Research report

PREVALENCE OF DEPRESSION IN PERSONS WITH SCHIZOPHRENIA – A CROSS-SECTIONAL STUDY FROM A TERTIARY PSYCHIATRIC HOSPITAL

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Abstract

Background: It is important to be aware of depressive symptoms in schizophrenia because of the impact it has on its course and outcome. There are only a few studies that have evaluated depression in schizophrenia in Indian settings and no data is available from Kerala. The objective of this study was to find the prevalence and associated factors of depression in persons with schizophrenia. **Methods:** This was a cross-sectional study in which 225 patients with a diagnosis of schizophrenia according to DSM-5 who availed outpatient or inpatient services from a tertiary psychiatric hospital were included. Socio-demographic data were collected using a structured proforma. The symptom domains of schizophrenia were assessed using the Positive and Negative Syndrome Scale (PANSS). Depression was measured using the Calgary Depression Scale for Schizophrenia (CDSS). A cut-off score of ≥6 on the CDSS was used to identify clinically significant depressive symptoms. **Results:** This study found the prevalence of depression in schizophrenia to be 30% (95 % CI - 29.94, 30.06). Higher education, being married, greater insight, a past history of suicide attempt, positive symptoms and general psychopathology symptoms were found to be associated with depression in schizophrenia. A positive correlation between PANSS positive subscale and CDSS scores was identified. **Conclusions:** Depression was seen in almost one-third of the patients with schizophrenia. Screening and management of depressive symptoms can help in improving the quality of care provided to patients with schizophrenia.

Keywords: Depression, Schizophrenia, CDSS, PANSS

INTRODUCTION

Schizophrenia is a heterogeneous clinical syndrome characterized by a range of cognitive, behavioral and emotional dysfunctions.[1] Depression in schizophrenia has long been a taxonomic challenge leading to assertions that true schizophrenia is "non-affective"; or the invention of new diagnoses and broadening definitions, such as schizoaffective disorder.[2] The Epidemiological Catchment Area study showed that persons with schizophrenia were 29 times more likely than the general population to have a lifetime diagnosis of a major depressive episode.[3] Estimates of the frequency of depressive

episodes in patients with schizophrenia have shown a range of 7% to 75% and a modal frequency of 25%.[4] When depression is investigated longitudinally in schizophrenia, the vast majority, up to 80% of patients experience a clinically significant depressive episode at one or more points of time during the early phase.[2]

Persistent depressive symptoms during the chronic phase of illness have been associated with a higher risk for relapse.[5] While numerous authors have reported a strong association between depressive and negative symptoms of schizophrenia, others have found significantly higher correlations between depression and positive symptoms compared to negative ones.[6,7] Depressive symptoms in schizophrenia have been found to be associated with a higher risk of suicide attempts.[8] Dutta et al. (2011) reported that depression is the most significant factor in completed suicide in schizophrenia.[9] In a sample of chronically ill patients with schizophrenia, depressive symptoms were found to have a strong association with overall subjective quality of life.[10] Higher scores in BDI in schizophrenia were correlated with more impaired everyday functioning, lower subjective impressions of social cognitive competence, and greater feelings of interpersonal sensitivity, combined with the impression that others were mistreating them.[11]

The various differential diagnosis for depression in the course of schizophrenia include organic factors, negative symptoms of schizophrenia, neuroleptic-induced dysphoria, neuroleptic-induced akinesia, neuroleptic-induced akathisia, reactions to disappointment, schizoaffective disorder, substance use disorders, comorbid medical illnesses and psychosocial stressors .[4]

The Brief Psychiatric Rating Scale — Depression subscale, Positive and Negative Syndrome Scale — Depression subscale, Hamilton Rating Scale for Depression,

Montgomery Asberg Depression Rating Scale, Raskin Depression Rating Scale and Calgary Depression Scale for Schizophrenia(CDSS) are all clinician-rated scales to measure depressive symptoms in schizophrenia.[12] The CDSS most accurately differentiated depressive symptoms from other symptoms of schizophrenia, correlated well with other depression instruments and was least likely to miss cases of depression or misdiagnose depression.[12]

Recent literature suggests that depressive symptoms may also be understood as a dimension within the schizophrenia concept and that individual symptom profiles should guide treatment.[13] Adequate screening and monitoring of depressive symptoms is required to guide appropriate treatment.[14] There are only a few studies that have evaluated depression in schizophrenia in Indian settings and no data is available from Kerala. So, a study to find out the prevalence of depression in schizophrenia and its associated factors was deemed relevant.

Objectives

The primary objective of the study was to find the prevalence of depression in persons with schizophrenia. The secondary objective was to find the associated factors of depression in persons with schizophrenia.

MATERIALS AND METHODS

This cross-sectional study was conducted on patients presenting to the outpatient clinic and inpatient wards of a tertiary psychiatric hospital in Kerala, India. In a study by El-Bahy and Mohamed (2013), the prevalence of depression in patients with schizophrenia was found to be 30%.[15] Using the formula for cross-sectional study, the minimum sample size required was found to be 224. The sample size was taken as 225.

The data collection commenced after getting permission from the Institutional Scientific and Ethics Committee. The study was conducted from October 2018 to April 2019. Consecutive sampling was done till the

Table 1: Socio-demographic profile of patients with schizophrenia

Socio-demographic factors	Frequency (%)
Sex	
Male	147 (65.3)
Female	78 (34.7)
Socioeconomic status	
APL	96 (42.7)
BPL	129 (57.3)
Marital status	
Unmarried	134 (59.6)
Married	45 (20.0)
Separated and widowed	46 (20.4)
Education	
Illiterate	2 (0.9)
Primary	23 (10.2)
Secondary	117 (52.0)
Higher Secondary	51 (22.7)
Graduate and above	32 (14.3)
Employment status	
Unemployed	179 (79.6)
Employed	46 (20.4)
Current living situation	
With family	215 (95.6)
Alone	10 (4.4)

adequate sample size was reached. Those in the age group of 18 to 60 years with a diagnosis of schizophrenia according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) were included. Patients with a diagnosis of schizoaffective disorder, a substance use disorder other than tobacco, intellectual disability, and patients with severe medical or surgical problems were excluded from the study.

Out of the 225 patients in the sample, 135 were from the outpatient department and 90 were inpatients. They were interviewed after obtaining their written informed consent. In patients who had difficulty giving written informed consent, it was obtained from their caregiver. Inpatients were interviewed within the first week of admission. Psychiatric diagnosis was done using DSM-5.

Sociodemographic and other variables were assessed using a semi-structured proforma prepared for the study and information was collected from the patient and caregiver. The symptom domains of schizophrenia were assessed by the Positive and Negative Syndrome Scale (PANSS) which is a 30-item scale developed by Kay et al. (1987).[16] Depression was assessed by Calgary Depression Scale for Schizophrenia (CDSS) which is a 9-item scale developed by Addington et al. (1993) specifically for the assessment of depressive symptoms in schizophrenia. A score of 6 or more on the CDSS, has a sensitivity of 75% and specificity of 79% to diagnose major depressive disorder in schizophrenia.[17] CDSS was translated to Malayalam, back-translated to English and peer validation was done. A cut-off score of ≥6 on the CDSS was used to identify clinically significant depressive symptoms. Pilot testing was done on 20 patients using the proforma and translated scales.

Statistical Analysis

Numerical data were expressed as mean and standard deviation and categorical data as frequencies. The comparison of categorical variables between two groups was tested using the Chi-square and Fisher's exact test. Continuous variables were compared using Student's t-test. Correlations between continuous variables were tested using the Pearson correlation coefficient (r). A p-value <0.05 was considered statistically significant. All statistical tests were two-sided. The SPSS statistical package (version 16.0) was used for the statistical analysis.

RESULTS

Data from all 225 subjects were used in the analysis. Socio-demographic factors are summarized in Table 1 and clinical variables in Table 2. In the study population, 68 patients (30%; 95 % CI - 29.94, 30.06) had depression. The mean age of the patients with depression was 36.04 years (SD = 10.01). Of all the

Table 2: Clinical profile of patients with schizophrenia

Clinical factors	Frequency (%)
Past history of suicide attempt	
Present	177 (78.7)
Absent	48 (21.3)
Duration of illness	
<1 year	11 (4.9)
1-5 years	35 (15.6)
6-10 years	43 (19.1)
>10 years	136 (60.4)
Medication	
Typical Antipsychotic	62 (27.2)
Atypical Antipsychotic (Other than clozapine)	176 (77.9)
Clozapine	67 (29.5)
Antidepressant	30 (13.1)
Mood stabilizer	79 (34.9)
Benzodiazepines	128 (56.6)
Typical + Atypical antipsychotic	51 (22.3)
Not on medication	19 (8.4)
Insight	
1	105 (46.7)
2	25 (11.1)
3	38 (16.9)
4	48 (21.3)
5	8 (3.6)
6	1 (0.4)

participants, 78% were on at least one atypical antipsychotic (other than clozapine) while only 27% were on typical antipsychotics. Antidepressants were prescribed for 13% and clozapine for 30% of the sample. The majority had Grade 1 insight into their illness. The mean of the CDSS score for the sample was 3.73 (SD = 5.22) and the mean of the PANSS total score was 57.6 (SD = 14.04).

Among socio-demographic factors, higher education (p = 0.038) and being married (p = 0.014) were found to be associated with depression (see Table 3). In clinical variables, greater insight (p = 0.001) and a past history of suicide attempt (p <0.001) were found to be associated with depression (see Table 4). Depression was found to be associated with positive symptoms (p <0.001) and general psychopathology symptoms (p = 0.007) (see Table 5). A positive correlation was found between PANSS positive subscale score and CDSS score (Pearson correlation r = 0.307, p<0.001).

DISCUSSION

This study assessed the prevalence of depression in schizophrenia using the CDSS scale and it was found to be 30%. The results are similar to the modal rate of depression in schizophrenia which was reported to be 25%.[4] Other cross-sectional studies done in Egypt and Iran using CDSS found similar results.[15,18] A prospective follow-up study also showed that 30% to 40% of schizophrenia patients evidenced full depressive syndromes.[19] Prevalence of depression in schizophrenia has a wide range from 20 to 70%.[20] This large range may be explained by the type of study conducted, differences in depressive symptoms in the various phases of the illness and also because of the various scales which are available.

The participants of this study were from a wide catchment area mostly from the five southern districts of Kerala. The subjects of the study were predominantly young adults, males, unmarried, with an educated background, not employed, and from rural areas. The majority of the subjects were from a nuclear family with Below Poverty Line (BPL) status, now living with the family, with no family history of mental illness. The socio-demographic profile of the patients in this study was similar to other studies.[15,21,22] Majority of the patients were on at least one atypical antipsychotic which may be indicative of the higher prescription rates of atypical antipsychotics that have been observed through the years.[23]

Historically, it has been stated that the presence of mood symptoms in schizophrenia may be a good prognostic indicator, with patients who have high levels of affective symptoms appearing more on the "bipolar" rather than the deficit end of a psychosis

Table 3: Relationship between socio-demographic factors and depression

Socio-demographic factors		Patients with depression (n_1=68) Frequency (%)	Patients without depression (n_2=157) Frequency(%)	χ^2	P
Age in years	<30	16(27.6)	42(72.4)	7.237	0.06
	31 – 40	33(38.4)	53(61.6)		
	41 – 50	16(29.1)	39(70.9)		
	51 – 60	3(11.5)	23(88.5)		
Sex	Male	38(25.9)	109(74.1)	3.843	0.05
	Female	30(38.5)	48(61.5)		
Socioeconomic status	APL	30(31.3)	66(68.8)	0.084	0.77
	BPL	38(29.5)	91(70.5)		
*Marital status	Unmarried	38(28.4)	96(71.6)	8.469	0.014
	Married	21(46.7)	24(53.3)		
	Separated	9(19.6)	37(80.4)		
*Education	Primary	4(16)	21(84)	8.400	0.03
	Secondary	30(25.6)	87(74.4)		
	Higher Secondary	22(43.1)	29(56.9)		
	Graduate	12(37.5)	20(62.5)		
Employment status	Unemployed	57(31.8)	122(68.2)	1.091	0.29
	Employed	11(23.9)	35(76.1)		
Current living situation	With family	66(30.7)	149(69.3)	0.519	0.47
	Alone	2(20)	8(80)		

*- statistically significant (P value < 0.05)

Table 4: Relationship between clinical factors and depression

Clinical variables		Patients with depression Frequency (%) (n_1=68)	Patients without depression Frequency (%)(n_2=157)	χ^2	P
*Past history of suicide attempt	Yes	28(58.3)	20(41.7)	22.865	<0.001
	No	40(22.6)	137(77.4)		
*Insight	1	19(18.1)	86(81.9)	17.382	0.001
	2	14(56)	11(44)		
	3	13(34.2)	25(65.8)		
	>4	22(38.6)	35(61.4)		
Duration of illness	<1 year	3(27.3)	8(72.7)	5.449	0.14
	1-5 year	15(42.9)	20(57.1)		
	6-10 years	16(37.2)	27(62.8)		
	>10 years	34(25)	102(75)		

*- statistically significant (P value < 0.05)

Table 5: Comparison between symptom domains of PANSS and depression

Symptom domains	Patients with depression		Patients without depression		Total score		P
	Mean	SD	Mean	SD	Mean	SD	
*PANSS Positive	18.26	6.53	14.46	7.97	15.61	7.75	0.001
PANSS Negative	15.71	7.90	16.84	8.43	16.50	8.27	0.34
*PANSS General	27.57	6.61	25.35	5.63	26.02	6.02	0.011
*PANSS total	60.59	12.60	56.39	14.47	57.66	14.04	0.03

*- statistically significant (P value < 0.05); SD – standard deviation

continuum model.[24] Current evidence suggests that depression is linked to poorer outcomes in schizophrenia and has been identified as the most significant factor in completed suicide in schizophrenia.[2] Identifying and treating the depressive symptoms in schizophrenia have helped to improve the overall outcome and the quality of life of patients.[25]

Higher education was found to be associated with depression in schizophrenia and was statistically significant. Acosta et al. (2006) reported a similar finding.[26] This may be due to the higher awareness of the patients regarding the nature of the illness and the greater impairment of their socio-occupational functioning. Most of the previous studies did not find an association between the two.[21]

In our study, we found that being married was a factor associated with depression. The added stresses and responsibilities of marriage could be contributing to the depression. A German study also found that patients with schizophrenia who had depression were more frequently married; less frequently single than the non-depressed patients.[27] Delahanty et al. (2001) found that the risk of depression in schizophrenia is three times greater in persons who were ever married.[28] Other studies have reported that marital status was not associated with depression in schizophrenia.[18, 22]

A past history of suicide attempts was found to be associated with depression in schizophrenia. Multiple studies have reported the association between suicide and depression in schizophrenia.[27,29,30] The SOHO study identified depression as one of the risk factors for suicide in schizophrenia.[31] Depression and especially hopelessness have been identified to be the most important factor predisposing patients with chronic schizophrenia to suicide.[32]

Patients with higher grades of insight were found to have depression and this was found to be statistically significant. Studies by Misdrahi,

et al. (2014) and Gilleen, et al. (2017) also had similar findings.[33,34] Defense theorists report that growing insight into the presence of a mental disorder and its long-term consequences results in feelings of worthlessness and hopelessness. Cognitively oriented research emphasizes that depressed mood could be causing the change in attribution processes resulting in a more accurate view of the self and thus a higher level of insight.[35] The expression "insight paradox" has been used to describe the presence of depressive symptoms or suicidal ideation, among patients with schizophrenia who have good levels of insight.[36]

Depression was found to be associated with positive and general psychopathology symptoms. When PANSS scores were compared with CDSS scores, we found a positive correlation between CDSS and PANSS positive subscale scores. Emsley et al. (1999) found that the depression score was found to be associated with the score for positive symptoms and not with the score for negative symptoms of the PANSS.[37] Rajkumar et al. (2015) also reported that depressive symptoms were positively associated with positive symptoms using the CDSS scale.[22] Many other studies have also found an association between positive symptoms and depressive symptoms.[21,22] Inverse correlation was found between the depression factor and negative symptoms by Rabany et al. (2013).[38] Some previous studies have reported a positive correlation between depression and negative symptoms.[39,40] Xu et al. (2018) also found that more severe general psychopathological symptoms were significantly associated with depression.[41]

The present study on the prevalence of depression in persons with schizophrenia is the first of its kind done in a mental health institution setting in Kerala. This study has yielded information regarding the prevalence and the factors associated with depression in schizophrenia which can be used for the

benefit of patients by improving the treatment they receive and thus improving the outcome of the illness. This study shows that proper management of depression in schizophrenia will help prevent suicide and this is especially relevant in a state like Kerala which has a high suicide rate.

LIMITATIONS

There are some limitations to this study. Some of the information was gathered retrospectively and recall bias may influence the results to some extent. Since the study was conducted in a tertiary psychiatric hospital, the patients taking treatment here may be skewed to higher severity. This might have influenced the findings in the study and the findings are not generalizable. The cross-sectional nature of the study makes the direction of causality and the role of the associated factors difficult to ascertain. All the associated factors of depression in schizophrenia were not looked into in this study. The difference in depressive symptoms depending on the various phases of schizophrenia was not looked into. A detailed analysis of individual medications and the dose equivalence of the medications were not done in this study.

CONCLUSION

The present study reveals that almost one in three patients with schizophrenia have depression. Higher education, being married, greater insight, a past history of suicide attempt, positive symptoms and general psychopathology symptoms were found to be associated with depression. A positive correlation was found between the positive subscale of PANSS and CDSS scores. Further research in this area would help to improve the functioning of patients with schizophrenia and will also be valuable in the prevention of suicide. Studies in general hospitals and at community levels will help us to improve our understanding of it. More factors like depressive symptoms in various phases of schizophrenia, its impact on quality of life, its

association with medications and other outcome measures can be looked into in future studies.

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