the researcher who tried to read all questions in an identical manner in order to prevent any prejudice or from guiding the patient to give a specific answer. For each subject administration of questionnaire was done by the researcher only.

STATISTICAL ANALYSIS:

All the data obtained was coded and entered in Microsoft excel. Data were statistically analyzed by using the Karl Pearson Correlation (r) test, Student's t-test, One-way ANOVA, Chi square test. SPSS version (17.0) was used for all the data analysis.

RESULT:

Descriptive statistics of the Demographic details of the study participants has been presented in Table 1. The distribution showed that 244 (92.8 %) of 263 participants were men and 19 (7.2 %) were women. The age group of 15 to 35 years included the highest number of participants who had 164 (62.4 %), 86(32.7 %) of the 36-55 years age group, 13(4.9 %) of the 56-75 years age group. Of the 263 subjects, 99 (37.6%) were smokers and 164 (62.4%) were smokeless users. Of these, 34.3% smoked their first cigarette after 60 min, while 45.1% put their first dip within 5 minutes in smokeless tobacco users. 62.6 percent of participants in the smoker group had no trouble avoiding smoking where it was forbidden (e.g. in a cathedral, in a library, in films ...). 49.4 percent of participants had deliberately swallowed tobacco juice among smokeless tobacco customers.

In smokers group, 56.6% hated to give up morning cigarette, while in smokeless tobacco users.

The participants hated the morning chew 64.6 percent. 67.7% of smokers were smokers of 0-10 cigarettes a day, compared with 44.5% of the smokers who were smokers of more than 3 cans/pounds per week.

75.8% of smokers smoke often throughout the rest of the day, instead of the first hour after the wake, while 51.8% of participants killed more often over the rest of the day in smokeless cigars, than in the first hour after the wake. 68.7 percent of smokers in the group did not smoke when they were so ill that they were most of the day on the bed, whilst 62.8 percent of the smokeless people did not chew tobacco when they were so sick that they were in bed most of the day.

Table 3 provides answers to questions about labeling policies. The answers showed that 60.6 per cent knew of the new photographic warning labels in the Smokers group while 73.8 per cent knew of the new warning label in non-smokers. 27.3% of participants in the smokers' group often looked or read the information on the content side carefully. 46.5 percent of smokers in the group had knowledge of health warning websites or messages on cigarette packages where 64.6 percent of smokeless tobacco users knew where warning messages were found on tobacco packets. In the cigarette / bidi packet groups 47.5 percent recall the specific health warning messages. While 58.5% were able to remember specific health warnings on the tobacco packets in smokeless tobacco users.

No significant association between the age group and FTND score as shown in table 4 has been found.

The form of tobacco, FTND, and p value of 0,001 and 4663, showed that nicotine dependency is due to the use of tobacco, as shown in the Table 5.

Mean FTND score among smokers was highest for the 56-75 year age group. Mean FTND score for chewed tobacco users was highest among the 36-55 years age group. A positive correlation was found between the form of tobacco and the FTND scores as presented in Table 6.

Table1: Demographic Distribution Socio demographic, form of tobacco

Variable	N	%
Gender		
Male	244	92.8
Female	19	7.2
Age		
15-35	164	62.4
36-55	86	32.7
56-75	13	4.9
Type of tobacco Use		
Smokers	99	37.6
Tobacco chewer	164	62.4

Table 2: Responses to FTND questionnaire

S. no	Questions	Smokers	Smoke-less Tobacco Users
1.	How soon after you wake up do you smoke your first cigarette/take first dip	34.3%*(After 60 min)	45.1% (After 60 min)
2.	Do you find it difficult to refrain from smoking in places where it is forbidden (e.g. in church, at the library, cinema, etc.)?/ How often do you intentionally swallow tobacco juice?	62.6% (Said No)	49.4% (Always)
3.	Which cigarette would you hate to give up? / Chew would you hate to give up most?	56.6% (First one in the morning)	64.6% (First one in the morning)
4.	How many cigarettes or Pouches/day	67.7% (10 or less)	44.5% (More than three pouches)
5.	Do you smoke/chew more frequently during the first hours after waking than during the rest of the day?	75.8%* (Said No)	51.8% (Said Yes)
6.	Do you smoke/chew if you are so ill you are in bed most of the day?	68.7% (Said No)	62.8% (Said No)

Table 3: Awareness regarding labelling policies

S. no	Questions	Smokers	Smoke-less Tobacco Users
1.	Have you seen the new warning labels which include pictures?	60.6%* (Said Yes)	73.8% (Said Yes)
2.	In the last month, how often have you read or looked closely at the information about the contents on the side of the pack?	27.3%* (very often)	26.2% (often)
3.	Without looking at a cigarette/tobacco package, where on the pack are the warnings or messages located?	46.5%* (Said Yes)	64.6% (Said Yes)
4.	Without looking at a cigarette/tobacco package, what specific health warning messages can you remember seeing on cigarette packages	47.5%* (Said Yes)	58.5% (Said Yes)

Table 4: Distribution of age group and FTND Score (One Way ANOVA)

Age Code	N	Mean ± Standard Deviation	F value	P value
Smokers				
1	70	3.64 ± 2.174	.776	.462
2	24	3.25 ± 2.090		
3	5	3.80 ± 1.483		

Tobacco chewers				
1	94	4.52 ± 2.547	.339	.713
2	62	4.66 ± 2.415		
3	8	3.50 ± 2.138		

Table 5: t Test (Form of tobacco & FTND Score)

FTND score	Form of Tobacco	N	Mean ± Std. Deviation	F value	P value
	Smoking	99	3.56 ± 2.115	4.663	.001
	Smokeless	164	4.52 ± 2.478		

Table 6: Karl Pearson correlation (r) between Form of and FTND score

Form of Tobacco	Karl Pearson correlation(r) value
Smokers	0.197
Tobacco chewers	0.175

DISCUSSION

The use of tobacco in developing countries like India has been on a constant rise, though measures have been taken to forbid the products. Tobacco is used in smoke and smokeless forms and both these forms have a direct impact on the health of the individual, involving the lungs, larynx, pharynx and the oral cavity. Tobacco has been used in both smoke and smokeless forms and its use in children and adolescents is reaching pandemic levels.

The use of tobacco has started since 600 AD in Europe by Columbus from the Caribbean. Later it was introduced by India by the Portuguese in the form of pipes and cigars. Later in mid nineteenth century, Nicotine was identified as the most important component in the tobacco leaves. Considering the harmful nature of these products steps were initiated to ban these products. However it still continues to be used popularly in developing countries.

Tobacco is used in both smoke and smokeless forms. Smoking forms are more common in western countries while India stands first in the use of smokeless forms of tobacco.

Smoking form includes the use of beedis and cigarettes predominantly with various devices like hooka, hookli, chutta, dhumthi, chillum. Cigarette smoking is common in urban areas. However the higher pricing of these products compared to other forms makes this more common amongst the middle and upper socioeconomic classes of population.

Usage of tobacco among children and adolescents is reaching epidemic levels. The use of tobacco started since 600 AD in Europe by Columbus from the Carribeans. Later it was introduced in India by Portuguese in the form of pipes and cigars. In midnineteenth century, The most important component in tobacco leaves was identified as Nicotine. Tobacco is consumed in both smoked and smokeless forms. In western countries smoking forms are more prevalent, while in India smokeless tobacco is most commonest form. In Jodhpur, 38% of the male population smoked tobacco daily whereas smoking among females was low according to a survey report. Overall 39% of the population used smokeless tobacco out of which 54% were men, and 23% were women. Forty seven percent of the population in Jodhpur used tobacco in any form (i.e. smoking or smokeless). This prevalence was 68% among males and 23% among females. Among young age (15-34 years) the mean age of initiation of tobacco use group was 19 years for male smokers, and 20 years for male smokeless tobacco users. Overall, prevalence of smoking and smokeless tobacco users among female population was low compared with males. Similar results were found in the present study wherein 92.8% of the tobacco users were males while 7.2% were females. Out of this 37.6 % were smokers and 62.4% were having a habit of smokeless tobacco. The present study results revealed that tobacco users, irrespective of the form of tobacco were common in the age group of 15- 35 years.

Smokeless tobacco users were more than the smokers. A study was conducted by Kishore et al. in a rural population of the district of Wardha. The authors found that majority of the boys were engaged in tobacco chewing (69.74%), while in the present study 62.4% had tobacco chewing habit. According to KiranJadhav's study, people are highly dependent on tobacco smoking after the age of 40 years (and mean FTND score of 5.24 ± 2.31). While in the present study, smokers in the age group of 36-55 years had the highest mean FTND Score of 3.25 ± 2.09 and Smokeless tobacco users in the age group of 36-55

years had the highest mean FTND score of $4.66 \pm 2.41.7$. According to a study conducted by Jayakrishnan to see the nicotine dependence among smokers in a selected rural population in Kerala, India, the authors found that FTND scores increased with age. On the contrary, present study did not reveal a significant association between age groups and FTND score.¹² Studies have been conducted by Karinagananavar A to see the impact of the current pictorial warnings on tobacco consumers. It was found that (72.5%) had seen the pictorial warnings and among them 25.5% had interpreted correctly. While in the present study 100% had seen the pictorial warnings and among them 75% had interpreted correctly. This means awareness and its impact on tobacco consumption were good among our study subjects.¹³ The findings suggest that most people have seen text and pictorial warnings on smokeless and smoking tobacco products, but they lacked relevance to the text messages.

Irrespective of education, the early proposed pictorial warnings by the government were more effective than the currently implemented warnings. As stated by Oswal KC's study, individuals might in on perceive those warnings mostly in hindi and marathi (local language) and they desire them to be located on the top or middle of both sides of tobacco packaging.¹⁴ People were aware of the harmful outcome of tobacco, but they had an ignoring mentality.

Duration of habit was not considered in the present study, which is a factor in relation to tobacco consumption habit. The FTND questionnaire records only physical dependence, and it taps only a narrow aspect of dependence. So there is a need for a tool that report both physical and psychological dependence. A positive correlation was found between the FTND scores and the form of tobacco, which is a point of concern for the government and policy makers. The main cause was nicotine dependence. Therefore, individual intervention promoting tobacco cessation is a key for management of tobacco users and also to increase awareness by administering health talks in outreach programs. The present study, most of the users were in the age group of 15-35 years. This is an alarming situation. Hence, those children's ought to be focused to tobacco discontinuance therapy, regardless of kind of susceptibility to tobacco utilization.

CONCLUSION

The Smokeless form of tobacco caused more nicotine dependence than the smoked form, according to results of the present study. Prevalence of tobacco usage was found to be highest in the 15-35 years age group. Health care provider needs to be sensitized & trained to play a proactive role for behavioral change in tobacco users and there is a need for stricter enforcement of existing policies.

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