Substance Use in Psychotic Individuals-Case Control Study

Dr. Clinton Castelino, Dr. Supriya Hegde Aroor

Father Muller Medical College and Hospital, Kankanady, Karnataka, India

Abstract: *Introduction: Substance use disorder is a burdensome condition which often coexists in patients with psychiatric disorders, but are often undetected (1, 2). Addiction and psychosis both have a dopamine dysregulation-related etiology and involves experiences of dissociation from the real world (1). Patients with psychotic disorders are considerably likely and have higher rates of substance abuse when compared to other psychiatric disorders or the general population. Objective: To determine the type and severity of substance use in psychotic patients and also to compare them with controls. Method: A case control study was conducted among 33 cases and controls. All the participants were screened using Mini International Neuropsychiatric Interview (M. I. N. I) scale and WHO Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). Chi square test/ Fishers exact test was used to compare study variables among cases and controls. P value <0.05 was considered to be statistically significant. Results: Among the cases 13.6% were alcohol dependent, 18.2% were substance dependent and 16.7% were substance abusers. Among controls 7.6% were substance abusers and only 1.5% were alcohol abusers. Among the cases 3% need intensive treatment for tobacco, cannabis and 6.1% for Alcohol. Almost 19.6% need brief intervention for tobacco followed by alcohol (6.1%), sedatives (3.1%), cocaine and Amphetamine (1.5%) Conclusion: Substance dependence and abuse was observed in psychotic patients indicating the importance of timely intervention, in understanding what started first and to take necessary steps in preventing the illness and the use of substances.*

Keywords: Substance use disorders, psychotic individuals

1. Introduction

Substance use disorder is a burdensome condition which often coexists in patients with psychiatric disorders, but are often undetected (1, 2). Addiction and psychosis both have a dopamine dysregulation-related etiology and involve experiences of dissociation from the real world (1). Patients with psychotic disorders are considerably likely and have higher rates of substance abuse when compared to other psychiatric disorders or the general population (3, 4). Substance use disorder in psychotic patients can affect the natural history of disease, disease recurrence, patient quality of life, and treatment compliance (5). They are more likely to have higher rates of hospitalization, homelessness, aggression, criminal offences, unemployment, violence, incarceration and suicidality (2, 6). It also increases the burden of the disease, deteriorates the outcome, and increases morbidity and mortality (1).

Although the impact of drug use during the phase of psychosis is yet unknown and is complicated due to factors including stigma, restrictions imposed by law and respondents reluctant to disclose the status of their substance use (1, 7). Thus, the study aims to determine the type and severity of substance use in psychotic patients and also to compare them with controls.

2. Materials and Method

A case control study was conducted in Father Muller Medical College Hospital, Mangalore from June 2022 to August 2022. The sample size was calculated considering the prevalence of substances used as 56.2% and 22.5% among cases and controls (2) with 80% statistical power. The estimated sample size was 33 cases and controls. The cases were the individuals who visited the outpatient department and were diagnosed with psychosis, aged between 18 to 60 years. Controls were healthy individuals accompanying the patients, with no history of major psychiatric illnesses. Patients with uncontrolled medical conditions and those not willing to consent were also excluded from the study. The study commenced after obtaining Ethical clearance. Written informed consent was obtained from the study participants.

A semi-structured proforma was used to collect information on sociodemographic variables. All the participants were screened using Mini International Neuropsychiatric Interview (M. I. N. I) scale (8). The participants were assessed for current substance use using The WHO Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) version 3.1. It was developed by the World Health Organization (WHO), to evaluate the impact of psychoactive substance use or risky substance use in adults. It consists of eight questions covering the usage of tobacco, alcohol, cannabis, cocaine, amphetamine-type stimulants (including ecstasy), inhalants, sedatives, hallucinogens, opioids and 'other drugs'. Each substance has a risk score, which is categorised as "low risk, " "moderate risk, " or "high risk. " The recommended level of intervention is determined by the risk score (9).

Statistical Analysis
The data was analysed using the SPSS version 25.0. Categorical variables were presented as frequencies and percentages. Chi square test/ Fisher's exact test was used to compare study variables among cases and controls. P value <0.05 was considered to be statistically significant.

3. Results

A total of 33 cases and 33 controls were included in the study. Equal distribution between gender was observed in both the groups. Most (68.2%) belonged to the age group of 26 to 40 years, having education level up to primary. Almost three fourth were hailing from a rural background and were

from the middle socioeconomic status. While comparing the cases and controls with sociodemographic variables, there was significant difference in age group (p value= 0.015), socio economic status (p value =0.026) and the association was found to be statistically significant. (Table 1)

Among the cases 13.6% were alcohol dependent, 18.2% were substance dependent and 16.7% were substance abusers. Among controls 7.6% were substance abusers and only 1.5% were alcohol abusers. While considering the cases, 8 were nicotine dependent and abusers, 2 were Cannabis dependent and abusers and 2 were Benzodiazepines dependent and 1 study participant was a Benzodiazepines abuser. Among controls nicotine was used by 3 individuals, Cannabis by 1 individual and Benzodiazepines by 1 individual. Among the 33 cases 10.6% had current episode of psychotic disorder (Table 2).

Table 1: Comparison of study variables with cases and controls, n=66

Study variables		Cases (n=33)	Controls (n=33)	Total (n=66)	P value
Gender	Female	15 (22.7)	15 (22.7)	30 (45.5)	1.00
	males	18 (27.3)	18 (27.3)	36 (54.5)	
Age group	18-25	3 (4.5)	1 (1.5)	4 (6.1)	0.015*
	26-40	17 (25.8)	28 (42.4)	45 (68.2)	
	41-60	13 (19.7)	4 (6.1)	17 (25.8)	
Education level	Primary	12 (18.2)	13 (19.7)	25 (37.9)	-
	Secondary	4 (6.1)	0	4 (6.1)	
	Higher secondary	9 (13.6)	14 (21.2)	23 (34.8)	
	Graduate and above	8 (12.1)	6 (9.1)	14 (21.2)	
Locality	Rural	23 (34.8)	26 (39.4)	49 (74.2)	0.398
	Urban	10 (15.2)	7 (10.6)	17 (25.8)	
Occupation	Unemployed	5 (7.6)	10 (15.2)	15 (22.7)	-
	Unskilled	2 (3.0)	0	2 (3.0)	
	Semiskilled	8 (12.1)	7 (10.6)	15 (22.7)	
	Skilled	10 (15.2)	12 (18.2)	22 (33.3)	
	Professional	8 (12.1)	4 (6.1)	12 (18.2)	
Marital status	Unmarried	3 (4.5)	1 (1.5)	4 (6.1)	-
	Married	28 (42.4)	27 (40.9)	55 (83.3)	
	Married & separated	2 (3.0)	1 (1.5)	3 (4.5)	
	Divorced	0	2 (3.0)	2 (3.0)	
	Widow	0	2 (3.0)	2 (3.0)	
Socio economic status	Lower class	2 (3.0)	7 (10.6)	9 (13.6)	0.026*
	Middle class	22 (33.3)	24 (36.4)	46 (69.7)	
	Upper class	9 (13.6)	2 (3.0)	11 (16.7)	
Religion	Hindu	11 (16.7)	16 (24.2)	27 (40.9)	0.389
	Muslim	15 (22.7)	13 (19.7)	28 (42.4)	
	Christian	7 (10.6)	4 (6.1)	11 (16.7)	
Type of family	Nuclear	12 (18.2)	18 (27.3)	30 (45.5)	0.228
	Joint	14 (21.2)	12 (18.2)	26 (39.4)	
	Extended	7 (10.6)	3 (4.5)	10 (15.2)	

Table 2: Comparison of psychiatric disorder among cases and controls

| Psychiatric disorder		Cases (n=33)	Controls (n=33)	Total (n=66)	P value
Alcohol dependence	Yes	9 (13.6)	0	9 (13.6)	-
	No	24 (36.4)	33 (50.0)	57 (86.4)	
Alcohol abuse	Yes	0	1 (1.5)	1 (1.5)	-
	No	33 (50.0)	32 (48.5)	65 (98.5)	
Substance dependence	Yes	12 (18.2)	0	12 (18.2)	-
	Nicotine	8	0		
	Cannabis	2	0		
	Benzodiazepines	2	0		
	No	21 (31.8)	33 (50.0)	54 (81.8)	
Substance abuse	Yes	11 (16.7)	5 (7.6)	16 (24.2)	0.085
	Nicotine	8	3		
	Cannabis	2	1		
	Benzodiazepines	1	1		
	No	28 (42.4)	22 (33.3)	50 (75.8)	
Psychotic disorder-lifetime	Yes	33 (50)	0	33 (50)	-
	No	0	33 (50)	33 (50)	
Psychotic disorder-current	Yes	7 (10.6)	0	7 (10.6)	-
	No	26 (39.4)	33 (50.0)	59 (89.4)	

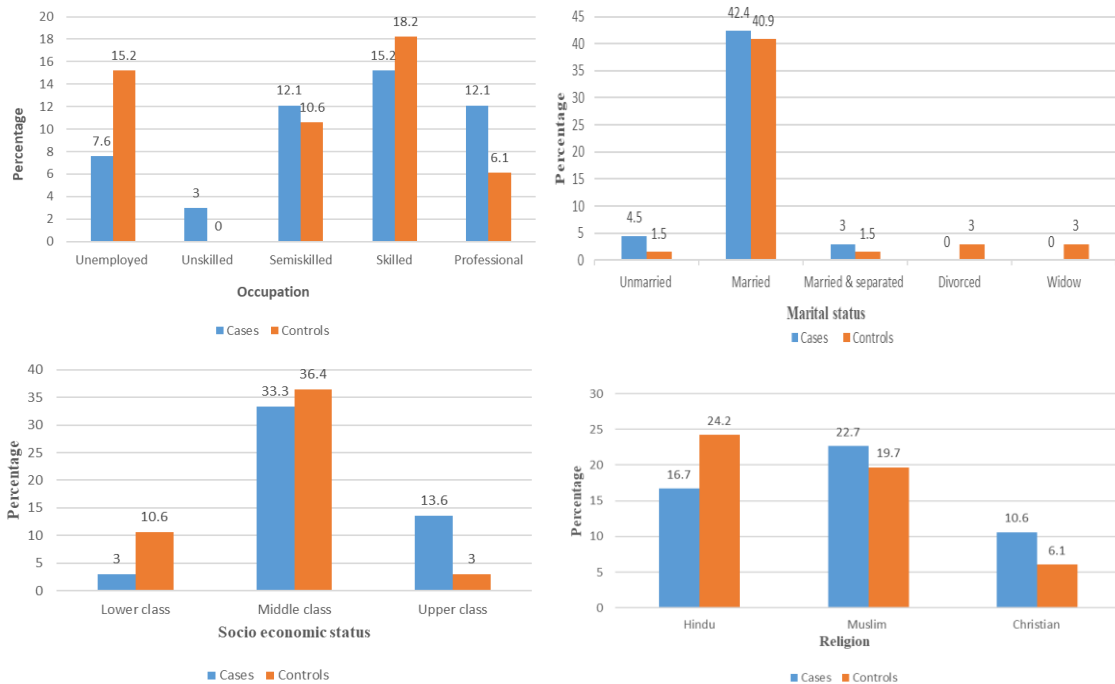|	Substance dependence N=12		Substance abuse N=16	
	Cases	control	Cases	control
Nicotine	8	0	8	3
Cannabis	2	0	2	1
Benzodiazepines	2	0	1	1

Table 3: Comparison of ASSIST among cases and control

Assist		Cases (n=33)	Controls (n=33)	Total (n=66)
Tobacco	No intervention	18 (27.3)	26 (39.4)	44 (66.7)
	Receive brief intervention	13 (19.6)	7 (10.6)	20 (30.3)
	More intensive treatment	2 (3.0)	0	2 (3.0)
Alcohol	No intervention	25 (37.9)	31 (47.0)	56 (84.8)
	Receive brief intervention	4 (6.1)	2 (3.0)	6 (9.1)
	More intensive treatment	4 (6.1)	0	4 (6.1)
Cannabis	No intervention	31 (47.0)	33 (50.0)	64 (97.0)
	More intensive treatment	2 (3.0)	0	2 (3.0)
Cocaine	No intervention	32 (48.5)	33 (50.0)	65 (98.5)
	Receive brief intervention	1 (1.5)	0	1 (1.5)
Amphetamine	No intervention	32 (48.5)	33 (50.0)	65 (98.5)
	Receive brief intervention	1 (1.5)	0	1 (1.5)
Inhalants	No intervention	33 (50)	66 (50)	66 (100.0)
Sedatives	No intervention	31 (46.9)	66 (50)	97 (96.9)
	Receive brief intervention	2 (3.1)	0	2 (3.1)

Table 3, The cases and controls were assessed for current substance use using The Alcohol, Smoking and Substance Involvement Screening Test. The results showed that among the cases 3% need intensive treatment for tobacco and cannabis and 6.1% for Alcohol. Almost 19.6% need brief intervention for tobacco followed by alcohol (6.1%), sedatives (3.1%), cocaine and Amphetamine (1.5%). Among controls brief intervention is required for tobacco (10.6%) and alcohol (3%).
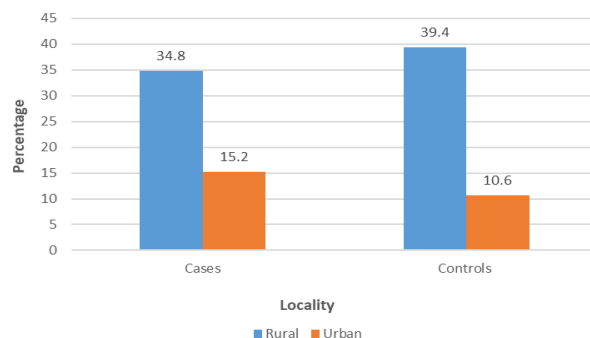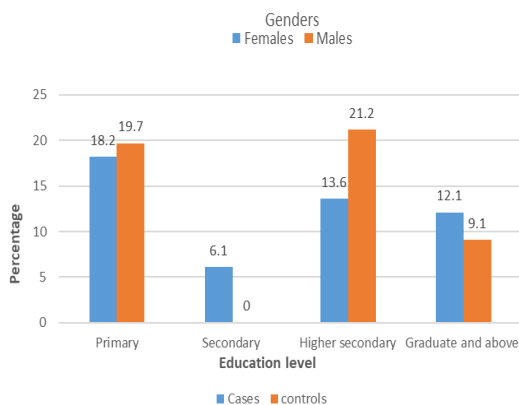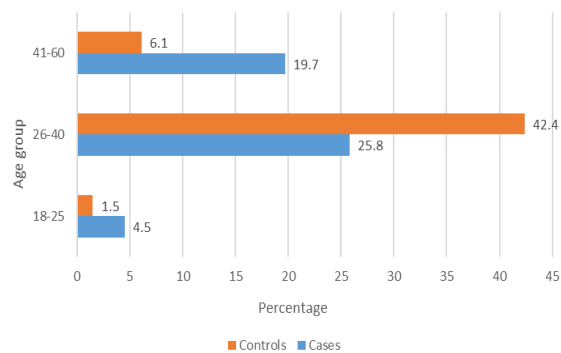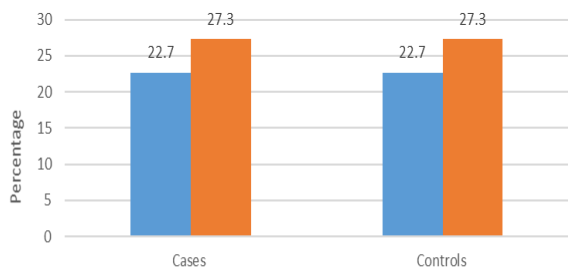
4. Discussion

In the present study, it was observed that substance abuse and substance dependence were more in psychotic patients compared to the non-psychotic control group. Substance use and psychosis have a very close relationship. Individual abusing substances may end up in the development of psychosis and other Behavioral changes (7, 10). As per a survey conducted by the National Drug Dependence Treatment Centre, All India Institute of Medical Sciences, New Delhi, alcohol is the most common substance used followed by cannabis and opioids (11). However, many of the earlier pieces of literature quote that nicotine is the most common substance used by schizophrenic patients (5). Any substance use may lead to its dependency on prolonged usage. Psychotic patients may choose a substance as a way to overcome their mental illness and over time may totally be dependent on this substance. Among the substances, nicotine was commonly used by most of the psychotic patients in the present study. This current observation is in accordance with an earlier study by Gupta et al., where tobacco was the substance used by mentally ill patients (12). In another study cannabis was the substance used by the majority of schizophrenic patients (13). In the present study, the prevalence of substance dependence in psychotic patients was high compared to substance abuse. The rate of tobacco smoking was found to be 2-3 times more in psychotic patients compared to non-psychotic individuals (14). Nicotine is a stimulant enhancer, so smoking nicotine may be used as a self-medication option by the psychotic patients (14). Nicotine is an enzyme inducer and the patient with psychosis using nicotine substance may require higher doses of medications (16). Also other lifestyle illnesses like metabolic syndrome in psychotic patients will worsen the progression of the illness, when they are using substances (17). There is a strong genetic overlapping between smoking nicotine and schizophrenia associated with $\alpha2$ (8p21), $\beta2$ (1q21) and $\alpha7$ (15q14) nicotinic receptor subunits (18). Studies say that the abnormal expression of NMDA receptor and its interacting molecules of the postsynaptic density in schizophrenia will be normalized by smoking nicotine (18). A single blind study showed that the akathisia induced by antipsychotic medications in non-smoker psychotic patients were significantly reduced by applying 14 mg of nicotine patches (19).

The present study opined that the majority of the psychotic alcohol and nicotine users need intervention to come out of this dependency. The present observation is supported by an earlier documented study, where alcohol and other substance abuse were commonly found in psychotic patients, which emphasized the need for de-addiction intervention (15). In this regard, an interesting conclusion of a study by Padhy et al is worth mentioning here, in which it was said that inclusion of certain substances in the treatment regimen may help in treating difficult-to-treat patients, thus it exploits the benefit of these substances in controlling the conditions of such patients (4).

5. Conclusion

Substance dependence and abuse was observed in psychotic patients indicating the importance of timely intervention, in understanding what started first and to take necessary steps in preventing the illness and the use of substances.

6. Strengths and Limitations

Many a times patients are treated for the primary psychotic disorder ignoring for the other things like comorbid substance use which determines the overall outcome. So in this case we are looking for the comorbid substance use and the need for intervention that will be a holistic approach. Strength of the study is that there is a control group in this study and this study has used the standard scales and the screening of all substances has been done.

The Limitations of this study is that the sample size is less. It's not a prospective study. No intervention could be done for many of the psychotic patients.

References

[1] Mousavi SB, Higgs P, Piri N, Sadri E, Pourghasem M, Fakhari SJ, Noroozi M, Miladinia M, Ahounbar E, Sharhani A. Prevalence of substance use among psychotic patients and determining its strongest predictor. Iranian Journal of Psychiatry.2021 Apr; 16 (2): 124.

[2] Srivastava M, Jain S, Patel A. Substance use among outdoor treatment-seeking patients with mental illness: A case–control study from a tertiary care hospital of northern India. J Edu Health Promot 2018; 7: 75.

[3] Corvin A, O'Mahony E, O'Regan M, Comerford C, O'Connell R, Craddock N, Gill M. Cigarette smoking and psychotic symptoms in bipolar affective disorder. The British Journal of Psychiatry.2001 Jul; 179 (1): 35-8.

[4] Padhy SK, Sarkar S, Basu D, Kulhara P. Self-medication hypothesis in substance-abusing psychotic patients: Can it help some subjects? Indian Journal of Social Psychiatry.2016; 32 (4): 325-3331

[5] Tekinuludag Y., Gulec G. Prevalence of substance use in patients diagnosed with Schizophrenia. Noro Psikiyatr Ars.2016 Mar; 53 (1): 4-11. doi: 10.5152/npa.2015.8827

[6] Hunt GE, Large MM, Cleary M, Lai HM, Saunders JB. Prevalence of comorbid substance use in schizophrenia spectrum disorders in community and clinical settings, 1990–2017: Systematic review and meta-analysis. Drug and alcohol dependence.2018 Oct 1; 191: 234-58.

[7] Addington J, Case N, Saleem MM, Auther AM, Cornblatt BA, Cadenhead KS. Substance use in clinical high risk for psychosis: a review of the literature. Early Interv Psychiatry.2014 May; 8 (2): 104-12. doi: 10.1111/eip.12100.

[8] Sheehan DV, Lecrubier Y, Sheehan KH, et al. (1998). "The Mini-International Neuropsychiatric Interview (M. I. N. I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10". J Clin Psychiatry.59 (Suppl 20): 22–33.

[9] Humeniuk R, Ali R, Babor TF, Farrell M, Formigoni ML, Jittiwutikarn J, De Lacerda RB, Ling W, Marsden J, Monteiro M, Nhiwatiwa S. Validation of the alcohol, smoking and substance involvement screening test (ASSIST). Addiction.2008 Jun; 103 (6): 1039-47.

[10] Khokhar J. Y., Dwiel L., Henricks A., Doucette W. T., Green A. I. The link between schizophrenia and substance use disorder: A unifying hypothesis. Schizophr Res.2018 April; 194: 78–85. doi: 10.1016/j. schres.2017.04.016

[11] Singh O. P. Substance use in India-Policy implications. Indian J Psychiatry.2020 Mar-Apr; 62 (2): 111. doi: 10.4103/psychiatry. IndianJPsychiatry_207_20

[12] Gupta A, Gauba D, Bhatia T, Deshpande SN. A study of tobacco and substance abuse among mentally ill outpatients in a tertiary care general hospital. J Mental Health Hum Behav.2016; 21: 117-121

[13] Condren RM, O'Connor J, Browne R. Prevalence and pattern of substance misuse in schizophrenia – A catchment area case-control study. Psychiatric Bulletin.2001; 25: 17-20

[14] Quigley H., MacCabe J. H. The relationship between nicotine and psychosis. Ther Adv Psychopharmacol.2019; 9: 20

[15] Aggarwal M., Banerjee A., Singh S. M., Mattoo S. K., Basu D. Substance-induced psychotic disorders: 13-year data from a de-addiction centre and their clinical implications. Asian Journal of Psychiatry.2012Sept; 5 (3): 220-224

[16] Zevin S, Benowitz NL. Drug interactions with tobacco smoking. An update. Clin Pharmacokinet.1999 Jun; 36 (6): 425-38. doi: 10.2165/00003088-199936060-00004. PMID: 10427467.

[17] Virmani A, Binienda ZK, Ali SF, Gaetani F. Metabolic syndrome in drug abuse. Annals of the New York Academy of Sciences.2007 Dec; 1122 (1): 50-68.

[18] Leonard S, Mexal S, freedman R. Smoking, Genetics and Schizophrenia: Evidence for self Medication. J Dual Diagn.2007 Nov1; 3 (3-4): 43-59. doi: 10.1300/J374v03n03_05. PMID: 19122786; PMCID: PMC2613326.

[19] Anfang, M., Pope Jr., H. treatment of neuroleptic-induced akathisia with nicotine patches. Psychopharmacology134, 153-156 (1997). https: //doi. org/10.1007/s002130050436.