



## Prevalence and Pattern of Tobacco Use in Patients with Mental Disorders in Eastern India

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**ABSTRACT:** *Background:* This study looks into the prevalence and pattern of tobacco use among psychiatric outpatients in eastern India compared to an age and sex matched control group and the association between tobacco use and various socio-demographic and clinical characteristics in this population. *Method:* An observational study of 795 psychiatric patients was conducted at a government medical college in Kolkata. Sociodemographic and clinical data were gathered using a semi-structured proforma. Diagnosis according to ICD 10 was made using the MINI International Neuropsychiatric Interview. Data regarding nicotine use was collated using the Fagerstrom's questionnaire. Data were analyzed using Spearman correlation and logistic regression. *Results:* 58.6% of psychiatric outpatients reported nicotine use (low – moderate – high level of dependence), compared to 35.6% of the control group. In both groups smoking was more common in men whereas smokeless tobacco (SLT) use was commoner in women. Prevalence of smoking among women psychiatric patients (18.7%) was higher compared to other parts of the country. Smoking was highest in patients with depressive disorders followed by bipolar disorder. SLT use was highest in patients with schizophrenia followed by anxiety disorders. Combined use of smoking and SLT was highest in schizophrenia. *Conclusion:* In keeping with the global trends nicotine/tobacco use is more common among psychiatric outpatients than the general population. There is a differential pattern of use among psychiatric patients; patients with mood disorders smoke more whereas those with schizophrenia or anxiety disorders are prone to using SLT. Findings of this study should spur more research and allow targeted strategies to promote abstinence in this particularly vulnerable group.

**KEY WORDS:** Nicotine Use, Mental disorders, Psychiatric outpatients.

**Running Title:** Tobacco use and Mental Health

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### I. INTRODUCTION

Prevalence of smoking is much higher among psychiatric patients than the normal population. The national mental health survey of India (NMHS), 2016 findings reveal that the prevalence of tobacco use disorder (moderate to high level of dependence) is around 32.8% among men and 9.8% in women with mental illness, which is higher than the national figures for the general population [1].

India, along with other south Asian countries, is unique because use of smokeless tobacco is more common here than smoking [2]. Tobacco has been used by Indians in different forms like cigarette or bidi (dried and shredded tobacco hand rolled into a piece of leaf called tendu); zarda used as component of betel quid, khaini and the more recent, near ubiquitous packaged forms of chewable tobacco (gutkha) which can also be sucked; gul or gurakhu which are used mostly by women to brush their teeth and gums with, as alsonasya (snuff). Two important studies have addressed the details of tobacco use in India so far [3], but both of these have been carried out in southern India, and the last one was done with indoor patients only. The sociodemographic and cultural realities are somewhat different in the eastern parts of the country, hence the need for a study in eastern India was felt to be overdue.

## **II. MATERIALS AND METHOD**

### **Study population**

#### **Patient group**

This study was conducted in the psychiatric outpatient department of Medical College and Hospital, Kolkata. A purposive, consecutive sampling method was employed to select patients between October 2018 to March 2019. Among the 905 patients thus selected, 76 patients were excluded as they did not fulfill our exclusion and inclusion criteria, and 34 patients did not give informed consent. Remaining 795 out-patients were interviewed. Diagnoses were made by a psychiatrist at the hospital according to ICD 10 using the MINI International Neuropsychiatric Interview. Inclusion criteria comprised those psychiatric patients who had been under treatment at least 5 months at the department of psychiatry at Calcutta Medical College and Hospital, Kolkata within the age group of 18-60. The exclusion criteria were inability to answer the interview due to disorganized speech or thought content or having mental retardation.

#### **Control group**

An age sex and socioeconomic status matched control group consisting of 410 participants was also interviewed. Presence of psychiatric morbidity was ruled out using the General Health Questionnaire (GHQ 12).

#### **Procedure**

Those who met the inclusion criteria gave a written consent to participate in the study. Study protocol was approved by the Ethics Committee of Medical College and Hospital, Kolkata. Sociodemographic and clinical data were collected via an interview using a semi-structured proforma.

#### **Nicotine use behaviour**

All these participants answered questions regarding nicotine consumption. Assessment was done using the Fagerstrom's questionnaire for nicotine dependence, both for smokers and users of smokeless forms. On the basis of types of nicotine consumption participants were divided into four groups: smokers (cigarettes, bidi), chewers (gutka, khaini, packeted tobacco), others (guraku, gul, khaini) and users of more than one form. Tobacco use was diagnosed if the Fagerstrom's score was 3 or more (low – moderate – high level of dependence).

**Tools:**

1. The M.I.N.I. International Neuropsychiatric Interview 5 [4]: This is a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done to compare the M.I.N.I. to the SCID-P and the CIDI. The results of these studies show that the M.I.N.I. has high validity and reliability scores and can be administered in a brief period of time. The modules I, J and K will be administered in the current study to rule out substance abuse and psychosis in the subject.
2. General Health Questionnaire 12 [5]: It is developed by Goldberg in 1972 was used to assess psychological distress. GHQ-12 consists of 12 best items of the original 60 item questionnaire. GHQ is a self-administered tool, with scoring ranging from 0-1 for each item. Individuals scoring above 2 are addressed as psychologically distressed. The reliability for the scale is found out to be .90 from Likert method.
3. The Fagerstorm Test for Nicotine Dependence [6]: 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.

**Statistical Analysis**

SPSS program version 21 was used for compilation and analysis of data. Analysis was done to compare the number of current and ever smokers in each study group. Chi-square was computed to assess the differences in the study groups with respect to demographic characteristics and psychiatric disorder.

**Content Analysis**

Qualitative Data Analysis was done to determine the causes for smoking and chewing in terms of nicotine use with respect to gender difference.

**Tool:**

Semi structured interview with specified probes.

**Qualitative measure:-**

Content analysis also, known as document analysis, is a method of systematic examination of communications or of current records or documents. Instead of questioning respondents according to some scale items or observing their behaviour directly, content analysis finds out the frequency or proportion of the appearances of any communication.

Methods Of Content Analysis:- There are different ways or methods of content analysis. Of these various methods, Berelson's method [7] is the most useful and has been applied in the current study. This method can be presented under the following three heads:

- Specification of the Universe- in Berelson's method, the first step is to define the universe or U of the content.
- Unit of Analysis- unit of analysis refers to the measure in terms of which content analysis can be carried out. Berelson has suggested five major units of analysis, namely, words, themes, items, character and space and time measures.
- Quantification- it is the third important aspect in content analysis. It refers to the process of assigning numerals to the objects of the content analysis. Ordinarily, this process can be completed in any of the three ways, namely, nominal measurement, ordinal measurement and

rating. In nominal measurement, each object after being assigned to a proper category is counted. Ordinal measurement consists of ranking of objects done by subjects according to some fixed criterion. Rating is another form of quantification, wherein the whole reproduction or the object may be rated on several dimensions.

### **Procedure**

This phase of the study is qualitative. In this phase, interview was taken from all the participants. Firstly, consent was taken from them to conduct an interview. Interview was conducted in the form of guided narratives with specified probes. Patients were asked about their reasons for nicotine use. After conduction of all the interviews, data was analyzed using content analysis. For the present study, firstly, unit was defined and then coding was done for causes. After all the coding were done, “u” was arranged as a unit in themes along with the interpretations. From the interpretation tables, tally was done. Themes were arranged in the table along with their frequencies in rank order.

## **III.RESULTS**

**Table 1: Summary of Chi square showing difference between Psychiatric and non Psychiatric group in terms of Substance use**

<b>GROUPS</b>	<b>SMOKING</b>	<b>CHEWING</b>	<b>OTHERS</b>	<b>MORE THAN ONE FORM</b>	<b>NONE</b>
Psychiatric	189 (23.77%)	194 (24.40%)	36 (4.53%)	18 (2.26%)	358 (45.03%)
Non psychiatric	73 (17.80%)	33 (8.05%)	16 (3.90%)	24 (5.85%)	264 (64.39%)

There is a significant difference observed between the psychiatric and non-psychiatric group in terms of substance use,  $X^2$  (df= 4, N= 1205) = 72.18, p= .000. In terms of nicotine use, smoking and chewing are significantly higher in psychiatric group as compared to non-psychiatric group using substance.

**Table 2: Summary of Chi square showing difference between males and females in terms of Substance use**

<b>GROUPS</b>	<b>SMOKING</b>	<b>SMOKELESS TOBACCO</b>
Male	225 (62.13%)	138 (37.87%)
Female	32 (31.57%)	69 (68.43%)

There is a significant difference observed between the males and females in terms of substance use,  $X^2$  (df= 2, N= 1205) = 114.785, p= .000. In terms of gender, smoking is significantly higher in males whereas chewing is higher among females.

**Table 3: Summary of Chi square showing difference in Substance use in Psychiatric group in terms of Diagnosis**

DIAGNOSIS	SMOKING	CHEWING	SMOKING/ CHEWING	NONE	OTHERS
Anxiety	20 (20%)	37 (37%)	1 (1%)	36 (36%)	6 (6%)
Bipolar Disorder	31 (29.2)	25 (23.6%)	0 (0%)	40 (37.7%)	10 (9.4%)
Depressive Disorder	43 (35.5%)	36 (29.8%)	0 (0%)	38 (31.4%)	4 (3.3%)
Schizophrenia	16 (21.1%)	39 (51.3%)	16 (21.1%)	0 (0%)	5 (6.6%)
Somatoform	22 (28.6%)	8 (10.4%)	0 (0%)	41 (53.2%)	6 (7.8%)
Sexual dysfunction	5 (31.3%)	5 (31.3%)	1 (6.3%)	2 (12.5%)	3 (18.8%)
Other Psychosis	52 (17.4%)	44 (14.7%)	0 (0%)	201 (56.1%)	2 (5.6%)

There is a significant difference observed within the psychiatric groups in terms of diagnosis,  $X^2$  (df= 24, N= 1205) = 303.487,  $p = .000$ . Results suggest that smoking is highest in patients with Major depressive disorder followed by Bipolar affective disorder. Chewing has been observed to be highest in patients with Schizophrenia followed by Anxiety spectrum disorder. Smoking and chewing combined is observed to be highest in Schizophrenic patients. It has been seen that Psychosis patients use the least substance.

### Qualitative analysis

**Table 4: Frequency table for content analysis showing ‘Causes’ for Nicotine use among Males**

SERIAL NO.	THEMES FOR CAUSES	SMOKING FREQUENCY	CHEWING FREQUENCY
1	Desire to experiment	91	132
2	To overcome negative emotion	100	88
3	Loneliness	101	84
4	Boredom	85	94
5	Pleasure	89	97
6	Peer pressure	58	64
7	Withdrawal psychological symptoms	60	54
8	Withdrawal physical symptoms	62	45

**Table 5: Frequency table for content analysis showing 'Causes' for Nicotine use among Females**

SERIAL NO.	THEMES FOR CAUSES	SMOKING FREQUENCY	CHEWING FREQUENCY
1	To overcome negative emotion	134	88
2	Loneliness	101	84
3	Boredom	85	94
4	Peer pressure	78	94
5	Pleasure	49	37
6	Desire to experiment	43	20
7	Withdrawal physical symptoms	12	15
8	Withdrawal psychological symptoms	10	14

#### IV. DISCUSSION

The number of tobacco users is high both in the control group and psychiatric patients. The implications of this finding cannot be overlooked, as tobacco use has been projected to account for 13% of all deaths in India by 2020 [2]. The percentage of patients having tobacco use (58.6% overall, 45.6% in men, 12.7% in women) in our study is higher than that reported by the National Mental Health Survey, 2016 (38.2% in men, 9.8% in women). This could be because we took a Fagerstrom test score of even low level of dependence as our cut off while the NMHS included those with moderate to high level of dependence only. We decided to include low level users also because, as per recommendations of the test itself, these people need regular monitoring and should come under the ambit of any intervention programme. Another reason for a higher rate could be that in this part of the country, use of smokeless tobacco has a long standing tradition, is culturally sanctioned, and not really looked upon as addictive or dangerous. The availability of cheap, attractive pouches of chewable tobacco is a rising menace in the country and millions are spent in marketing these products. Tobacco along with beetle nut chewing and sucking has traditionally been looked upon a remedy for anxiety in this part of the country for centuries. We tried to cover all forms of tobacco use.

As expected, men (45.6%) were using more tobacco than women (12.7%). Compared to previous studies [3] done a decade earlier, the prevalence seems to have increased, more so for women (9.8% to 12.7%). Whether this is because of breakdown of the traditional Indian family and subsequent erosion of values and restrictions imposed on any kind of substance use including tobacco or because of the allure of ubiquitous advertisements put forth by an increasingly powerful tobacco industry is yet to be known. In terms of age, residence, occupation or income the tobacco users were no different from non users.

Men outnumbered women when it came to smoking as well as chewing. This is different from the trend noticed in previous studies done in south India, where women chew tobacco more than men [3]. In our study, women more commonly used gul or gurakhu, in a dry or paste form, to brush their teeth or gums with or just keep them inside the mouth for long hours. Tobacco use, overall, was more common in the 20 to 40 year age groups. Skilled workers and homemakers constituted the highest user categories. The silent but significant invasion of tobacco into Indian households has happened over decades, as revealed by a qualitative analysis study carried out in the slums of Maharashtra.

Women often don't believe that tobacco can be harmful, they insist on its benefit to release 'tension', and site age old traditions in favour of continued use. In India, there is much more social acceptance about using smokeless tobacco among women [8].

Prevalence of smoking in women is 18.7%, which is much higher than estimates from south India (1%) about a decade back [2]. However, studies from Bihar and other parts of eastern India report high rates of smoking in women (31.6% males, 23.4% females)[9]. Social taboo against smoking is not so high in rural parts of Bihar and bordering areas of Bengal, many of whom attend the government medical colleges of Bengal.

Apart from chewing tobacco, a significant number of patients (4.5%) and control group participants (3.9%) were using 'other' forms of tobacco like gul or gurakhu which they brush onto their teeth and gums and believed them to be good for oral hygiene. This has always been an ingrained belief in many pockets of India, especially in the eastern regions. In a study in Bihar among women smokeless tobacco users, the most common product was tobacco as a dentifrice (41.3%). Though the Government of India had banned use of tobacco in toothpowder and toothpaste in 1992 and the Supreme Court of India upheld the decision of Government in 1997. These products however, continue to be available openly in the market, often without mentioning tobacco as one of the ingredient.

Psychiatric patients preferred chewing or using 'other' forms of tobacco (29%), whereas for the control group smoking was more prevalent (17.8%). One reason for this could be that bidi or cigarettes are more expensive than the other forms.

When we analyzed tobacco use patterns with respect to diagnostic categories, smoking was found to be highest in patients with depressive disorders followed by bipolar disorder. SLT use was highest in patients with schizophrenia followed by anxiety disorders. Combined use of smoking and SLT was highest in schizophrenia.

Previous studies have consistently documented a strong link between smoking and depression [10] though in Indian studies smoking has been found to be more common in patients with bipolar disorder [2]. Patients with schizophrenia are also known to have a high propensity to smoke and within patient samples, smoking has been suggested to be related to the presence of psychotic symptoms in both bipolar disorder [11] and schizophrenia [10]. Many researchers have suggested that smoking in psychiatric patients may have a biological etiology, citing findings that genetic linkage related to nicotinic receptor were common in both schizophrenia and bipolar

disorders [12]. In our study SLT was more prevalent among patients with anxiety disorders. High levels of state and or trait anxiety are known to have a close correlation with tobacco use and those dependant on tobacco have more severe withdrawal symptoms if they have associated anxiety [13]. Anxiety disorders along with depression constitute the common mental disorders (CMD) of India and are more common in women. Women often take to tobacco use as an accepted household remedy, and later develop dependence which, as we discussed, is even stronger in the presence of anxiety, thus setting up a perpetuating vicious cycle.

From the qualitative analysis, it has been found that for males, major cause for chewing is desire to experiment whereas for smoking is loneliness. Desire to experiment drugs can be linked to high novelty seeking trait. It is a predisposing personality trait that reflects a tendency towards exploratory behaviour and desire for novel sensations [14]. Research further indicates that novelty seeking is higher among males as compared to females [15]. Research shows higher rate of loneliness in men [16]. De Wall and Pond's Theory [17] suggests that lonely people exhibit low impulse control and irrational decision making, both which reduce a lonely person's ability to abstain from unhealthy yet pleasurable activity like smoking. Researchers suggests that smokers may view cigarettes as their companions in response to loneliness, using them to fulfil their social needs [18].

Findings suggests that for females, major cause for chewing is boredom and peer pressure whereas for smoking is to overcome negative emotions. In India, large section of females are house wives and have limited source of entertainment causing boredom. Chewing nicotine leads to increased arousal and thrill seeking behaviour [19] which may combat their boredom. Self medication model [20] further suggests that smoking tends to alleviate depression and anxiety which are common negative emotions. Thus, nicotine smoking may be used by females as a primary stress reducing agent.

### **III. CONCLUSION**

In keeping with the global trends nicotine/tobacco use is more common among psychiatric outpatients than the general population. There is a differential pattern of use among psychiatric patients; patients with mood disorders smoke more whereas those with schizophrenia or anxiety disorders are prone to using SLT. Findings of this study should spur more research and allow targeted strategies to promote abstinence in this particularly vulnerable group.

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