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Original Article

Dentistry Section

Risk of Psychiatric Morbidity in Patients with Tobacco Habits: A Cross-Sectional Study

AMITA ADITYA[1], APOORVA KALUSKAR[2], SHRETIKA PANDYA[3], VINEET VINAY[4], AKSHAY SHARMA[5]

ABSTRACT

Introduction: Tobacco cessation is a challenging arena for healthcare professionals. Many patients seem to be unable to quit tobacco despite of knowing its ill-effects and several efforts. It has been speculated that patients' psychosocial status may be associated with his/her dependence on tobacco and there could be some amount of psychiatric morbidity associated with chronic and compulsive use of tobacco. However, very few studies have been conducted to explore this aspect of tobacco dependence.

Aim: To assess psychiatric morbidity in tobacco users as compared to non-users of tobacco.

Materials and Methods: This cross-sectional study included 200 patients reporting to a Dental College who consented to participate in the study. The study consisted of two groups; first consisting 100 tobacco users and another age and gender matched group of 100 non-users of tobacco. Dependence to tobacco products amongst the study group was assessed using International classification of Diseases-10 (ICD-10) criteria. General Health Questionnaire – 28 (GHQ-28) was used to assess the psychological morbidity amongst both the groups. Statistical analysis was done using SPSS 21.0 version. Chi square test and Pearson's correlation coefficient were used to assess the difference in proportion and correlation between variables respectively.

Results: A 79% of tobacco users showed dependence on tobacco according to ICD-10 criteria. GHQ-28 scores analysis revealed that 61% of tobacco users with a score of 24 or above in contrast to only 17% of non-tobacco users. Tobacco users were observed to be 7.63 folds at a higher risk of developing psychiatric morbidity than non-users of tobacco (p-value< 0.001).

Conclusion: There appears to be a significant risk of psychiatric morbidity prevalent amongst tobacco users. Hence, psychosocial counselling must be considered as a part of tobacco cessation strategy.

Keywords: General health questionnaire, Tobacco dependence, Tobacco use cessation

INTRODUCTION

India has seen the use of tobacco in various forms for centuries and its use is still exponentially rising in the public domain. Various tobacco products are widely available in the market and more than 30% of the Indian population older than age 15 years is reported to use them. The smoked form of tobacco is reported to be used by males more predominantly, whereas use of non-smoked form is more prevalent amongst the females [1]. The ill-effects of tobacco use are well established now. Out of 4,000 different chemicals found in tobacco, 60 are known carcinogens. Another constituent i.e., Nicotine is reported to cause physical and emotional addiction in a person on extended use of tobacco. Nicotine addiction has been reported to be associated with affective, anxiety and psychotic disorders [2,3].

In a developing country like India, increasing tobacco usage is also associated with significant economic implications due to enormous health complications and disease burden posed by it. Despite of initiation of various policies and awareness drives, tobacco cessation seems to be a challenging task in the public health sector. It is therefore important to understand the factors associated with its wide spread use and thereby carefully plan out strategies to reduce its consumption. It has been speculated that psychosocial status and behavioural patterns of the individual may have some role to play in his/her dependence on tobacco [4]. In fact, some individuals are seen to be completely dependent on tobacco usage for their perceived physical and psychological well-beings and despite of several attempts, are unable to quit this habit. Understanding the psychological aspect of tobacco addiction could probably be an important step in formulating the tobacco cessation strategies.

Psychiatric morbidity in general refers to the incidence of both physical and psychological deterioration [5]. It can also be used as a measurement and is therefore an important tool in making decisions that help social groups monitor and coordinate their activities and structures to achieve better mental health. If a correlation is found between psychiatric morbidity and tobacco habit, it would further emphasize the need for psychosocial counseling in tobacco users along with other treatments. It will also help us in streamlining the attempts on professional front to implement our tobacco cessation strategies. Hence, this study was conducted with an aim of assessing psychiatric morbidity in tobacco users as compared to non-users of tobacco.

MATERIALS AND METHODS

This cross-sectional study was conducted in full accordance with ethical principles and was independently reviewed and approved by an Ethical Board of the Institution. Strengthening The Reporting of Observational Studies in Epidemiology (STROBE) guidelines were followed in conducting and reporting the study. Patients reporting to the Out-Patient Department (OPD) of Sinhgad Dental College and Hospital, Pune, Maharashtra, India, were approached for participation in the study. Patients belonging to the age of 18 years and above, who were willing to participate in the study and gave informed consent were included in the study. Patients with a history of any psycho-social disease or any other neurological deficit interfering with an accurate recording of information including dementia and delirium were excluded from the study. Patients with history of substance abuse other than tobacco were also excluded. The sample size was determined using Krejcie RV and Morgan

DW table method after carefully considering the average number of potential participants visiting the Department while the duration of data collection [6]. A total of 200 individuals participated in the study; amongst which the study group (Group A) consisted of 100 tobacco users who fulfilled the criteria of tobacco abuse according to ICD-10 and health problems criteria by WHO [7]. The age and gender matched control group (Group B) consisted of 100 normal individuals with no habit and history of tobacco use.

Participants were interviewed with a semi-structured proforma to know the sociodemographic details. GHQ-28 which consisted of 28 structured, close-ended, self-administered questions were given to each participant in both the groups to assess the psychological morbidity. The questionnaire was provided in Hindi, English or Marathi as per the subjects' preference. Linguistic validation of the questionnaire in Hindi and Marathi was done by language experts using forward and backward translation method. This commonly used linguistic validation method includes forward translation of the research instrument followed by expert panel back-translation. The pretesting of the instrument is then done and final version is devised [8].

In this study, GHQ-28 was used to detect individuals who are likely to have or be at risk of developing psychiatric disorder. It is considered as one of the most feasible as well as commonly used tools to assess mental health problems such as anxiety, depression, somatic symptoms, and social withdrawal. If a patient has a score of 5 or more on the Likert scale, or 24 or greater score on the GHQ scale, he or she can be distinguished to be suffering from some psychiatric problem [9]. Additionally, dependence to tobacco products amongst our study group was assessed using ICD-10 criteria as it can be used in diagnosing an individual's absolute dependence on tobacco. According to this criterion, if an individual has experienced any three or more parameters at some point in time during the previous year, he may be diagnosed as tobacco-dependent [10]. Both GHQ-28 and ICD-10 criteria have been found to be reliable and have been used successfully by several researchers for similar analysis and thus were considered to be feasible and suitable for our study [11].

STATISTICAL ANALYSIS

For statistical test, SPSS 21.0 version was used. Chi-square test and Pearson's correlation coefficient were used to assess the difference in proportion and correlation between variables respectively.

RESULTS

Group A (tobacco users) consisted of 80 males and 20 females with the mean age of 39.27 years whereas the Group B (non-tobacco users) consisted of 63 males and 37 females with a mean age of 38.2 years. Much in accordance with recent studies done in this geographical region, the investigators observed use of tobacco products to be more prevalent in males [12]. It was also noted on post-hoc observation that the participants in the tobacco users group had poorer educational qualification (7% illiterate, 47% with matriculate degree or lesser) as compared to the non-tobacco users group (4% illiterate, 10% with or lesser than matriculate degree), however no statistically significant inference could be drawn from it [Table/Fig-1].

Group	Gender distribution (%)		Mean Age (in years)	Educational qualification (%)			
	Male	Female		Illiterate	10th pass or lesser	11th pass - Graduate	Post-graduate
A (n=100)	80	20	39.27	7	47	38	8
B (n=100)	63	37	38.2	4	10	55	31

[Table/Fig-1]: Sociodemographic details of participants as assessed in the study.

Amongst tobacco users, chewable tobacco was most commonly used with 63% of the patients using this form. The most common site (30%) to keep the tobacco quid was the lower left buccal vestibule. As many as 40% of the tobacco users had been using it for more than 10 years and frequency of consumption was 3-5 times a day for the 56% of the participants. The chronicity of tobacco use was evident from the above history of tobacco consumption amongst the participants [Table/Fig-2]. As many as 79% of tobacco users showed dependence on tobacco as per the ICD-10 criteria. Also, on the analysis of the GHQ-28 questionnaire, a significant contrast in the scores of tobacco-users and non-tobacco users was observed. Using the GHQ scale, which says that a score of 24 or above indicates the presence of distress, the scores of both groups were analysed. The results showed that 61% of tobacco users had a score of 24 or above in contrast to only 17% of non-tobacco users, who scored above 24 in the questionnaire. This difference was statistically significant. According to the results of this study, tobacco users are 7.63 folds at a higher risk of developing psychiatric morbidity than non-users of tobacco (p-value < 0.001). Mean GHQ score for tobacco users was 22.99 and non-tobacco users was 12.77. This difference in score was statistically significant (p-value < 0.05) [Table/Fig-3].

Although weak, there was a positive correlation between psychiatric morbidity and tobacco duration (Pearson's correlation =0.398, p-value < 0.05) and psychiatric morbidity and tobacco frequency (Pearson's correlation = 0.392, p-value < 0.05) [Table/Fig-4].

DISCUSSION

This study indicated higher prevalence of tobacco use in males and smoked tobacco to be the most common form used by them whereas chewed form to predominantly consumed by females. In a recent study done in this geographical region, it was observed that overall tobacco usage and tobacco related oral lesions were

	Pattern of tobacco use															
	Form used (%)			Site for chewed form (%)					Duration (in years) (%)				Frequency (times per day) (%)			
Group A	Chewed	Smoked	Any other	Labial vestibule		Buccal vestibule		Any other	<1	1-5	5-10	>10	1-2	3-5	6-10	>10
				Left	Right	Left	Right									
	63	21	16	16	2	30	14	1	9	35	16	40	24	56	14	6

[Table/Fig-2]: Pattern of tobacco use amongst the participants belonging to Group A.

Group	Individual Total GHQ score		Mean GHQ score	
	High GHQ (≥ 24) (%)	Low GHQ (< 24) (%)	GHQ score (Mean ± SD)	p-value
A: Tobacco Users (n=100)	61	39	22.99 ± 10.707	<0.05*
B: Non- Tobacco Users (n=100)	17	83	12.77 ± 5.981	

[Table/Fig-3]: Comparison of total and mean GHQ score among tobacco and non- tobacco users.
*p-value significant, Chi-square test was applied.

	Factor	Pearson's correlation coefficient	p-value
Psychiatric morbidity	Tobacco duration	0.398	<0.05*
	Tobacco frequency	0.392	<0.05*

[Table/Fig-4]: Correlation of psychiatric morbidity with duration and frequency of tobacco usage.
*p-value significant

more predominantly seen in the male population [12]. This trend has also been pointed out by Nation-wide survey taken up by National Sample Survey Organization (NSSO) in 1994 [13]. National family health survey (1998-99) also indicated that 46.55 of men and 13.8% of women aged 15 years or above in India used some form of tobacco. Considering the ill effects of tobacco on individual's overall well-being, this seems to be an alarming situation which warrants our urgent attention [14].

We used ICD-10 criteria and GHQ-28 to assess the tobacco dependence and psychiatric morbidity respectively in the participants. The results indicated that substantial psychiatric morbidity is present in tobacco users as compared to non-tobacco users. The dependence on tobacco was present in as many as 79% of the users which was in fact much more than originally anticipated by the researchers. This relation also seems to be specific to tobacco, as patients with mental retardation and neurologic deficits were excluded as well as those with any other substance abuse. These results clearly emphasize that the psychosocial status of the patient may have some role to play in his/her addiction to tobacco. There are a few studies which have indicated the correlation between psychosocial status of the patients and their oral conditions or tissue abuse habits. In a study done by Mubeen K et al., it was concluded that oral submucous fibrosis may be associated with considerable psychological morbidity which is significantly more in patients with worst functional staging [15]. A positive correlation was found between tobacco cigarette smoking and psychiatric morbidity in a study done by Degenhardt L and Hall W and this correlation was statistically significant (p-value < 0.05) [16]. In our study, a 7 folds increase in psychiatric morbidity among tobacco users was observed in comparison to non tobacco users whereas in the study done by Blazer DG and Wu LT, it was concluded that there was 1.73 folds increase in anxiety among cigarette smokers [17]. There also seemed to be some correlation between increased risk of psychiatric morbidity and duration and frequency of tobacco consumption. It may be said that longer the duration of tobacco habit and higher the frequency, greater is the tobacco addiction and risk of psychiatric morbidity in an individual. Some other researchers have also pointed out in previous studies that the higher frequency and longer duration of tobacco use are important clinical indices associated with tobacco addiction and play an important role in relapse and maintenance issues in tobacco cessation [18,19].

However, these correlations need to be explored further so that more efficient patient care strategies could be developed. Our study is a preliminary step in this direction and explores the risk of psychiatric morbidity in tobacco users. We recommend such studies on much larger populations with more detailed analysis of psychiatric morbidity types associated with tobacco addiction. Another limitation of our study was that as in any questionnaire based study, the response bias could not be controlled. Social desirability bias was another concern of this study. Future research shall be targeted at evaluating a cause and effect relationship between psychiatric morbidity and tobacco use. When tobacco use or dependence is evident in individuals, it could be useful in screening and addressing psychiatric morbidity in them. The tobacco cessation strategies must be started at preventive stages and tailor-made for each patient after including a psychosocial analysis during the preliminary interview or counselling. In serious cases, appropriate referrals to a psychologist shall be warranted.

CONCLUSION

As per the ICD-10 criteria, the dependence on tobacco appeared to be present in a significant proportion of tobacco users in our study. There also seemed to be a significant correlation between psychiatric morbidity and tobacco usage as per the assessment done using GHQ-28 questionnaire. Tobacco users were found to be at significantly higher risk of psychiatric morbidity as compared to the non-users of tobacco, and the risk appeared to increase with the increased duration and frequency of tobacco consumption. Hence, we recommend psychosocial counselling and behavioural interventions to be considered as a part of the essential treatment strategies for tobacco cessation.

REFERENCES

[1] Tobacco use in India: An Evil with Many Faces. American Cancer Society. Available from: http://www.cpaaindia.org/infocentre/acs/eng/Tobacco%20Abuse.pdf. Accessed on 2016 Dec 12.
[2] Farrell M, Howes S, Bebbington P, Brugha T, Jenkins R, Lewis G, et al. Nicotine, alcohol and drug dependence and psychiatric comorbidity. Results of a national household survey. Br J Psychiatry 2001;179 (5):432–37.
[3] Martı´nez-Ortega JM, Jurado D, Martı´nez-Gonza´lez MA, Gurpegui M. Nicotine dependence, use of illegal drugs and psychiatric morbidity. Addict Behav. 2006;31(9):1722–29.
[4] Tyas SL, Peterson LL. Psychosocial factors related to adolescent smoking: a critical review of the literature. Tob Control. 1998;7(4):409-20.
[5] Boys A, Farrell M, Taylor C, Marsden J, Goodman R, Brugha T, et al. Psychiatric morbidity and substance use in young people aged 13–15 years: results from the Child and Adolescent Survey of Mental Health. Br J Psychiatry. 2003;182:509-17.
[6] Krejcie RV, Morgan DW. Determining sample size for research activities. Educational and Psychological Measurement. 1970;30:607-10.
[7] World Health Organization. The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines. Geneva, 1992. Available from: http://www.who.int/classifications/icd/en/bluebook.pdf. Accessed on 2016 Sep 11.
[8] Chen HY, Boore JR. Translation and back-translation in qualitative nursing research: methodological review. J Clin Nurs. 2010;19(1-2):234-39.
[9] Sterling M. General Health Questionnaire-28 (GHQ-28). J Physiother. 2011;57(4):259.
[10] World Health Organization. Neuroscience of psychoactive substance use and dependence. Summary. Geneva 2004. Available from: www.who.int/substance_abuse/publications/en/Neuroscience_E.pdf. Accessed on 2016 Dec 12.
[11] Malakouti SK, Fatollahi P, Mirabzadeh A, Zandi T. Reliability, validity and factor structure of the GHQ-28 used among elderly Iranians. Int Psychogeriatr. 2007;19(4):623-34.
[12] Aditya A, Lele S, Aditya P. Oral health and treatment needs of patients with psychosocial disorders in Pune, India: A cross-sectional study. Dent Med Res. 2014;2:43-48.
[13] National Sample Survey Organisation. A Note on Consumption of Tobacco in India, Sarvekshana. Journal of the National Sample Survey Organization. 1998; 21:69-100.
[14] Soni P, Raut DK. Prevalence and pattern of tobacco consumption in India. Int Res J social Sci. 2012;1(4):36-43.
[15] Mubeen K, Kumar CN, Puja R, Jigna VR, Chandrashekhar H. Psychiatric morbidity among patients with oral sub-mucous fibrosis: a preliminary study. J Oral Pathol Med. 2010;39:761–64.
[16] Degenhardt L, Hall W. The relationship between tobacco use, substance-use disorders and mental health: Results from the National Survey of Mental Health and Well-being. Nicotine Tob Res. 2001;3(3):225-34.
[17] Blazer DG, Wu LT. Patterns of tobacco use and tobacco-related psychiatric morbidity and substance use among middle-aged and older adults in the United States. Aging and Mental Health. 2012;16(3):296-304.
[18] Ockene JK, Emmons KM, Mermelstein RJ, Perkins KA, Bonollo DS, Voorhees CC, et al. Relapse and maintenance issues for smoking cessation. Health Psychol. 2000;19(1S):17-31.
[19] Barth J, Critchley J, Bengel J. Efficacy of psychosocial interventions for smoking cessation in patients with coronary heart disease: a systematic review and meta-analysis. Ann Behav Med. 2006;32(1):10-20.

PARTICULARS OF CONTRIBUTORS:
1. Reader, Department of Oral Medicine and Radiology, Sinhgad Dental College and Hospital, Pune, Maharashtra, India.
2. Postgraduate Student, Department of Orthodontics and Dentofacial Orthopedics, Sinhgad Dental College and Hospital, Pune, Maharashtra, India.
3. Postgraduate Student, Department of Periodontics, D.Y. Patil Dental College, Pune, Maharashtra, India.
4. Lecturer, Department of Public Health Dentistry, Sinhgad Dental College and Hospital, Pune, Maharashtra, India.
5. Postgraduate Student, Department of Orthodontics and Dentofacial Orthopedics, D.Y. Patil Dental College, Pune, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Amita Aditya,
Reader, Department of Oral Medicine and Radiology Sinhgad Dental College and Hospital, S.No. 44/1,
Vadgaon (BK) Off Sinhgad Road, Pune-411041, Maharashtra, India.
E-mail: dr.amita30@rediffmail.com

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