Original Article www.pimr.org.in

DOI: 10.47799/pimr.1002.06

Pattern Of Nicotine Use And Dependence In Psychiatric Patients

Rama rao Erabally Pattabhi[1], Preeti Gudlavallety[2]*, Ruthika Radham[3]

[1]Civil Surgeon, Area Hospital, Mulugu
[2]Assistant Professor,Department of Psychiatry, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, India
[3]Junior Resident,Department of Psychiatry, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar

*Corresponding Author:
Preeti Gudlavallety, Assistant Professor,Department of Psychiatry, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, India
E-MAIL: aac.preeti@gmail.com

Date of Submission: 24/03/2021 Date of Review: 27/04/2021 Date of Acceptance: 12/05/2021

ABSTRACT

Background: Tobacco use is an epidemic known as "the brown plague" affecting one billion lives in the 21st century and 80% in developing countries. Prevalence of smoking is especially high in patients with psychiatric illness with an ongoing debate over which comes first. Studies about nicotine consumption in psychiatric patients are few from developing countries. Hence, this study is designed to identify socio-demographic and diagnostic correlates of nicotine use.

Aims and Objectives:- To estimate the pattern of nicotine use and determine the association between socio-demographic profile, onset of nicotine use, it's use as a coping mechanism, psychological association with nicotine use in psychologically ill patients.

Material and methods:- A cross-sectional study including 101 patients with nicotine use and psychiatric illness were administered a semi structured questionnaire, Fagerstrom Test for Nicotine Dependence(FTND) and nicotine dependence syndrome scale. Data analyzed with mean, standard deviation, chi- square, ANOVA

Results:-Nicotine use was more common in middle age group with alcohol dependence followed by depression. Nicotine use was not associated with background, socioeconomic status, gender. Majority tried to quit for health but what kept them with nicotine were drive, stereotypy, continuity, priority.

Conclusions:- Nicotine is a commonly abused substance in psychiatric patients without a clear demarcation about the cause effect relationship. The existing study gives few insights into reasons for nicotine intake which was more so among the productive age group. Hence, there is a need for further research about psychotropic drug interactions with nicotine use and focus on integration of nicotine cessation into treatment of other psychiatric disorders rather than separate deaddiction clinics to alleviate the illness burden.

KEYWORDS: nicotine use, FTND, psychiatric comorbidities

INTRODUCTION:

Tobacco use is an example of modern epidemic and also known as "the brown plague". [1]According to the estimation of the WHO, tobacco use will cease one billion lives in the 21st century and 80% of that will occur in developing countries. The WHO predicted that the tobacco deaths in India may exceed 1.5 million annually by 2020. [2]Rates of smoking are markedly higher among people with psychiatric illness than in the general population, estimated at being 2–5 times higher in patients with several disorders. [3, 4] Lasser et al. found that 41% with psychiatric diagnosis are nicotine addicted, which indicate two–fold of greater prevalence than general population. [5]

Nicotine is the chief component of tobacco, which causes dependence both physically and psychologically. It causes temporarily pleasing effect in brain predominantly by altering the mesolimbic pathway that project to the nucleus accumbens causing dopamine hike. [6]Young age group who are usually quite explorative and experimental starts initially with cigarette smoking to get that pleasing effect which eventually may lead to addiction. Even the studies reveal that the average age of onset of smoking is 14.5years and the average age for smoking daily is 17.7 years. [7]They explore nicotine in different smoke and smokeless forms. Out of which beedi smoking constitute 40%, cigarette smoking 20% and smokeless form 40%. [8]

Socioeconomic status (SES) which is most frequently measured by education level, income and occupation has a clear relationship with poor health, morbidity and mortality. [9, 10]The people belonging to low SES usually have an early exposure to substance use, and they are more likely to smoke for longer periods of time, have more trouble to quit smoking and are more likely to suffer from smoking-related diseases. [10, 11]The neuroimaging studies have revealed that smoking activates the reward pathways more among men than women. [12]

It was found that prevalence of smoking is especially high in patients with schizophrenia (70-90%), affective disorder (42-70%), alcohol dependence (60-90%), and other sub-

stance use disorders (70-95%). About 75% of subjects with nicotine use and history of major depressive disorder developed depressed mood during the first week of withdrawal versus only 30% of those with no depressive history. [13]

Henceforth, there is an ongoing debate over which comes first; nicotine use or the symptoms of mental illness but both tend to manifest in adolescence and early adulthood and believe that the relationship is cyclical. Studies about nicotine consumption in psychiatric patients are few from developing countries where social and familial factors influence smoking behavior. To address this issue, the current study was designed to estimate the prevalence of tobacco use in both smoking and smokeless forms among male and female psychiatric patients in India. In addition, we sought to identify socio-demographic and diagnostic correlates of tobacco use and nicotine dependence.

MATERIAL AND METHODS :

It is a cross-sectional study conducted at Prathima Institute of Medical Sciences, Karimnagar. Every tenth patient attending the psychiatric out patient with nicotine use along with co-morbid psychiatric illness and have given their informed consent during 2014 – 2016 were included in the study.

Description of Tool:A total of 101 subjects with nicotine use and age above 18years of both the genders who have given their informed consent were included in this study. Patients who were not willing to participate and those below 18 years of age were excluded from the study. All the participants were administered a semi structured questionnaire including socio-demographic data, Nicotine use age of onset, severity of dependence, coping mechanisms, quitting and relapse history, Co morbid psychiatric illness. Along with the semi structured questionnaire following scales for assessing nicotine dependence were administered.

Fagerstrom Test for Nicotine Dependence (FTND)

Fagerstrom began constructing a scale with the specific objective to estimate the degree of pharmacologically determined dependence. This work resulted in the 8 item Fagerstrom tolerance questionnaire (FTQ) in 1978. FTQ is multi factorial with only two items limited to cigarette use. So, Lynn kozlowski & Todd Heatherton revised Fagerstrom tolerance questionnaire in 1991 by excluding those two items and resulted into a new version known as Fagerstrom test for nicotine dependence (FTND). It is a six item scale and scores obtained on the test permit the classification of nicotine dependence into five levels, very low (0-2), low (3-4), moderate (5 points), high (6-7 points) & very high (8-10 points). FTND is a widely used and researched scale with a Cronbach's alpha value of 0.56. [14]

Nicotine Dependence syndrome scale (NDSS):

It is a 19 item multi dimensional measure consisting of five factors drive, priority, continuity, stereotypy & tolerance and it assesses nicotine dependence using Edward's theory of the dependence syndrome. Drive measures craving and withdrawal symptoms, while tolerance assesses reduced sensitivity to tobacco products. Priority assesses the preference for smoking over other reinforces, continuity assesses the regularity of smoking while stereotypy measures the sameness of smoking contexts. Items were rated on a scale from one (not at all true) to five (extremely true). The total score & five factor scores were computed using the regression based algorithms as described in appendix, the total scores and most factors demonstrated acceptable reliability (Cronbach's alpha = 0.823-0.945). [15]

The data was collected on a daily basis. Verbal consent was taken from each subject prior to data collection. A total of 101 subjects were enrolled in this study. The data collected was entered into the data collection form designed for the recording of only those parameters essential to establish the objectives of the study. Data was analyzed using software Epi info version 7.0. Data collected is thereby subjected to statistical analysis, which included Chi-square and Fischer Exact test, post-hoc analysis.

OBSERVATION AND RESULTS

A total number of 101 psychiatric patients with nicotine use were enrolled during the study period.

The study was conducted among the age group 20 to 61 and above, higher percentage of nicotine abuse (34.7%) seen between the age group of 31-40 years followed by the age group between 41-50 years (19.8%). The least percentage was found to be in 61 and above age group (11.9%).There is statistical significance between age group of psychiatric patients and nicotine abuse with p value 0.035 Out of 90 male respondents and 11 female respondents, male subjects (89.1%) showed the higher percentage. There is no statistical association between gender and nicotine abuse with a p value of 0.0717. Majority of the subjects 77(76.2%) hailed from rural background with 24 (23.8%) from urban area and p value was 0.655 implying no significant difference. Table 1

Self employed (35.6%) subjects found to have higher percentage of nicotine use followed by daily wager (24.8%), unemployed (22.8%) and employed (15.85%). Interestingly students have been reported with 1%. However, the P value was 0.466 with no significant difference. Nicotine use was found to be high among the subjects belonging to Low SES (58.4%) followed by medium SES (33.7%) and high SES (7.7%). The p value was found to be 0.435 showing no statistical association between socio economic status and nicotine use. Among the subjects 87(86.1%) were found to be married who are showing higher FTND values of about 97.5% and with statistically significant p value of 0.003.

Nicotine abuse in the subjects living with the spouse was 83.2%, 12.9% in the subjects living with parents and 4% in the subjects living alone. The p value was 0.036 showing a statistical significance with the social support.

		FTND				
		NO	LOW	MEDIUM	HIGH	Chi-square (p value)
AGE GROUP	20 TO 30	1(7.7%)	8(50.0%)	6(18.8%)	3(7.5%)	23.004 (0.028)
	31 TO 40	5(38.5%)	2(12.5%)	8(25.0%)	20(50.0%)	
	41 TO 50	2(15.4%)	1(6.3%)	9(28.1%)	8(20.0%)	
	51 TO 60	3(23.1%)	3(28.9%)	4(12.5%)	6(15.0%)	
	61 & above	2(15.4%)	2(12.5%)	5(15.6%)	3(7.5%)	
SEX	MALE	12(92.3%)	14(87.5%)	27(84.4%)	37(92.5%)	1.393 (O.707)
	FEMALE	1(7.7%)	2(12.5%)	5(15.6%)	3(7.5%)	
RESIDENCE	RURAL	9(69.2%)	15(93.8%)	24(75.0%)	29(72.5%)	3.396 (0.335)
	URBAN	4(30.8%)	1(6.3%)	8(25.0%)	11(27.5%)	

Table 1: Social Demographic data and FTND

It was found 50.5% of subjects were consuming smokeless form of tobacco followed by 42.6% of subjects smoke form. The high and medium FTND scores were seen consuming chew able form of tobacco. The p value was found to be 0.724 and this clearly states that there is no significant association.

As per the data, the prevalent disease was found to be alcohol dependence(30.7%), followed by depression(23.8%), bipolar affective disorder(11.9%), schizophrenia(10.9%), panic attack(6.9%), mixed anxiety depression(4%), generalized anxiety disorder(4%), somatization disorder(4%), sexual dysfunction(2%), and phobia, PTSD with 1%. The p–value was 0.029 which implies statistically significant.Table 2

The data collected from the subjects show that 91.1% had an exposure to nicotine before the onset of mental illness with a p value of 0.47 which was not significant.

The table reflects the results of a semi structured questionnaire administered by the examiner about the perceived effect of consumption on the subjects. 53.5% subjects said that the tobacco gives energy on consumption.78.2% subjects stated that it calms their mind whenever they are nervous. According to 57.4% of subjects, consumption of nicotine increases their concentration at work. About 86.1% consume nicotine to relieve their stress and 51.5% subjects accepted that the tobacco consumption improves their mood. The p value was statistically not significant for all the components.Table 3

This table reflects that 51.5% subjects never tried to quit tobacco consumption. The value of high FTND was higher over the negative side response with a significant p value of 0.007. The subjects who tried to quit the tobacco consumption, were asked the reason to quit the tobacco and predominantly 42% said healthy well-being as the reason which was followed by money and health (34%) as their reason. Many of the subjects (51.5%) have never tried to quit, however few subjects gave a chance of quitting by 2 attempts which constitutes around 18.8% followed by 14.9% with 1 attempt.Table 4

This table shows 5 domains of NDSS and overall score of study subjects compared by using one way ANOVA with post-hoc(LSD) tests. Drive domain p value was 0.0001 which was significant. The mean drive score was more in high FTND compared to the other groups. P value of Stereotypy and continuity domains were 0.010 and 0.009 which was significant. The mean scores of stereotypy and continuity scores were more in low FTND group compared to other groups. Priority domain score p value is 0.001 which was significant the mean score of high FTND group was more than other groups and coming to tolerance domain p value is 0.716 which was not significant with no difference between groups. Lastly, overall score p value 0.0001 which was significant. The overall mean score in high FTND group was more compared to the other groups.Table 5

DISCUSSION

The current study conducted on psychiatric patients with nicotine abuse, the age group between 31 and 40 had shown the higher percentage of prevalence with a significant association and the similar findings were reported by S Prasannalatha et al. [16]A contrast results were noticed in the studies conducted outside India. [17, 18]

Review articles had shown different results regarding the gender and nicotine dependence. [19, 20]The current study sample portrayed male predominance. This could have been

DIAGNOSIS	FTND				CHI SQUARE (P VALUE)
	NO	LOW	MEDIUM	HIGH	
Alcohol dependence	1(7.7%)	3(18.8%)	11(34.4%)	16(40.4%)	
Schizophrenia	2(15.4%)	0(0%)	4(12.5%)	2(12.5%)	
BPAD	2(15.4%)	3(18.8%)	4(12.8%)	3(7.5%)	
Depression	2(15.4%)	7(43.8%)	6(18.8%)	9(22.5%)	
Phobia	0(0.0%)	1(6.3%)	0(0.0%)	0(0.0%)	
Panic disorder	2(15.4%)	0(0.0%)	3(9.4%)	2(5.0%)	4 (0.029)
GAD	2(15.4%)	1(6.3%)	0(0.0%)	1(2.5%)	
Mixed anxiety depression	1(7.7%)	0(0.0%)	1(3.1%)	2(5.0%)	
PTSD	0(0.0%)	0(0.0%)	1(2.5%)	1(1.0%)	
Somatisation disorder	1(7.7%)	1(6.3%)	2(6.3%)	0(0.0%)	
Sexual dysfunction	0(0.0%)	0(0.0%)	1(3.5%)	1(2.5%)	

Table 2: DISEASES WISE PREVALENCE OF NICOTINE ABUSE IN PSYCHIATRIC PATIENTS

		FTND				F test / P value
		NO	LOW	MEDIUM	HIGH	
Does , tobacco give you energy , when you' are tired?	yes	5(38.5%)	9(56.3%)	18(56.3%)	22(55.0%)	1.385/ (0.739)
	no	8(61.5%)	7(43.8%)	14(43.8%)	18(45.0%)	
Does it calm you, when you are nervous?.	yes	9(69.2%)	14(87.5%)	23(71.9%)	33(82.5%)	2.603/ (0.475)
	no	4(30.8%)	2(12.5%)	9(28.1%)	7(17.5%)	
Does it improve your concentration at work?	yes	10(76.9%)	11(68.8%)	17(53.1%)	20(50.0%)	3.883/ (0.275)
	no	3(23.1%)	5(31.3%)	15(46.9%)	20(50.0%)	
Does it relieve tension, when stressed?	yes	11(84.6%)	15(93.8%)	27(84.4%)	34(85.0%)	0.932/ (0.867)
	no	2(15.4%)	1(6.3%)	5(15.6%)	6(15.0%)	
Does it improve mood?	yes	6(46.2%)	10(62.5%)	19(59.6%)	17(42.5%)	03.005/ (0.393)
	no	7(53.8%)	6(37.5%)	13(40.04%)	23(57.5%)	

Table 3: Effect of Nicotine Consumption

due to a bias because of the cultural factors where the females were not more outspoken about their habits.

A household survey inquiring about the form and frequency of nicotine use in their family was done on a sample representative of Indian population. According to that survey there was no statistical difference in over all current tobacco use among rural and urban students and same findings were replicated in our study done on psychiatric patients.It was also observed in our study that consumption of nicotine was mostly smokeless form and the same findings were reported in this survey. [21]A study done by S Prasannalatha et al. had found a correlation between occupation and socioeconomic status with nicotine dependence but our study depicted a contrast results. [16]

Few studies stated that, the prevalence of nicotine dependence was higher among the married subjects and more so among women living in a joint family. [22, 23] Our study was also showing similar results where the married subjects with spouse being a social support showed higher prevalence with significant p value. This may be because their increased responsibilities after marriage and unable to cope up their stress which may compel them to choose an alternate method like nicotine use to decrease their stress load.

		FTND				F test (p value)
		No	Low	medium	High	
Tried to quit tobacco consumption	Yes	11(84.6%)	7(43.8%)	18(56.3%)	13(32.5%)	11.859 (0.007)
	No	2(15.4%)	9(56.3%)	14(43.8%)	27(67.5%)	
Reasons for quitting	Health reasons	5(45.5%)	3(42.9%)	9(47.4%)	4(30.8%)	9.716 (0.608)
	Money and health	4(36.4%)	3(42.9%)	7(36.8%)	3(23.1%)	
	Positive role model	0(0.0%)	1(14.3%)	2(10.5%)	3(23.1%)	
	Health reasons and positive role model	2(18.2%)	0(0.0%)	0(0.0%)	1(7.7%)	
	Others	0(0.0%)	0(0.0%)	1(5.3%)	2(15.4%)	
Number of attempts	0	2(15.4%)	9(56.3%)	14(43.8%)	27(67.5%)	23.276 (0.029)
	1	5(38.5%)	2(12.5%)	5(15.6%)	3(7.5%)	
	2	3(23.1%)	4(25.0%)	8(25.0%)	4(10.0%)	
	3	2(15.4%)	1(6.3%)	0(0.0%)	2(5.0%)	
	4	0(0.0%)	0(0.0%)	1(3.1%)	0(0.0%)	
	6	1(7.7%)	0(0.0%)	4(12.5%)	4(10.0%)	

Table 4: Quitting of Nicotine Consumption

Colin Depp et al. highlighted in his study that patients with schizophrenia had double rate of smoking compared to patients with bipolar disorder.[24]However,our study depicted that the patients with alcohol dependence did have higher prevalence of nicotine abuse(30.7%) followed by depression(23.8%) though, 91.1% subjects were exposed to nicotine before the onset of their illness. This may be because of the additive releases of dopamine in reward pathway and increased sensitivity of nicotine receptors when alcohol and nicotine were consumed together. Hence, increase the pleasurable effects of nicotine. Alcohol and nicotine co morbidity can also be explained by their counteracting mechanism wherein nicotine alleviates cognitive impairment caused by alcohol. [25]

Many subjects in our study stated that nicotine consumption calms their mind, decrease the stress and increase their concentration at work. A study done by Knott V et al. depicted that nicotine induces pleasure and reduces stress and anxiety and also stated that stress significantly increased craving but not increased smoking. [26]It was also evident that females have same difficulties in quitting smoking as males and the same findings were replicated in our study. [27]

CONCLUSION

Nicotine is a commonly abused substance in psychiatric patients without a clear demarcation about the cause effect relationship. The existing study gives few insights into reasons for nicotine intake which was more so among the productive age group. Hence, there is a need for further research about psychotropic drug interactions with nicotine use and focus on integration of nicotine cessation into treatment of other psychiatric disorders rather than separate deaddiction clinics to alleviate the illness burden.

REFERENCES

1. Islam K, Datta AK, Seth S, Roy A, Das R. A study on the prevalence and correlates of nicotine dependence among adolescents of Burdwan Town, West Bengal. Indian J Psychiatry. 2019;61:89–93.
2. CJ M, AD L, editors. comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020 Murray CJ, Lopez AD.eds. text book of the global burden of the disease. HARVARD UNIVERSITY BOSTON, MA, USA: Harvard School of Public Health ; 1996,.
3. Hughes JR, Hatkurami DK, Mitchell JE. Prevalence of smoking among Psychiatric outpatients. Am J Psychiatre. 1986;143:993–1000.
4. Dierker L, Avenevoli S, Stolar M. Smoking and depression: An examination of mechanism of Co morbidity. Am J Psychiatre. 2002;159:947–53.

Scale	Group	Mean	SD	F(df)	P value
	Low	-1.993	1.07193		
DRIVE	Medium	-5.371	1.21055	17.703(2)	0.000
	High	0.0998	0.92342		
	Low	0.801	1.47854		
STEREOTYPY	Medium	-0.219	1.08924	4.934(2)	0.010
	High	-0.362	0.9507		
	Low	0.220	0.65225		
CONTINUITY	Medium	-0.657	0.63828	5.016(2)	0.009
	High	-0.687	0.94125		
	Low	0.455	1.0009		
PRIORITY	Medium	0.391	0.6381	7.377(2)	0.001
	High	1.168	0.9016		
	Low	-0.0155	0.62059		
TOLERANCE	Medium	-0.113	0.99515	0.336(2)	0.716
	High	0.0688	0.82273		
	Low	-0.883	0.64244		
OVERALL	Medium	-0.404	0.78080	10.057(2)	0.0001
	High	0.1673	0.76059		

Table 5: Domains of NDSS-ANOVA

5. Lasser K, Boyd JW, Woolhandler S. Smoking and mental illness. JAMA: The Journal of the American Medical Association. 2000;284(20):2606–2616.
6. Mifsud JC, Hernandez L, Hoebel BG. Nicotine infused into the nucleus accumbens increases synaptic dopamine as measured by in vivo microdialysis. Brain Res. 1989;478(2):365–372.
7. Peters J, Bromberg U, Schneider S, Brassen S, Menz M, Banaschewski T. Lower ventral striatal activation during reward anticipation in adolescent smokers. Am J Psychiatry. 2011;168(5):540–549.
8. Vijayan V, Rajkumar. Tabocco Cessation in India: Indian J Chest Dis Allied Sci. 2005;47:5–8.
9. Harwood GA, Salsberry P, Ferketich AK, &wewers ME. Cigarette smoking, socioeconomic status, and psychosocial factors: Examining a conceptual framework. Public Health Nursing. 2007;24(4):361–71.
10. Businelle MS, Kendzor DE, Reitzel LR, Costello TJ, Cofta-Woerpel L, Li Y et al. Mechanisms linking socioeconomic status to smoking cessation: a structural equation modeling approach. Health Psychol. 2010;29(3):262–73.
11. Healton C, Nelson K. Reversal of misfortune: Viewing tobacco as a social justice issue. American Journal of Public Health. 2004;94(2):186–91.
12. Cosgrove KP, Wang S, Kim SJ. Sex differences in the brain's dopamine signature of cigarette smoking. J Neurosci Off J Soc Neurosci. 2014;34(50):16851–55.
13. Covey LS, Glassman AH, Stetner F. Depression and depressive symptoms in smoking cessation. Compr. 1990;31:350–54.
14. Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. British Journal of Addiction. 1991;86(9):1119–1146.
15. Shiffman S, Waters AJ, Hickcox M. The Nicotine Dependence Syndrome Scale: A multidimensional measure of nicotine dependence. Nicotine Tob Res. 2004;6:327–375.
16. Latha SP, Kumar MV, Tialam G, Mallepalli PK. Prevalence of nicotine dependence and its impact on quality of life and severity of symptoms in schizophrenic patients. Arch Ment Health. 2019;20:14–20.

17. Li H. The Relationship between Nicotine Dependence and Age among Current Smokers. Iran Journal of Public Health. 2015;44(4):495–500.

18. Šagud M, Vuksan-Ćusa B, Jakšić N ; 2018,. Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/s12888-018-1606-1.

19. Fagerström K, Kunze M, Schoberberger R, Breslau N, Hughes J, Hurt R. Nicotine dependence. Cross cultural comparisons in population surveys and cessation samples. Tob Control. 1996;5:52–58.

20. Benowitz NL, Swan GE, P3rd J, Lessov-Schlaggar CN, Tyndale RF. CYP2A6 genotype and the metabolism and disposition kinetics of nicotine. ClinPharmacolTher. 2006;80:457–67.

21. Rani M, Bonu S, Jha P, Nguyen SN, Jamjoum L. Tobacco use in India: prevalence and predictors of smoking and chewing in a national cross sectional household survey. Tob Control. 2003;12(4):4–4.

22. Wang Z, Baoy YS, Lian Z, Jia Z, Liu Z. An investigation of cigarettes smoking behaviour and nicotine dependence among Chinese methamphetamine users in two provinces. Biomed Res Int. 2014;p. 175205–175205.

23. Nisar N, Billoo N, Gadit AA. Pattern of tobacco consumption among adult women of low socioeconomic community Karachi, Pakistan. J Pak Med Assoc. 2005;55(3):111–115.

24. Depp CA, Bowie CR, Mausbach BT, Wolyniec P, Thornquist MH, Luke JR et al. Current smoking is associated with worse cognitive and adaptive functioning in serious mental illness. Acta Psychiatr Scand. 2015;131(5):333–374.

25. Hurley LL, Taylor RE, Tizabi Y. Positive and negative effects of alcohol and nicotine and their interactions: a mechanistic review. Neurotox Res. 2012;21(1):57–69.

26. Knott V, Heenan A, Shah D, Bolton K, Fisher D, Villeneuve C. Electrophysiological evidence of nicotine's distracter-filtering properties in non-smokers. J Psychopharmacol. 2011;25(2):239–287.

27. Shiffman S, Scharf DM, Shadel WG. Analyzing milestones in smoking cessation: illustration in a nicotine patch trial in adult smokers. J Consult Clin Psychol. 2006;74:276–85.

How to cite this article: Pattabhi RrE, Gudlavallety P, Radham R. Pattern Of Nicotine Use And Dependence In Psychiatric Patients. Perspectives in Medical Research. 2022;10(2):26-32
DOI: 10.47799/pimr.1002.06