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USAGE OF FAGERSTROM TEST FOR NICOTINE DEPENDENCE AMONGST DENTAL OUTPATIENTS VISITING HOSPITALS AND HEALTH CARE CENTERS IN COASTAL KARNATAKA, SOUTH INDIA – A CROSS SECTIONAL STUDY

Dental Sciences

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ABSTRACT

Aim: The present study aimed at assessing the levels of addiction among tobacco users of both the smoking and smokeless variety, in Udupi taluk of Karnataka State.

Materials and Methods: A cross-sectional study was done among 574 outpatients in Udupi taluk using Stratified Random Sampling Method. A 6 item modified Fagerstrom Test for Nicotine Dependence Scale for Smokers and Smokeless Tobacco was used to assess the participants' level of addiction to tobacco, in both the smoking and the smokeless form. The data obtained was analysed statistically using SPSS version 20.0 software. Chi-square test was used for comparison and p-value < 0.05 was considered to be significant.

Results: Out of 574 participants, 234 were smokers and 340 were smokeless tobacco users. Within the age range of 18-70 years old, smokers had a mean Fagerstrom score of 6.04 ± 1.188 while smokeless tobacco users had 9.93 ± 1.662. The majority had moderate to high dependency. Females who were smoking recorded higher mean Fagerstrom scores.

Conclusion: It is vital to recognize that the degree of addiction is an important determinant in successful quit attempts for both male and female tobacco users. This data builds a preliminary consideration and platform for appropriate policy development.

KEYWORDS

Tobacco Use Disorder, Behaviour, Addictive, Tobacco smoking, Tobacco smokeless

INTRODUCTION :

Tobacco is the most commonly used addictive substance in the world. (1) According to the World Health Organization (WHO), more than 7 million people are killed annually due to tobacco use alone. (2) It also significantly increases the risk of various chronic non communicable diseases. (3) A large proportion of the 1.3 billion smokers worldwide are from low- and middle-income countries. (4) India with 267 million adult (28.6% of all adults) tobacco users, is second only to China in tobacco usage. (4,5) Every year approximately 1 million deaths in India are attributable to tobacco use. (6) Billions of dollars are spent every year in India for treatment of diseases related to tobacco use. (7) It is therefore apparent that the MPOWER (M: Monitor tobacco use and prevention policies, P: Protect people from Tobacco smoke, O: Offer help to quit tobacco use, W: Warn about the dangers of tobacco use, E: Enforce bans on tobacco advertising, promotion and sponsorship, R: Raise taxes on tobacco) measures of the World Health Organization (WHO) (8) need to be implemented at each district and State level.

There are two main varieties of tobacco used in India, smoking and smokeless. Beedis and cigarettes are the popular smoking variety, while the smokeless forms include tobacco chewing and snuff dipping. (9,10) Regardless of the forms, tobacco usage is always associated with addiction and the nicotine in tobacco plays a major role in it. (11) Nicotine dependence for users is an obvious hurdle to overcome for successful cessation. Hence the assessment of the intensity of Nicotine dependence is the key to adequate planning of the Nicotine Replacement Therapy (NRT) or non NRT prescription and dosage. (12) To measure the dependence, there are different tests used in different regions and populations, such as:

1. The Fagerstrom Test for Nicotine Dependence (FTND) (13)(21)
2. Tobacco Dependence Screener (TDS), mainly used in Japan (14)
3. Wisconsin Inventory of Smoking Dependence Motives (WISDM) – mainly used in United States (15)
4. The Heaviness of Smoking Index (HSI) (16)
5. The Cigarette Dependence Scale (CDS) (17)
6. The Nicotine Dependence Syndrome Scale (NDSS) – used in United States (18)
7. Hooked on Nicotine Checklist (HONC) (19)
8. The Autonomy Over Smoking Scale (AUTOS) (20)

In this study, the 6 item modified Fagerstrom Test for Nicotine Dependence (FTND) is used. (13,21)The test consists of questions for which the answers leave a categorization of nicotine dependence.

Studies in Udupi have indicated the high use of tobacco products among the fishermen community and adolescent population (22,23,24). Potentially malignant disorders have also been seen. (25) There is limited data available in relation to the tobacco addiction and degree of dependency patterns in Udupi taluk (26,27,28) and coastal Karnataka. A recent review found that there is not enough research done to obtain FTND score for Beedi smokers and smokeless tobacco users.(29)

Hence this study was planned to get the present baseline data and aimed to obtain the intensity of dependence among both smoking and smokeless tobacco users. The objectives of the study hence were to estimate the level of addiction to tobacco amongst smokers and smokeless tobacco users using the Fagerstrom Addiction Scale as a primary tool and provide data for appropriate treatment modalities and to assess the differences in the level of addiction to tobacco in relation to age, gender and socioeconomic status.

MATERIALS AND METHODS:

A questionnaire based cross sectional observational study was done among outpatients in selected departments among hospitals and community outreach medical and dental centers in different zones of Udupi taluk. It was done following the ethical clearance at Manipal College of Dental Sciences, Manipal, obtained from the Institutional Ethical Committee of Kasturba Medical College and Kasturba Hospital, Manipal, Manipal Academy of Higher Education (Number 425). The study duration was for 18 months from January 2014 to June 2015 across 14 different centres of the taluk. The centres were: Dental OPD at MCODS, Manipal, Dr.TMA Pai Hospital, Udupi, Dental OPD at District General Hospital, Udupi, Dental OPD at Community Health Centres of Udupi taluk namely: Shirva, Brahmavara, and Psychiatry OPD of Kasturba Hospital, Manipal, Psychiatry OPD at Dr.TMA Pai Hospial, Udupi, District General Hospital, Udupi, Community Health Centre OPD at Shirva, Brahmavara, and Community Medicine Outreach Centres at Malpe, Kadekar, Udyavara, and Alevooru. Among the outpatients, those who were found to be using tobacco products and willing to participate in the study were included. As per CDC guidelines, a minimum life time usage/ consumption of a minimum 100 cigarettes or 100 beedis or 100 sachets of smokeless tobacco was given priority for inclusion.

However, the use of both smoked and smokeless tobacco simultaneously confounds the dependency score of each other, therefore those who reported to use both forms of tobacco products concurrently were excluded from the study. Those who were not willing to participate in the study were also excluded.

In order to record the dependency patterns of both smoked and smokeless tobacco users, Stratified Random Sampling method was used. The outpatients who were tobacco users were first stratified into mutually exclusive smoked and smokeless tobacco users. The stratification was done to ensure sample population was selected from both subgroups. Then the sample population under each subgroup was randomly selected. To estimate the sample size n for this study, the minimum proportion was kept at 10% with an absolute error of 3% and a confidence interval of 95% suggesting a sample size of 384. Keeping 20% as the nonresponse rate, the minimum sample desired was calculated to be 500. The study gathered momentum as it proceeded due to health promotion activities and we were able to get a total outpatient sample size of 574.

Amongst 574 hospital and community outreach medical and dental outpatients in the taluk, the age range was from 18 years to 70 years. [Less than 30, 30-39, 40-49, 50-59, 60 plus] Furthermore to estimate the proportion of tobacco users with respect to gender, age, level of education, per capita income and occupation, as well as to allow assessment of the relationship of these variables to dependence level, demographic and other relevant data of Socio Economic Status was collected at the start of the questionnaire administration. Consent form was explained in a comprehensible language, signed and obtained from each participant, in the presence of a witness. The questionnaires were then administered to the participants. Every patient was attended personally and choices explained in an easy to understand language. The responses were then recorded.

Depending on the score, categorization of the level of dependence on nicotine and interpretation of the score was done. Subsequently, according to the level of nicotine dependence, the treatment needed for the patient was categorized. For score 0-4 (low dependence), only behavioural counselling alone was required. For score 4-6 (moderate dependence), the participants would need behavioural counselling and Nicotine Replacement Therapy. Meanwhile, participants with score more than 6 (significant dependence) was categorized as needing behavioural counselling, Nicotine Replacement Therapy and Pharmacological medication.

STATISTICAL ANALYSIS:

The data so obtained was entered into Microsoft Excel and analyzed statistically using SPSS version 16 software. Chi square test was used for comparison and p value < 0.05 was considered to be significant.

RESULTS:

Out of the 574 participants, 234 were smokers and 340 were smokeless tobacco users. There were 216 male smokers and 18 female smokers. Meanwhile among the smokeless tobacco users, 272were male and 68 were female. Smokers had a mean Fagerstrom score of 6.04 (Standard Deviation (SD): 1.188). Whereas smokeless tobacco users had a mean Fagerstrom score of 9.93 (SD: 1.662). (Table 1) The categorization of level of dependence was done for each participant based on their Fagerstrom score as described, and majority of them had moderate to high dependency (79.5% smokers and 85.2% smokeless tobacco users). (Table 2)

When Fagerstrom score was correlated with the demographic findings, some interesting findings were observed. Females in the study consistently had higher mean Fagerstrom score than males. Smoking females had a mean score of 6.65 (SD: 1.071) compared to males which had a lower mean score of 5.97 (SD: 1.183), and the difference was statistically significant ($p<0.05$). The same was recorded for female smokeless tobacco users who had higher mean score of 10.13 (SD: 1.713) than male 9.89 (SD: 1.632), albeit unlike smoking, it was not statistically significant ($p>0.05$).

When the participants were divided by age group, it was observed that among the smokers, the age group 50-59 had the highest mean Fagerstrom score of 6.44 (SD:1.045). In comparison the age group 30-39 had the lowest mean Fagerstrom score of 5.84 (SD: 1.328). The findings were completely distinct in smokeless tobacco users, with the age group 40-49 having the highest mean Fagerstrom score of 10.02 (SD: 1.548) and the age group over 60years having the lowest mean Fagerstrom score of 9.67 (SD: 1.706). However, none of the differences were statistically significant ($p>0.05$).

Although not statistically significant ($p>0.05$), an obvious trend of mean Fagerstrom score was observed when the participants were sorted according to their level of education. For both smoking and smokeless tobacco users, the mean Fagerstrom score decreased (for smoking 6.13 ± 1.276 to 5.6 ± 1.195 and for smokeless 10.06 ± 1.652 to 9.21 ± 1.817) as the level of education increased from illiterate to high school. The per capita income (PCI) of the participants also yielded differences in mean Fagerstrom score, albeit not statistically significant ($p>0.05$). For both forms of tobacco usage, participants with PCI categorized as Class III had the highest mean Fagerstrom score (smoking: 6.36 ± 1.502 and smokeless: 10.44 ± 1.413) while those who fell in Class II category had the lowest mean Fagerstrom score (smoking: 5.91 ± 1.199 and smokeless: 9.65 ± 1.668).

The participants were also stratified according to their occupation. Among the smokers, those working as professional (doctors, engineers, lawyers etc) had the mean Fagerstrom score of 6.26 (SD: 1.098), higher than farmers, agriculturists, businessmen and others. In smokeless tobacco users, farmers had the highest mean Fagerstrom score of 10.01 (SD: 1.618) among all the occupations. (Table 3)

DISCUSSION:

The heterogeneity of the population with diverse ethnicity, religion, culture, social structure coupled with wide range of products available in both smoking and smokeless forms increases the difficulty of addressing the issue in Udupi district. It has 3 taluks: Udupi, Kundapur and Karkala. (23) Udupi taluk is the pivot taluk of the district. The district is well known for its beedi industry (22) with a high prevalence of tobacco usage.

Attempts by users to quit tobacco many at times end in failure because of the withdrawal symptoms. Therefore, to gauge the severity and adequately address the tobacco usage, understanding of the level of dependence of tobacco users is as equally important as the data on the prevalence of use. Besides, support in the form of NRT to tobacco users, is based on their level of dependence prior to starting the treatment. By using the Fagerstrom Addiction Scale, the present study collected the baseline data on the level of addiction of smoking and smokeless tobacco users in the outpatient population of Udupi taluk of Udupi district, unlike the previously conducted studies (22,23,24) that did not record this component.

The present study found most tobacco users in Udupi taluk to have moderate to severe nicotine dependency, with higher proportion of smokeless tobacco users to be highly dependent compared to smokers. Besides, though prevalence of smoking was lesser among females, female smokers tend to have higher dependency than male smokers.

In the present study, the 234 smokers had a mean Fagerstrom score of 6.04 (SD: 1.188). This was higher than what was found by a study done in rural population in Kerala, India, a neighbouring state, which

reported the FTND score of 5.04 (SD: 5.05). (30) In contrast, another study done among 500 male students in Ranchi district of India reported a higher FTND score of 6.7 (SD: 2.22) (31) While both the studies mentioned were done in specific population of rural and male students, this present study was done on outpatients visiting medical care centers, which catered to all gender, age, locality, socioeconomic status and occupation. This would explain the mean Fagerstrom score to lie between the two study scores.

There are very few studies which reported the Fagerstrom score on smokeless tobacco users and its comparison or relationship with those of smokers. One study conducted in South India, on an urban slum population in Pondicherry and one on outpatients in Belgaum City have had data on tobacco consumption patterns in males and females of both the smoking and smokeless types, but have had relatively small sample sizes. (32,33) It is hence recommended to treat both mean Fagerstrom score of smoking and smokeless tobacco users found in this study as two independent values. The mean score can serve as a baseline score indicated for future comparisons and policy making.

Based on the score, the participants were categorized into different levels of dependence. Among the 234 smokers, 1 (0.43%) had very low dependence, 22 (9.4%) had low dependence, 47 (20.1%) had medium dependence, 139 (59.4%) had high dependence and 25 (10.68%) had very high dependence. The results were almost similar to previous studies which reported approximately 53%-65% of the participants currently using tobacco having moderate to severe nicotine dependence. (10,31,34) Not all studies reported the same severity of addiction though, as the study on smokers in rural population in Kerala found only moderate level of nicotine dependence (30) while the study in prisoners in India reported 62.7% of smokers had very high dependence. (35) This could be due to the difference in level of environmental stress faced by the different target populations in respective studies.

Meanwhile, among the 340 smokeless tobacco users, 0 (0%) were categorized as very low dependence, 25 (7.35%) as low dependence, 45 (13.24%) as medium dependence, 255 (75%) as high dependence and 15 (4.41%) as very high dependence. The findings were comparable to a study conducted in Jodhpur, India where it was documented that roughly 65% of smokeless tobacco users had medium to high dependency. (36) Moreover in the present study, higher proportion of smokeless tobacco users had high level of dependence compared to smokers, similar to findings from a previous study. (31) From the results, it was inferred that while both forms of tobacco usage cause high degree of addiction and require appropriate intervention methods to aid cessation, even more help and attention should be given to smokeless tobacco users as the dependency was greater.

An interesting finding from the study was that female smokers had higher mean Fagerstrom score (6.65 ± 1.071) than male smokers (5.97±1.183) and it was statistically significant. A study among psychiatry patients also found that more percentage of female tobacco users had moderate to severe nicotine dependency compared to males. (10) However, a large cross-sectional study in Andaman and Nicobar Islands, India reported less percentage of females were nicotine dependent compared to males. (37) On the other hand, while female smokeless tobacco users too had higher mean Fagerstrom score than males, it was not statistically significant. There were many possible reasons for higher mean Fagerstrom score among females in this study.

Females in India were commonly at a social disadvantage and had to endure more mental stress due to the social and cultural factors in a predominantly patriarchal society. Therefore, they were easily under the influence of older male members of the family and begin using tobacco products at a tender age. This is supported by a World Health Organization (WHO) report, detailing about tobacco use women in Cambodia, also a developing country with similar culture to India, where older family members influence was accounted as one of the major factors. Furthermore, many of these women had the perceptions that tobacco products can be used to relieve morning sickness during pregnancy and to reduce appetite. (38)

Also, many female smokers believed that stoppage of smoking can cause weight gain. (39) Female smokers were presumed to be more conscious about their weight gain as it was associated with social repercussions. The fear of weight gain by female smokers was seen to contribute to high level of dependency. Lastly, female smokers generally had less access to tobacco cessation service due to their stay-at-home nature habitually occurring in India.

This was corroborated by one study that had found that male smokers probably had more chances of experiencing smoking restrictions and contact with healthcare providers who provided advice on cessation compared to females. (40) This data suggested that tobacco cessation centers should appreciate the difference in dependency pattern between the genders and increase their effort of reaching out to female tobacco users in the region. Relatively less number of female smokers were interviewed, as compared to female smokeless tobacco users. The number of tobacco users among females was lesser than the males. No statistically significant difference in mean Fagerstrom score were obtained when the participants were divided by broad age group. This was in disparity with the study in Kerala, India which concluded that FTND scores increased with age. (10,30) Other studies also reported that age affected degree of tobacco addiction, (37,41) observing that younger age group were more prone to being dependent to tobacco chewing while those above 40 years old were more dependent on smoking. (41) While many studies indicated that age was an important determinant of tobacco dependency, the present study did not report the same results probably due to sample size variations.

On the other hand, even though not statistically significant, the mean Fagerstrom score increased as literacy decreased. This was in accordance with other studies which reported the same trend. (10,30,37,42) This was most likely due to lower knowledge and risk perceptions on tobacco use, as well as deprivation of health education and reduced likelihood of utilization of tobacco cessation programs.

When the participants were compared by their socioeconomic status, the statistical analysis yielded no significant difference in their mean Fagerstrom score. However, one study has reported otherwise, reporting that FTND and socioeconomic status was inversely related. (30)

Occupation too created differences in mean Fagerstrom score, albeit not statistically significant. Professionals who smoked had the highest mean Fagerstrom score compared to other occupations, probably owing to the high mental and emotional stress in their respective professions. Comparatively for smokeless tobacco users, farmers had the highest mean Fagerstrom score among other occupations, presumably because smokeless tobacco was more affordable and easier to consume, making it a popular choice. This study data can serve as a baseline for more extensive tobacco cessation effort in the region.

There are some limitations to the study as this cross sectional study at the grass root level has been done only at the taluk level among patients using tobacco and visiting outpatient departments in government community health centers and private health care centers of the taluk. Secondly, we have assessed the patients for their tobacco addiction based on the modified Fagerstrom Test for Nicotine Dependence, which is suitable for assessment in the Indian population, though it is known that there are other scales for screening . The characteristics of the other scales vary, and the genetic and non-genetic nature of nicotine dependence in the populations may be better represented with appropriate use of these other scales in other populations, and so the findings of the study have implications but cannot be generalized to all populations.

This study supports in understanding the population needs and demonstrates the usefulness of having a fully functional tobacco cessation and counselling centre which can counsel and guide patients appropriately for the reduction of tobacco usage in all forms, serving as a useful link in the chain of patient referral.

CONCLUSION: This study was done to assess the addiction and dependency patterns of tobacco users in Udupi taluk. It is vital to recognize that the degree of addiction as an important determinant in successful quit attempts. In this study, majority of the tobacco users had medium to high levels of dependency, which would deserve extra attention with the various treatment modalities. Behavioural Counselling, Nicotine Replacement Therapy, and Pharmacological medication all have an important role to play in cessation. Behaviour Counselling alone or with Nicotine Replacement Therapy and/or with Pharmacological Medication are to be used as appropriate, if tobacco cessation attempts are to be successful. Often at social disadvantages, female users would need additional support and measures of confidentiality to overcome this addiction. The data so obtained builds a preliminary platform for decisions about treatment protocols,

palliative changes in treatment and policy development. With the given data, counsellors and tobacco cessation clinics can implement the transformation, thus facilitating improved quit rates in relation to successful tobacco cessation and sustenance for improved community health outcomes in the region.

APPENDIX [13,21]

The Fagerstrom Test for Nicotine Dependence is widely used as a screening test for the physical aspects of nicotine dependence. There are scales for both smoking and smokeless tobacco. Based on the score, the level of addiction can be low (score less than 4), Moderate (score 4- 6) or significant (score more than 6)

Modifed Fagerstrom test for smoking and Modified Fagerstrom test for smokeless tobacco

MODIFIED FAGERSTROM TEST FOR SMOKING	MODIFIED FAGERSTROM TEST FOR SMOKELESS TOBACCO USERS
1. How soon after you wake up do you smoke your first cigarette or bidi? Within 5 minutes 3 6 to 30 minutes 2 31 to 60 minutes 1 After 60 minutes 0	How soon after you wake up do you use your first dip / chew ? Within 5 minutes 3 6 to 30 minutes 2 31 to 60 minutes 1 After 60 minutes 0
2. Do you find it difficult to refrain from smoking in places where it is forbidden ? (In church, library or cinema etc) Yes 1 No 0	How often do you intentionally swallow tobacco juice Always 2 Sometimes 1 Never 0
3. Which cigarette / bidi would you hate togive up most ? The first one in the morning 1 Any others 0	Which tobacco chew would you hate to give up most ? The first thing in the morning 1 All others 0
4. How many cigarettes / bidis do you smoke per day 10 or Less 0 11 – 20 1 21 – 30 2 31 or more 3	How many cans/ pouches of tobacco do you use per week ? More than 3 2 1 – 3 1 Less than 1 0
5. Do you smoke more frequently during the first hours after waking up than during the rest of the day ? Yes 1 No 0	Do you chew more frequently during the first hours after waking up than during the rest of the day ? Yes 1 No 0
6. Do you smoke if you are so ill that you are in bed most of the day? Yes 1 No 0	Do you chew tobacco if you are so ill that you are in bed most of the day? Yes 1 No 0
Total score :	Total score :
Level of dependence : Greater than 6 : High 4-6 : Moderate Less than 4 : Low	

TABLE 1: Mean and Standard Deviation of Fagerstrom score among smoking and smokeless tobacco users

Type of tobacco consumption	Fagerstrom score	
	Mean	SD
Smoking	6.04	1.188
Smokeless	9.93	1.662

TABLE 2: Mean and Standard Deviation of Fagerstrom score according to demographic details along with p – value for test of significance

Demographic groups	Smoking		Smokeless	
	Fagerstrom score		Fagerstrom score	
	Mean	SD	Mean	SD
Gender				
Males	5.97	1.183	9.89	1.632
Females	6.65	1.071	10.13	1.713
p-value	0.009*	0.296		
Broad age group				
Less than 30 years	6.19	0.943	9.96	1.721
30-39	5.84	1.328	9.91	1.764
40-49	5.95	1.252	10.02	1.548
50-59	6.44	1.045	9.98	1.626
60 plus years	6.08	1.018	9.67	1.706
p-value	0.150	0.829		
Level of education				
Illiterate	6.13	1.276	10.06	1.652
Primary	6.1	1.033	9.94	1.653
Middle	5.87	1.218	9.84	1.596
High School	5.6	1.195	9.21	1.817
p-value	0.271	0.126		
Per capita income				
Class I	6.07	1.161	9.99	1.667
Class II	5.91	1.199	9.65	1.668
Class III	6.36	1.502	10.44	1.413
p-value	0.425	0.127		
Occupation				
Farmer	6.18	1.156	10.01	1.618
Agriculture	5.98	1.221	9.94	1.83
Business	5.98	1.143	9.96	1.574
Professional	6.26	1.098	9.83	1.733
Others	5.78	1.294	9.7	1.536
p-value	0.454	0.87		

*p value significant at <0.05

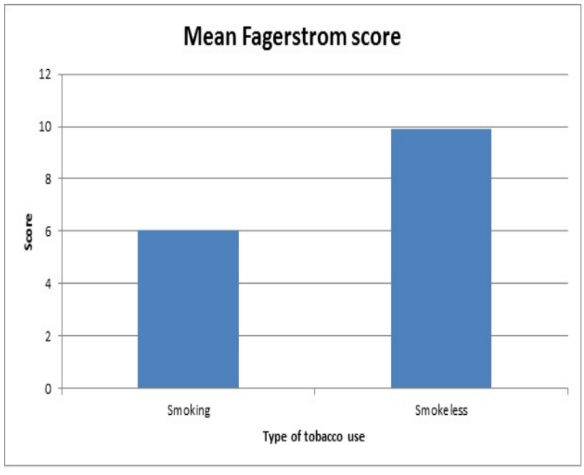

FIGURE 1 : Mean Fagerstrom score

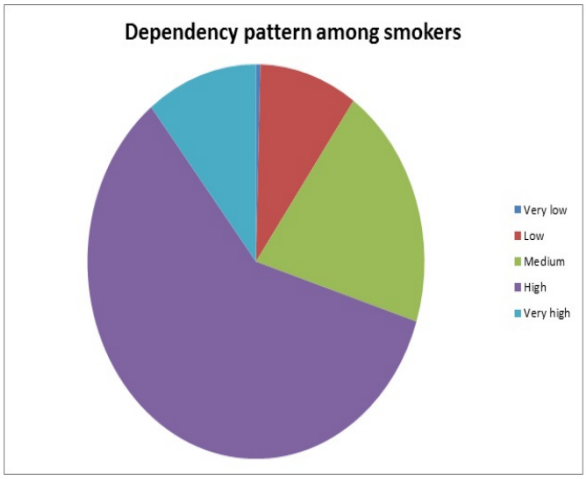

FIGURE 2 : Dependency pattern amongst smokers

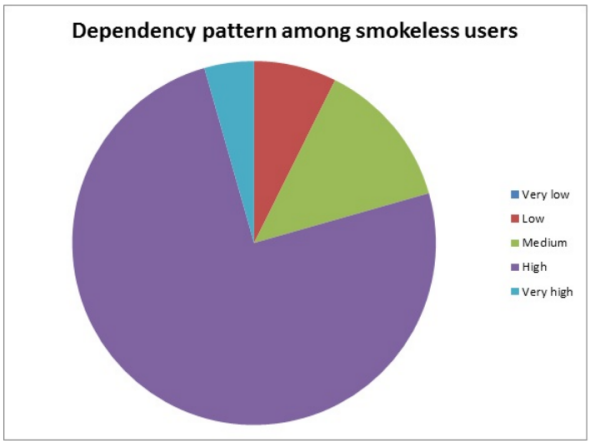

FIGURE 3 : Dependency pattern amongst smokeless users

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REFERENCES

1. Gowing L, Ali R, Allsop S, Marsden J, Turf E, West R, et al. Global statistics on addictive behaviours: 2014 status report. Addiction. 2015 Jun: p. 904-19.
2. World Health Organization. WHO Fact Sheet. [Online].; May 2017 [cited 2017 September 6. Available from: http://www.who.int/mediacentre/factsheets/fs339/en/.
3. World Health Organization. Tobacco control economics. [Online]. [cited 2017 September 6. Available from: http://www.who.int/tobacco/economics/background/en/.
4. Jha P, Peto R. Global effects of smoking, of quitting, and of taxing tobacco. N Engl J Med. 2014 January: p. 60-8.
5. World Health Organization. Global Adult Tobacco Survey (GATS-2) India. [Online].; 2016-17 [cited 2017 September 6. Available from: http:// www. searo. who. int/india/mediacentre/events/2017/gats2_india.pdf?ua=1.
6. Jha P, Jacob B, Gajalakshmi V, Gupta P, Dhingra N, Kumar R, et al. A nationally representative case-control study of smoking and death in India. N Engl J Med. 2008 Mar: p. 1137-47.
7. World Health Organization. Economic burden of tobacco related diseases in India. [Online].; 2011-12 [cited 2017 September 6. Available from: http:// www. searo. who. int/india/topics/tobacco/fact_sheet_economic_burden_of_tobacco_related_diseases.pdf.
8. World Health Organization. Tobacco Free Initiative MPOWER. [Online].; 2008 [cited 2017 September 6. Available from: http://www.who.int/tobacco/mpower/en/.
9. Rani M, Bonu S, Jha P, Nguyen SN, Jamjoum L. Tobacco ue in India: prevalence and predictors of smoking and chewing in a national cross sectional household survey. Tobacco Control. 2003: p. e4.
10. Chandra PS, Carey MP, Carey KB, Jairam KR, Girish NS, Rudresh HP. Prevalence and correlate of tobacco use and nicotine dependence among psychiatric patients in India. Addict Behav. 2005 August: p. 1290-1299.
11. Benowitz NL. Nicotine Addiction. 2010 Jun: p. 2295-2303.
12. Davies JB, Ross AJ, Sudbery MV. The Fagerstrom test for nicotine dependence and its relationship to NRT use and readiness-to-quit. Journal of Substance Use. 2008 October: p. 340-348.
13. Heatherton T, Kozlowski L, Frecker R, Fagerstrom K. The Fagerstrom test for nicotine dependence: a revision of the Fagerstrom tolerance questionnaire. Br J Addict. 1991 Sep: p. 1119-27.
14. Kawakami N, Takatsuka N, Inaba S, Shimizu H. Development of a screening questionnaire for tobacco/nicotine dependence according to ICD-10, DSM-111-R, and DSM-IV. Addict Behav. 1999 Mar-Apr: p. 155-66.
15. Piper ME, McCarthy DE, Bolt DM, Smith SS, Lerman C, Benowitz N, et al. Assessing dimensions of nicotine dependence: An evaluation of the Nicotine Dependence Syndrome Scale (NDSS) and the Wisconsin Inventory of Smoking Dependence Motives (WISDM). Nicotine Tob Res. 2008 Jun: p. 1009-1020.
16. Heatherton T, Kozlowski L, Frecker R, Rickert W, Robinson J. Measuring the heaviness of smoking: using self-reported time to the first cigarette of the day and number of cigarettes smoked per day. Br J Addict. 1989 Jul: p. 791-9.
17. Etter J, Le Houezec J, Perneger T. A self-administered questionnaire to measure dependence on cigarettes: the cigarette dependence scale. Neuropsychopharmacology. 2003 Feb: p. 359-70.
18. Shiffman S, Waters A, Hickcox M. The nicotine dependence syndrome scale: a multidimensional measure of nicotine dependence. Nicotine Tob Res. 2004 Apr: p. 327-48.
19. Difranza JR, Savageau JA, Fletcher K, Ockene JK, Rigotti NA, McNeill AD, et al. Measuring the Loss of Autonomy Over Use in Adolescents: The DANDY (Development and Assessment of Nicotine Dependence in Youths) Study. Arch Pediatr Adolesc Med. 2002 Apr: p. 397-403.
20. DiFranza J, Wellman R, Ursprung W, Sabiston C. The Autonomy Over Smoking Scale. Psychol Addict Behav. 2009 Dec: p. 656-65.
21. Ebbert JO, Patten CA,Schroeder DR The Fagerstrom test for Nicotine Dependence - Smokeless Tobacco (FTND-ST) Addictive Behaviors.2006;31(9):1716-1721. doi : 10.1016/j.addbeh.2005.12.015
22. Rane PP, Narayanan P, Binu V, Unnikrishnan B. Prevalence of tobacco and alcohol consumption among fishermen in Udupi taluk, Karnataka, India: a cross-sectional study. Asian Pac J Cancer Prev. : p. 1733-1737.
23. Acharya S, Pentapati K, Acharya S. Socioeconomic mobility and tobacco consumption patterns in fish industry workers in Udupi district of coastal Karnataka. Indian J Dent Res. 2014: p. 653-6.
24. Mohanan P, Swain S, Sanah N, Sharma V, Ghosh D. A study on the prevalence of alcohol consumption, tobacco use and sexual behaviour among adolescents in urban areas of the Udupi district, Karnataka, India. Sultan Qaboos University Medical Journal. 2014: p. e104-e112.
25. Kumar Y, Acharya S, Pentapati K. Prevalence of oral potentially malignant disorders in workers of Udupi taluk. South Asian Journal of Cancer. 2015: p. 130-133.
26. Islam K, Saha I, Saha R, Samim Khan SA, Thakur R, Shivam S. Predictors of quitting behaviour with special reference to nicotine dependence among adult tobacco-users in a slum of Burdwan district, West Bengal, India. Indian J med Res. 2004 April: p. 638-642.
27. Hatsukami DK, Stead LF, Gupta PC. Tobacco addiction: diagnosis and treatment. Lancet. 2008 June: p. 2027-2038.
28. Sharma MK, Sharma P. Need for validation of Fagerstrom Test for nicotine dependence in Indian context: implications for nicotine replacement therapy. Indian K Psychol Med. 2016 March-April: p. 105-108.
29. Vinoth Kumar NM, Khijmatgar S, Chowdhury C. Interrelations of level of urinary cotinine and score for Fagerstrom Test for Nicotine Dependence among Beedi smokers, and smokeless tobacco users in India. Indian J Psychol Med. 2017 July-August: p. 392-398.
30. Jayakrishnan R, Mathew A, Lekshmi K, Sebastian P, Finne P, Uutela A. Assessment of nicotine dependence among smokers in a selected rural population in Kerala, India. Asian Pacific J Cancer Prev. 2012: p. 2663-2667.
31. Saddichha S, Khess CRJ. Prevalence of tobacco use among young adult males in India: A community-based epidemiological study. The American Journal of Drug and Alcohol Abuse. 2010: p. 73-77.
32. Samantha S, Byahatti S, Ammanagi R, Tantradi P. Assessing the level of nicotine dependence in smokers visiting a dental college in Belgaum city: A questionnaire study. J Educ Ethics Dent. 2015: p. 25-9.
33. Naik B, Majella M, Parthibane S, Kar S. Level of tobacco dependence among tobacco users in an urban slum of Puducherry: A pilot study. J Family Med Prim Care. 2017: p. 336-9.
34. Jhanjee S, Sethi H. The Fagerstrom Test for Nicotine Dependence in an Indian sample of daily smokers with poly drug use. Nicotine & Tobacco Research. 2010 November: p. 1162-1166.
35. Reddy S, Khanagar SB, Naganandini S, Rajanna V, Naik S, Kodoth JK. Tobacco usage and attitude towards tobacco cessation among prisoners in India - a cross sectional survey. J Int Oral Health. 2014 Sep-Oct: p. 22-26.
36. Chhabra C, Chhabra KG, Bishnoi S, Singh J, Sahu V, Lohra A, et al. Exploring the predictors of quitting tobacco usage among patients attending a private dental instituion - a survey from Jodhpur, India. Oral Health and Dental Management. 2014 September: p. 815-820.
37. Manimunda SP, Benegal V, Suqunan AP, Jeemon P, Balakrishna N, Thennarusu K, et al. Tobacco use and nicotine dependency in a cross-sectional representative sample of 18,018 individuals in Andaman and Nicobar Islands, India. BMC Public Health. 2012.
38. Singh PN, Yel D, Sin S, Khieng S, Lopez J, Job J, et al. Tobacco use among adults in Cambodia: evidence for a tobacco epidemic among women. Bull World Health Organ. 2009 Dec: p. 905-912.
39. Bush T, Hsu C, Levine MD, Magnusson B, Miles L. Weight gain and smoking: perceptions and experiences of obese quitline participants. BMC Public Health. 2014.
40. Auguston EM, Barzani D, Finney Rutten LJ, Marcus S. Gender differences among hardcore smokers: an analysis of the tobacco use supplement of the current population survey. J Womens Health (Larchmt). 2008 September: p. 1167-1173.
41. Jadhav K, Singh D. 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 (Isfahan). 2013 Jul-Aug: p. 467-473.