DOI: 10.7860/JCDR/2020/43287.13577

Original Article

Psychiatry/Mental Health Section

Prevalence of Substance Abuse in Patients with Schizophrenia

PARISHA NARAYAN KELKAR[1], GANPAT K VANKAR[2], KSHIROD K MISHRA[3], SALLY JOHN[4], AJINKYA SURESHRAO GHOGARE[5]

ABSTRACT

Introduction: Substance abuse is a common comorbidity in patients of Schizophrenia. Link between the use of substances and development of psychosis is demonstrated by high prevalence of substance abuse in schizophrenia. Substance use disorders and their effects on schizophrenia have made identification and treatment of these patients a high priority.

Aim: To study the prevalence of substance abuse, preferred types of substances of abuse and its association with socio demographic characteristics and clinical features of schizophrenia.

Materials and Methods: It was an observational cross-sectional study conducted at Jawaharlal Nehru Medical College, Wardha, Maharashtra, India. Sample size was 100 patients. The participants were assessed for socio demographic details and questionnaires on Positive And Negative Symptom Scale (PANSS) and Alcohol Use Disorder Identification Test (AUDIT). Patients with substance abuse were compared with patients without substance abuse on demographic and disease related characteristics. SPSS version 22.0 was used for statistical analysis. Categorical data was analysed by Chi-square test and quantitative data was analysed by t-test.

Results: 48% patients of schizophrenia had substance abuse. Smokeless tobacco was found to be the most commonly abused (42%) by patients of Schizophrenia. Substance use was more common in males than females. Smokeless tobacco was the only substance abuse in females (18%). Schizophrenia patients with substance abuse had more PANSS positive score than those without substance use.

Conclusion: Substance abuse is a significant comorbidity in patients of schizophrenia in India.

Keywords: Alcohol, Comorbidity, Dual diagnosis, Tobacco

INTRODUCTION

Schizophrenia is a very severe mental illness that affects the way how a person thinks, feels and behaves. About 1% of the world population suffers from schizophrenia. It has adverse effects on both the patient as well as the people close to them. It causes considerable human suffering, and has a significant impact on health and social systems, which leads to immense economic losses [1].

Patients with schizophrenia have poorer outcomes than patients with other psychiatric disorders, and relapses are associated with worsening of symptoms, impaired functioning and cognitive decline [2]. Schizophrenia is often associated with various comorbidities like anxiety disorder, depression, substance abuse, panic disorder etc., [3]. The literature supports that schizophrenia and substance abuse often occur together than only a mere chance. About half of all patients with schizophrenia have a history of substance use disorders during their lifetime [4].

Substance abuse is likely to reduce the effectiveness of antipsychotic medications, increase in psychosis and other symptoms and contribute to a higher probability of symptom exacerbation, poor compliance, poor quality of life and need for inpatient care [5]. Sometimes substance use can also mimic psychosis and can mislead the diagnosis and the treatment henceforth.

Using recreational drugs, such as amphetamines, marijuana etc., can exacerbate schizophrenic symptoms and even worsen the symptom severity. Studies suggest the substance use by schizophrenia patients increases the severity of positive symptoms of schizophrenia [6].

Thus schizophrenia and substance abuse comorbidities have implications as regards diagnosis, treatment and prognosis. This study aimed to find out the prevalence of co-occurrence of these two illnesses in the dry district of Wardha and the correlation between substance abuse and symptom profile in schizophrenia.

MATERIALS AND METHODS

This cross-sectional study was conducted within a period of one year from January 2018 to December 2018, was approved by institutional ethics committee of Datta Meghe Insititute of Medical Sciences , Wardha, Maharashtra, India. (IEC Approval no: DMIMS[DU]/IEC/2017-18/6706 dated 03/10/2017).

The sample size of 100 patients was considered who gave written informed consent for participating in the study. As per Epi-info online calculator for such study sample size with 95% confidence was 91. Allowing for refusal to provide informed consent and other exclusion criteria, sample size of 100 was decided. Convenience sampling method was used.

Patients who were diagnosed as having schizophrenia as per ICD 10 criteria and were above 18 years of age who gave valid informed consent for participation in the study were included. Those who did not give written informed consent and who did not fulfill ICD-10 diagnostic criteria for schizophrenia and those with an organic mental disorder or mental retardation were excluded from the study.

The tools used in the study were:

1. Socio demographic variables which included registration number, age, sex, residence, education, socio economic status, occupation, religion, marital status. Disease related characteristics like duration of illness, age of onset of schizophrenia, number of exacerbations, duration of substance abuse, family history of any psychiatric illness, family history of substance abuse and/or suicide were noted.
2. Alcohol Use Disorder Identification Test (AUDIT) [7]- It is an instrument with 10 questions with 5 item scale used to assess the severity of alcohol. Total scores of 8 or more are recommended as indicators of hazardous and harmful use of alcohol as well as a possible dependence. AUDIT scores in the range of 8-15 represent a minimum level of alcohol dependence, and scores above 16 indicate high level of alcohol dependence.

3. Positive and Negative Symptom Scale (PANSS) (Kay, Opler, Fiszbain 1987) [8]- PANSS is a 30-item which are rated from 1 to 7 on the basis of severity (1: absent to 7: severe). Out of the 30 items, 7 items assess the severity of positive symptoms, 7 questions to assess the negative symptoms, while 16 items assess the severity of symptoms of general psychopathology. Scale for the Assessment of Positive Symptoms (SAPS), Scale for the Assessment of Negative Symptoms (SANS) measure the same things hence we did not use them as it would be waste of time and resources.

STATISTICAL ANALYSIS

SPSS version 22.0 was used for statistical analysis. Schizophrenia patients with substance use comorbidity and those without such comorbidity were compared on demographic and disease related characteristics. Chi-square test was used to analyse categorical data and t-test was used to analyse quantitative data. The $p<0.05$ was considered statistically significant difference.

RESULTS

1. Sociodemographic characteristics of patients:

A sample size of 100 patients was taken for the study. Sociodemographic details are shown in [Table/Fig-1].

Characteristics	n=100
Sex	
Male	49
Female	51
Age	
Range	18-76
Mean (SD)	38.13 (11.43)
Marital status	
Married	55
Single	29
Divorced	13
Widowed	3
Religion	
Hindu	92
Buddhism	2
Christian	2
Muslim	4
Education	
Illiterate	3
Primary school	21
Secondary school	42
Intermediate	24
Graduate	10
Occupation	
Professional	1
Skilled worker	8
Semi-skilled worker	6
Unskilled worker	5
Unemployed	47
Farmer	33
SESS class	
Lower	46
Lower middle	33
Middle	21

[Table/Fig-1]: Demographic characteristics of the patients (N=100).

2. Disease related characteristics

Most patients had chronic schizophrenia with duration >2 years (83) and average age at onset was 26.8 years. 55% had more than 2 exacerbations. 16% had family history of psychiatric disorder whereas family history of substance abuse was present in 58%. Family history of suicide was present in 6% patients [Table/Fig-2].

Characteristics	N=100
Duration of Illness	
Upto 2 years	17
3-5 years	18
6-10 years	23
11-15 years	13
16-20 years	16
>20 years	13
Age at onset of illness	
Range	14-53
Mean (SD)	26.87 (6.961)
PANSS positive score	
Range	7-35
Mean (SD)	14.41 (5.21)
PANSS negative score	
Range	8-39
Mean (SD)	15.06 (5.32)
PANSS general psychopathology score	
Range	18-62
Mean (SD)	36.17 (10.38)
PANSS total score	
Range	32-121
Mean (SD)	65.45 (17.10)
No. of exacerbations	
1	15
2	30
3	29
4	16
5+	10
Family history of psychiatric illness	16
Family history of substance abuse	58
Family history of suicide	6

[Table/Fig-2]: Disease related characteristic in the patients with schizophrenia

2. Prevalence and pattern of substance use

Prevalence of Substance Abuse

Out of the total 100 patients of schizophrenia, 48% were found to have substance abuse in their lifetime and 52% had no substance abuse in their lifetime.

Among 48% who had substance abuse 26% had alcohol abuse, 42% had smokeless tobacco and 2% were smokers. Cannabis, opioid and other substance use disorder were conspicuous by their absence and for women patient substance use was limited only to smokeless tobacco.

Chronology

Of the 48 patients who had substance use disorder 32 patients (66.7%) had onset prior to onset of schizophrenia while 13 patients (27.1%) had onset of substance use after onset of schizophrenia. 3 patients (6.3%) had onset of both disorders simultaneously.

Of the 10 females who had substance use disorder 3 (30%) had onset of substance abuse prior to schizophrenia whereas 7 (70%) had onset of substance use after onset of schizophrenia.

Of the 38 males who had substance use disorder 27 (71.05%) had onset of substance abuse prior to schizophrenia whereas 8 (21.05%) had onset of substance use after onset of schizophrenia.

3. Demographic correlates of substance use

Substance abuse in schizophrenia was associated with male gender, older current age and lower socioeconomic class [Table/Fig-3].

	Substance abuse Present N=48 n (%)	Substance abuse absent N=52 n (%)	p-value
Sex			
Male	38 (79.2)	11 (21.2)	<0.000001
Female	10 (20.8)	41 (78.8)	
Age			
Range	22-71	18-67	0.0044
Mean (SD)	40.89 (10.91)	35.57 (10.20)	
Marital status			
Married	27 (56.25)	28 (53.84)	0.90
Single	13 (27.08)	16 (30.76)	
Divorced	6 (12.5)	7 (13.46)	
Widowed	2 (4.16)	1 (1.92)	
Religion			
Hindu	44 (91.66%)	48 (92.30)	
Buddhism	2 (4.1%)	0	0.87
Christian	1 (2.08%)	1 (1.9%)	
Muslim	1 (2.08%)	3 (5.7%)	
Education			
Illiterate	1 (2.08)	2 (3.84)	0.79
Primary school	9 (18.75)	12 (23.07)	
Secondary school	23 (47.91)	19 (36.53)	
Intermediate	10 (20.83)	14 (26.92)	
Graduate	5 (10.41)	5 (9.61)	
Occupation			
Professional	0 (0)	1 (1.92)	0.16
Skilled worker	4 (8.33)	4 (7.69)	
Semi-skilled worker	1 (2.08)	5 (9.61)	
Unskilled worker	4 (8.33)	1 (1.92)	
Unemployed	26 (54.16)	21 (40.38)	
Farmer	13 (27.08)	20 (38.46)	
SESS class			
Lower	26 (54.16)	20 (38.46)	0.04
Lower middle	17 (35.41)	16 (30.76)	
Middle	5 (10.41)	16 (30.76)	
Residence			
Rural	24 (0.5)	21 (40.38)	0.57
Semiurban	19 (39.58)	23 (44.23)	
Urban	5 (10.41)	8 (15.38)	

[Table/Fig-3]: Demographic characteristics of substance use in schizophrenia.

4. Disease related parameters and substance use

Patients with substance use had higher mean PANSS positive score and had higher family history of substance abuse [Table/Fig-4].

	Substance abuse present	Substance abuse absent	p-value
Duration of illness			
Upto 2 years	8	9	
3-15 years	23	31	0.37
15+	17	12	
Age at onset of illness			
Range	14-53	15-40	0.02
Mean (SD)	28.55 (7.77)	25.35 (5.77)	
PANSS positive score			
Range	7-35	7-24	0.0037
Mean (SD)	16.16 (5.96)	13.05 (4.19)	
PANSS negative score			
Range	8-32	8-39	
Mean (SD)	14.79 (5.19)	15.13 (5.62)	0.75
PANSS general psychopathology score			
Range	18-58	18-62	
Mean (SD)	36.65 (11.02)	35.71 (9.15)	0.064
PANSS total score			
Range	32-121	36-105	
Mean (SD)	67.14 (18.99)	63.88 (15.17)	0.35
No. of exacerbations			
1	5	10	
2	12	18	0.41
3	16	13	
4	8	8	
5+	7	3	
Family history of psychiatric illness	11	5	0.06
Family history of substance abuse	33	24	0.02
Family history of suicide	3	3	0.91

[Table/Fig-4]: Disease related parameters and Substance abuse in schizophrenia.

5. Correlation of AUDIT score with PANSS scores (N=26)

AUDIT score has low negative correlation with PANSS positive (-.202), PANSS negative (-.103), PANSS general psychopathology (-.133) and total PANSS score (-.187).

AUDIT Score of Patients who Used Alcohol

Twenty six patients who had alcohol use had AUDIT score more than 8 indicating possibility of alcohol use disorder [Table/Fig-5]. More than 2/3 patients had been advised by someone either to abstain or cut down alcohol use. Five patients (19.2%) had eye opener drink almost daily indicating severe dependence. Four patients (15.4%) had binge drinking episodes at least every month.

DISCUSSION

Although methodology in previous studies has been variable, we had decided to use several study instruments. However pilot study of first 20 patients suggested none of the patients had comorbid substance abuse except alcohol and smokeless tobacco, hence rather than using a questionnaire like DAST10 or assessing severity of substance use, we chose to rely on interview patients as regards their substance use. Few studies have been tabulated on substance use comorbidity in schizophrenia [Table/Fig-6] [9-15].

Prevalence and pattern of substance abuse: ECA study reported a lifetime prevalence of substance abuse in 47% of schizophrenia population [16]. Dixon L reported 48% [17], Lehman AF et al., [18] reported 54%, Kovasznay B et al., [19] reported 43.8%, Aich T et al., [13] reported 54.3%, comorbid substance abuse in their respective schizophrenia populations.

Types of substances abused: In present study, the prevalence of alcohol abuse was 26%, smokeless tobacco was 42% and smokers were 2% of the study sample. Cannabis was conspicuous by its absence. This may be due to difficulty in growing or procuring cannabis in the dry district of Wardha. Also cannabis use is less in Maharashtra compared to the national average according to the national data on magnitude of substance use in India [20].

In the available literature there is no consistency in pattern of drug abuse in patients of schizophrenia. The number of patients vary in

S. No.	Audit question	0	1	2	3	4
1.	How often do you have a drink containing alcohol?	0	2 (7.7%)	2 (7.7%)	4 (15.4%)	0
2.	How many drinks containing alcohol do you have on a typical day when you are drinking?	0	7 (26.9%)	15 (23.1%)	4 (15.4%)	0
3.	How often do you have six or more drinks on one occasion?	0	10 (38.5%)	12 (46.2%)	4 (15.4%)	0
4.	How often during the last year have you found that you were notable to stop drinking once you had started?	1 (3.8%)	6 (23.1%)	13 (50%)	6 (23.1%)	0
5.	How often during the last year have you failed to do what was normally expected from you because of drinking?	8 (30.8%)	15 (23.1%)	3 (11.5%)	0	0
6.	How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	8 (30.8%)	2 (7.7%)	7 (26.9%)	4 (15.4%)	5 (19.2%)
7.	How often during the last year have you had a feeling of guilt or remorse after drinking?	18 (69.2%)	8 (30.8%)	0	0	0
8.	How often during the last year have you been unable to remember what happened the night before because you had been drinking?	17 (65.4%)	7 (26.9%)	2 (7.7%)	0	0
9.	Have you or someone else been injured as a result of your drinking?	20 (76.9%)	0	6 (23.1%)	0	0
10.	Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down	2 (7.7%)	0	6 (23.1%)	0	18 (69.2%)

[Table/Fig-5]: AUDIT score of patients who used alcohol (n=26).

Authors [reference]	Sample size	% Substance abuse	Commonly used substances
Wobrock T et al., [9]	323	31.1%	Cannabis 22.2%
Tekin Uludağ Y and Güleç G [10]	85	70%	Smoking 70%, Alcohol 32%, Cannabis 4%
Hartz SM, et al., [11]	79	74%	Smoking 74%
Kerner B [12]	1219	50%	Alcohol most common
Aich T et al., [13]	70	54.3%	cannabis abuse/dependence 32.8%; alcohol 22.8%, nicotine 32.8%, and opioid 2.8%
Cuffel BJ et al., [14]	231	52%	37% alcohol, 23% cannabis, 8% sedatives, 10% narcotics and 13% stimulant drugs.
Yee A et al., [15]	180	38.1%	Nicotine 38.1%

[Table/Fig-6]: Selected studies on substance use comorbidity in schizophrenia [9-15].

studies from 10% to 70%, depending on the place of study, type of population studied, male to female ratio and how schizophrenia and substance use were defined [6].

Fowler IL et al., found that 48.4% of schizophrenia patients abused alcohol while 36% abused cannabis [21]. Aich T et al., in a sample of 70 patients found 22.8% abusing alcohol, 32.8% nicotine, 32.8% cannabis and 2.8% opoid [13].

In the recent National Mental Health Survey of India [2016], The prevalence of tobacco use disorder (moderate and high dependence) and alcohol use disorder (dependence and harmful use/alcohol abuse) was 20.9% and 4.6%, respectively. The prevalence of alcohol use disorders in males was 9% as against 0.5% in females. Survey also revealed that 0.6% of the 18+ population were recognised with illicit substance use disorders (dependence + abuse) which included cannabis products, opioid drugs, stimulant drugs, inhalant substances and prescription drugs. Among adult males this was 1.1%. There was a wide variation across different states, and similar high rates of consumption of illicit drugs were reported by participants in many states during our focused group discussions. The burden of substance use disorders, contributed by alcohol and tobacco showed prevelance in middle aged (40-59 years) individuals (29%), males (35.67%) and in rural areas (24.12%). However, other substance use disorders (illicit drugs) were more prevalent in urban metro areas [20].

Characteristics of patients: There was not much difference between the two groups i.e., patients with substance abuse and patients without substance abuse on various demographic and clinical parameters. Thus the two groups were comparable. The major exceptions were gender and socioeconomic status. Substance abuse was less common in women and it was limited to smokeless tobacco. This finding is consistent with the cultural norms as substance use especially alcohol and smoking is not socially acceptable in rural India. Similar gender difference was seen in studies by Tekin Uludağ Y and Güleç G [10], Archie S et al., [22], Weilbell M et al., [23], Chaves L and Shirakawa I [24], Zhang XY et al., [25]. Thus in general, males are at greater risk for substance abuse.

Difference in socioeconomic status may be related to majority of study population belonging to rural area. According to national data substance use is more common in rural population. Substance abuse was seen more often among schizophrenia patients who lived in urban areas in the study by Aich T et al., [13] and Yee A et al., [15]. In this study preponderance of substance abuse among the rural patients was noted. This may be related to easy availability of the substances like tobacco, smoking and alcohol even in rural areas.

Disease Related Parameters

PANSS SCORE: In present study, patients with substance use had higher PANSS positive score compared to those who did not have substance abuse. Similar findings were observed in studies conducted by Krishnadas R et al., [26], Yee A et al., [15], Zhang XY et al., [25]. Study by Batki SL et al., also suggests association of negative schizophrenia symptoms with alcohol and other substance use [27].

Symptom exacerbation and substance use: Westmeyer J, in their study found that substance use disorders negatively affect the clinical status of patients with schizophrenia and the patients end up having poorer outcome [28]. No such correlation was found in present study.

Family History of substance use in schizophrenia patients: Higher incidence of family history of substance use was obtained in study conducted by Cantor- Graae E et al., [29] which was similar to the findings of present study. Aich T et al., [13] had 17% of substance abuse group with a family history of substance abuse, while it was 37% in the study conducted by Yee A et al., [15] on nicotine abuse in schizophrenia.

AUDIT scores and schizophrenia: Studies using AUDIT to screen alcohol use disorder among schizophrenia patients report alcohol use disorder in schizophrenia patients from 8% to 30% [3,10]. Although none of these studies have analysed patients alcohol use disorders item wise. Hence, we do not have figures for comparison.

AUDIT score had low negative correlation with PANSS score which implies that increasing AUDIT scores were associated with lower PANSS positive scale, negative scale, general psychopathology scale and total PANSS score. The well-known four that are widely available are the Dual Recovery Therapy (DRT) approach, modified Cognitive Behavioral Therapy (CBT), modified MET, and the Substance Abuse Management Module (SAMM) [30].

Limitation(s)

As the sample size of the study was small, its results cannot be generalised. No biochemical test was done to confirm substance use. As this is a cross-sectional study, effect of substance use on evolution of schizophrenia could not be studied.

CONCLUSION(S)

Although the correlation of AUDIT score and severity of psychopathology of schizophrenia was not statistically significant, this lends support that alcohol use in these patients may be related to an attempt to reduce psychopathology. Several clinical therapy manuals have been established and verified for value of treating schizophrenia and addiction. There is a clear need to implement these therapies to improve the treatment outcome of schizophrenia patients with comorbid substance use.

REFERENCES

[1] Chong HY, Teoh SL, Wu DBC, Kotirum S, Chiou CF, Chaiyakunapruk N. Global economic burden of schizophrenia: A systematic review. Neuropsychiatr Dis Treat. 2016;12:357-73.
[2] Lee RSC, Hermens DF, Naismith SL, Lagopoulos J, Jones A, Scott J, et al. Neuropsychological and functional outcomes in recent-onset major depression, bipolar disorder and schizophrenia-spectrum disorders: A longitudinal cohort study. Transl Psychiatry. 2015;5(4):e555.
[3] Buckley PF, Miller BJ, Lehrer DS, Castle DJ. Psychiatric comorbidities and schizophrenia. Schizophr Bull. 2009;35(2):383-402.
[4] Koskinen J, Löhönen J, Koponen H, Isohanni M, Miettunen J. Rate of cannabis use disorders in clinical samples of patients with schizophrenia: A meta-analysis. Schizophr Bull. 2010;36(6):1115-30.
[5] Bobes J, Garcia-Portilla MP, Bascaran MT, Saiz PA, Bousoño M. Quality of life in schizophrenic patients. Dialogues Clin Neurosci. 2007;9(2):215-26.
[6] Winklbaur B, Ebner N, Sachs G, Thau K, Fischer G. Substance abuse in patients with schizophrenia. Dialogues Clin Neurosci. 2006;8(1):37-43.
[7] Bohn MJ, Babor TF, Kranzler HR. The Alcohol Use Disorders Identification Test [AUDIT]: Validation of a screening instrument for use in medical settings. J Stud Alcohol. 1995;56(4):423-32.
[8] Kay SR, Fiszbein A, Opler LA. The Positive And Negative Syndrome Scale [PANSS] for schizophrenia. Schizophr Bull. 1987;13(2):261-76.
[9] Wobrock T, Falkai P, Schneider-Axmann T, Hasan A, Galderisi S, Davidson M, et al. Comorbid substance abuse in first-episode schizophrenia: Effects on cognition and psychopathology in the Eufest Study. Schizophr Res. 2013;147(1):132-39.
[10] Tekin UludağY, Güleç G. Prevalence of substance use in patients diagnosed with schizophrenia. Noro Psikiyatr Ars. 2016;53(1):04-11.
[11] Hartz SM, Horton AC, Hancock DB, Baker TB, Caporaso NE, Chen LS, et al. Genetic correlation between smoking behaviors and schizophrenia. Schizophr Res. 2018;194:86-90.
[12] Kerner B. Comorbid substance use disorders in schizophrenia: A latent class approach. Psychiatry Res. 2015;225(3):395-401.
[13] Aich T, Sinha V, Khess Christoday RJ, Singh S. Substance abuse co-morbidity in schizophrenia: An inpatient study of course and outcome. Indian J Psychiatry. 2005;47(1):33.
[14] Cuffel BJ, Heithoff KA, Lawson W. Correlates of patterns of substance abuse among patients with schizophrenia. Psychiatr Serv. 1993;44(3):247-51.
[15] Yee A, Bt Nek Mohamed NN, BintiHashim AH, Loh HS, Harbajan Singh MK, Ng CG, et al. The effect of nicotine dependence on psychopathology in patients with schizophrenia [Internet]. BioMed Research International. 2015 [cited 2018 Oct 8]. Available from: https://www.hindawi.com/journals/bmri/2015/730291/.
[16] Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, et al. Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area [ECA] Study. JAMA. 1990;264(19):2511-18.
[17] Dixon L. Dual diagnosis of substance abuse in schizophrenia: Prevalence and impact on outcomes. Schizophr Res. 1999;35 Suppl:S93-100.
[18] Lehman AF, Myers CP, Corty E. Assessment and classification of patients with psychiatric and substance abuse syndromes. Psychiatr Serv. 1989;40(10):1019-25.
[19] Kovasznay B, Fleischer J, Tanenberg-Karant M, Jandorf L, Miller AD, Bromet E. Substance use disorder and the early course of illness in schizophrenia and affective psychosis. Schizophr Bull. 1997;23(2):195-201.
[20] Murthy RS. National mental health survey of India 2015-2016. Indian J Psychiatry. 2017;59(1):21-26.
[21] Fowler IL, Carr VJ, Carter NT, Lewin TJ. Patterns of current and lifetime substance use in schizophrenia. Schizophr Bull. 1998;24(3):443-55.
[22] Archie S, Rush BR, Akhtar-Danesh N, Norman R, Malla A, Roy P, et al. Substance use and abuse in first-episode psychosis: Prevalence before and after early intervention. Schizophr Bull. 2006;33(6):1354-63.
[23] Weibell M, ten VeldenHegelstad W, Olav Johannessen J, Bronnick K, Joa I, Ketil Larsen T, et al. SU47. Neurocognition and substance use in first-episode psychosis: 10-Year Trajectories. Schizophr Bull. 2017;43[suppl_1]:S178-S178.
[24] Chaves L, Shirakawa I. Nicotine use in patients with schizophrenia evaluated by the Fagerström Tolerance Questionnaire: A descriptive analysis from a Brazilian sample. Rev Bras Psiquiatr Sao Paulo Braz. 1999. 2008;30(4):350-52.
[25] Zhang XY, Liang J, Chen DC, Xiu MH, He J, Cheng W, et al. Cigarette smoking in male patients with chronic schizophrenia in a Chinese population: Prevalence and relationship to clinical phenotypes. PloS One. 2012;7(2):e30937.
[26] Krishnadas R, Jauhar S, Telfer S, Shivashankar S, McCreadie RG. Nicotine dependence and illness severity in schizophrenia. Br J Psychiatry J Ment Sci. 2012;201(4):306-12.
[27] Batki SL, Leontieva L, Dimmock JA, Ploutz-Snyder R. Negative symptoms are associated with less alcohol use, craving, and "high" in alcohol dependent patients with schizophrenia. Schizophr Res. 2008;105(1-3):201-07.
[28] Westermeyer J. Comorbid schizophrenia and substance abuse: A review of epidemiology and course. Am J Addict. 2006;15(5):345-55.
[29] 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;48(1):69-82.
[30] Ziedonis DM, Smelson D, Rosenthal RN, BatkiSL, Green AI, Henry RJ, et al. Improving the care of individuals with schizophrenia and substance use disorders: Consensus recommendations. J Psychiatr Pract. 2005;11(5):315-39.

PARTICULARS OF CONTRIBUTORS:

1. Junior Resident, Department of Psychiatry, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India.
2. Professor, Department of Psychiatry, People's College of Medical Sciences, Bhopal, Madhya Pradesh, India.
3. Professor and Head, Department of Psychiatry, Mahatma Gandhi Institute of Medical Sciences, Sewagram, Maharashtra, India.
4. Associate Professor, Department of Psychiatry, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India.
5. Assistant Professor, Department of Psychiatry, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Parisha Narayan Kelkar,
Department of Psychiatry, JNMC, DMIMS, Wardha, Maharashtra, India.
E-mail: kelkarparisha25@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Nov 26, 2019
- Manual Googling: Feb 17, 2020
- iThenticate Software: Feb 25, 2020 (18%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Nov 25, 2019**
Date of Peer Review: **Jan 23, 2020**
Date of Acceptance: **Feb 18, 2020**
Date of Publishing: **Mar 01, 2020**