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Research Article

Nicotine Dependence among Smokers: A Community Based Study

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Abstract

Nicotine dependence is a challenging health problem present among smokers as it involves a compulsive use of a substance in spite of its known harmful effects. Hence, A community based cross-sectional study was conducted for a period of eight months from November 2020 to June 2021 in the selected smoking population of Raichur district. Data was collected using a pre structured questionnaire of the participants for age, gender, and socio- economic data. Informed consent was obtained from participants before study. Direct interview was conducted with patients using a questionnaire which contains three parts. Patient's Nicotine dependence was assessed using scores obtained from each scale. Among 150 participants 142 (94.67%) patients were male and 8 (5.33%) patients were female. Participants under the age group of 41-60 years were more i.e. 51 (34%). It was observed that most of them were married. When taking account of education of the participants 55 (36.67%) were graduates, 34 (22.67%) were secondary educated and only 28 (18.67%) participants were illiterate. Most of the participants had occupations such as business 18%, agriculture 28%, employees 36.67% and only 16.67% were not having occupation. In the FTDN score 78 (52%) participants were having moderate nicotine dependence as in HIS dependence score shows more number of low Nicotine dependence i.e. 74 (49.33%). This study showed that most of the participants had low or moderate nicotine dependence. Hence it is needed to be continuously evaluated in order to reduce complications for major disease, premature death and improve the quality of life of the population.

Keywords: Tobacco smoking, Nicotine dependence, FTND, HSI.

INTRODUCTION

The health impact of tobacco use is deleterious as it has detrimental effects on bio-physical, psychological and social spheres of life. According to WHO, 5 million deaths occur worldwide due to use of tobacco in various forms. Especially in low and moderate income countries smoking is still prevalent and it constitutes a major public health concern. India is the third largest producer of tobacco and second largest consumer of tobacco there by almost 910,000 people die annually due to excessive tobacco consumption. The presence of additive alkaloid 'nicotine' causes dependency, which is the major obstacle smokers come across in the process of quitting. Although tobacco smoking is the major public health concern, nicotine dependence is the area which requires significant attention[1].

Nicotine causes addiction by acting on nicotinic cholinergic receptors which triggers the release of neurotransmitters that produce psychoactive effects that are rewarding. One person prematurely dies every six seconds due to addiction to tobacco. One in two long-term smokers mostly in low- and middle-income countries will die from tobacco addiction. This epidemic reflects the highly addictive nature of tobacco, and specifically of nicotine.[2]

The nicotine dependency is measured using the Fagerstrom Tolerance Questionnaire, which determines the dependency in physiological symptoms and behavioral symptoms. This test consists of 2 parts: (1) the amount of time until the first cigarette of the day is smoked and (2) the number of cigarettes smoked per day.[1,3].

So the objective of the present study was to assess the nicotine dependence among smokers with age, duration of years and number of packets smoked per day and to measure the nicotine dependence using Fagerstrom Test of Nicotine Dependence (FTND) and Heaviness of Smoking Index (HIS).

MATERIALS AND METHODS:

The study was performed as a community based cross-sectional study conducted from November 2020 to June 2021.The data were collected from the respondents using a prestructured questionnaire. The questionnaire consisted of three parts i.e.

1) Socio-demographic characteristics of respondents like age, gender, marital status and questions related to smoking habits.

2) Fagerstrom Test of Nicotine Dependence (FTND) : The Fagerström Test for Nicotine Dependence is a standard instrument for assessing the intensity of physical addiction to

nicotine. The test was designed to provide an ordinal measure of nicotine dependence related to cigarette smoking. It contains six items that evaluate the quantity of cigarette consumption, the compulsion to use, and dependence. In scoring the Fagerstrom Test for Nicotine Dependence, yes/no items are scored from 0 to 1 and multiple-choice items are scored from 0 to 3. The items are summed to yield a total score of 0-10. The higher the total Fagerstrom Score, the more intense is the person's physical dependence on nicotine.

3) Heaviness of Smoking Index (HSI): The Heaviness of Smoking Index (HSI) was developed as a test to measure nicotine dependence by using two questions from the Fagerstrom Tolerance Questionnaire and the Fagerstrom Test for Nicotine Dependence i.e. time to first smoking in the morning and number of cigarettes per day. It uses a six-point scale calculated from the number of cigarettes smoked per day (1-10, 11-20, 21-30, 31+) and the time to first cigarette after waking (less than/equal to 5, 6-30, 31-60, and 61+ minutes). Nicotine dependence is then categorized into a three-category variable: low (0-1), medium (2-4), and high (5-6). It is a measure for assessing nicotine dependence may have significant effects among lighter smokers seen in non-clinical populations and the validity of the measure for assessing dependence in a general population may be questioned.However, there is no accepted definition of what constitutes a lighter smoker, the Smoking Cessation, Harm Reduction, and Biomarkers Working Group suggests a definition could be smoking fewer than 10 cigarettes per day. Nevertheless, HIS is commonly used in both clinical and population surveys to assess the dependence.

Inclusion and Exclusion Criteria: 150 smokers in the community of Raichur district of Karnataka were selected for the study by cluster sampling method. In which 1) Smokers between 16 years to 80 years of age and both gender were included 2) Smokers using beedi and churut were also included, whereas Non-smokers (or) secondhand smokers, smokers not willing to participate, smokers terminally ill or bed ridden, smokeless tobacco users and people who only use chewing form of tobacco were excluded from the study.

Participant Consent: Informed consent was taken from the respondents using Participant Consent Form. The designed patient consent form and the pre structured questionnaire were translated into the local languages Kannada and Telugu.

Data Collection and Compilation: Project team approached 150 respondents who were being randomly selected and were requested to complete the pre structured questionnaire. The questionnaire was translated to local languages like Kannada and Telugu for the easy understanding of the patient. Questions have been asked orally to some of the respondents and recorded. The filled questionnaires were evaluated as per the study objectives. The nicotine dependence of the participants were determined based upon the scores obtained from the pre structured questionnaire. According to the scores obtained, the participants were categorized into 3 groups, that is high dependence, moderate dependence and low dependence. The comparison of nicotine dependence with various parameters such as sex, age distribution, socioeconomic data, marital status, educational qualification and occupation were noted.

Statistical Analysis: The socio demographic and nicotine dependence data of the patients were analyzed using descriptive statistics namely total numbers, percentage, to represent nicotine dependence score. Microsoft Word and Excel have been used to generate graphs, tables etc. All gathered data were entered into SPSS software for windows, the chi square test was applied to compare the gathered data between the three groups of nicotine dependence score and also for the comparison of data used in the study.

RESULT AND DISCUSSION

Results:

Table 1: Distribution based on socio demographics characteristics. (n=150)

Sl. No.	Socio-Demographics	Characteristics	No. of Patient	Percentage (%)
1	**Age**			
		18 -30	32	21.33
		31 -40	43	28.67
		41 -50	51	34
		51 -60	20	13.33
		61 (or) above	4	2.67
2	**Gender**			
		Male	142	94.67
		Female	8	5.33
3	**Marital status**			
		Married	115	76.67
		Unmarried	31	20.67
		Widowed	2	1.33
		Divorced	2	1.33
4	**Education**			
		Illiterate	28	18.67

		Primary	21	14
		Secondary	34	22.67
		Graduate	55	36.67
		Post Graduate	12	8
5	**Occupation**			
		Farmer (or) Agriculture	43	28.67
		House wife	2	1.33
		Unemployed	13	8.67
		Employed	55	36.67
		Business	27	18
		Retired (or) other	10	6.66
6	**Habits**			
		Smoker	30	20
		Smoker, alcoholic	101	67.33
		Smoker, tobacco	7	4.67
		Smoker, alcoholic, tobacco in other form	12	8
7	**Type of tobacco smoke**			
		Beedi	6	4
		Cigarette	69	46
		Churut	0	0
		Other	2	1.33
		Beedi, Cigarette	35	23.33
		Beedi, Churut	7	4.67
		Beedi, Other	1	0.67
		Cigarette, Churut	3	2
		Cigarette, Other	19	12.67
		Beedi, Cigarette, Churut	3	2
		Beedi, Cigarette, Other	1	0.67
		Beedi, Churut, Other	4	2.66

- Based on socio demographics characteristics most of the participants were male between the age group of 41-50. Majority of them were married and had habits of smoking and drinking alcohol.
- Based on the distribution of FTND scores it was noticed that most of the participants had moderate dependence on nicotine.
- Based on distribution of HSI score it was seen that similar no. of participants has low and moderate nicotine dependence.
- In comparison, based on nicotine dependence of socio demographics characteristics using FTND score it was noticed that married male participants between the ages of 41-50 were more and have moderate nicotine dependence in which most of them were uneducated.
- Comparison based on nicotine dependence of socio demographics characteristics using HSI score shows that the majority of participants were married male between the ages of 41-50 and had low nicotine dependence.

Table 2- FTND Questionnaire

Questions	Score	Interpretation
1. How soon after waking do you smoke your first cigarette? 2. Do you find it difficult to refrain from smoking in places where it is forbidden? (eg. Library, church) 3. Which cigarette do you hate to give up? 4. How many cigarettes per day do you smoke? 5. Do you smoke more frequently in the morning? 6. Do you smoke even if you are sick in bed most of the day?	< 4	Low dependence
	4 - 10	Moderate dependence
	7 - 10	High dependence

Table 3: Distribution based on FTND score. (n=150)

Sl. No.	FTND score	No. of Patient	Percentage (%)
1	Low dependence	56	37.33
2	Moderate dependence	78	52.01
3	High dependence	16	10.67

The Fagerstrom Test for Nicotine Dependence helps to assess the intensity of physical dependence of a person towards nicotine. Based on the calculated score, dependency was categorized as highly dependent (7–10), moderately dependent (4–6) and minimally dependent (< 4). Further it was categorized into nicotine dependency (highly and moderately dependent) and no nicotine dependency (minimally dependent). In Our study, 52.01% were found to be moderately dependent on nicotine, whereas 37.3% were with low dependence and 10.6% of them were found to be highly dependent on nicotine.

Table 4- HSI QUESTIONNAIRE

Sl. No.	HSI Dependence score	No. of Patient	Percentage (%)
1	Low dependence	74	49.33
2	Moderate dependence	70	46.67
3	High dependence	6	4

Table 5 - Comparison based on nicotine dependence of socio demographics characteristics using HSI score. (n=150)

Sl. No.	Socio-Demographics	Characteristics	HSI dependence score		
1	**Age**		**Low dependence**	**Moderate dependence**	**High dependence**
		18 -30	14(9.33%)	18 (12%)	0 (0%)
		31 -40	23 (15.33%)	19 (12.67%)	1 (0.67%)
		41 -50	26(17.33%)	24 (16%)	1(0.67%)
		51 -60	11(7.33%)	7 (4.67%)	2 (1.33%)
		61 (or) above	0 (0%)	2 (1.33%)	2(1.33%)
2	**Gender**				
		Male	69 (46%)	68(45.33%)	5 (3.33%)
		Female	5 (3.33%)	2 (1.33%)	1 (0.67%)
3	**Marital status**				
		Married	61(40.67%)	48 (32%)	6 (4%)
		Unmarried	11 (7.33%)	20 (13.33%)	0 (0%)
		Widowed	0 (0%)	2 (1.33%)	0 (0%)
		Divorced	2 (1.33%)	0 (0%)	0 (0%)
4	**Education**				
		Illiterate	10 (6.67%)	18 (12%)	0 (0%)
		Primary	10(6.67%)	7 (4.67%)	4 (2.67%)
		Secondary	18(12%)	16(10.67%)	0 (0%)
		Graduate	27 (18%)	26 (17.33%)	2 (1.33%)
		Post Graduate	9 (6%)	3 (2%)	0 (0%)
5	**Occupation**				
		Farmer (or) Agriculture	16(10.67%)	23 (15.33%)	4 (2.67%)
		House wife	1 (0.67%)	0 (0%)	1(0.67%)
		Unemployed	5 (3.33%)	8(5.33%)	0 (0%)
		Employed	34 (22.67%)	20 (13.33%)	1 (0.67%)
		Business	14 (9.33%)	13 (8.67%)	0 (0%)
		Retired (or) other	4 (2.67%)	6 (4%)	0 (0%)

Heaviness of Smoking Index (HSI) which is a short version of FTND was developed to assess nicotine dependence. There are two components in HSI, which have been framed from two items of FTND (namely viz.- item 1- time of 1st cigarette and item 4- number of cigarettes daily). In our study,

Table 4 illustrates comparison based on nicotine dependence of socio demographics characteristics using FTND score. The data suggest that majority participants under the age group of 18-30, 31-40, 41-50 and 51-60 are having moderate nicotine dependence i.e 12.67%, 13.33%, 18%, and 7.33% respectively but participants under age group of 61 or above are having high nicotine dependence i.e 1.33%. Most of the male participants were also having moderate nicotine dependence i.e 50.67% but most female participants were low nicotine dependence i.e 3.33%. In which most of the participants were uneducated and showed moderate nicotine dependence.

Table 5 illustrates comparison based on nicotine dependence of socio demographics characteristics using HSI score. The data suggest that the majority of the participants were married male under the age group of 41-50, well-educated and employed, who shows low nicotine dependence.

CONCLUSION:

In conclusion, the study reported a higher number of low and moderate levels of nicotine dependence among the population of Raichur district, Karnataka. Nicotine dependence, tobacco cessation strategies and group intervention programmes could be made more cost effective and productive if a baseline assessment of nicotine dependency could be completed before intervention. Hence, I hope that my study will help to assess the nicotine dependence among smokers and awareness about labeling policies among tobacco users. It would help in an attempt in creating a new avenue for the tobacco cessation. This study would also serve as a baseline data for policy makers to formulate necessary counseling points for the cessation of tobacco and establishment of tobacco cessation programs. The data generated from this study will be

informative and useful for further hypotheses of future studies.

Conflict of Interest: Nil.

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