

Brief Report

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_5_18

Tobacco-related morbidity and nicotine dependence: An experience in an urban slum of Burdwan district, West Bengal, India

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Abstract:

Tobacco use causes many diseases irrespective of age and sex. More the addiction, more is the occurrence of morbidity in terms of frequency and severity. This community-based study was conducted to find out any relationship between the morbidity associated with tobacco use and nicotine dependence. In an urban slum – Alamganj, district Burdwan, West Bengal, India, from January to October 2012 among 128 current adult tobacco users using Fagerström test for nicotine dependence (FTND) questionnaire. Tobacco users were maximally suffering from chronic obstructive pulmonary disease (COPD) (27.27%), gastritis (25.45%), and leukoplakia (25.45%). For individual diseases, the difference in FTND score was significantly high in cases of gastritis, hypertension, and COPDs. All types of morbidity were more common in the group of high nicotine dependence. FTND score can be suitably used to assess nicotine dependence of the tobacco users, who can be counseled accordingly to reduce the tobacco-related morbidity and mortality.

Keywords:

Fagerström test, Fagerström test for nicotine dependence score, nicotine dependence, tobacco-related morbidity

Introduction

The World Health Organization–Tobacco-Free Initiative aims to reduce the global burden of disease and death caused by tobacco, thereby protecting present and future generations from the devastating health, social, environmental, and economic consequences of tobacco consumption and exposure to tobacco smoke. Secondary and tertiary prevention of nicotine dependence is not feasible in large scale. In spite of pharmacotherapy, there are many fatalities in the form of cancers, different premalignant conditions and other diseases such as chronic obstructive pulmonary disease (COPD) and pneumothorax.

Nicotine, the main addictive chemical in tobacco, causes physical and psychological addiction.^[1] This is true for both smoke and smokeless forms of tobacco. Cotinine is a metabolite of nicotine can be measured in serum or saliva to find the level of nicotine dependence of an individual. However due to the complexity, different questionnaires were developed to find out nicotine dependence. One such questionnaire is Fagerström test for nicotine dependence (FTND).^[2,3] This degree of dependence will further help to determine the suitable plan of tobacco cessation, which will, in turn, reduce the tobacco-related morbidity and mortality.^[1]

Many studies had been carried out in our country regarding the prevalence of tobacco use and its different correlates. However,

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How to cite this article: Saha I, Islam K, Paul B, Som TK. Tobacco-related morbidity and nicotine dependence: An experience in an urban slum of Burdwan district, West Bengal, India. *J Edu Health Promot* 2018;7:94.

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Received: 02-01-2018

Accepted: 05-05-2018

level of nicotine dependence and its relationship with morbidity in the Indian context is relatively scarce. In this background, the present community-based study was conducted to find out any relationship between the morbidity associated with tobacco use and nicotine dependence.

Methods

An observational, community-based, cross-sectional study was conducted in an urban slum– Alamganj from January to October 2012. Alamganj is an urban field practice area under the Department of Community Medicine, Burdwan Medical College and Hospital. The study population comprised all the current adult tobacco users (both smokers and smokeless) in that community. Out of the 315 adults, 132 individuals were found to be tobacco users. Ultimately, 128 individuals were interviewed, as 4 individuals were excluded from the study. Subjects were interviewed after getting consent from them in a predesigned, pretested, semi-structured schedule, and containing FTND questionnaire.^[2,3] This questionnaire has been extensively used in various countries, and its reliability has also been confirmed in different settings and populations.^[4-6]

The study was initiated after obtaining necessary clearance from Ethics Review Board, Burdwan Medical College (BMC/PG/2725).

Operational definition

The current smokers were defined as, who were smoking at the time of study and had smoked more than 100 cigarettes in their lifetime were defined as current smokers.^[7] Cigarettes, smoking pipes, and cigars were considered as smoked products. The current smokeless tobacco users defined as, who were either chewing tobacco or snuff at the time of study and had chewed tobacco 20 or more times in their lifetime.^[8] Smokeless tobacco products consist of chewing tobacco, moist snuff, and dry snuff. FTND score <4, 4–6 and more than 6 in FTND questionnaire was identified as low, medium, and high level of nicotine dependence, respectively.^[2,3] In this study, gastritis was identified from clinical feature such as pain abdomen and from previous medical records of the individuals. Hypertension is diagnosed if blood pressure is equal to or more than 140/90 mmHg or there were previous medical records suggestive of it. COPD was established from previous medical records. Other tobacco-related diseases such as bronchogenic carcinoma, pneumothorax, erythroplakia, and bronchial asthma were documented by medical records.^[9]

Statistical analysis

Data were entered into Microsoft excel worksheet (Microsoft, Redwoods, WA, USA). Categorical and

continuous data were expressed in proportions and mean values, respectively. The difference between two mean values was tested by Student's independent *t*-test (unpaired). $P \leq 0.05$ was considered as statistically significant. All the statistical analysis was done in SPSS software, version 19.0 (Statistical Package for the Social Sciences Inc., Chicago, IL, USA).

Results

Out of 128 study individuals, 90% were male and 10% were female. More than one-third (35.94%) of the adult tobacco users were under 30 years of age, followed by 51–60 years of age group (19.53%). Geriatric individuals (≥ 60 years) were 10.93%. The majority, i.e., 44% (57) of adult tobacco users used exclusively smokeless tobacco, 22% (28) were exclusively smokers and 34% (43) used both, i.e., smokers and smokeless tobacco users. Almost, half (46.87%) of the tobacco users were having high level of nicotine dependence followed by medium level of nicotine dependence (28.91%) and 24.22% of them had low dependence to nicotine.

The majority, i.e., 57.81% (74) of the tobacco users were free from tobacco-related disease at the time of the study, but mean FTND score was significantly ($t = 5.9143$, $P < 0.0001$) higher among the diseased person compared to the nondiseased (7.26 ± 2.23 vs. 4.73 ± 2.50). Out of the 54 diseased subjects, majority of them were suffering from COPD (27.27%) followed by gastritis and leukoplakia (both 25.45%). About 21.82% were hypertensives. Other diseases such as bronchogenic carcinoma, asthma, erythroplakia, and pneumothorax comprised 21.82%.

Regarding each and every disease, the mean FTND score was higher in the diseased subjects compared to nondiseased subjects. This difference was statistically significant ($P < 0.05$) by unpaired Student's *t*-test in case of gastritis, hypertension, and COPD. However, in case of leukoplakia and other diseases, the difference was not statistically significant ($P > 0.05$), though the mean FTND score was higher among the diseased subjects [Table 1].

All types of morbidity were more common in the group of high nicotine dependence; overall, COPD being the maximum [Figure 1]. However, among the smokers, COPD constituted the major group, while among the smokeless tobacco users both leukoplakia and COPD constituted the major group.

Discussion

Tobacco use is regarded as pandemic globally and has been recognized as the single-most important source of preventable morbidity and premature mortality in the

Table 1: Mean Fagerström test for nicotine dependence score among the study individuals in the presence and absence of disease (n=128)

Disease	Disease present	Disease absent	Student's t-test
Gastritis			
n (%)	14 (10.94)	114 (89.06)	
Mean±SD	7.64±1.67	5.57±2.71	2.7879*
HTN			
n (%)	12 (9.38)	116 (90.62)	
Mean±SD	8.17±1.40	5.55±2.67	2.6200*
COPD			
n (%)	15 (11.72)	113 (88.28)	
Mean±SD	7.80±1.97	5.53±2.67	3.1752*
Leukoplakia			
n (%)	14 (10.94)	114 (89.06)	
Mean±SD	7.00±2.28	5.64±2.72	1.7953
Other			
n (%)	12 (9.38)	116 (90.62)	
Mean±SD	7.08±2.68	5.66±2.68	1.7473

*Statistically significant (P<0.05). SD=Standard deviation, HTN=Hypertension, COPD=Chronic obstructive pulmonary diseases

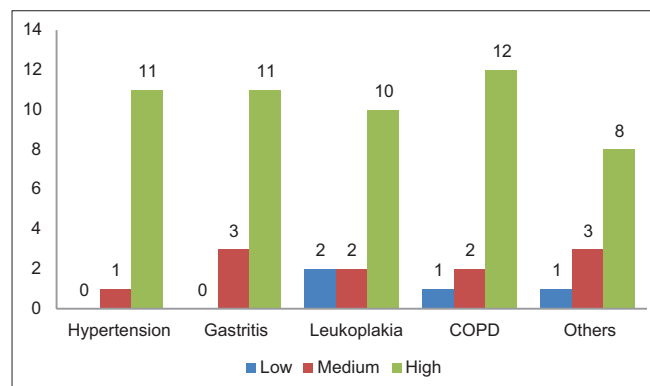


Figure 1: Multiple bar diagram showing the distribution of morbidity and level of nicotine dependence among the study individuals (n = 128)

world. It is well documented that smoking substantially increases the risk of cancer, COPD, coronary heart disease, and many other medical problems. Some studies have been conducted with FTND score and psychiatry morbidity, but its relation with some of the common morbidity of tobacco use in the Indian scenario and outside is scarce.

Adult tobacco users were maximally suffering from COPD (27.27%), followed by gastritis (25.45%) and leukoplakia (25.45%). Mean FTND score was significantly ($P < 0.05$) higher among the diseased population (4.73 ± 2.50) than the nondiseased (7.26 ± 2.23). For individual disease, the difference in score is significant only in cases of gastritis, HTN, COPD but insignificant in case of leukoplakia and other disease. In both smoker and smokeless tobacco users, the maximum number of people with disease belonged to high nicotine dependence group. Increased nicotine addiction severity had also been documented with increased risk

for mental illness and increased scores of anxiety and depression.^[10] Cigarette smoking has been postulated to common underlying factors for both respiratory illness and panic attacks among patients with different comorbidity.^[11] FTND score can be suitably used to assess nicotine dependence to reduce morbidity.^[4]

Conclusion

The FTND score can be suitably used for the tobacco users to identify the level of nicotine dependence. That identified persons should be targeted for quitting. Advertisements against the use of tobacco should be done in mass media such as television and newspaper. Children and their parents should also be educated about the ill effects of tobacco. This degree of dependence will further help to determine the suitable plan of tobacco cessation (counseling or both counseling and pharmacotherapy) for an individual, who wants to quit tobacco.

Acknowledgment

Authors would like to acknowledge the Indian Council of Medical Research, New Delhi, for providing short-term studentship to the second author (KI).

Financial support and sponsorship

This study was supported by the Indian Council of Medical Research.

Conflicts of interest

There are no conflicts of interest.

References

1. Kaur J, Sinha SK, Srivastava RK. Integration of tobacco cessation in general medical practice: Need of the hour. *J Indian Med Assoc* 2011;109:925-8.
2. Heatherton TF, Kozlowski LT, Frecker RC, fagerström KO. The Fagerström test for nicotine dependence: A revision of the Fagerström Tolerance Questionnaire. *Br J Addict* 1991;86:1119-27.
3. Ebbert JO, Patten CA, Schroeder DR. The Fagerström test for nicotine dependence-smokeless tobacco (FTND-ST). *Addict Behav* 2006;31:1716-21.
4. Huang CL, Lin HH, Wang HH. Evaluating screening performances of the fagerstrom tolerance questionnaire, the Fagerstrom test for nicotine dependence and the heavy smoking index among Taiwanese male smokers. *J Clin Nurs* 2008;17:884-90.
5. Uysal MA, Kadakal F, Karşıdağ C, Bayram NG, Uysal O, Yilmaz V, et al. Fagerstrom test for nicotine dependence: Reliability in a Turkish sample and factor analysis. *Tuberk Toraks* 2004;52:115-21.
6. Meneses-Gaya IC, Zuairi AW, Loureiro SR, Crippa JA. Psychometric properties of the Fagerström test for nicotine dependence. *J Bras Pneumol* 2009;35:73-82.
7. Saha I, Paul B, Dey TK. An Epidemiological Study of smoking among adult males in a rural area of Hooghly district, West Bengal, Ind. *J Smok Cess* 2008;3:47-90.
8. Nelson DE, Mowery P, Tomar S, Marcus S, Giovino G, Zhao L, et al. Trends in smokeless tobacco use among adults and adolescents in the United States. *Am J Public Health* 2006;96:897-905.

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9. Longo DL, Kasper DL, Jameson JL, Fauci AS, Hauser SL, Loscalzo Z. Harrison's Principles of Internal Medicine. 18th ed. 2012. p. 2042-59, 2151, 2457.
10. Emre N, Topal K, Bozkurt N, Topaktas E. Mental health screening and increased risk for anxiety and depression among treatment-seeking smokers. *Tob Induc Dis* 2014;12:20.
11. Balhara YP, Jain R, Sundar AS, Sagar R. Use of cotinine urinalysis to verify self-reported tobacco use among male psychiatric out-patients. *Lung India* 2012;29:217-20.