

Study to determine the prevalence of substance use and factors associated with it, in first-episode of psychosis

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ABSTRACT

Background: Psychoactive substance use occurs commonly in patients with psychotic disorders. **Aim:** This study aimed to determine the prevalence of substance use in first-episode psychotic patients and to evaluate the association between substance use and various sociodemographic variables. **Materials and Methods:** This was a cross-sectional study, and symptomatic first-episode, treatment-naïve psychosis patients were included ($n = 79$). A semi-structured pro forma was used for the evaluation of sociodemographic and clinical characteristics. The patients were then interviewed for use of any psychoactive substance in their lifetime. In each case, the history was corroborated by a family member or a caregiver. Wherever required, a second interview was conducted. **Results:** The mean age at the onset of psychotic disorder for substance users was 36.09 years and for nonusers was 35.50 years. Almost three-fourth of the patients reported the use of at least one substance in their lifetime. Alcohol use was reported by 40.50% of patients, tobacco by 55%, and cannabis by 8.86%. It was significant in patients who were diagnosed with schizophrenia, acute and transient psychotic disorder, persistent delusional disorder, and unspecified nonorganic psychotic disorder. **Conclusion:** The results show a high prevalence of psychoactive substance abuse compared to the prevalence in the general population. This has tremendous significance in the management of such illness, which is known to impact the prognosis adversely.

Keywords: Alcohol, psychosis, substance abuse, substance-induced disorder, tobacco

Psychoactive substance use in psychiatric disorders is a recognized entity with a mirage of problems such as complicating the course of disorder, affecting drug adherence, and delayed or incomplete recovery, thus increasing morbidity. Such use occurs commonly in patients with psychotic disorder.^[1,2] Both groups have been mentioned among the twenty leading causes of years lost to disability in the Global Burden of Disease Study 2015.^[3] Substance use patterns seem to establish themselves before the onset of psychotic disorders in a significant proportion, which may be as little as a month before the first signs of illness.^[4] A number of studies suggest a high level of comorbidity between substance abuse and psychosis.^[5,6]

Such comorbidity is usually associated with poor treatment response, more frequent relapses, more positive symptoms, depression, cognitive impairment, and a poorer outcome.^[5,7] It has been hypothesized that substance abuse may increase the risk of psychosis, in vulnerable individuals.^[3] Self-medication hypothesis suggests that patients abuse drugs to alleviate the symptoms of psychosis or the debilitating side effects caused by antipsychotic medications^[8] or, it could be a merely coincidental association of two psychiatric disorders that have similar age peaks in the distribution of onset and prevalence but without any causal interrelation.

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How to cite this article: Banyal N, Bhattacharyya D, Yadav P. Study to determine the prevalence of substance use and factors associated with it, in first-episode of psychosis. *Ind Psychiatry J* 2018;27:264-70.

Access this article online

Quick Response Code:



Website: www.industrialpsychiatry.org

DOI: 10.4103/ipj.ipj_86_18

At present, there are very few studies available on the prevalence of substance use among patients with first-episode treatment-naïve psychosis in clinical settings in India. Hence, the current study was planned, wherein the results of the study can be useful in assessing risk factors for substance use in patients with first-episode psychosis. This study aims to determine the prevalence of substance use in first-episode psychotic patients in a general hospital psychiatric unit (GHPU) setting and to evaluate the association between substance use and sociodemographic variables in the context of the study population.

MATERIALS AND METHODS

The study was conducted in a GHPU of a tertiary care center in North India, after clearance from the institutional ethical committee, on samples collected from all patients reporting to outpatient as well as inpatient services during the study period of 1 year.

This was a cross-sectional study, and symptomatic first-episode, treatment-naïve psychosis patients (18–65 years of age) were included. Patients with other comorbid psychiatric disorders/comorbid neurological or medical illness/those prescribed opioid analgesics/benzodiazepines and those who refused to consent to the study were excluded. Patients manifesting with transient psychotic symptoms during substance intoxication or withdrawal phase were also not included in the study. The study was initiated with informed consent and assurance of confidentiality. We included all patients reporting to our GHPU setting during the study period of 1 year, fulfilling the inclusion and exclusion criteria and volunteered to give informed consent. The study sample consisted of 79 patients.

The first episode of psychosis included schizophrenia, schizotypal disorder, persistent delusional disorder, acute and transient psychotic disorders (ATPDs), schizoaffective disorder, other nonorganic psychotic disorder, unspecified nonorganic psychosis, manic episode with psychotic symptoms, severe depressive episode with psychotic symptoms, and mental and behavioral disorders due to psychoactive substance use (psychotic disorder).

A consultant psychiatrist made a clinical diagnosis of the first episode of various psychotic disorders as per the WHO, International Classification of Diseases-10, Classification of Mental and Behavioral Disorders: Diagnostic Criteria for Research (ICD-10 DCR), 1993.^[9]

These patients were then interviewed for the use of any psychoactive substance in their lifetime. In each case, the history was corroborated by a family member or a caregiver.

Whenever required, a 2nd interview was conducted for outpatient department patients within 2 weeks during the follow-up period, when the patient was well enough to complete the further assessment regarding the history of substance use. A clinical diagnosis of dependence or harmful use, where applicable, was then made according to the ICD-10 DCR.

A modified semi-structured pro forma of the psychiatry department was used to obtain the sociodemographic and clinical characteristics of the study population. It consisted of identification number, age, sex, address, educational status, religion, marital status, occupation, type of family, and socioeconomic status. Clinical variables included presenting complaints with duration and details regarding the use of substance (which comprised the age at which the patient started taking substance, type of substance, pattern of use, duration of substance use, last intake of substance, and the family history of psychiatric illness). Findings from physical examination, mental state examination at initial presentation, and investigational results including urine screening test for psychoactive substance detection and markers of alcohol abuse were noted.

Urine test was carried out by immunoassay-based cassette method for six common substances, namely cannabis (tetrahydrocannabinol), benzodiazepine, morphine, amphetamine, barbiturates, and cocaine. Immunoassay drug testing is based on the principle of competitive binding and uses antibodies to detect the presence of a particular drug or metabolite in a urine sample. Instant-view drugs screen kit developed by Alfa Scientific Designs, Inc., was used for the above six substances. The cutoff score for the samples to be positive for the drug under study was as follows: cannabis – 50 ng/ml, benzodiazepine – 300 ng/ml, morphine (opiate metabolite) – 2000 ng/ml, amphetamine – 1000 ng/ml, barbiturate – 200 ng/ml, and cocaine – 300 ng/ml.

Patients who used alcohol were also scored by the Alcohol Use Disorder Identification Test (AUDIT) which, across studies, shows a median sensitivity of 0.86 and a median specificity of 0.89.^[10] Patients who smoked tobacco were assessed by Fagerstorm Test for Nicotine Dependence (FTND).^[11] The reliability of Fagerstorm test shows Cronbach's alpha coefficient of 0.63.^[12]

Statistical tests were performed using SPSS software version 20 (Statistical Package for the Social Sciences, IBM Corp). Descriptive analysis was performed. Mean, median, and range were calculated. The data were explained as mean $\pm$ standard deviation (SD) wherever suitable. The independent sample *t*-test and single-tail Z-test were

applied and Z-score was calculated whenever applicable. 5% probability level was considered statistically significant, i.e., $P < 0.05$.

RESULTS AND OBSERVATIONS

The mean age of the treatment-naïve, first-episode psychotic patients was 36.13 years (SD 10.90). Around 59.49% of the patients were male and 40.51% were female. Nearly 77.22% of the patients were married, 43.04% were employed, 69.62% were living in joint family, and 15.19% patients had a family history of psychiatric illness.

Table 1 shows the distribution of diagnosis in these 79 patients. Table 2 shows the number of patients using

Table 1: Distribution of first-episode psychotic diagnosis

Diagnosis	Number of patients (n=79), n (%)
Schizophrenia	12 (15.19)
Schizotypal disorder	0
Persistent delusional disorder	13 (16.46)
ATPD	14 (17.72)
Schizoaffective disorders	1 (1.26)
Other nonorganic psychotic disorders	0
Unspecified nonorganic psychosis	14 (17.72)
Mania with psychotic symptoms	10 (12.66)
Severe depressive episode with psychotic symptoms	8 (10.12)
Mental and behavioral disorders due to psychoactive substance use (psychotic disorder)	7 (8.86)
(alcohol-induced psychotic disorder - 4 and cannabis-induced psychotic disorder - 3)	

ATPDs - Acute and transient psychotic disorders

Table 2: Prevalence of substance use in first-episode psychotic patients

Substance use	Number of patients (n=79), n (%)
Users	58 (73.42)
Nonusers	21 (26.58)

psychoactive substance ($n = 58$) and highlights usage in almost three-fourth (73.42%) of the sample.

Table 3 depicts the distribution of the substance used and the pattern of substance use. It shows that tobacco was the most commonly used substance, with 55.69% of patients reporting its use. Alcohol use was reported by 40.50% of the patients. Nearly 6.32% of the patients were having harmful pattern of substance use and 46.83% were using the substance in dependent pattern. The distribution of diagnosis of psychosis in various types of substance use is shown in Table 4.

The mean age of these 58 psychoactive substance users in this study was 36.29 years (SD 11.31), whereas that of the nonusers was 35.67 years (SD 9.95), with $P = 0.41$. The results presented in Table 5 also show that overall substance use was significant among male, single, and unemployed patients. This is also reflected in another Indian study.^[13]

Further, it was observed that substance use was significantly higher in the age groups of 18–25, 36–45, and 46–55 years ($P < 0.05$) in comparison to the nonusers, whereas it was not in age group older than 55 years.

The mean age of cannabis users was found to be 24.57 years and was significantly different from the mean age of overall substance users which is 36.29 years ($P < 0.05$); mean age at onset of psychosis for cannabis users (24.39 years) was also significantly different from alcohol users (33.86 years), with $P = 0.012$.

Further, use of alcohol was significant among male patients as compared to female patients among all types of substance used ($P < 0.05$). Mean AUDIT score for alcohol users was 16.97 (SD 9.97). Nearly 46.88% of alcohol users had AUDIT score ≥ 20 .

DISCUSSION

The mean age at the onset of psychotic disorder for substance users was 36.09 years and for nonusers, it was

Table 3: Prevalence on the basis of pattern of substance use

	Substance use	Total	Nondependent use (prevalence) (%)	Harmful use (prevalence) (%)	Dependence (prevalence) (%)
A	Alcohol	32	11 (33.9)	5 (15.6)	16 (50.3)
B	Cannabis	7	3 (42.9)	0	4 (57.1)
C	Benzodiazepine	0	0	0	0
D	Morphine	1	0	0	1 (100)
E	Amphetamine	0	0	0	0
F	Barbiturates	0	0	0	0
G	Cocaine	0	0	0	0
H	Tobacco	44	28 (63.6)	0	16 (36.3)
	Total		42	5	37

Table 4: Cross tabulation of substance use with different diagnosis of psychosis and *P* value calculation

	Diagnosis	Users	Nonusers	<i>P</i>	Total
A	Schizophrenia	9	3	0.00714	12
B	Schizotypal disorder	0	0	-	0
C	Persistent delusional disorder	11	2	0.00021	13
D	ATPDs	12	2	0.000005	14
E	Schizoaffective disorders	1	0	0.07927	1
F	Unspecified nonorganic psychotic disorder	10	4	0.0116	14
G	Other nonorganic psychotic disorder	0	0	-	0
H	Mania with psychotic symptoms	5	5	0.5	10
I	Severe depressive episode with psychotic symptoms	3	5	0.15866	8

ATPDs - Acute and transient psychotic disorders

Table 5: Sociodemographic variables of substance users and nonusers

	Users	Nonusers	Total	<i>P</i>
Mean age, years (SD)	36.29 (11.31)	35.67 (9.95)		>0.05
Gender				
Male	41	6	47	0.00038
Female	17	15	32	
Marital status				
Married	41	20	61	0.01072
Single	17	1	18	
Education				
Illiterate	0	0	0	-
Up to 5 th class	3	3	6	0.5
Up to 8 th class	1	0	1	0.07927
Up to 10 th class	17	6	23	0.0006
Up to 12 th class	23	8	31	7×10 ⁻⁵
Graduate	11	2	13	0.00021
Postgraduate	0	1	1	0.07927
Others	3	1	4	0.07927
Employment status				
Employed	30	4	34	0.0048
Unemployed	28	17	45	
Residence				
Urban	20	3	23	0.04006
Rural	38	18	56	
Family type				
Nuclear family	38	17	55	0.31918
Joint family	20	4	24	
Family history of psychiatric disorder				
Present	10	2	12	0.20045
Absent	48	19	67	

SD - Standard deviation

35.50 years. It was statistically not significant ($P > 0.05$). This is in synchronization with a study carried out in an outpatient setting in India.^[14] However, another similar study in Germany reported mean age at presentation to be in the mid-twenties.^[15] The results of the present study were different from those of other published studies^[2,16] in developed countries, which had found that, compared

to patients with no history of substance use, patients with substance use had an earlier age of onset of psychosis. Another study reported that, in India, schizophrenia has fairly late peak with age of onset in the early thirties followed by a steep decline through the older age ranges.^[17] The authors of previous researches in India have argued that the risk for an early age of onset for schizophrenia in India is preferentially decreased as infants at future risk of schizophrenia do not survive because of poor perinatal care.^[18]

The mean age of cannabis users was significantly lower when compared to the mean age of overall substance users ($P < 0.05$). In addition, patients who used cannabis presented with psychotic disorder at an early age compared to patients who used alcohol. Other studies have also delineated similar findings.^[19,20]

Almost three-fourth of the 79 patients reported use of at least one substance. Another Australian study found the rates of lifetime substance use disorder and daily tobacco use to be 71% and 77%, respectively.^[21] A study from Canada reported that 44.5% of patients had an incidence of one or more current substance abuse or dependence;^[16] however, their study had not taken into account the use or abuse of tobacco. In this study, if the use of tobacco is not taken into account, the lifetime use of substance drops to about 47% (37 patients). A study from Nepal reported 47.5% prevalence (excluding tobacco) of substance abuse.^[20] A study from India reported 20% prevalence (excluding tobacco) of substance use in this kind of population sample.^[14] The difference could be due to different ethnicity of the sample as our study was based in North India, while that of latter in South India. Another Indian study which also included nicotine reported 54.3% of patients with schizophrenia to be suffering from substance abuse.^[22]

In this study, tobacco was the most commonly used substance with more than half of the patients (55.69%)

reporting its use (out of which 77.27% were smokers), which is higher than the prevalence of tobacco in the general population in India, being 35%.^[23] We found dependence pattern of tobacco use in 20.25% of patients. A meta-analysis estimated prevalence of tobacco users in the first episode of psychosis at 58.9%.^[24] The mean FTND score^[25] for smokers was 3.63 with SD of 1.86, suggesting low-to-moderate physical dependence.

Alcohol use was reported by 40.50% of patients, whereas cannabis use was reported by 8.86%. The prevalence of their use in the general population in India was 21.4% and 3%, respectively.^[26] Among the above factors, harmful use of alcohol was found among 6.32% and alcohol dependence in 20.25% of patients, and the mean AUDIT score was 16.97 with SD 9.97, which was above the cutoff value for hazardous alcohol consumption. The prevalence of alcohol use disorders in the general population was 4.6%.^[27] Patients with psychosis are more prone to abuse alcohol and may become dependent more easily than those without psychosis.^[28] The relatively higher prevalence of alcohol dependence in first-episode psychosis also points to possible psychotogenic effects of alcohol in the onset of psychosis.

Another study had evaluated substance use in 643 patients with first-episode psychosis and found that cannabis-related disorders were the most prevalent (70.6%), followed by polysubstance abuse (16.4%).^[29] The prevalence of cannabis use disorders was substantially lower in the present study when compared to similar studies on first-episode psychosis done across the world which have recorded high rates of up to 65%.^[2,30]

The factors influencing this wide variation in results in different countries could be easy availability, affordability, and cultural acceptability, whereas in urban India, it is not culturally permissible and not readily available (as compared to tobacco and alcohol). Still, the prevalence found in the present study is a cause of concern as a previous study had shown that risk for developing psychosis was doubled in those with cannabis abuse.^[31]

Hartz *et al.* had conducted one of the largest assessments of substance use among individuals with severe psychotic illness and found that the odds of smoking and alcohol, cannabis, and other substance use were dramatically higher than the estimates of substance use in the general population.^[32] An Indian study had also concluded that patients with psychotic illness were 4.5 times more likely to use substances compared to the normal population and were three times more likely compared to those with neurotic illness.^[33]

Substance use was significant in patients those who were diagnosed with schizophrenia, ATPD, persistent delusional disorder, and unspecified nonorganic psychotic disorder ($P < 0.05$). This also shows that mood disorders with psychotic symptoms did not have a significant increase in substance abuse when compared to primary psychotic illness. This also opens opportunities for further research as substance abuse and primary psychotic illness have some common risk factors or anatomical correlations, which is different from the mood disorders.

Substance use was significant among patients who were single as compared to married ($P < 0.05$). The likely reason could be poor social support and high prevalence of psychiatric morbidity in single patients, which reflects possible self-medication with psychoactive substances. In the present study, only 15.19% of the patients had a family history of psychiatric illness. The large percentage of patients without a family history of psychiatric illness suggests that there are other important vulnerability factors which may predispose an individual to the development of psychosis.

There were almost equal percentages of patients diagnosed with ATPD (17.72%), unspecified nonorganic psychotic disorder (17.72%), persistent delusional disorder (16.46%), and schizophrenia (15.19%). Whereas in another study, a large percentage of patients were diagnosed with ATPD (42.4%).^[14] This, along with the fact that in our sample the prevalence of substance use or abuse was found higher than that of the above study, probably shows that substance abuse is equally associated with almost all the major psychotic illnesses, and not just ATPD. Mood disorder-related psychosis is not significantly associated with substance use or abuse [Table 6].

This study was an attempt to assess the magnitude of substance use in first-episode psychotic patients in Indian clinical setting, which has tremendous significance in the management of such illness, particularly known to impact the prognosis adversely. One of the strong points is the real-world clinical setting of GHPU. This was a cross-sectional study which is a major limitation, and a longitudinal study with a larger sample size and community follow-up is recommended for further confirming the findings, to establish any diagnosis shift, treatment response pattern, and its association with substance use. This study was conducted in a hospital, and hence there is an inherent problem of generalizing our findings to the community.

CONCLUSION

The results of the present study show a high prevalence of psychoactive substance abuse when compared with

Table 6: Distribution on the basis of type of substance use and diagnosis

	Diagnosis	Alcohol	Cannabis	Morphine	Tobacco	Multiple
A	Schizophrenia	3	3	0	9	1
B	Persistent delusional disorder	8	0	0	9	0
C	ATPDs	4	1	0	9	1
D	Schizoaffective disorders	1	0	0	1	0
E	Unspecified nonorganic psychosis	5	0	1	0	0
F	Mania with psychotic symptoms	4	0	0	6	0
G	Severe depressive episode with psychotic symptoms	3	0	0	3	0
H	Mental and behavioral disorders due to psychoactive substance use (psychotic disorder)	4	3	0	7	1

ATPDs - Acute and transient psychotic disorders

the prevalence in the general population. This high percentage demands that a thorough history of substance use and its laboratory screening is essential in the cases of treatment-naïve, first-episode psychosis, and further appropriate treatment of comorbid status needs to be addressed, as it affects the course of illness, response, and chances of relapses.

Because the availability and abuse of illicit substances are increasing with change in population trends and availability of newer psychotropic substances, this study findings recommend a comprehensive attempt to delineate substance abuse and routine urine screening for psychoactive substance detection among patients with first-episode psychosis as a significant fraction of first-episode psychotic patients abuse variable substances. Preventive measures in this class of patients and their family should be aimed at additional psychoeducation/information regarding the adverse effects of psychoactive substance abuse, especially in young adults, and need of early reporting to treatment facility if individual shows symptoms of behavioral abnormality.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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