Original Article

Tobacco Use and Dependence among Psychiatry Out-Patients of a Health Institute in Eastern Nepal

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Abstract

Background: Assessment of nicotine dependence among tobacco users is essential as highly dependent individuals have greater risk of developing tobacco related physical and psychiatric problems. There is little information about the tobacco use and nicotine dependence among psychiatric patients in developing countries, including Nepal.

Objectives: To estimate the prevalence of tobacco use, the level of nicotine dependence and the psychiatric disorder specific prevalence among tobacco users visiting a psychiatry out-patient department.

Materials and methods: A cross-sectional study was conducted in Out-patient setting of Department of Psychiatry, B. P. Koirala Institute of Health Sciences (BPKIHS). Ninety cases (calculated sample size) were enrolled. The Fagerström Test for Nicotine Dependence (FTND) was applied to assess the level of nicotine dependence and the Mini International Neuropsychiatric Interview (MINI) for diagnosis of Psychiatric disorders.

Results: The prevalence of tobacco use was 55.6%. Tobacco use was more common among males (p value < 0.05). Smokeless form was the common form of tobacco. Majority of them had started their consumption in their adolescence. Most users had moderate nicotine dependence. Major depressive disorder and Alcohol dependence were the most common diagnoses among tobacco users.

Conclusion: More than half of the psychiatry out-patients consumed tobacco. Future studies that help to understand the relationship and possible mechanism of increased tobacco use in patients with psychiatry disorders are required. Tobacco control and prevention strategies should be initiated targeting vulnerable populations such as male gender and adolescent.

Keywords: BPKIHS, Nicotine Dependence, Outpatient, Psychiatric comorbidities, Tobacco

Introduction

Nicotine found in tobacco plant, is the primary compound that meets criteria for abuse potential and dependence. Reports on the overall rate of tobacco use may not reflect the most accurate or complete picture, because these reports do not track nicotine-dependent users, nor do they distinguish between dependent and nondependent users. It is shown that nicotine dependence is considered to be the primary factor for sustaining tobacco use.[1] Dependent users are more likely to use tobacco in increased amount and frequency, consequently associated with greater risk of tobacco related disease. Therefore, assessing nicotine dependence in tobacco user has great importance, with implications in management. Furthermore, association between the nicotine dependence and the mental illness has been known and studied for many years. It is seen that nicotine

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dependence and smoking are two to three times more common in individuals with psychiatric and other Substance use disorders than in the general population.[2] On the other way, heavy smokers have more severe psychiatric symptoms, poorer overall general well-being and greater functional impairment when compared to light smokers and nonsmokers.[3] There may be various reasons for higher rates of tobacco use in patients with psychiatric disorders or vice versa. This relation has been most extensively studied in Schizophrenia where clinical data suggest that schizophrenic patient have primary defect in the CNS nicotinergic system that leads to abnormal sensory gating. Beside these, other hypotheses include improvement of cognition by nicotine, as a means of self-medication, reducing the adverse effects of medication and so on.[4] Considering these factors and lack of studies addressing these issues in developing countries including Nepal, we carried out this study to estimate the prevalence of tobacco users in patients visiting psychiatry OPD and the level of nicotine dependence among the users. We also aim to estimate the psychiatric disorder specific prevalence among tobacco users.

Materials and methods

This is a cross-sectional study conducted in the outpatient psychiatry department of BPKIHS, Dharan. This study was conducted over the duration of one year from March 2014 to February 2015. This study was approved by the Ethical Review Board of Research Committee of B. P. Koirala Institute of Health Sciences.

Sample size and study population

Keeping the estimated prevalence 55% of tobacco user in hospital setting with β error at 0.2, sample size came out to be 82. Additional 10% subjects were taken for better representation which makes 90. Those patients coming in contact with the research team in Psychiatry out-patient were enrolled in the study. Those who were unwilling or unable to give informed consent and participate in the research were excluded. Acutely ill patients were enrolled only after they improved from the acute phase of illness.

Instruments

A Semi-structured proforma including information about socio-demographic and clinical variables was used for all the consecutive patients coming in contact with research team. Fagerström Test for Nicotine Dependence/ Fagerström Test for Nicotine Dependence-Smokeless Tobacco (FTND-ST) were applied to those who consumed any form of tobacco. This test consists of total score of 10, and classified with 1-2 = low dependence, 3-4 = low to moderate dependence, 5-7 = moderate dependence, 8+ = high dependence. Nepali translation of Mini International Neuropsychiatric Interview (MINI) English Version 6.0.0 was used for the psychiatric diagnoses. The collected data were entered in Microsoft Excel, tabulated and analyzed using SPSS. Statistical analysis was done using parametric and non-parametric statistical techniques for measures of central tendency, standard deviation and other tests of significance as appropriate.

Results

Table 1: Distribution of Socio-demographic characteristics

Characteristics	Category	Frequency N (%)
Age	15- 25 years	18 (20)
	26- 35 years	28 (31.1)
	36- 45 years	19 (21.1)
	46 years & above	25 (27.8)
Sex	Male	59 (65.6)
	Female	31 (34.4)
Address	Terai	76 (84.4)
	Hilly	14 (15.6)
Marital Status	Married	69 (76.7)
	Unmarried/ Separated/ Widow	21 (23.3)
Religion	Hindu	65 (72.2)
	Kirat	15 (16.7)
	Buddhist/ Christian/ Muslim	10 (11.1)
Caste	Brahmin and Chhetri	34 (37.8)
	Janajati	41 (45.6)
	Madhesi/ Dalit and others	15 (16.7)
Education	Illiterate and under SLC	72 (80)
	SLC and above	18 (20)
Occupation	Housewife	23 (25.6)
	Business/ Service	11 (12.2)
	Farmers/ Others	43 (47.8)
	Unemployed	13 (14.4)
Type of Family	Nuclear	44 (48.9)
	Joint	46 (51.1)

More participants were from age group 26- 35 years with predominance of male patients. Most people were from Terai following Hindu religion. According to castes, Janajati had the highest participation. Most people were illiterate or had under SLC education. Farmers and others profession had highest presence with more people belonging to the joint family.

Prevalence of tobacco users

Prevalence of tobacco users was 55.6% which was the highest in 46 and above age group (68%).

Table 2: Distribution of Tobacco users according to Age groups

Age groups	Tobacco use		Total N (%)	p value
	Present N (%)	Absent N (%)		
15- 25 years	7 (38.9%)	11 (61.1%)	18 (100%)	0.298
26- 35 years	15 (53.6%)	13 (46.4%)	28 (100%)	
36- 45 years	11 (57.9%)	8 (42.1%)	19 (100%)	
46 years & above	17 (68.0%)	8 (32.0%)	25 (100%)	
Total	50 (55.6%)	40 (32.5%)	90 (100%)	

Table 3: Distribution of Tobacco users according to sex

Sex	Tobacco use		Total N (%)	p value
	Present N (%)	Absent N (%)		
Male	40 (67.8%)	19 (32.2%)	59 (100%)	0.001
Female	10 (32.3%)	21 (67.7%)	31 (100%)	
Total	50 (55.6%)	40 (44.4%)	90 (100%)	

Males were found to be using tobacco significantly more compared to female. Males used tobacco about 2 times more than females which is statistically significant (67.8% compared to 32.3%).

Forms, first use and nicotine dependence among tobacco users

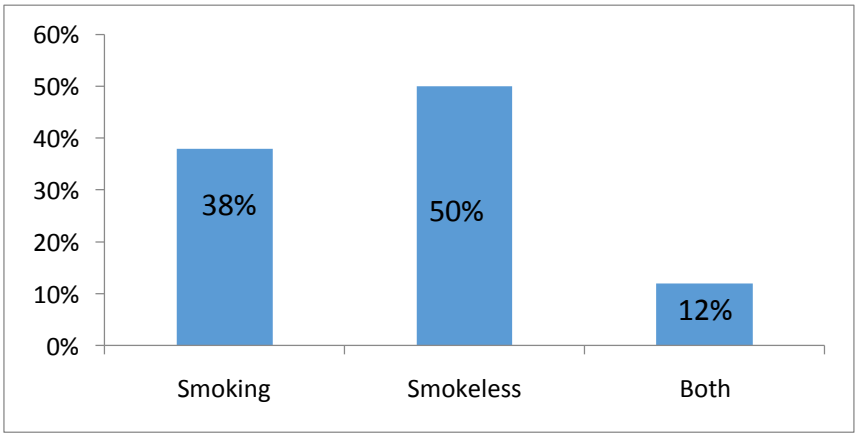

Figure 1: Distribution of tobacco users according to form of tobacco

Use of smokeless form of tobacco such as *khaini* was higher compared to smoking or both form of tobacco, among tobacco users.

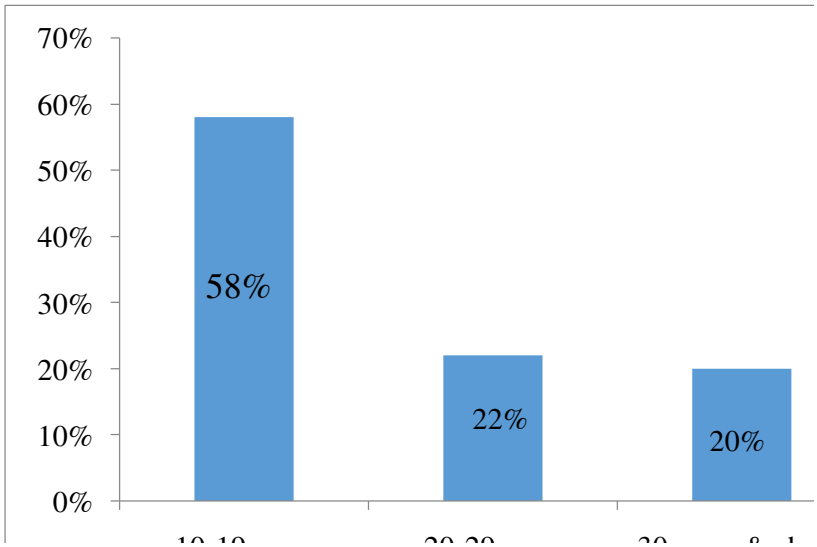

Figure 2: Distribution of tobacco users according to their age at first use

Most of the users have started their consumption of tobacco during adolescence period (10- 19 years of age) which was followed by in their 20s.

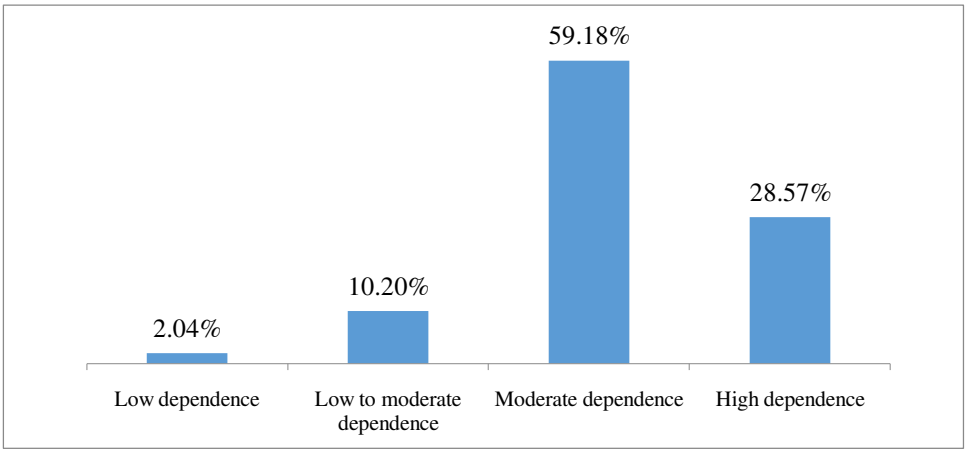

Figure 3: Distribution of Tobacco users according to their level of nicotine dependence

On using FTND, most of the tobacco users were found to have moderate dependence followed by high dependence.

Psychiatric Disorders Specific Prevalence among Nicotine Users

Out of 90 cases enrolled, 50 cases were found to use tobacco. Among tobacco users, diagnosis of major depressive episode was found to be the highest (28%) which was followed by alcohol dependence (20%) and Manic and hypomanic episodes (18%). In 5 persons, there was no psychiatric diagnosis.

Table 4: Distribution of Psychiatric disorders among tobacco users

Diagnoses	Tobacco use		Total
	Present	Absent	
Major Depressive Episode	14 (28.0%)	13 (32.5%)	27
Manic and Hypomanic episodes	9 (18.0%)	3 (7.5%)	12
Generalized Anxiety Disorder	5 (10.0%)	3 (7.5%)	8
Psychotic Disorder	7 (14.0%)	8 (20.0%)	15
Panic Disorder	3 (6.0%)	2 (5.0%)	5
Alcohol Dependence	10 (20.0%)	0 (0.0%)	10
Non-Alcohol Psychoactive Substance Use Disorder	4 (8.0%)	0 (0.0%)	4
Seizure Disorder	2 (4.0%)	3 (7.5%)	5
Suicidality	2 (4.0%)	5 (12.5%)	7
Agoraphobia	0 (0.0%)	1 (2.5%)	1
No Psychiatric Diagnosis	1 (2.0%)	4 (10.0%)	5
Total	50	40	90

Discussion

In our study, the prevalence of tobacco use was 55.6%. The highest prevalence of use was seen in 45 years and above age group (68%). This implies that more than half of our patients visiting OPD service were tobacco users. Our finding is consistent with the finding in western setting where the prevalence of smokers among 277 psychiatric outpatients was found to be 52%.[5] Another study by Lasser et al had shown that smoking rates in respondents with life time mental illness was 34.8% and past month mental illness was 41%.[6] In context of our country, many studies done in national level or community level have shown various prevalence of tobacco use. Khanal et al study on 2011 showed the prevalence of consuming any form of tobacco in Nepal was 51.9% and in the eastern region, it was estimated to be 51.7%.[7] However, this study included only males. There are also some studies done in Dharan focusing on certain population such as either male or female. A study done by S Poudel in Male population of Dharan reported the prevalence of smoking to be 41.7%.[8] Similarly, another study done in female population of Dharan reported the prevalence of smoking and smokeless tobacco chewing in female population of Dharan was 12.9% and 14.1% respectively.[9] Higher prevalence rate of tobacco use as observed in our study further support the fact that the prevalence of tobacco use is higher among psychiatric patients. As seen in our finding, more people from older age groups consumed tobacco than other age groups in a study of Khanal et al.[7] This study showed Nepalese men of age group 36- 49 were more likely to consume tobacco. Another study of Chandra PS et al[10] found 88% of tobacco using psychiatric patients were from 39 years and above. We found more male patients consumed tobacco compared to female. Out of 59 male patients, 49 were using some form of tobacco compared to female where only 10 out of 31 cases were found consuming tobacco. This finding was statistically significant (p value <

0.05). Our finding is consistent with many of previous studies (Karki et al[11], Chandra et al[10]).

Out of various forms of tobacco, smokeless form such as khaini, gutka etc. was the most common form among the tobacco users (50%). Smoking form of tobacco was used by 38% and both form of tobacco was used by 12%. Smokeless form of tobacco is easy to access and relatively, there is a lack of adequate awareness regarding its hazards might have resulted in its wide use. Demographic and health survey in Nepal (2006) found the prevalence of tobacco chewing was highest in Eastern region (19.7%) compared to other regions of country.[12]

Almost three-fifths (58%) of our cases had started their tobacco consumption at their adolescent period. This finding relates with the fact that nicotine dependence is called a pediatric disease as most of the tobacco users start their consumption in adolescent period.[13]

Using the Fagerstorm Test for Nicotine Dependence scale, most of the cases had moderate nicotine dependence (59.18%). High level of nicotine dependence was found among 28.57% patients. This assessment of level of nicotine dependence has a greater significance as highly dependent persons may have more difficulty in quitting when compared to lower dependent persons. However, there is a lack of data assessing the nicotine dependence in the country. Outside Nepal, most of the study reflects that nicotine dependence in a patient with psychiatric disorder may have impact on patient's improvement.[14] However; some other studies differ from this finding as it is considered that the relationship between nicotine dependence and psychiatric illness is complex. Still, it is well known that tobacco use can influence the efficacy of medication used and many times, tobacco use or its abstinence can also pose diagnosis difficulties. For instance, anxiety symptoms can be observed as a part of nicotine withdrawal and conversely, many patients may use tobacco to decrease their anxiety symptoms.

In our study, out of 50 tobacco users, major depressive disorder was the most common diagnosis (28%), which was followed by alcohol dependence (20%). Eighteen percent of cases had diagnoses of manic and hypomanic episodes, including bipolar illness. All the cases receiving the diagnosis of substance use disorder such as alcohol dependence or non-alcohol psychoactive substance use disorder were tobacco users. The prevalence of psychiatric illness varies greatly in relation to tobacco use. Less literature is available which is exclusively done to see the prevalence of psychiatric disorders among the tobacco users. Nevertheless, a study by Keuthen et al[15] found that almost 62% of treatment seeking smokers had a history of psychiatric illness. Similarly, another study found that smokers aged 16– 24 years, who are likely to have started smoking most recently, had the highest rates of mental illness, compared to other age groups.[16] Previous studies done in same clinical setting of BPKIHS by Shakya et al[17] and Pandey et al[18] had also found the prevalence of tobacco use was high among those seeking treatment. Our study has shown major depressive episode on higher proportion; not only among tobacco users but also as a whole, which may be due to the reason that majority of our cases were from their 30s, 40s and above and it is a well-known fact that

depression usually have onset during these ages. Our study reflects a finding of an Australian study that showed smoking increased major depressive disorder risk by 93% which was not explained by other factors.[19] Though we are aware that there is a strong association between tobacco use and psychiatric illness but the interrelationship between them is complex and it is difficult to attribute to one or other as a contributing factor.

The mean age of cases was 37.91±13.95 years in our study, minimum age being 16 and maximum 75 years. These findings in hospital OPD setting correspond to the study done in National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, where mean age was 31.7 with Standard deviation of 9.9.[10] Shakya et al[20] study on alcohol dependence in same In-patient setting reported the mean age of the cases to be 39.19 years.

The present study has some limitations. Despite the voluntary participation and assurance for the confidentiality of information provided to the participants, chances of bias may occur in the findings. Because of denial or minimization, social stigma attached with tobacco use, socio-cultural aspects, underreporting in substance taking behavior may be possible. Further, self-reported tobacco consumption and nicotine dependence could not be assessed with biomarkers. Tobacco use patterns may be affected by long term psychiatric illness and use of different medications which we could not assess in our study.

Conclusion

Significant proportion (more than half) of our patients visiting Psychiatry Outpatient consumed different forms of tobacco. Future researches that help to understand the relationship and possible mechanism of increased tobacco use in patients with psychiatric disorders are required. It also implies that adequate screening and advice to stop tobacco use is essential in our day to day practice. More male patients, from their adolescence consumed tobacco and smokeless forms were preferred more than smoking form. Considering these factors, tobacco control and prevention strategies should be initiated targeting vulnerable populations which can have positive impact in overall outcome.

Acknowledgements

To all the patients and their family members who agreed to participate in the study.

Competing interests - None.

References

1. Shadel WG, Shiffman S, Niaura R, Nichter M, Abrams DB. Current models of nicotine dependence: what is known and what is needed to advance understanding of tobacco etiology among youth. Drug Alcohol Dependence, 2000. 59 (suppl 1): 9-22.
2. Dierker LC, Avenevoli S, Stolar M, Merikangas KR. Smoking and depression: An examination of mechanisms of comorbidity. Am J Psychiatry, 2002; 159: 947-53.
3. Heiligenstein, E and Stevens S. Smoking and mental health problems in treatment seeking university students. Nicotine and Tobacco Research, 2006; 8: 1-5.
4. Dalack GW, Healy DJ, Meador-Woodruff JH. Nicotine Dependence in Schizophrenia: Clinical Phenomena and Laboratory findings. Am J Psychiatry, 1998; 155:1490-1501.

5. Hughes JR, Hatsukami DK, Mitchell JE, Dahlgren LA. Prevalence of smoking in Psychiatric oupatients. Am J Psychaitry, 1986; 143: 993-7.
6. Lasser K. Smoking & mental illness: a population based prevalence study. JAMA, 2000 Nov: 22-9.
7. Khanal V, Adhikari M, Karki S. Social determinants of tobacco consumption among Nepalese men: findings from Nepal Demographic and Health Survey 2011. Harm reduction Journal, 2013; 10: 40.
8. Poudel S, Gurung K. Prevalence of smoking and perceived health problems among male population of Dharan municipality. JKMC [Internet]. 3 Mar. 2014 [cited 25Jun.2019]; 2(3): 129-38. Available from: https://www.nepjol.info/index.php/JKMC/article/view/9963
9. Niraula SR. Tobacco Use among Women in Dharan, Eastern Nepal, J health popul nutr, 2004 Mar; 22 (1): 68-74.
10. Chandra PS, Carey MP, Carey KB, Jairam KR, Girish NS, Rudresh HP. Prevalence and Correlates of Tobacco Use and Nicotine Dependence among Psychiatric Patients in India. Addict Behav, 2005; 30(7): 1290–99.
11. The national anti-tobacco communication campaign strategy for Nepal [Internet]. Available at: (www.ncf.org.np/upload/files/691_en_9-3-Tobacco-Control-Act.pdf). Accesed at: (December 21, 2012).
12. Sreeramareddy CT, Ramakrishnareddy N, Harsha Kumar HN, Sathian B, Arokiasamy JT. Prevalence, distribution and correlates of tobacco smoking and chewing in Nepal: a secondary data analysis of Nepal Demographic and Health Survey- 2006. Substance Abuse Treatment, Prevention, and Policy, 2011; 6:33.
13. Ziedonis D, Steinberg ML, Fiester S, Cimpeanu C, Tasman A, Kay J, Lieberman JA, First MB, Maj M. Substance abuse: Nicotine dependence. In: Psychiatry. Vol 1. 3rd ed. John Wiley and sons. 2008; pp 1152-53.
14. Krishnadas R, Jauhar S, Telfer S, Shivashankar S, McCreadie RG. Nicotine dependence and illness severity in schizophrenia. The British Journal of Psychiatry. 2013; 201: 306-12.
15. Keuthen NJ, Niaura RS, Borrelli B, Goldstein M, DePue J, Murphy C et al. Comorbidity, smoking behavior and treatment outcome. Psychother Psychosom, 2000; 69 (5): 244- 50.
16. Lawrence D, Mitrou F, Zubrick SR. Smoking and mental illness: results from population survey in Australia and the United States. BMC Public Health 2009; 9: 285.
17. Shakya DR. Alcohol ab/use in eastern Nepal: a review of studies. Health Renaissance, 2013; 1(11): 74-82.
18. Pandey AK, Sapkota N, Tambi A, Shyangwa PM. Clinico-demographic profile, sexual dysfunction and readiness to change in male alcohol dependence syndrome inpatients in a tertiary hospital. Nep med col j, 2012; (1): 35-40.
19. Pasco JA, Williams LJ, Jacka FN, Ng F, Henry MJ, Nicholson GC, Kotowicz MA, Berk M. Tobacco smoking as a risk factor for major depressive disorder: population-based study. British J Psychiatry, 2008; 193: 322-6.
20. Shakya DR, Shyangwa PM, Sen B. Psychiatric Comorbidity in Cases Admitted for Alcohol Dependence. Delhi Psych J, 2009: 2(9): 252-7.