

## Clinical Correlates of Suicide in Suicidal Patients with Schizophrenia Spectrum Disorders and Affective Disorders

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### ABSTRACT

**Background:** The most common psychiatric illnesses in the background of suicide are schizophrenia spectrum disorders (SSD) and affective disorders (AD). While depression and hopelessness are important factors for suicide in psychiatric patients, the role of psychotic symptoms is unclear. We examine the comparative differences in the clinical correlates of suicide in SSD and AD patients with suicidal risk. **Materials and Methods:** One hundred and twenty suicidal psychiatric patients (aged between 17-60 years) were evaluated for depression severity, hopelessness, past attempts, and reasons for wanting to commit suicide at the emergency psychiatry centre. Of these 29% had SSD, 65% AD, and 6% other disorders. **Results:** Lifetime history of suicide attempts and suicide attempts in previous month were higher in SSD patients. Mean Beck Depression scores, Hopelessness, and Suicide Intention scores were significantly lower in patients with SSD as compared to AD ( $P \leq 0.05$ ). More than 60% patients with SSD attributed psychotic symptoms as a reason for wanting to commit suicide, while more than 50% patients with AD attributed it to family and personal stressors ( $P \leq 0.001$ ). **Conclusions:** Factors associated with suicidal ideations were significantly different between SSD and AD patients. Hence, suicide prevention strategies should be based on the specific risk factors for each group, SSD and AD.


**Key words:** Affective disorders, emergency psychiatry, schizophrenia spectrum disorders, suicide attempts

### INTRODUCTION

Suicidal patients are commonly encountered in psychiatric practice, and attempted suicide and suicidal ideation are often a cause of emergency treatment and psychiatric hospitalization. The most common psychiatric illnesses in the background of suicide are

the affective disorder (AD) of unipolar major depression and the non-AD of schizophrenia.<sup>[1]</sup>

Patients with ADs are at a higher risk of suicide relative to the general population<sup>[2]</sup> with depression and bipolar

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manic-depression being the most common psychiatric conditions associated with suicide.<sup>[3]</sup> Suicide rates in bipolar patients are among the highest of any psychiatric disorder.<sup>[4]</sup> Between 25% and 50% of patients with bipolar disorder make suicide attempts during their lives,<sup>[3,5]</sup> while suicide rates among schizophrenics fall in the broad range of 5-13%.<sup>[6]</sup>

Suicide attempt is the most strong predictor of committed suicide, particularly in patients with mood disorder.<sup>[7-9]</sup> Suicide attempts are also an important risk factor for suicide in schizophrenia. Kelly *et al.*<sup>[10]</sup> in their study of schizophrenic patients who had committed suicide found that 93% of these individuals had engaged in previous suicidal behaviors as compared to 23% of the patients who died by other means of death. A study by Heilä *et al.*<sup>[11]</sup> reports that 71% of Finnish schizophrenics who committed suicide had a history of suicide attempts.

Hopelessness plays a more important role in schizophrenia than its relationship with suicidality,<sup>[6]</sup> and a history of hopelessness and demoralization is common among schizophrenics. A review of risk factors for schizophrenia and suicide by Hawton *et al.*,<sup>[12]</sup> identified seven robust risk factors, including previous depressive disorder, previous suicide attempts, drug misuse, agitation or motor restlessness, fear of mental disintegration, poor treatment adherence, and recent loss. The authors suggest that command hallucinations, though not an independent risk factor, increased the risk in those already vulnerable to suicide.

Although suicide is one of the major causes for mortality among psychiatric patients, in the Indian context research efforts in this area have been sparse. In this context, an Indian study found that the prevalence of suicide attempts in major depressive disorder was 16.6%.<sup>[13]</sup> Another Indian study reported a 4.7% rate of attempted suicide in schizophrenia.<sup>[14]</sup> A hospital-based study in India found that about one-fourth (24%) of schizophrenia patients had suicidal ideation.<sup>[15]</sup>

There is, therefore, a need for research in the Indian context that is based on a sample of psychiatric patients (with suicidal risk and who have been admitted to a tertiary psychiatric care center) that examines the comparative differences in the clinical correlates of suicide attempt between the significantly important mental illnesses. This study aims to bridge this research gap in the Indian context.

## MATERIALS AND METHODS

The study is based on a sample of 120 psychiatric patients with suicidal risk who were admitted to the Emergency Psychiatry and Acute Care (EPAC) Service

at National Institute of Mental Health and Neuro Sciences (NIMHANS), Bengaluru, India. All psychiatric patients presenting to the EPAC Service of NIMHANS from June 2011 to May 2012, with identified suicidal risk, and who were aged 17-60, were approached to participate in the study. Approval from the Institute Ethics Committee of NIMHANS was obtained before initiating the study. Written informed consent was obtained from the patients. Patients with dementia, mental retardation, and organic mental disorders such as head injury, tumors, central nervous system infections, catatonia, and those with acute psychotic symptoms, which interfere with the understanding of procedures and/or tools, were excluded from the study.

All assessments were done within 48 h of inpatient care to avoid factors which would have reduced the patients' symptomatic severity. A structured proforma was designed to assess the sociodemographic details of the patients, their premorbid, personal, past, and family history. Questions related to clinical variables such as age of onset of illness, duration of illness, and the reason for wanting to commit suicide attempt were included. The psychiatric diagnosis of these 120 patients was made by using the Mini-International Neuropsychiatric Interview (M.I.N.I.). M.I.N.I. is a short structured clinical interview which enables researchers to make diagnoses of psychiatric disorders according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition or International Classification of Diseases-10.<sup>[16]</sup> For this study, schizophrenia spectrum disorder (SSD) was defined as schizophrenia, delusional disorder, psychotic disorder not otherwise specified, schizoaffective disorder, and schizotypal personality disorder,<sup>[17,18]</sup> while ADs was defined as major depressive disorders, bipolar ADs, and dysthymia.

The patients were systematically evaluated for depression severity, hopelessness, suicide ideations, suicide intent, distress due to auditory hallucinations, and delusions by using the Beck Depression Inventory (BDI),<sup>[19]</sup> Beck Hopelessness Scale (BHS),<sup>[20]</sup> Scale for Suicide Ideation (SSI),<sup>[21]</sup> Suicide Intent Scale (SIS),<sup>[22]</sup> and Psychotic Symptoms Rating Scales (PSYRATS),<sup>[23]</sup> respectively. A qualitative semi-structured interview was used to get the patient's own narrative about the reasons for wanting to commit suicide.

PSYRATS comprises interviewer administered scales designed to allow ratings of the severity of dimensions of auditory hallucinations and delusions. It consists of a 6-items structured interview designed to elicit the different dimensions of delusions and an 11-items structured interview designed to elicit specific details regarding different dimensions of auditory hallucinations. The scales have been found to

demonstrate excellent inter-rater reliability and good validity against similar instruments in people with acute, as well as chronic psychosis.<sup>[24]</sup>

Results were analyzed using Statistical Package for the Social Sciences 16.0 version (Chicago, SPSS Inc., 2007). Chi-square test was used to find out the relation of categorical variables. Kolmogorov-Smirnov test was used to test for normality of all variables. Mann-Whitney test and the independent sample *t*-test were applied to compare the mean values of BDI, BHS, SSI, and SIS scores in patients with SSD and AD.

## RESULTS

The diagnostic breakup of the 120 sample patients was as follows: SSD — 35 (29%), AD — 78 (65%), and other disorders 7 (5.8%). Of these, 120 patients with suicidal risk, 111 patients had made a current suicide attempt.

Comorbid substance use disorders were found in 21 (17.5%) patients, with the most common co-morbid substance use disorder being nicotine dependent syndrome (NDS) — 10 (8.3%), followed by alcohol dependence syndrome (ADS) — 7 (5.8%), and both NDS and ADS 4 (3.3%). The SSD group of patients had more co-morbid substance use/dependence than the AD group of patients. However, both the groups did not differ significantly with regards to co-morbid substance use/dependence disorders.

Those with AD did not differ significantly from those with SSD in respect of various sociodemographic variables [Table 1].

The mean BDI scores ( $P = 0.001$ ), BHS scores ( $P = 0.013$ ), and SIS scores ( $P = 0.034$ ) were significantly lower in those with SSD as compared to those with AD. However, the scores were not significantly different between the two groups with respect to Beck Scale for SSI ( $P = 0.225$ ) [Table 2].

A comparison between those with SSD and those with AD for hopelessness and depression severity indicates that 72 (92.3%) patients with AD had significantly a higher BDI scores (20-63, i.e., moderate to severe depression), in comparison to 17 (48.6%) patients with SSD ( $P \leq 0.001$ ). On BHS, 67 (85.9%) patients with AD had a significantly higher score (9-20, i.e., moderate to severe hopelessness), as compared to 23 (65.7%) patients with SSD ( $P = 0.014$ ). On SIS, the patients showed high suicide intent at the time of assessment (SIS score = 29+): 70.6% in those with SSD and 74.3% in those with AD [Table 3].

The proportion of suicide attempters was high in both the groups of patients, although the proportion was

relatively higher in patients with SSD (97%-34/35) as compared to patients with AD (89.5%-70/78). The lifetime history of suicide attempts was also high in both the groups, although, again, it was relatively higher in the SSD group (100%-35/35) as compared to the AD (94.9%-74/78) group. Further, those with SSD

**Table 1: Comparison of sociodemographic characteristics of patients with SSD and AD**

Characteristic	SSD ( <i>n</i> = 35) <i>n</i> (%)	AD ( <i>n</i> = 78) <i>n</i> (%)	Statistic
Age (years)			
Mean age (SD)	33.06 (±9.613)	33.19 (±10.326)	<i>t</i> =0.06 <i>P</i> =0.498
Below 30 years	18 (51.4)	37 (47.4)	$\chi^2=0.159$ <i>P</i> =0.924
30-46 years	13 (37.1)	31 (39.7)	
47-60 years	4 (11.4)	10 (12.8)	
Gender			
Female	22 (62.9)	48 (61.5)	$\chi^2=0.018$ <i>P</i> =0.894
Male	13 (37.1)	30 (38.5)	
Marital status			
Never married	12 (34.3)	22 (28.2)	$\chi^2=0.425$ <i>P</i> =0.515
Married	17 (48.6)	46 (59.0)	
Divorced	6 (17.2)	7 (9.0)	
Widow	0 (0.0)	3 (3.8)	
Education			
Primary (1 <sup>st</sup> -5 <sup>th</sup> class)	9 (25.7)	16 (20.5)	$\chi^2=0.802$ <i>P</i> =0.670
School (6 <sup>th</sup> -10 <sup>th</sup> class)	11 (31.4)	31 (39.7)	
Above 10 <sup>th</sup> class	15 (49.9)	31 (39.7)	
Residence			
Urban	23 (65.7)	49 (62.8)	$\chi^2=0.088$ <i>P</i> =0.767
Rural	12 (34.3)	29 (37.2)	
Occupation			
Unemployed	22 (62.9)	44 (56.4)	$\chi^2=0.413$ <i>P</i> =0.520
Employed	13 (37.1)	34 (43.6)	
Family history of suicide			
No	31 (88.6)	64 (82.1)	$\chi^2=0.761$ <i>P</i> =0.381
Yes	4 (11.4)	14 (17.9)	
Family history of psychiatric illness			
No	22 (62.9)	46 (59.0)	$\chi^2=0.152$ <i>P</i> =0.697
Yes	13 (37.1)	32 (41.0)	

SD – Standard deviation; SSD – Schizophrenia spectrum disorder;  
AD – Affective disorder

**Table 2: Comparison of clinical correlates of patients with SSD and patients with AD**

Variable	Mean ± SD		Statistic
	SSD ( <i>n</i> = 35)	AD ( <i>n</i> = 78)	
AOOI	26.46±8.136	27.26±8.662	<i>t</i> =-0.462, <i>P</i> =0.538
DOI	79.23±59.655	72.05±78.388	<i>Z</i> =-1.257, <i>P</i> =0.209
BDI total score	23.43±13.34	38.37±13.324	<i>t</i> =-5.510, <i>P</i> =0.001
BHS total score	11.09±6.491	14.06±5.478	<i>Z</i> =-2.351, <i>P</i> =0.019
SSI total score	14.26±8.205	16.29±8.201	<i>t</i> =-1.221, <i>P</i> =0.225
SIS total score	30.35±5.157	32.89±5.874	<i>t</i> =-2.144, <i>P</i> =0.034

AOOI – Age of onset of illness in years; DOI – Duration of illness in months; BDI – Beck depression inventory; BHS – Beck hopelessness scale; SSI – Scale for suicide ideation; SIS – Suicide intent scale; SSD – Schizophrenia spectrum disorder; AD – Affective disorder; SD – Standard deviation

also had a relatively higher rate of suicide attempts in the previous month and past years (34%-12/35 and 31.4%-11/35, respectively), as compared to those with AD (23%-18/78 and 29.5%-23/78, respectively). Among those with SSD, a relatively higher proportion 15 (42.95%) had made more than two suicide attempts as compared to those with AD 30 (38.5%). However, there was no statistically significant difference between SSD and AD group with regards to suicide attempts in the previous month and the previous year [Table 4].

The reasons given for current suicidal ideations by those with SSD were significantly different from the reasons given by those with AD ( $P \leq 0.001$ ) [Table 5]. The reasons given by patients with SSD included having psychotic symptoms, i.e., auditory hallucinations, 12 (34.3%) patients; delusions, 11 (31.4%); family stressors, 5 (14.3%); chronic illness, 6 (17.1%); and, career-related problems, 1 (2.9%). Of the 12 patients with SSD, who reported attempting suicide on account of auditory hallucinations, 7 (58.33%) gave command hallucinations as the reason and 5 (41.66%) as distress associated with the negative content of the voices. Among the 11 patients, who reported attempting suicide on account of delusions, 7 (63.63%) did so because of delusion of infidelity, 3 (27.27%) because of delusion of persecution, and 1 (9.09%) because of delusion of reference.

The reasons given for current suicide ideations by patients with AD, in order of importance, were family stressors, 24 (30.8%); personal stressors, 18 (23.1%), which include love failure, 7 (9%) and career-related/job-related problems, 11 (14.1%); chronic mental illness, 28 (35.9%); delusions, 5 (6.41%); and auditory hallucination 3 (3.84%). Further, the three patients with AD, who reported suicide attempts on account of auditory hallucinations, 2 (66.7%) gave command hallucinations as the reason and 1 (33.3%) attributed their suicide attempt to distress associated with the negative content of the voices. Among the five patients, who reported attempting suicide on account of delusions, 3 (60%) did so because of delusion of infidelity and others 2 (40%) because of delusion of persecution and reference.

## DISCUSSION

We found that 50% of the patients in our study were below 30 years of age. We also found that those with AD did not differ from those with SSD as regard their age. Our study thus supports the observations made by earlier studies<sup>[25-29]</sup> that early age is a major risk factor for suicide in both SSD, as well as AD. A previous study reports that males affected with schizophrenia disorders are less likely to attempt suicide as compared to males with affective or other disorders.<sup>[30]</sup> In our study, we

**Table 3: Interpretation of clinical correlates between patients with SSD and patients with AD**

Variable	Category	SSD (n = 35) n (%)	AD (n = 78) n (%)	Statistic
BDI score	Minimal to mild (0-19)	18 (51.4)	6 (7.7)	$\chi^2=27.62$ $P<0.001$
	Moderate to severe (20-63)	17 (48.6)	72 (92.3)	
BHS score	Minimal to mild (0-8)	12 (34.3)	11 (14.1)	$\chi^2=6.071$ $P=0.014$
	Moderate to severe (9-20)	23 (65.7)	67 (85.9)	
SIS score	Low to medium intention (15-28)	10 (29.4)	18 (25.7)	$\chi^2=0.371$ $P=0.542$
	High intention (29+)	24 (70.6)	52 (74.3)	

BDI – Beck depression inventory; BHS – Beck hopelessness scale; SIS – Suicide intent scale; SSD – Schizophrenia spectrum disorder; AD – Affective disorder

**Table 4: Comparison of characteristics of suicide attempt between patients with SSD and patients with AD**

Variable	SSD n (%)	AD n (%)	Statistic
Suicide attempt in previous month			
No	23 (65.7)	60 (76.9)	$\chi^2=1.557$ $P=0.121$
Yes	12 (34.3)	18 (23.1)	
Suicide attempts in past years			
No	24 (68.6)	55 (70.5)	$\chi^2=0.849$ $P=0.357$
Yes	11 (31.4)	23 (29.5)	

SSD – Schizophrenia spectrum disorder; AD – Affective disorder

**Table 5: Comparison of reason for suicidal ideations between patients with SSD and patients with AD**

Reason for suicide attempt	SSD (n = 35) n (%)	AD (n = 78) n (%)	Statistic
Illness	6 (17.1)	28 (35.9)	$\chi^2=37.571$ $P=0.001$
Psychotic symptoms	23 (65.7)	8 (10.3)	
Family and personal stressors	6 (17.1)	42 (53.8)	

SSD – Schizophrenia spectrum disorder; AD – Affective disorder

find that in both SSD and AD patients, as compared to females, a lesser number of males have attempted suicide.

Previous research suggests that being divorced or widowed increases the risk of suicide in case of depressed patients.<sup>[27-29]</sup> However, we find that 71.8% of the patients with AD were married, among whom 3.8% were widowed, and 9% were divorced. Of those with SSD 66% were married, among whom 17.2% were divorced. In our sample, being married does not appear to confer any protection against suicide.

Several studies have investigated the role of family history of suicide among schizophrenics who had committed suicide, but their findings are conflicting.<sup>[6]</sup> We find that a family history of suicide was less prevalent among patients in the schizophrenic disorders group

as compared to patients in the ADs group (11.4% vs. 17.9%). However, those with AD did not differ significantly from those with SSD in respect of the family history of suicide.

Several studies have pointed out that substance use, abuse or dependence is often comorbid with schizophrenia and psychosis, and that there is an increased risk of suicide in schizophrenics involved in substance abuse.<sup>[31-33]</sup> In case of individuals suffering from major depressive disorder too, it is found that at the time of their suicidal act, suicide completers were significantly more likely to use alcohol or drugs prior to their suicidal act.<sup>[34]</sup> In our study, we observe that comorbid substance use disorders were found in 17.5% of the patients, and only 4 (4.1%) patients had consumed alcohol or taken a drug prior to their suicide attempt. However, it needs to be pointed out that we have not included those with primary alcohol and other drug dependencies in our sample as these patients are admitted for treatment in a separate Deaddiction Center at NIMHANS.

A previous study has reported that suicide risk is high early in the course of bipolar illness.<sup>[35]</sup> In our study, age of onset and duration of illness among AD is found to be  $27.26 \pm 8.662$  years and  $72.05 \pm 78.388$  months, respectively. While the mean age of onset of illness among those with SSD was  $26.46 \pm 8.136$  years, and the duration of illness was  $79.23 \pm 59.655$  months at the time of the current suicide attempt. This reflects a narrow time interval between age of onset and the present suicide attempt for the AD as compared to the SSD group. However, we do not find any significant association with age of onset or duration of illness to suicide attempts.

We find that the proportion of suicide attempts and lifetime history of suicide attempts was relatively high in the SSD of patients as compared to the AD group of patients. Furthermore, the number of suicide attempts in the previous month and the previous year were significantly higher in SSD as compared to AD. This supports the observations of previous studies<sup>[10,11,36]</sup> that a history of past suicide attempts is a predictor of future suicide, and that a past history of suicide appears to be a risk factor for suicide attempt.

Depressed mood and hopelessness are important components of suicidal behavior. Among adult clinical populations, hopelessness has been shown to correlate better with suicidal intent<sup>[37,38]</sup> and subsequent suicide,<sup>[39,40]</sup> than the severity of depression. Hopelessness in case of schizophrenia is reported to be a more important risk factor than the presence of clinical depression (also a significant risk factor for suicide).<sup>[41]</sup>

In our study too, half of the patients with SSD scored moderate to severe on the BDI, and 66% scored moderate to severe on the BHS. Our study shows that the mean BDI scores and the mean BHS scores were significantly lower in patients with SSD as compared to patients with AD. It shows that hopelessness and depressed mood are important correlates of suicidal behavior for AD as compared to SSD.

Based on self-reports of the patients we find that the subjective attribution of reasons for wanting to commit suicide were significantly different between patients with SSD and patients with AD. Suicide attributable to psychotic symptoms was reported by more than half of the patients with SSD, whereas more than half of the patients with AD attributed suicide to family and personal stressors. This is probably explained by differences in psychopathology, life stressors, differences in lifestyle, and influence of psychotic symptoms. However, in our study we find that although 9 (7.5%) of the suicidal patients had command hallucinations, all the 9 patients had commands to harm self. This could be explained by the fact that the patients in our study were exclusively those who had attempted suicide. Even then, this observation supports that command auditory hallucinations are psychotic symptoms most frequently associated with suicidal behavior,<sup>[42]</sup> particularly so in the most vulnerable to suicide of these patients.<sup>[43]</sup>

This study was carried out in the emergency psychiatric unit of a tertiary health care center, where all the patients included in the study were admitted with suicidal risk. To the best of our knowledge, this is the first systematic comparative study between patients with SSD and patients with AD in a psychiatric emergency center in India. Very few studies have examined the correlates of suicide proximal to the suicide attempt or at a time when the patient is suicidal. Hence, this study is expected to further our understanding of the clinical and the more subjective correlates of suicide. This is the first Indian study that examines the subjective attribution of reasons for wanting to commit suicide for two major groups of mental disorders based on data obtained from self-reports of the patients themselves.

Although the study has come up with some interesting findings, the cross-sectional design of the study does not allow us to draw definite conclusions from these findings. Even though patients with suicidal risk were recruited from the psychiatric emergency ward for this study, there are other patients with serious suicide attempts elsewhere who might not reach a psychiatric center because of medical emergencies. No measurement of personality traits was made. The rater was not blind to the diagnoses of the patients.

## CONCLUSION

The severity of depression and hopelessness, which are established risk factors for suicide in ADs, was relatively lower in the SSD group of patients as compared with the AD group. However, more than half the patients in the SSDs group attributed their suicide attempt to psychotic symptoms. We find that auditory hallucinations when present in psychiatrically ill patients are an important factor for attempting suicide. Command hallucinations and distress associated with the negative content of voices are significant factors for attempted suicide. When assessing patients for suicide risk, it is clinically relevant to also assess them for the presence of auditory hallucinations. While not disregarding the role of hopelessness and depressive symptoms in patients with SSDs, it might be clinically relevant to not entirely rely on these two measures while assessing suicide risk in these patients. Factors associated with suicide attempts were age below 30 years, female sex, being married, urban background, past suicide attempts, presence of psychotic symptoms, family and personal stressors, and perceived stress due to mental illnesses. Hence, early detection of these factors may be helpful in preventing suicide and in implementing proper therapeutic interventions accordingly.

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### Conflicts of interest

There are no conflicts of interest.

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