European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 09, Issue 07, 2022

Original Research Article

How does tobacco affect quality of life of patients of schizophrenia and bipolar affective disorder: A comparative study

Bishnoi D[1], Bhardwaj P[2]

Dr Divya Bhisnoi[1], Senior Resident, Department of Psychiatry, Rajasthan University of Health Sciences College of Medical Sciences (RUHS CMS), Jaipur, Rajasthan, India
Dr Priyanka Bhardwaj[2], Assistant Professor, Department of Psychiatry, RUHS CMS, Jaipur, Rajasthan, India

Corresponding Author:
Dr. Priyanka Bhardwaj (leopriyanka.sharma@gmail.com)
Address- k3 Keshav Path Ahinsa Circle C Scheme Ashok Marg Jaipur 302001 (RAJ)

Abstract

Introduction: The rate of smoking in people with schizophrenia and bipolar affective disorder is at least two to three times more that in the general population. They consume more cigarettes per day and are less likely to quit tobacco. In treating schizophrenia and BPAD clinicians often ignore factors that are directly related to QOL and prognosis of disease. The evaluation and management of nicotine dependence in these patients can contribute to improving the outcome, reducing the disability and improving QOL along with decreasing the burden of disease on caregivers.

Aim and Objectives

1. Comparison of socio-demographic and various clinical variables related to tobacco use among persons with schizophrenia and BPAD.
2. To compare the impact of tobacco on QOL among persons with schizophrenia and BPAD.

Material and Method: This was a cross sectional study. Purposive sampling was done and total 60 patients were recruited. Various scales were applied and date thus collected was analysed using SPSS ver. 24.

Observation and Discussion: We found there was no significant difference between the two groups with sociodemographic profiles of two groups of patients except for education of patients. The difference of QOL scores was highly significant between tobacco users and non-tobacco users of bipolar disorder and schizophrenia. Within the bipolar disorder group, tobacco use seemed to affect quality of life significantly in the psychological (p 0.042) and social (p 0.028) domains of WHOQOLBREF. In the schizophrenia group, QOL was significantly affected in the psychological (p 0.026) and environmental (p 0.015) domains.

Conclusion: Tobacco dependence leads to significant differences in quality of life, so it should be addressed along with other psychopathological symptoms.

Keywords: Schizophrenia, tobacco, BPAD, quality of life, caregiver burden

Introduction

Tobacco use is one of the leading preventable cause of poor health and premature mortality. While tobacco smoking in general population is said to be decreasing, patients with severe mental disorders have reportedly shown higher prevalence of tobacco use in many countries**.** The rate of smoking in people with schizophrenia and bipolar affective disorder is at least two to three times higher than that in the general population in developed countries. The former group consumes more cigarettes per day and is less likely to quit smoking than tobacco users in the general population [1]. A study done among all psychiatry out-patients showed higher

ISSN 2515-8260 Volume 09, Issue 07, 2022

prevalence of smoking compared to general population (52% vs. 33%) [2].

According to Leonard [3] 1996, the maintenance of neuroregulator effects of nicotine is the most important factor of continuing cigarette smoking, once started. However, the most-mentioned theory is "self-medication". According to this theory, schizophrenia is related to increased dopaminergic activity at the mesolimbic system (positive symptoms) and reduced at prefrontal region (negative symptoms). Thus, cigarette smoking has been proposed to reduce the severity of negative symptoms and improve cognitive functions by temporarily increasing dopaminergic activity in prefrontal subcortical network in schizophrenia. Improvement of selective attention and neuropsychological impairment in patients with schizophrenia after cigarette smoking in some studies supports this theory [4-6].

The World Health Organization (WHO) defines the quality of life (QOL) as individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, concern, and standards [7]. In treating and managing schizophrenia, clinicians often focus on treating psychotic symptoms and ignore factors that are directly related to QOL and prognosis of disease. Hence, the evaluation and management of nicotine dependence in the evaluation and management of schizophrenia can contribute to improving the outcome of the illness, reducing the associated disability, and improve the quality of illness of these individuals [8]. There is a need to explore the relationship between smoking and clinical characteristics and QOL in schizophrenia patients.

Bipolar affective disorder is a recurrent and chronic disorder characterized by fluctuations in mood state and energy that affects around 2.4% of the global population [9]. As a lifelong and recurrent illness, BPAD is associated with functional decline, cognitive impairment, and a reduction in quality of life (QoL) [10-12]. Given the complexity of this illness and its consequences, researchers and clinicians are not only focused on clinical remission but also functional recovery and, more lately, well-being too [13]. Considering the high prevalence of tobacco use among patients of schizophrenia and bipolar affective disorder very few studies have compared the quality of life of these patients.

Aims and Objectives

- Comparison of socio-demographic and various clinical variables related to tobacco use among persons with schizophrenia and bipolar affective disorder.
- To compare the Quality of life between patients of schizophrenia and bipolar affective disorder.

Material and Method

Sample recruitment: This is a cross sectional study. Consecutive sampling from OPD was done. Patients visiting psychiatry OPD services with the diagnosis of Schizophrenia and Bipolar affective disorder, over a period of 6 months from June, 2022 to Nov 2022 are recruited in the study after fulfilling inclusion criteria.

Study sample: The sample was comprised of thirty persons each diagnosed with Bipolar affective illness and schizophrenia based on ICD-10.

Inclusion criteria for patients

- Patients coming to out-patient Department of Psychiatry at govt. RDBP Jaipuria hospital.
- Male patients of age 18-60 years.
- Patients in a state of clinical remission defined by BPRS score < 37, HAM-D score <7 and YMRS score <7.
- 'Clinically stable' patients i.e., no exacerbations or relapses or greater than 50% hikes in medication dosages in the last 2 years period prior to assessment for the study.
- Patients giving written informed consent.

ISSN 2515-8260 Volume 09, Issue 07, 2022

Exclusion criteria

- History of significant head injury or having undergone any neurological procedure or having significant cognitive deficits.
- Severe mental retardation or organic brain syndrome.
- Patients who do not give informed consent.

Tools

- **Consent form**
- **Subject information sheet**
- **Socio-demographic data:** A semi-structured proforma designed to collect the socio-demographic details of the patient and clinical variables related to tobacco.
- **Fagerstrom Test for Nicotine Dependence (FTND):** (Heatherton TF *et al*. 1991) [14, 15] for assessing physical dependence to nicotine.
- **WHO-QOL-BREF Hindi Version:** shorter version of WHO-QOL-100. Hindi version developed by Shekhar Saxena [7] was used. 26 questions divided into 4 domains namely physical, psychological, social and environmental.

Methodology

Patients visiting outpatient at Department of Psychiatry, Government RDBP Jaipuria hospital, after satisfying inclusion and exclusion criteria were recruited for study using purposive sampling. Written informed consent was taken and Socio-demographic data was collected along with history of current and past tobacco use.

BPRS, HAM-D or YMRS was applied to find out clinically stable patients.

Patients were then assessed on FTND scale to identify nicotine dependence. WHO-QOL BREF was then applied to assess the quality of life among tobacco users and non-tobacco users.

Comparison of quality of life in patients among patients of schizophrenia and bipolar affective disorder was done using appropriate statistics.

Statistics

- Descriptive statistical measures (mean, median, standard deviation and range) estimated for summarizing the quantitative variables. Student t test was applied; Chi-Square test, fisher's test and ANOVA were applied for collected data. Pearson correlation coefficient was calculated. The data analysis was performed by using Statistical Package for the Social Sciences (SPSS) software version 24. The two-sided $p<0.05$ was considered statistically significant.

Ethical considerations

- Study was initiated after ethics committee clearance.
- Informed written consent was taken from the study participants.
- Study did not involve any invasive intervention/assessment.
- Confidentiality of the participants was maintained.
- No additional benefits were provided to the patients for participating in the research.
- Participation or non-participation in the study did not affect the treatment received by the patient.

ISSN 2515-8260 Volume 09, Issue 07, 2022

Results and Observations

Table 1: Comparison between sociodemographic characteristics of BPAD and Schizophrenia patients

Variable		BPAD tobacco user n=15	Schizophrenia tobacco user n=15
Mean age		32.93±10.10	40.33±15.00
Marital status	Married	09	09
	unmarried	06	06
Religion	Hindu	12	12
	Muslim	03	03
Education	Primary	04	03
	Middle	06	04
	Upper middle sec. + senior	03	05
	Graduate	02	03
Employment status	Employed	10	06
	Others	05	09
Family type	Joint	09	09
	Nuclear	06	06
Locality	Urban	06	05
	Rural	09	10
Duration of illness (yrs)		7.2 ±2.5	11.4 ±8.5
Form of tobacco	Smoker	02	02
	Smokeless	03	04
	Both	10	09
	>25	04	02

Table 1 depicts mean age of patients was 32.93±10.10 years in bipolar patients and 40.33±15 years in schizophrenia, majority patients were married (60%) and Hindu by religion (80%). There was no significant difference between education in both groups. 66.67% patients were employed in bipolar group but only 40% in schizophrenia group. Majority patients were from joint families in rural locality. Mean duration of illness was more in schizophrenia (11.4 ±8.5 years) than bipolar (7.2 ±2.5 years), form of tobacco used by majority in both groups was both.

Table 3: Fagerstrom Test for Nicotine Dependence (FTND) and FTND-ST

Variable	BPAD tobacco user	Schizophrenia tobacco user
FTND	5.60±2.64	5.46±2.77
FTND-ST	5.07±2.52	5.00±2.29

Table 3 shows FTND scores for bipolar and schizophrenia patients were 5.6± 2.64 and 5.46± 2.77 respectively. FTND-ST scores were 5.06±2.52 and 5±2.29. There was no significant difference between 2 groups.

ISSN 2515-8260 Volume 09, Issue 07, 2022

Table 7: Scores of WHOQOLBREF in both groups

Domain	BPAD patients		Schizophrenia patients		P value	
	Tobacco user	Non Tobacco user	Tobacco user	Non Tobacco user	TU	NTU
Physical	38.80±16.7	47.00±11.7	25.06±11.7	22.73±14.4	0.014*	<0.0001**
Psychological	42.53±12.8	50.73±13.3	20.20±13.5	37.53±12.9	0.0001*	0.010*
Social	45.06±16.2	55.60±12.2	20.46±16.3	38.6±16.9	0.0003**	0.0038**
Environmental	48.53±14.2	50.06±12.9	25.53±13.5	38.06±12.9	<0.0001**	0.016*
Overall (Q1)	2.50±0.67	3.60±0.73	1.53±0.63	2.5±0.79	0.0002**	0.0005**
Overall (Q2)	3.80±0.63	3.8±0.70	2.20±0.70	3.2±0.74	<0.0001**	0.030*

**Difference is significant at the 0.01 level.

* Difference is significant at the 0.05 level.

Table 7 shows scores of WHOQOLBREF in both groups of patients. BPAD non tobacco user had highest score and lowest were found in schizophrenia tobacco user. And difference was found to be highly significant when tobacco users and non-tobacco users of both groups were compared. This also shows significant difference in overall QOL in both groups between tobacco users and non-users.

Discussion

Our study included total 60 patients, 30 of schizophrenia and 30 of bipolar disorder along with their caregivers. Our study included only male patients. Vasudeva S. (2013) studied 103 patients and caregivers, 52 of schizophrenia and 51 of bipolar disorder, attending the outpatient department [16].

When compared between tobacco users of bipolar and schizophrenia, schizophrenia patients were having higher mean age. Level of education was also not significantly different in both groups. Duration of illness was found to be higher in schizophrenia patients group. Groups were not significantly different in all other variables. Significant group differences in terms of age, male gender, education level, marital status, income, age of onset and length of illness were found in a Chinese study by Xiao-Hong Li [17].

We compared the severity of tobacco dependence between bipolar disorder and schizophrenia. The mean ± SD FTND (for smokers) score for patients with schizophrenia is 5.46±2.77 and that for patients with bipolar disorder was 5.6±2.64 indicating that they were associated with moderate to high degree of tobacco dependence (FTND >5) [18, 19]. Severity of tobacco dependence for smokeless forms of tobacco also revealed moderate to high dependence (FTND score >5) as mean ± SD FTND (for smokeless) was 5.00±2.29 for patients with schizophrenia and 5.07 ±2.52 for patients with bipolar disorder these findings are consistent with the finding of other studies stating heavy cigarette use and high dependence is seen in patients with schizophrenia and serious mental illnesses might be due to consuming higher doses probably by deeper inhalations (Freedman *et al*., 1997) [18]. We did not get any statistically significant difference (p=0.888) between the mean FTND scores (smokers) for patients with schizophrenia and that for bipolar disorder.

Quality of life

We also compared the quality of life between tobacco users and non-users in patients of bipolar disorder and schizophrenia. We found that the difference was highly significant when scores were compared between tobacco users of bipolar disorder and schizophrenia, and similarly when quality of life scores of non-tobacco users were compared between these two illnesses. In contrast a Chinese study showed smokers had a higher mental QOL than non-smokers (p=0.007) in MDD, but no difference was found in the bipolar and schizophrenia

groups. A Ethiopian study by Desalgne D. (2020) [19] in schizophrenia patients also revealed current tobacco use has significant negative association with all domains of quality of life including physical health, psychological health, social relationships, and environmental health domains as well as with overall quality of life and the current chewing khat has significant negative association with physical, psychological, environmental domains and overall quality of life. A negative relationship between nicotine dependence and psychological, social, and environment domains of QOL was observed, negative symptoms are negatively correlated to all the domains of QOL and general psychopathology and social relationships, environmental among nicotine dependents. Nicotine-dependent patients suffer from the higher levels of symptoms and suffer a worse QOL compared to that of the nondependent patients with schizophrenia [20]. Another study showed that the total QOL score and scores on all the four domains of WHO-QOL-Bref were significantly lower for the dual-diagnosis (DD) patients when compared with all the other groups that were not substance dependent [21].

Conflicts of interest: Nil.

Financial Support: Nil.

References

1. Salokangas RKR, Honkonen T, Stengard E, Koivisto AM, Hietala Jarmo. Cigarette smoking in long term schizophrenia. Eur. psychiatry. 2006;21(1):219-23.
2. Hughes JR, Hatsukami D. Signs and symptoms of tobacco withdrawal. Arch Gen Psychiatry. 1986;43(3):289-294. Doi:10.1001/archpsyc.1986.
3. Leonard S, Breese C, Adams C, Benhammou K, Gault J, Stevens K, *et al*. Smoking and schizophrenia: Abnormal nicotinic receptor expression. Eur. J Pharmacol. 2000;393:237-42.
4. Berlin I, Singleton EG, Pedarriosse AM, Lancrenon S, Rames A, Aubin HJ, *et al*. The modified reasons for smoking scale: Factorial structure, gender effects and relationship with nicotine dependence and smoking cessation in French tobacco users. Addiction. 2003;98:1575-83.
5. Ziedonis DM, Fisher W. Assessment and treatment of comorbid substance abuse in individuals with schizophrenia. Psychiatr. Ann. 1994;24:477-83.
6. Lyon ER. A review of the effects of nicotine on schizophrenia and antipsychotic medications. Psychiatr. Serv. 1999;50:1346-50.
7. World Health Organization. WHOQOL-BREF: introduction, administration, scoring and generic version of the assessment: Field trial version. Geneva: World Health Organization; c1996.
8. Dalack GW, Healy DJ, Meador-Woodruff JH. Nicotine dependence in schizophrenia: Clinical phenomena and laboratory findings. Am J Psychiatry. 1998;155:1490-501.
9. Merikangas KR, Jin R, He JP, Kessler RC, Lee S, Sampson NA, *et al*. Prevalence and correlates of bipolar spectrum disorder in the world mental health survey initiative. Arch Gen Psychiatry. 2011;68:241-251.
10. Martínez-Arán A, Vieta E, Reinares M, Colom F, Torrent C, Sánchez-Moreno J, *et al*. Cognitive function across manic or hypomanic, depressed and euthymic states in bipolar affective disorder. Am J Psychiatry. 2004;161:262-270.
11. Michalak EE, Yatham LN, Lam RW. Quality of life in bipolar affective disorder: a review of the literature. Health Qual Life Outcome S; c2005. p. 63-72.
12. Bonnín CM, Sánchez-Moreno J, Martínez-Arán A, Solé B, Reinares M, Rosa AR, *et al*. Subthreshold symptoms in bipolar affective disorder: impact on neurocognition, quality of life and disability. J Affect Disord. 2002;136:650-659.

13. Vieta E, Torrent C. Functional remediation: the pathway from remission to recovery in bipolar affective disorder. World Psychiatry. 2016;15:288-289.
14. Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerstrom test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. Br j Addict. 1991;86(9):1119-1127.
15. Jon O Ebbert, Christi A Patten, Darrell R Schroeder. The Fagerstrom Test for Nicotine Dependence-Smokeless Tobacco (FTND-ST). Addict Behav. 2006 Sep; 31(9):1716-1721.
16. Vasudeva S, Shekhar CK, Rao PG. Caregivers burden of patients with schizophrenia and bipolar affective disorder: a sectional study. Indian J of Psychol Med. 2013;35(4):352-357.
17. Parrott AC. Cigarette derived nicotine is not a medicine. The World J Biol. Psychiatry. 2003;4(2):49-55.
18. Freedman R, Olincy A, David A. Increased levels of nicotine metabolite cotinine in schizophrenic smokers compared to other smoker. Biolog. Psych. 1997;42(1):1-5.
19. Desalegn D, Girma S, Abdeta T. Quality of life and its association with psychiatric symptoms and sociodemographic characteristics among people with schizophrenia: A hospital based cross-sectional study. PLoS One. 2020 Feb;15(2):e022-9514.
20. Latha SP, Kumar MV, Tialam G, Mallepalli PK. Prevalence of nicotine dependence and its impact on quality of life and severity of symptoms in schizophrenic patients. Arch Ment. Health. 2019;20:14-20.
21. Singh J, Mattoo SK, Sharan P, Basu D. Quality of life and its correlates in patients with dual diagnosis of bipolar affective disorder and substance dependence. Bipolar Disord. 2005;7:187-191.