



<https://africanjournalofbiomedicalresearch.com/index.php/AJBR>

Afr. J. Biomed. Res. Vol. 27(3s) (October); 3525 – 3531

Research Article

The Study On Prevalance Of Substance Use Disorder In Schizophrenic Patients

Dr. Gouthami SG¹, Dr.Manovijay B Kalasagond², Dr Darshan Yallappa Jotibannad^{3*}

¹Senior resident, Department of psychiatry, Shri B M Patil medical College, Hospital and Research centre, Vijayapura

²Associate Professor, Department of Psychiatry, Shri B.M.Patil Medical College, Hospital and Research Centre. Vijayapura

^{3*}Assistant professor department of psychiatry, Shri Atal Bihari Vajpayee Medical College and Research Institute, Bengaluru

***Corresponding author:** Dr Darshan Yallappa Jotibannad

*Email: darshanjotibannad@gmail.com, 7892072620

Abstract

Introduction: The high frequency of co-occurring substance use disorder in schizophrenia is linked to an increased risk of illness and injury. Primary prevention and early treatment of SUD in patients with schizophrenia are still relatively neglected.

Aim: this study would help us understand the significance of dual diagnosis and aid to reduce relapses, improve treatment compliance, functioning, and outcome in schizophrenia patients.

Methods: This is a Cross-Sectional Observational study including 100 patients with a history suggestive of schizophrenia attending the Psychiatry OPD. The enrolled patients giving consent for the study were assessed for the relevant tests including AUDIT, FTND, and DAST-10.

Results: There was a statistically significant positive correlation between FTND scores and positive scores of PANSS at the 0.05 level (2-tailed). The correlation between FTND scores and negative scores of PANSS, and FTND scores and PANSS general psychopathology scores was not significant.

Discussion: The study results were in correlation with other studies the plausible explanation for the increase in positive symptoms could be role of nicotine in boosting dopamine levels in the mesolimbic pathway and accelerating anti-psychotic metabolism.

Conclusion: This study concludes that the patients with schizophrenia should be routinely screened for the presence of a co-occurring SUD. Addressing the comorbidity of substance abuse in schizophrenia has important clinical implications for preventing and treating these two disorders and decreasing morbidity and mortality.

***Author for correspondence: Email:** darshanjotibannad@gmail.com

Received: 10/09/2024

Accepted: 15/10/2024

DOI: <https://doi.org/10.53555/AJBR.v27i3S.2979>

© 2024 The Author(s).

This article has been published under the terms of Creative Commons Attribution-Noncommercial 4.0 International License (CC BY-NC 4.0), which permits noncommercial unrestricted use, distribution, and reproduction in any medium, provided that the following statement is provided. "This article has been published in the African Journal of Biomedical Research"

Introduction

Substance use disorder (SUD) is the diagnostic term for the prolonged use and abuse of a substance. Abuse can be defined as the “Use of any drug, usually by self-administration, in a manner that deviates from approved social or medical patterns”.

[1] Dependence syndrome, as defined in ICD 10 is “A cluster of physiological, behavioral, and cognitive phenomena in which the use of a substance or a class of substances takes on a much higher priority for a given individual than other behaviours that once had greater value”. [2]

According to the National Survey of Drug Use and Health (NSDUH), 2017, conducted in the United States, more than 19 million persons older than the age of 12 years (about 7 percent of the total US population) had a substance-related disorder in the past year.[3] According to a national survey conducted by All India Institute of Medical Sciences, New Delhi, in 2019, alcohol was the most common substance used followed by cannabis and opioids. The prevalence of alcohol use was 4.6%, with male: female ratio being 17:1, followed by cannabis at 2.8% and opioids at 2.1%.[4]

SUD are chronic, relapsing disorders, which affect various aspects of physical, psychological, and socio-occupational functioning. They are quite prevalent and pose a huge burden on society[5] People seeking treatment for alcohol, cocaine, or opioid dependence have a high prevalence of additional psychiatric disorders. [3] Rates of substance use disorder in schizophrenics range from 30 to 70 %.[6] Results from the Epidemiologic Catchment Area (ECA) study show that schizophrenia ranks second in rates of substance abuse comorbidity. These studies also found that schizophrenics are 4.6 times more likely to have substance use disorders than persons without mental illness.[7,8] Family history and the temporal relationship of symptoms can help to distinguish patients with a SUD alone from co-occurring schizophrenia and SUD.[9]

The high frequency of co-occurring substance use disorder in schizophrenia is linked to an increased risk of illness and injury.[10] Apart from impaired cognitive functioning during intoxication, substance misuse is associated with poorer outcomes in psychosis and higher rates of presentation to inpatient and emergency services.[11] Primary prevention and early treatment of SUD in patients with schizophrenia are still relatively neglected, though they offer our greatest hope for enhancing the lives of these patients and improving the cost & efficacy of care. [12] Hence, this study would help us understand the significance of dual diagnosis and how it can help reduce relapses, improve treatment compliance, functioning, and outcome in schizophrenia patients.

Materials and methods: This is a Cross-Sectional Observational study including the patients with a history suggestive of schizophrenia attending or referred to Psychiatry OPD, at Basaveshwara Teaching and General

Hospital attached to H.K.E. Society’s Mahadevappa Rampure Medical College, Kalaburagi. The study was done during the period of 1st March 2021 - 31st August 2022 (18 months) on 100 patients selected by simple random sampling method. We included Schizophrenia cases fulfilling the criteria of the International classification of diseases – 10 (ICD 10) of age more than 18 years of all gender. This study excluded patients fulfilling ICD 10 criteria for any other comorbid major psychiatric disorder except substance use disorder and Patients being grossly uncooperative for a meaningful assessment (e.g., mental retardation, in acute intoxication or withdrawal, mute). Written informed consent was taken from the patients and patient’s relatives in their own vernacular language. The enrolled patients giving consent for the study were assessed for the relevant tests including PANSS, AUDIT FTND, and DAST-10. PANSS is a 30-item, 7-point rating scale. It was conceived as a carefully defined and operationalized method that evaluates positive, negative, and other symptom dimensions on the basis of a formal semi-structured interview and other informal sources. Alcohol use disorder Identification test (AUDIT) is a simple, 10-item questionnaire used for screening and classifying alcohol drinkers. Drinkers are classified as low risk (scores 0–7), increased risk (scores 8–15), high risk (scores 16–19) and dependent drinker (scores 20–40). AUDIT scores of >8 is referred to as hazardous or harmful use. Fagerstrom’s test for nicotine dependence (FTND) contains six items that evaluate the quantity of cigarette consumption, the compulsion to use, and dependence. The higher the total score, the more intense is the patient's physical dependence on nicotine. Drug abuse screening test – 10 (DAST – 10) is a 10-item brief screening tool that can be administered by a clinician or self-administered.

The data collected was analysed statistically by using IBM SPSS software 20.0. For quantitative data analysis t-test and ANOVA test were applied. For qualitative data analysis Chi square test was applied. For statistical significance, P value of less than 0.05 was considered as significant.

Results

This cross sectional study including 100 schizophrenia patients assessed for sociodemographic profile and clinical variables using appropriate tests. Out of 100 study population, 44(44.0%) had a family history of substance abuse and 56(56.0%) had no family history of substance abuse (Table 1). Mean PANSS scores were 24.40±6.564 on the positive subscale (Table 2), 14.40±4.018 on the negative subscale, 36.36±5.649 on the general psychopathology subscale, and 75.15±10.290 on the total score (Table 2). Out of 100 study population, 47 (47.0%) had substance abuse in their lifetime and 53 (53.0%) had no substance abuse in their lifetime. Among 47 schizophrenics who had substance abuse, 22 (22.0%) abused alcohol, 42 (42.0%) abused nicotine and 4 (4.0%) abused cannabis (Table 3). There was a statistically significant positive correlation between FTND scores and positive scores of PANSS at the 0.05 level (2-tailed) (Figure 2). The correlation between FTND scores and negative scores of PANSS

was not statistically significant (Figure 3). The correlation between FTND scores and PANSS general psychopathology scores was not significant (Figure 4).

Table 1: Distribution of Study Population based on the Family history of Substance abuse

Family history of Substance abuse	Number of cases	Percentage
Absent	56	56.0
Present	44	44.0
Total	100	100.0

Table 2: PANSS scores of the study sample

PANSS SCORE	MEAN	STANDARD DEVIATION
Positive score	24.40	6.564
Negative score	14.40	4.018
General psychopathology score	36.36	5.649
Total PANSS score	75.15	10.290

Figure 1: The pie chart shows the distribution of Study Population based on the prevalence of substance abuse

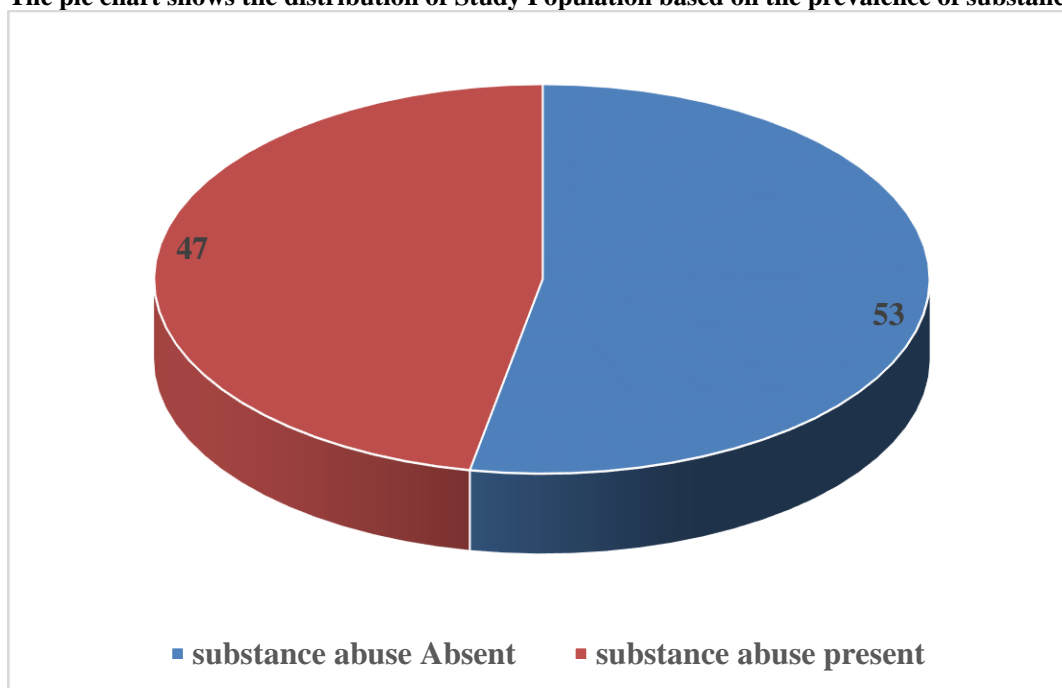


Table 3: Distribution of Study Population based on the type of Substance abused by Substance Abusing Schizophrenics

Substances	Substance-abusing schizophrenics (SAS) N=47	Percentage	Total sample N=100	Percentage
Alcohol	22	46.80	22	22.0
Nicotine	42	89.36	42	42.0
Cannabis	4	8.51	4	4.0

FIGURE 2: Correlation between FTND scores and PANSS positive scores showing a positive correlation

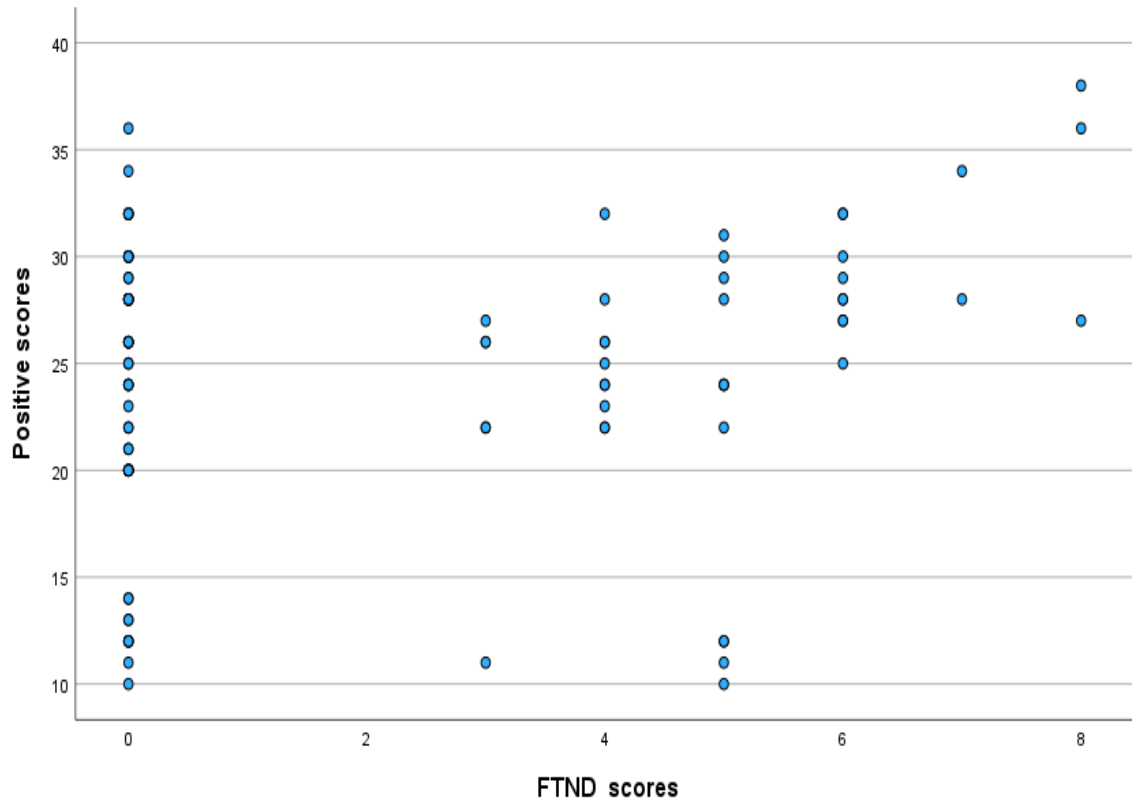


FIGURE 3: Correlation between FTND scores and PANSS Negative scores

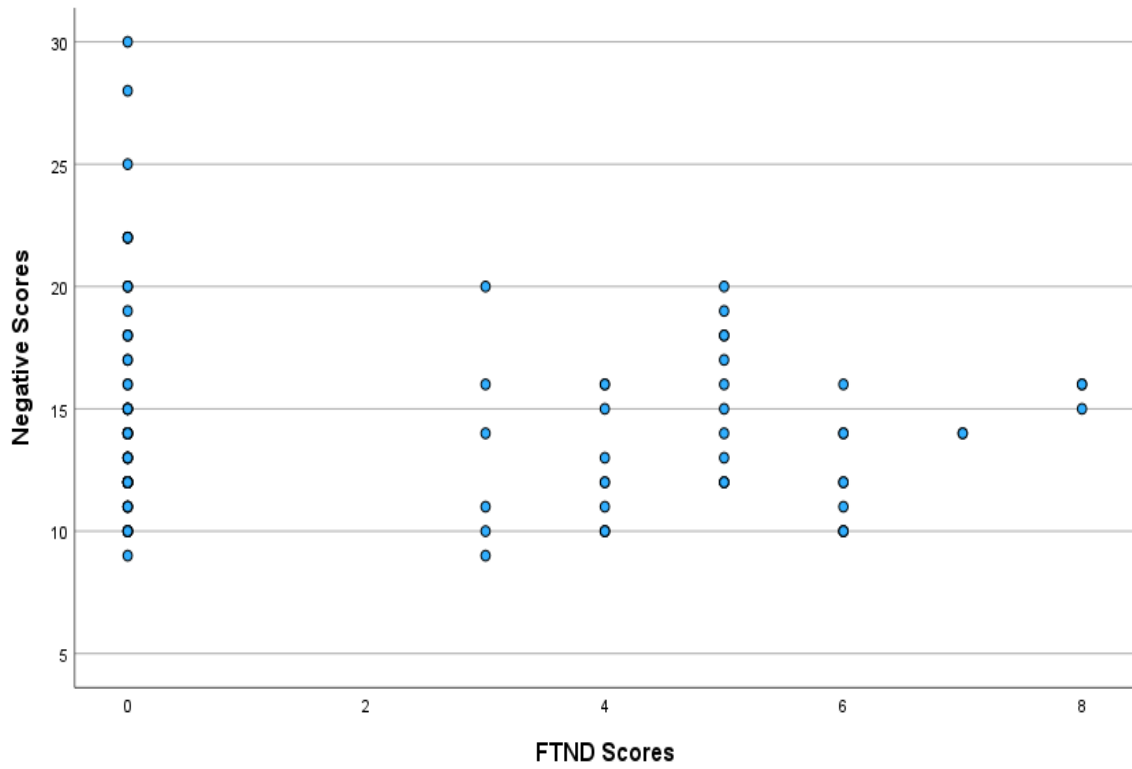
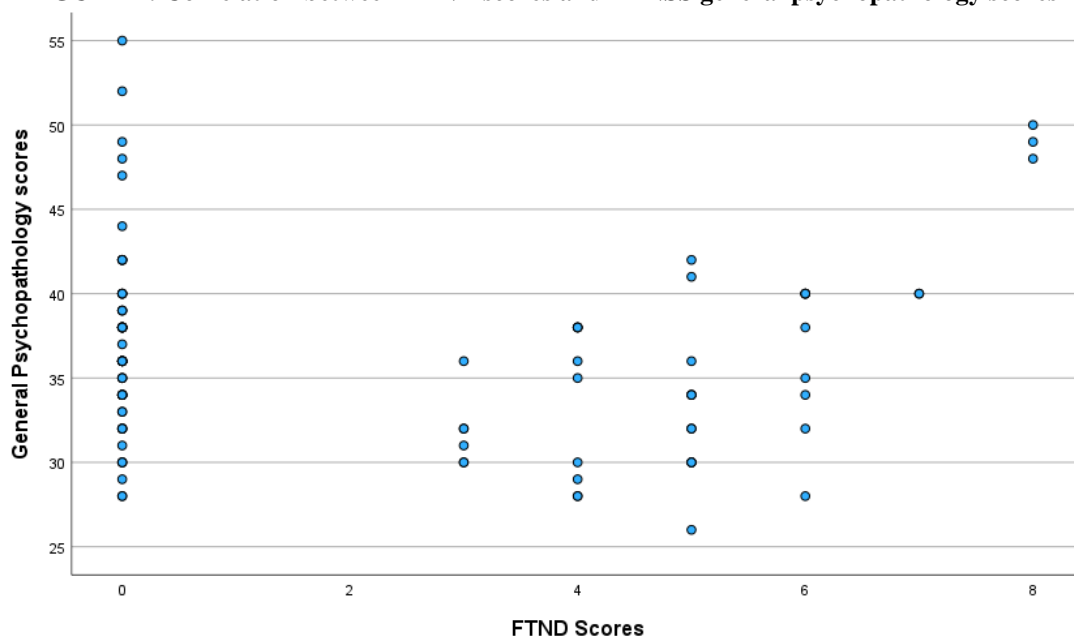


FIGURE 4: Correlation between FTND scores and PANSS general psychopathology scores



Discussion

The present study is a cross-sectional observational study conducted on schizophrenia patients attending or referred to Psychiatry OPD, at Basaveshwara Teaching and General Hospital, Kalaburagi attached to Mahadevappa Rampure Medical College, Kalaburagi. Our study aimed to assess the prevalence of substance use disorder in schizophrenia patients, the socio-demographic profile of schizophrenia patients, and to correlate clinical profile and substance use in schizophrenia patients in our epidemiological area.

In the present study, out of 100 study population, 47 (47.0%) had substance abuse in their lifetime and 53 (53.0%) had no substance abuse in their lifetime which is similar to a study conducted by Parisha Narayan Kelkar et al., (2020) in which 48% (n=48) were found to have substance abuse in their lifetime [13] and E. Cantor-Graae et al (2001), in which 48.3% (n=42) had a lifetime prevalence of substance abuse. [14] Tapas k aich, et al (2004) reported 54.3% (n=38) [15] and Addington J et al (2007) reported 51% (n=104) comorbid substance abuse in their respective schizophrenia population. [16] Individuals with schizophrenia have more than twofold increased risk of having a substance use disorder compared to the general population. [9]

In our study, among 47 schizophrenics who had substance abuse, 42 (42.0%) abused nicotine, 22 (22.0%) abused alcohol, and 4 (4.0%) abused cannabis which is similar to a study conducted by Parisha Narayan Kelkar et al., (2020) in which 26% abused alcohol and 44% abused nicotine. [13] Similar findings were noted in a study conducted by Rudraprosad Chakraborty, et al, (2014) in which 57.3% (= 82) abused nicotine, 17.5% (= 25) abused cannabis, 11.2% (= 16) abused alcohol and 0.7% (n=1) abused solvent. [17] In a study conducted by Addington J et al (2007) in Canada among 203 patients, 51% (n=104) had substance use disorder (SUD), 33% (n=67) with cannabis SUD, and 35% (n=71) with an

alcohol SUD. [16] The frequency of use is probably related to the ease of access to, availability, and affordability of these substances. [18]

In our study, the mean age of the substance abuse group was 35.28 ± 8.744 which was more when compared to the mean age of the non-substance abuse group which was 33.66 ± 10.795 , which is comparable with that of Tapas k aich et al (2004) where the mean age of substance abuse group was 31.5 ± 5.9 and non-substance abuse group was 30.5 ± 7.7 . [15] In a study conducted by Rudraprosad Chakraborty et al (2014), the mean age of the substance abuse group was 31.01 ± 8.16 and the non-substance abuse group was 27.84 ± 7.41 . [17] With the increase in age, patients accumulate experience with their psychotic illness and tend to learn maladaptive coping mechanisms like substance abuse to counteract their psychotic symptoms and side effects of antipsychotics, thus making them more dependent on the substances. [19]

Out of 59 males, 39 (66.1%) had comorbid substance abuse, and among 41 females, 8 (19.5%) had comorbid substance abuse. There is a statistically significant difference between substance abusers and non-substance abusers in terms of sex. Males abused both alcohol and nicotine while females abused nicotine only. Our results are similar to a study conducted by Parisha Narayan Kelkar et al (2020) in which 38 (79.2%) out of 49 (49%) males and 10 (20.8%) out of 51 (51%) females abused substances. [13] These findings are consistent with the general population as well. [18] The reason could be due to cultural factors in our region, where substance use among females is unacceptable. [19,20]

In the present study, Substance abuse was more in rural areas (n=27; 57.44%) when compared to urban areas (n=20; 42.5%). The results were similar to Tapas k aich, et al (2004) in which out of 70 schizophrenics, 40 (57.1%)

were from rural areas and 30 (42.9%) were from urban areas and substance abuse was also more in rural areas (n=26;68%) when compared to urban areas (n=12; 32%).[15] A study conducted by Parisha Narayan Kelkar et al., (2020) also reported a preponderance of substance abuse among rural patients.[13] The National mental health survey, India, 2015-16 reported that the burden of SUDs, contributed mainly by alcohol and tobacco, was more in rural areas (24.12%).[18] This shows that our findings were consistent with general population as well. The high prevalence of substance misuse in rural areas may be attributed to factors such as a high proportion of families below poverty line, illiteracy, scarcity of readily available resources, and low awareness regarding health.[18,19]

In our study, the mean score on the positive subscale in substance abusers (25.66 ± 6.32) was more when compared to non-substance abusers (23.28 ± 6.63) which is comparable to Rudraprosad Chakraborty et al (2014) in which substance abusing schizophrenics had mean PANSS positive score of 23.83 ± 6.41 while non-substance abusing schizophrenics scored 23.94 ± 6.19 [17] and Parisha Narayan Kelkar et al(2020) in which substance abusers had higher PANSS positive scores (16.16 ± 5.96) than those who did not have substance abuse (13.05 ± 4.19).[13] Similar findings were observed in studies conducted by Tapas K. Aich, et al (2004)[15], Thomas R. E. Barnes et al (2006)[21], and Amal Abdel-Baki et al (2016)[6]. The mesolimbic dopamine pathway has been linked not only to the rewarding mechanism for all substances of abuse, but also to the occurrence of positive symptoms in schizophrenia, implying that substances worsen positive symptoms in schizophrenics.[22]

In the present study, the mean score on the negative subscale in substance abusers (13.64 ± 2.94) was less when compared to non-substance abusers (15.08 ± 4.763). These findings were similar to Parisha Narayan Kelkar et al(2020), in which the mean PANSS negative score was 14.79 ± 5.19 in substance abusers and 15.13 ± 5.62 in non-substance abusers [13] and Latha SP et al (2019) in which the mean scores on the negative domain of the PANSS scale in nicotine abusers (20.075 ± 8.206) was lower than non-nicotine abusers (16.3 ± 3.865).[19] Similar findings were observed in Y. Akvardar et al (2004)[23], and Rajeev Krishnadas et al (2012)[24]. This could be explained by the prominent self-medication hypothesis, which states that schizophrenia patients use drugs to alleviate negative symptoms and cognitive deficits, as well as to counteract the side effects of their antipsychotic medication.[8,25] In the current study, there was no difference in mean general psychopathology score and total PANSS score in substance-abusing schizophrenics and non-substance abusing schizophrenics which is comparable to Rudraprosad Chakraborty et al (2014).[17] In our study, there was a positive correlation between FTND scores and PANSS positive scores, but there was a negative correlation between FTND and negative scores of PANSS similar to a study conducted by Latha SP et al (2019)[19], Anne Yee et al (2015)[26] and Rajeev Krishnadas et al (2012)[24]. The plausible explanation for the increase in positive symptoms could be role of

nicotine in boosting dopamine levels in the mesolimbic pathway and accelerating anti-psychotic metabolism.[24]

Limitations of the study

This study is done on a small sample size taken from patients visiting a tertiary care centre and hence results cannot be generalized. Since our study is a cross-sectional study, it does not address the direction of causality and the precise nature of the association between schizophrenia and substance abuse. Longitudinal studies are needed to examine changes in the pattern of substance use in patients with schizophrenia and the factors that influence such changes.

Conclusion

Substance abuse in schizophrenia is a significant problem that has important theoretical and clinical implications for understanding and managing the course of the illness. The course of patients with schizophrenia and a co-occurring SUD, compared with patients with schizophrenia alone, has been found to have higher rates of treatment non-adherence and adverse life events including medical comorbidity, hospitalization, homelessness, unemployment, violence, arrests/incarceration, earlier mortality and suicide. Studies suggest that dual diagnosis patients become non-complaint through two mechanisms: (1) antipsychotic blockade of dopamine mediated euphoria from the drug of abuse and (2) lack of efficacy of antipsychotic due to ongoing substance use with consequent loss of faith in the treatment. Hence, patients with schizophrenia should be routinely screened for the presence of a co-occurring SUD. Addressing the comorbidity of substance abuse in schizophrenia has important clinical implications for preventing and treating these two disorders and decreasing morbidity and mortality. However, research shows that treatment of patients with comorbidity should include interventions for both disorders because lack of adequate treatment of one of the disorders interferes with recovery. These factors highlight the significance of addressing the need for integrated treatment strategies for substance abuse in schizophrenia patients, as well as training psychiatrists in proper screening and treatment of substance abuse in schizophrenia patients.

References

1. Sadock BJ, Sadock VA, Ruiz P. Kaplan and sadock's comprehensive textbook of psychiatry. 10th ed. Baltimore, MD: Wolters Kluwer Health; 2017.
2. World Health Organization, editor. The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines. Geneva: World Health Organization; 1992. 362 p.
3. Boland R, Verduin M, Ruiz P. Kaplan & Sadock's Synopsis of Psychiatry. 12th ed. Baltimore, MD: Wolters Kluwer Health; 2021. 337-365
4. Ambekar A, Agrawal A, Rao R, Mishra AK, Khandelwal SK. Chadda RK on behalf of the group of investigators for the National Survey on Extent

- and Pattern of Substance Use in India. New Delhi: Ministry of Social Justice and Empowerment; 2019.
5. Lal R. Substance Use Disorders: Handbook for Physicians. :125.
 6. Abdel-Baki A, Ouellet-Plamondon C, Salvat É, Grar K, Potvin S. Symptomatic and functional outcomes of substance use disorder persistence 2 years after admission to a first-episode psychosis program. *Psychiatry Res.* 2017 Jan;247:113–9
 7. Regier DA. Comorbidity of Mental Disorders With Alcohol and Other Drug Abuse: Results From the Epidemiologic Catchment Area (ECA) Study. *JAMA.* 1990 Nov 21;264(19):2511.
 8. Chambers RA, Krystal JH, Self DW. A neurobiological basis for substance abuse comorbidity in schizophrenia. *Biol Psychiatry.* 2001 Jul;50(2):71–83
 9. E Cabrina Campbell, MDStanley N Caroff, MDStephan C Mann, MD. Co-occurring schizophrenia and substance use disorder: Epidemiology, pathogenesis, clinical manifestations, course, assessment and diagnosis. *UpToDate*, Sep 13, 2021.
 10. Dickey B, Azeni H, Weiss R, Sederer L. Schizophrenia, Substance Use Disorders and Medical Co-morbidity. 2000;7.
 11. Kavanagh DJ, McGrath J, Saunders JB, Dore G, Clark D. Substance Misuse in Patients with Schizophrenia. *Drugs.* 2002 Apr 1;62(5):743–55.
 12. Winklbaur B, Ebner N, Sachs G, Thau K, Fischer G. Substance abuse in patients with schizophrenia. *Dialogues Clin Neurosci.* 2006 Mar 31;8(1):37–43.
 13. Kelkar PN, Vankar GK, Mishra KK, John S, Ghogare AS. Prevalence of Substance Abuse in Patients with Schizophrenia. *J Clin Diagn Res.* 2020.
 14. Cantor-Graae E, Nordström LG, McNeil TF. Substance abuse in schizophrenia: a review of the literature and a study of correlates in Sweden. *Schizophr Res.* 2001 Mar;48(1):69–82.
 15. Aich TK, Sinha VK, Khess CRJ, Singh S. Demographic and Clinical Correlates of Substance Abuse Comorbidity in Schizophrenia. :5.
 16. Addington J, Addington D. Patterns, predictors and impact of substance use in early psychosis: a longitudinal study. *Acta Psychiatr Scand.* 2007 Apr;115(4):304–9.
 17. Chakraborty R, Chatterjee A, Chaudhury S. Impact of Substance Use Disorder on Presentation and Short-Term Course of Schizophrenia. *Psychiatry J.* 2014;2014:1–9.
 18. Gururaj G, Varghese M, Benegal V, Rao GN, Pathak K, Singh LK, et al. National Mental Health Survey of India, 2015-16: Summary. Bengaluru, National Institute of Mental Health and Neuro Sciences, NIMHANS Publication No. 128, 2016,17-22
 19. Latha Sp, Kumar Mv, Tialam G, Mallepalli PR. Prevalence of nicotine dependence and its impact on quality of life and severity of symptoms in schizophrenic patients. *Arch Ment Health.* 2019;20(1):14.
 20. Arun Bhat P., Arun Seetharaman, Kameshvell P. Substance Use among Patients with Schizophrenia Attending Tertiary Care Psychiatric Hospital: A Cross Sectional Study. *Indian Journal of Law and Human Behavior*, Volume 4 Number 2, July - December 2018.
 21. Barnes TRE, Mutsatsa SH, Ton SBH. Comorbid substance use and age at onset of schizophrenia. :6.
 22. Volkow ND. Substance Use Disorders in Schizophrenia--Clinical Implications of Comorbidity. *Schizophr Bull.* 2009 Mar 30;35(3):469–72.
 23. Akvardar Y, Tumuklu M, Akdede BB, Ulas H, Kitis A, Alptekin K. Substance Use Among Patients with Schizophrenia in a University Hospital. 2004;14(4):7.
 24. Krishnadas R, Jauhar S, Telfer S, Shivashankar S, McCreadie RG. Nicotine dependence and illness severity in schizophrenia. *Br J Psychiatry.* 2012 Oct;201(4):306–12.
 25. Khokhar JY, Dwiel LL, Henricks AM, Doucette WT, Green AI. The link between schizophrenia and substance use disorder: A unifying hypothesis. *Schizophr Res.* 2018 Apr;194:78–85.
 26. Yee A, Bt Nek Mohamed NN, Binti Hashim AH, Loh HS, Harbajan Singh MK, Ng CG, et al. The Effect of Nicotine Dependence on Psychopathology in Patients with Schizophrenia. *BioMed Res Int.* 2015;2015:1–6.