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Original Research Article

Assessment of nicotine dependence among tobacco chewers attending dental outpatient department in a tertiary care hospital

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ABSTRACT

Background: Smokeless tobacco is most common form of tobacco addiction. Nicotine dependence plays important role in tobacco addiction. In the present study we try to study sociodemographic factors, type of smokeless tobacco use and its pattern and smokeless tobacco chewers and nicotine dependence among them.
Methods: A cross sectional study was conducted for six months and responses from 854 smokeless tobacco chewers were collected from dental OPD of Government Medical College and Hospital, Latur, Maharashtra. A structured questionnaire was designed and filled by face to face interview and responses were analysed.
Results: Out of 854 study participants more than 50% i.e. 468 (54.80%) were in age group of 25-44 years. Illiterates compromised 27.87% of study participants. Almost one third (31.14%) of study participants started using smokeless tobacco before age of 18 years. Khaini or tobacco mixed with slaked lime is preferred type of smokeless tobacco by most of the smokeless tobacco users. Most common i.e. 51.87% of study participants consumed smokeless tobacco 5-9 times a day. Almost 50% of study participants i.e. 421 (49.30%) spent Rs 100-300 on smokeless tobacco per month. Nicotine dependence is seen in 38.20% of study participants.
Conclusions: Smokeless tobacco use is prevalent before age of maturity among teenagers. Nicotine dependence is seen in almost one third of smokeless tobacco users. Determining nicotine dependence is an important step in tackling nicotine dependence.

Keywords: Tertiary care centers, Tobacco, Tobacco use disorder, Smokeless

INTRODUCTION

Tobacco is one of the most common forms of addiction.[1-3] Smokeless tobacco(SLT) is approximately consumed by 250 million adults in the 11 countries of the WHO South-East Asia Region, which constitutes 90% of global smokeless tobacco users.[4] Global Tobacco survey states that prevalence of smokeless tobacco use is 23.6% and 30% in India and Maharashtra respectively.[5] SLT use led to 1,711,539 DALYs Disability Adjusted Life Years lost and 62,283 deaths due to cancers of mouth, pharynx, and oesophagus.[6]

The tobacco products have addiction potential which must be taken into account while doing any effort to reduce tobacco related disease. The nicotine has significant abuse potential and it is the major chemical component responsible for addiction in tobacco products.[7] The assessment of nicotine dependence is an important component in the analysis of smokeless tobacco consumption behaviour. Data on prevalence of nicotine

dependence among tobacco chewers is not available. So an attempt was made to find degree of nicotine dependence, type of smokeless tobacco use and its pattern and sociodemographic factors among tobacco chewers.

METHODS

The present study was undertaken at Government Medical College and hospital with an aim to find the prevalence of nicotine dependence among tobacco chewers attending dental OPD. A cross- sectional observational study among all tobacco chewers attending dental OPD during period of 1 December 2014 to 30 June 2015. Inclusion criteria included all tobacco chewers attending dental OPD who were chewing tobacco atleast once a day for last one month and willing to participate in study. Exclusion criteria for the study were tobacco chewers who did not smoke daily and tobacco chewers who smoked as well. Study sample included all tobacco chewers attending dental OPD who satisfied inclusion criteria among the study population. Sampling technique is consecutive eligible subjects attending the OPD with a clear predetermined starting date. This technique is considered as good as simple random sampling in clinical OPD setting.[8] Sequence of arrival of cases can be genuinely considered random and can be expected to represent a fair cross-section of target population. Total 5,437 patients attended dental OPD in period of 7 months. Out of which 2,348 used some form of tobacco. Among them 946 were only tobacco chewers and remaining 1,402 were either smoking or using both the type of tobacco i.e. tobacco chewers as well as smokers. From 946, 92 patients declined to participate in the study so 854 were interviewed for the study. A structured questionnaire was translated into Marathi by a high school teacher who was expert in Marathi as well as English then the Marathi draft was back translated into English by other high school teacher expert in English and Marathi. The back-translated version was compared with the original version to verify if the questions were properly translated. All of the back translated items were worded similarly to the original ones and were comparable in their meaning. The final Marathi version was pilot tested among 50 study subjects to assess the feasibility and finalization of questionnaire.

Necessary modifications were made after analyzing responses. Then questionnaire was finalized. The objectives of the study were explained to subjects and informed consent was obtained. The interview technique was used as a tool for data collection. Predesigned pretested questionnaire was used to record the necessary information. It included general information and socioeconomic details of study subject. Detailed history was obtained regarding tobacco consumption. History taking involved details regarding duration of tobacco exposure, type of tobacco use, any quitting attempts, any advice from medical practitioner regarding quitting etc. Fangerstorm's scale for nicotine dependence for smokeless tobacco was used to measure nicotine dependence.[9] Reliability of the scale is 0.53.[10] It predicts both behavioural and biochemical (e.g. CO, nicotine) indices of smokeless tobacco used in multiple countries. It has a strong predictive validity of heavy use and cessation. In this scale, score of less than 4 indicate person has low to moderate addiction, 4-6 score indicates low to moderate dependence on nicotine and 7-10 indicates high dependence on nicotine. Descriptive statistic (percentages) was used to summarize baseline characteristics of the study participant.

RESULTS

In this study, the total number of study participants was 854. It was observed that more than 50% participants i.e. 468 (54.80%) belonged to the age group of 25-44 years. Proportion of male and female participants were 756 (88.52%) and 98(11.48%) respectively. Almost one forth of study participants were illiterate 238(27.87%) closely followed by secondary level education 205(24.01%). Maximum number of study participants stayed in urban area i.e. 591 (69.20%). Married study participants were in higher proportion among the study participants i.e. 748 (87.59%) followed by single 74 (8.67%). Tobacco chewing habit was found in 283 (33.14%) of family member of study participants. Proportion of government or non government employee was 334 (39.11%) followed by self-employed group of 214 (25.06%) among study participants. According to their per capita income as per Modified Prasad BG classification 2015 most of the study participants belonged to lower middle class (IV) i.e. 356 (41.71%) followed by poor class (V) i.e.166 (19.42%) (Table 1).

Khaini or tobacco lime mixture was preferred by 520(60.89%) of tobacco users, followed by betel quid with tobacco i.e. 163(19.09%). Gutka or tobacco lime and areca nut, pan masala and raw tobacco and others constituted 97 (11.36%), 38 (4.22%) and 36 (4.45%) respectively. Others included jarda, mawa etc. Mean age of starting smokeless tobacco use was 21.39 years. The most common reason for starting use of smokeless tobacco was peer pressure i.e. 314 (36.76%). Toothache as the reason for starting use of smokeless tobacco occupies second position 119 (13.92%) which was closely followed by curiosity and night duty i.e. 105 (12.30%) and 90 (10.53%) respectively. Frequency of 5-9 times of tobacco consumption was found in more than 50% i.e. 443 (51.87%) of study participants followed by less than 5 times per day 258 (30.21%). The symptoms experienced by study participants on not having tobacco had been described. The most common symptom described by majority of participants was constipation 467 (54.68%), followed by craving 176 (20.60%), boredom 167 (19.55%), anxiety 165 (19.32%) and restlessness 150 (17.56%). When asked about quitting 200(23.42%) of study participants had no intention to quit at all. Regarding expenditure on smokeless tobacco in range of 100-300 Rs per month was done by 355 (41.56%) of study participants and 261 (30.56%) of study

participants spent less than 100 Rs per month. The number of study participants who spent 301-500 Rs per month on smokeless tobacco was 139 (16.27%) followed by 80 (9.37%) and 19 (2.24%) spent 501-1000 Rs and more than 1000Rs respectively (Table 2).

Table 1: Sociodemographic characteristics of participants.

Variables	Category	Number	%
Age	15-24	82	9.60
	25-44	468	54.80
	45-65	267	31.26
	>65	37	4.34
Gender	Male	756	88.52
	Female	98	11.48
Religion	Hindu	434	50.82
	Muslim	249	29.16
	Buddhist	168	19.67
	Others	003	0.35
Education	Illiterate	238	27.87
	Primary	157	18.38
	Middle Secondary	96 205	11.25 24.01
	Higher secondary	78	9.13
	Graduate and above	80	9.36
Residence	Urban	591	69.20
	Rural	263	30.80
Marital status	Married	748	87.59
	Single	74	8.67
	Widower	26	3.04
	Divorcee	4	0.47
	Separated	2	0.23
Family type	Nuclear	433	50.70
	Joint	339	39.70
	Three generation	9	9.60
Occupation	Government & non government employee	334	39.11
	Self – employed	214	25.06
	Retired and unemployed	117	13.70
	Student	104	12.18
	Homemaker	85	9.95
Per capita income per month (rupees)	5490 & above	73	8.53
	2970-5939	131	15.33
	1782-2969	128	15.01
	891-1781	356	41.71
	< 891	166	19.42

Table 2: Smokeless tobacco use pattern variables.

Variables	Category	Number	%
Family members having habit of chewing	Yes	283	33.14
	No	571	66.86
Age of starting smokeless tobacco chewing	≤15	134	15.69
	16-20	404	47.30
	21-25	172	20.14
	26-30	54	6.33
	>31	90	10.54
Reason of starting use of smokeless tobacco	Peer pressure	314	35.76
	Toothache	119	13.92
	Curiosity	105	12.30
	Night duty	90	10.53
	To prevent boredom	72	8.42
	Driving	61	7.24
	Farm work	52	6.03
	Other	41	4.80
Introduce to tobacco by	Friends	651	76.23
	Relatives	127	14.87
	Others	76	8.90
Type of tobacco	Betel quid with tobacco	163	19.09
	Khaini or tobacco lime mixture	520	60.88
	Guthkha or tobacco lime arecanut mixture	97	11.36
	Pan masala with tobacco	38	4.22
	Raw tobacco and others	36	4.45
Frequency of consumption	< 5 per day	258	30.21
	5-9 per day	443	51.87
	10-15 per day	138	16.16
	>15 per day	15	1.76
Symptoms on not having tobacco	Constipation	467	54.68
	Craving	176	20.60
	Boredom	167	19.55
	Anxiety	165	19.32
	Restlessness	150	17.56
	No symptoms	97	11.35
	Gum irritation	63	7.37
	Others	22	2.57
Best describing statement regarding quitting tobacco	Quit in one month	309	36.18
	Quit in six month	167	19.56
	Will quit not sure when	178	20.84
	Not interested in quitting	200	23.42
Monthly expenditure on smokeless tobacco	< 100	261	30.56
	100-300	355	41.56
	301-500	139	16.27
	501-1000 >1000	80 19	9.37 2.24

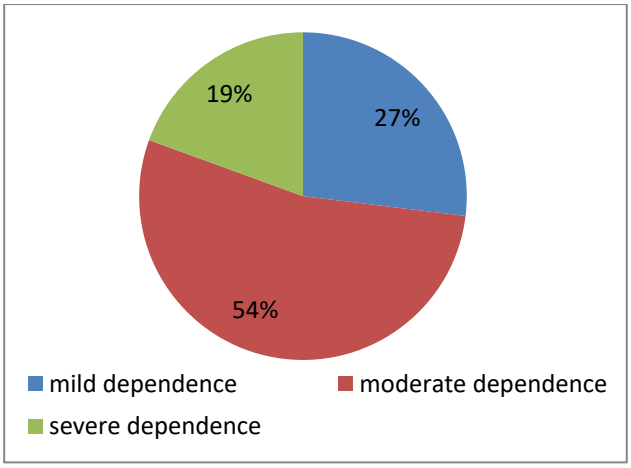

Figure 1: Distribution of participants on the basis of Fangerstorm nicotine dependence scale.

According to their Fangerstorm's nicotine dependence scale grading, low addiction was seen among study participants who had score <4 i.e. 230(26.94%), 458(53.62%) of study participants had score 4-6 which signifies moderate nicotine dependence. High degree of nicotine dependence was indicated by the score 7-10 which included 166 (19.44%) (Figure 1).

DISCUSSION

The study focuses on the epidemiological profile, pattern of smokeless tobacco use among smokeless tobacco chewers and nicotine dependence among them. The strength of the study was its large sample size and detailed description of smokeless tobacco use pattern.

In the study majority of study participants belonged to age group 25-44 yrs, similar findings are seen by Singh et al and Chockalingam et al the majority of smokeless tobacco users belonged to middle age group i.e. 25-44 years and 35-54years respectively.[11,12] Decrease in smokeless tobacco consumption with increase in age can be attributed to the fact that with increase in age there is increase in age related teeth problems making it troublesome to tobacco chewers to use tobacco. Proportion of females with smokeless tobacco consumption in this study is 11.48%. Also, a cross-sectional survey conducted by Abbas SM et al in semi urban area found 8.8% prevalence of smokeless tobacco use in females.[13] Similarly in the study Gupta et al noticed a prevalence of 10.7% among women of urban area for smokeless tobacco.[14] In our study, participants 27.87% study participants were illiterate. According Singh et al proportion of illiteracy among smokeless tobacco users is 27.5%.[15] This significant difference in smokeless tobacco consumption across educational level can be attributed to the fact that smokeless tobacco is commonly related with manual labour and as education level increases amount of manual labour decreases. Among our study participants who were tobacco chewers the combined proportion of employed and self employed is far more than unemployed, retired or student. Manimunda et al observed similar finding of more proportion of employed (68.9%) engaged in smokeless tobacco consumption.[16] This can be explained by fact that many a time's tobacco consumption is initiated to improve performance at work or to prevent boredom from repetitive nature of work. In our study majority of study participants belongs to poor and lower middle of socioeconomic strata (57.73%) as against upper higher and higher class (24.24%). Similar findings are observed in Sreeramareddy et al where prevalence of tobacco use is highest among the poorest and lowest among the richest.[17] Although smokeless tobacco is culturally acceptable but not regarded as a status symbol in high socioeconomic status. It is commonly associated with poverty due to its low cost. Poor are more likely to find themselves in conditions predisposing them to initiating of tobacco chewing. The mean age of initiation of tobacco in our study is 21.39 yrs (standard deviation±7.65). Panda et al mean age of initiation is 21.98 which are very similar to our study finding.[18] This early initiation of smokeless tobacco use is disturbing as it is important to increase the tobacco free years of life in order to reduce the harmful effect of tobacco at the population level.

The main reasons for starting smokeless tobacco are peer pressure (36.96%). In a study conducted by Soni P et al (2012) main reasons for initiation of tobacco is peer pressure.[19] Peer pressure is most common reason of tobacco initiation as this habit is commonly formed during adolescent years due to very high peer influence. The most common type of tobacco used in our study participants is khaini or tobacco lime (60.88%) followed by betel quid with tobacco (19.09%) and gutka (11.36%) respectively. Gupta B et al and Sinha et al found that Khaini, a smokeless tobacco product, is the most popular form of tobacco use.[14,20] This increased use of khaini can be due to easy availability with lesser price as compared to gutka. In our study most common discomfort /symptoms experience by study participants on abstaining from tobacco are constipation, craving, anxiety, gum irritation or oral discomfort. In the study conducted by Mishra et al.[21] Similar symptoms like constipation, craving for tobacco, oral discomfort and irritability are experienced. Ebbert et al reported in his article symptoms like difficulty concentrating, hunger, irritability, urges to use, restlessness, and symptoms of depression.[22] Nicotine produces paradoxical effects, acting as both a stimulant and a depressant. As a stimulant, it has been shown to increase attention, memory, information processing, and learning. It has also been shown to alleviate anxiety, depression, and pain. Nicotine consumption is related to improved attention, increased vigilance in the performance of repetitive tasks, and memory improvements. Median expenditure on smokeless tobacco is Rs 250 per month in our study. In the study conducted by Mini et al monthly expenditure on tobacco is 240 Rs per month.[23]

Fangerstorm's test for nicotine dependence for smokeless tobacco is used to access nicotine dependence among study participants. Mild degree of nicotine dependence i.e. score<4 is seen in 26.94% of study participants, moderate degree of nicotine dependence i.e. score between (4-6) is seen in 53.63% of study participants, severe degree of nicotine dependence (7-10) is seen in 19.44% of study participants. In a study conducted by Chahwala P et al (2015) findings similar to our study are noted with 39 % were in the category of mild dependence, 41% in moderate dependence and 20% in severe dependence.[24] These findings suggest one among five smokeless tobacco users has severe nicotine dependence in whom more meticulous treatment modalities will be required. Our study had few limitations. The study setting being a hospital reduces generalisability of study finding.

CONCLUSION

This study measures tobacco dependence among smokeless tobacco users attending dental OPD. One in three smokeless is dependent on nicotine whereas one in five smokeless tobacco users is severely dependent on nicotine requiring more meticulous treatment which is a matter of great concern. Most common form of smokeless tobacco use was found to be khaini or tobacco lime mixture with commonest reason to being peer pressure. Group psychological counselling can be employed to deal with peer pressure. Initiation of smokeless tobacco use is occurring at an early age implying smokeless tobacco cessation should primarily target young age group.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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