Original research article

This Study Aimed to Assess the Prevalence of Various Risks Associated with Bipolar Disorders.

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ABSTRACT
Objectives: This study aimed to assess the prevalence of various risks associated with bipolar disorders.
Methods: The cross-sectional observational study was conducted on 200 patients of bipolar affective disorders of age 18-60 years. Ram Manohar Lohia Risk Assessment Interview (RML-RAI) was done for identifying risk of violence, self-harming, self neglect, fire risk, risk of coming to harm, risk to others, risk from others, and others risk.
Results: The mean age of patients was 36.36 (±12.7) years with 64.50% males and 35.50% females. In our study,76.00% of patients had risk of violence followed by risk of coming to harm (42.50%), self-neglect (29.00%), self-harming (28.00%), risk to others (26.50%), risk from others (12.00%) and fire risk (2.00%). The individual risks showed significant association with history of substance abuse, mental state changes, stress levels and compliance to treatment. ($p<0.05$)
Conclusion: Bipolar disease patients in addition to having depression and mania carry a potential of risk of violence, risk of coming to harm, risk of self-neglect, risk of self-harming, risk to others, risk from others, and fire risk in decreasing frequency.

Key words: bipolar disorder, RML-RAI, self-harm, risk assessment, M.I.N

Introduction
Bipolar affective disorder is a major mental illness, with episodes of mania and depression which affects person's cognition,emotion, behaviour, and social abilities.[1] In the age group of 15-44 years, it is the 6th leading cause of Disability Adjusted Life Years (DALY) with worldwide burden of 2.4% and in India of 0.1 %.[2]
Because of its bipolar nature, the mental imbalance and behaviours vary completely in an individual. States of mania are characterized by elevated mood, decreased need for sleep, elevated self-esteem, pressure of speech, impulsivity, excessive libido, recklessness, increased psychomotor activity and/or social intrusiveness. On the other hand, depressive states are characterized by low mood, decreased interest in previously pleasurable activities, low self-

esteem and lack of confidence, easy fatiguability, sleep disturbance, hopelessness, worthlessness or inappropriate guilt and helplessness.[3]

Depressive episodes are associated with self-harm and suicidal and non-suicidal ideation,[4] and homicidal tendencies and on the other hand manic episodes are associated with aggressive behaviour causing financial losses, and increased risk taking behaviour and violence.Both carry a negative social impact and require a lot of care for the patient.[5]

Taking into account the different set of behaviours and the risk such behaviours carried for self and others, it becomes imperative to understand the factors that have been postulated to be associated with an increased prevalence of risks in bipolar disorder. This may help in better assessing and managing such patients.

Factors such as young age at onset of the disease, family history, poor social support, acute stressful events, use of substance, psychotic features and comorbidities such as Schizophrenia, depression, severe mental illness, lack of access to mental health care facilities, incompliance of the treatment, number of past episodes, history of past aggressions, depressive or manic symptoms; have found to increase the prevalence of risky behaviours in patients with Bipolar disorders.[5,6]It is important to pay attention for all these significant factors to manage and control aggressive behaviour among bipolar patients.[5]

Such risks in BPAD patients demand a high social support and family support. Decreased social support and security and hopelessness are closely associated with severity of episode of depression. Both behaviours may be managed if the risks are known, social support is available, medical knowledge and facilities are provided and adequate medical management is done with a proper follow up of the compliance.[7]

In addition, despite a proper management, bipolar affective disorder carries a high risk of recurrence. Approximately, 60 out of 100 (60%) patients experience recurrence in the first two years, and 75 out of 100 (75%) patients experience a recurrence in over five years following the initial diagnosis.[8] So, it demands a continuous monitoring of such patients to prevent any self-risk or risk to the others.

There is a wide gap of knowledge in the understanding of risks of violent behaviour associated with serious mental illnesses individually. Aggressive behaviour is a challenging behaviour to manage among bipolar patients that causes poor social interaction and hospitalization. But, there is scant information with regards of the magnitude and contributing factors for such behaviour among bipolar patients. Even the Indian data of the risks present in bipolar disorders and its correlation with other parameters is sparse.

Thus this study was done to assess the rates of various risks in bipolar disorder, like the risk of violence, self-harm, coming to harm, risk to others, risk from others and factors associated with these risks. Our study may help the physicians to know about various risks and do the timely management. The study shall also help make aware the care takers about the various risks associated with the BPAD patients; which shall make them strong to support them and prevent any harm to themselves and others.

Materials and methods

This cross-sectional observational study was conducted at Department of Psychiatry from November 2018 to March 2020. This study included 200 patients of bipolar affective disorders. Calculation of sample size was done as following: Three research papers (Volavka et al. (2013),[9]Kattimani et al. (2017),[10]Dalton EJ et al.,[11](2003)were consulted for sample size calculation in which prevalence was reported to be 2.52%, 23% and 23.8%, respectively for violence,suicide attempt in bipolar I and suicide risk without comorbid substance use.

We selected the maximum prevalence value among different risks prevalence which was rounded to 24% for sample size calculation.Confidence interval taken was 90%. Since the prevalence is between 10% and 30%, the precision taken was 0.05. An online sample size

calculator epitools.ausvet.com was used and sample for large population was 198. Hence, we proposed to have sample of 200 for the study.

Inclusion criteria included patients of both genders in the age group of 18-60 years, and those who fulfilled ICD-10 diagnosis of Bipolar Affective Disorder (F31).Patients with history of substance abuse (except for nicotine) which could interfere with diagnosis, any other Comorbid psychiatric illness, with mental retardation as defined in ICD10, and with any neurological illness like seizure disorder,dementia, Parkinson's disease,etc. which could make person more prone to risks.

The participants were recruited as persons with bipolar disorders, who presented for treatment at the outpatient or inpatient services of Psychiatry Department. Those who met the inclusion and exclusion criteria and willing to participate were explained in detail, in the language they understand regarding all aspects of participating in this study by the treating psychiatrist. Those who agreed to participate were referred to the researcher and written informed consent was obtained. Consenting participants and their unaffected relatives were interviewed and history pertaining to the demographic and psychiatric was obtained using instruments.

- M.I.N.I.[12]was applied for further aiding the diagnosis and to rule out any other psychiatric illness other than bipolar disorder.
- RML-RAI[13]was applied to assess various risks present in the sample.HAMD17 and YMRS we are applied to assess severity of current episode.

Among the outcome measures, primary outcomes included risks for individual patients,risk of violence, self-harm, self-neglect, fire risk, risk of coming to harm, risk to others, risk from others, and other risk. Secondary outcomes included association of individual risks with history.

Statistical analysis: Categorical variables were presented in number and percentage (%) and continuous variables were presented as mean $\pm$ SD and median. Qualitative variables were associated using Chi-Square test/Fisher's Exact test. A p value of <0.05 was considered statistically significant. The data was entered in MS EXCEL spreadsheet and analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0.

Results

The mean age of patients was 36.36 ($\pm$12.7) years with of 200 patients 129 (64.50%) were male and 71 (35.50%) were female. Out of 200, 48 (24.00%) patients were housewives followed by 44 patients (22.00%) doing private job. Of 200 patients, 145 (72.50%) were from Delhi. Of 200, 117 (58.50%) patients were living in own home with spouse and/or children and 69 (34.50%) were living in home of parents or children. 122 out of 200 (61.00%) patients were married.

The mean onset of disease among them was 25.52 ($\pm$ 10.05) years. Mean value of age at first consultation(years) of study subjects was 26.3 ($\pm$ 10.65) years. In 138 out of 200 (69.00%) of the patients, total number of episodes was less than 5.In index study, 81.50% of patients had no depression followed by mild depression (10.50%) and moderate depression (7.50%). Severe depression was seen in only 1 out of 200 patients. Mean value of HAM-D of study subjects was 2.92 $\pm$ 5.07. Mean value of Young Mania Rating Scale of study subjects was 6.99 ($\pm$9.61).

In majority, 199 out of 200(99.50%) of patients, information source was service user followed by carer 167 out of 200(83.50%), hospital notes 106 out of 200 (53.00%). Information source was GP and police in only 1 out of 200 patients each.

In our study, of 200 patients, 152 (76.00%) had risk of violence followed by risk of coming to harm 85(42.50%), self-neglect 58(29.00%), self-harming 56(28.00%), risk to others 53(26.50%), risk from others 24(12.00%) and fire risk 4(2.00%). The identified risks have been shown in Table 1, Figure 1.

Table 1:-Distribution of identified area of risks of study subjects.

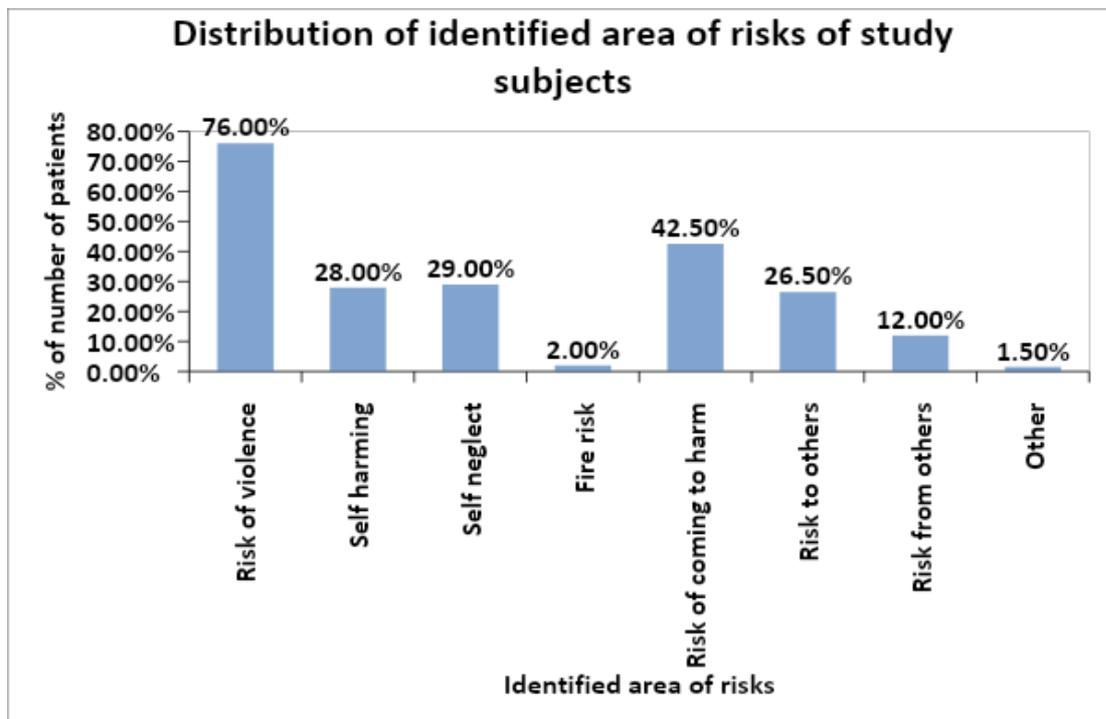| Identified area of risks	Frequency	Percentage
Risk of violence	152	76.00%
Self-harming	56	28.00%
Self neglect	58	29.00%
Fire risk	4	2.00%
Risk of coming to harm	85	42.50%
Risk to others	53	26.50%
Risk from others	24	12.00%
Other	3	1.50%

Figure 1:-Distribution of identified area of risks of study subjects.

In present study, majority (76.00%) of patients had risk of violence followed by risk of coming to harm (42.50%), self-neglect (29.00%), self-harming (28.00%), risk to others (26.50%), risk from others (12.00%) and fire risk (2.00%). Identified area of risks was other risks in only 3 out of 200 patients. It is shown in table 1, figure 1.

The association of identified risks with the history and mental state has been shown in Table 2,3,4,5,6,7,8,9,10 and 11.Various risks showed diverse associations with the history and mental state of the patients.

Table 2:-Association of history with self-harming.

History	Yes (n=56)	No (n=144)	Total	P value	Test performed
Q1.3 Evidence of poor compliance {Current}	20 (35.71%)	47 (32.64%)	67 (33.50%)	0.679	Chi square test,0.171
Q1.3 Evidence of poor compliance {Ever}	33 (58.93%)	88 (61.11%)	121 (60.50%)	0.777	Chi square test,0.08
Q1.4 Evidence of substance misuse {Current}	13 (23.21%)	11 (7.64%)	24 (12%)	0.002	Chi square test,9.263
Q1.4 Evidence of substance misuse {Ever}	19 (33.93%)	32 (22.22%)	51 (25.50%)	0.088	Chi square test,2.908
Q1.5 Evidence of sexually inappropriate {Current}	6 (10.71%)	9 (6.25%)	15 (7.50%)	0.282	Chi square test,1.158
Q1.5 Evidence of sexually inappropriate {Ever}	9 (16.07%)	18 (12.50%)	27 (13.50%)	0.507	Chi square test,0.44
Q1.6 Any changes in mental state {Current}	14 (25%)	16 (11.11%)	30 (15%)	0.014	Chi square test,6.1
Q1.6 Any changes in mental state {Ever}	13 (23.21%)	31 (21.53%)	44 (22%)	0.796	Chi square test,0.067
Q1.7 Evidence of severe stress {Current}	16 (28.57%)	41 (28.47%)	57 (28.50%)	0.989	Chi square test,0
Q1.7 Evidence of severe stress {Ever}	22 (39.29%)	25 (17.36%)	47 (23.50%)	0.001	Chi square test,10.781
Q1.10 Evidence of discontinuation {Current}	21 (37.50%)	45 (31.25%)	66 (33%)	0.399	Chi square test,0.712
Q1.10 Evidence of discontinuation {Ever}	26 (46.43%)	62 (43.06%)	88 (44%)	0.666	Chi square test,0.186

Significant association was seen in the distribution of evidence of substance misuse {Current}, changes in mental state {Current} and evidence of severe stress {Ever} with self-harming. (p value<.05) Proportion of patients with evidence of substance misuse {Current} in patients with risk of self-harming (23.21%) was significantly higher as compared to patients without risk of

self-harming (7.64%). Proportion of patients with changes in mental state {Current} in patients with risk of self-harming (25.00%) was significantly higher as compared to patients without risk of self-harming (11.11%). Proportion of patients with evidence of severe stress {Ever} in patients with risk of self-harming (39.29%) was significantly higher as compared to patients without risk of self-harming (17.36%).

Table 3:-Association of history with risk of violence.

History	Yes (n=152)	No (n=48)	Total	P value	Test performed
Q1.3 Evidence of poor compliance {Current}	56 (36.84%)	11 (22.92%)	67 (33.50%)	0.075	Chi square test,3.175
Q1.3 Evidence of poor compliance {Ever}	91 (59.87%)	30 (62.50%)	121 (60.50%)	0.745	Chi square test,0.106
Q1.4 Evidence of substance misuse {Current}	22 (14.47%)	2 (4.17%)	24 (12%)	0.073	Fisher Exact test
Q1.4 Evidence of substance misuse {Ever}	44 (28.95%)	7 (14.58%)	51 (25.50%)	0.047	Chi square test,3.962
Q1.5 Evidence of sexually inappropriate {Current}	14 (9.21%)	1 (2.08%)	15 (7.50%)	0.125	Fisher Exact test
Q1.5 Evidence of sexually inappropriate {Ever}	18 (11.84%)	9 (18.75%)	27 (13.50%)	0.222	Chi square test,1.491
Q1.6 Any changes in mental state {Current}	29 (19.08%)	1 (2.08%)	30 (15%)	0.002	Fisher Exact test
Q1.6 Any changes in mental state {Ever}	39 (25.66%)	5 (10.42%)	44 (22%)	0.026	Chi square test,4.938
Q1.7 Evidence of severe stress {Current}	50 (32.89%)	7 (14.58%)	57 (28.50%)	0.014	Chi square test,6.003
Q1.7 Evidence of severe stress {Ever}	35 (23.03%)	12 (25%)	47 (23.50%)	0.779	Chi square test,0.079
Q1.10 Evidence of discontinuation {Current}	58 (38.16%)	8 (16.67%)	66 (33%)	0.006	Chi square test,7.621
Q1.10 Evidence of discontinuation {Ever}	67 (44.08%)	21 (43.75%)	88 (44%)	0.968	Chi square test,0.002

Significant association was seen in the distribution of evidence of substance misuse {Ever}, changes in mental state {Current}, changes in mental state {Ever}, evidence of severe stress {Current} and evidence of discontinuation {Current} with risk of violence. (p value<.05) Proportion of patients with evidence of substance misuse {Ever} in patients with risk of violence (28.95%) was significantly higher as compared to patients without risk of violence (14.58%). Proportion of patients with changes in mental state {Current} in patients with risk of violence (19.08%) was significantly higher as

compared to patients without risk of violence (2.08%). Proportion of patients with changes in mental state {Ever} in patients with risk of violence (25.66%) was significantly higher as compared to patients without risk of violence (10.42%). Proportion of patients with evidence of severe stress {Current} in patients with risk of violence (32.89%) was significantly higher as compared to patients without risk of violence (14.58%). Proportion of patients with evidence of discontinuation {Current} in patients with risk of violence (38.16%) was significantly higher as compared to patients without risk of violence (16.67%).

Table 4:-Association of mental state with risk of violence.

Mental state	Yes (n=152)	No (n=48)	Total	P value	Test performed
Q3.3 Show any emotions to violence {Current}	36 (23.68%)	0 (0%)	36 (18%)	<.0001	Fisher Exact test
Q3.3 Show any emotions to violence {Ever}	44 (28.95%)	4 (8.33%)	48 (24%)	0.003	Fisher Exact test
Q3.5 Suffer from mental Illness {Current}	101 (66.45%)	25 (52.08%)	126 (63%)	0.072	Chi square test,3.229
Q3.5 Suffer from mental Illness {Ever}	106 (69.74%)	27 (56.25%)	133 (66.50%)	0.084	Chi square test,2.979

Significant association was seen in the distribution of mental state with risk of violence. (p value<.05) Proportion of patients who showed emotions to violence {Current} in patients with risk of violence (23.68%) was significantly higher as compared to patients without risk of violence (0.00%). Proportion of patients who showed emotions to violence {Ever} in patients with risk of violence (28.95%) was significantly higher as compared to patients without risk of violence (8.33%).

Table 5:-Association of history with self neglect.

History	Yes (n=58)	No (n=142)	Total	P value	Test performed
Q1.3 Evidence of poor compliance {Current}	21 (36.21%)	46 (32.39%)	67 (33.50%)	0.604	Chi square test,0.269
Q1.3 Evidence of poor compliance {Ever}	37 (63.79%)	84 (59.15%)	121 (60.50%)	0.543	Chi square test,0.371
Q1.4 Evidence of substance misuse {Current}	10 (17.24%)	14 (9.86%)	24 (12%)	0.145	Chi square test,2.125

Q1.4 Evidence of substance misuse {Ever}	15 (25.86%)	36 (25.35%)	51 (25.50%)	0.94	Chi square test,0.006
Q1.5 Evidence of sexually inappropriate {Current}	2 (3.45%)	13 (9.15%)	15 (7.50%)	0.239	Fisher Exact test
Q1.5 Evidence of sexually inappropriate {Ever}	5 (8.62%)	22 (15.49%)	27 (13.50%)	0.197	Chi square test,1.665
Q1.6 Any changes in mental state {Current}	13 (22.41%)	17 (11.97%)	30 (15%)	0.061	Chi square test,3.522
Q1.6 Any changes in mental state {Ever}	16 (27.59%)	28 (19.72%)	44 (22%)	0.223	Chi square test,1.486
Q1.7 Evidence of severe stress {Current}	28 (48.28%)	29 (20.42%)	57 (28.50%)	<.0001	Chi square test,15.678
Q1.7 Evidence of severe stress {Ever}	22 (37.93%)	25 (17.61%)	47 (23.50%)	0.002	Chi square test,9.463
Q1.10 Evidence of discontinuation {Current}	20 (34.48%)	46 (32.39%)	66 (33%)	0.776	Chi square test,0.081
Q1.10 Evidence of discontinuation {Ever}	30 (51.72%)	58 (40.85%)	88 (44%)	0.16	Chi square test,1.978

Significant association was seen in the distribution of evidence of severe stress {Current} and evidence of severe stress {Ever} with self neglect. (p value<.05) Proportion of patients with evidence of severe stress {Current} in patients with risk of self-neglect (48.28%) was significantly higher as compared to patients without risk of self-neglect (20.42%). Proportion of patients with evidence of severe stress {Ever} in patients with risk of self-neglect (37.93%) was significantly higher as compared to patients without risk of self-neglect (17.61%).

Table 6:-Association of history with risk of coming to harm.

History	Yes (n=85)	No (n=115)	Total	P value	Test performed
Q1.3 Evidence of poor compliance {Current}	35 (41.18%)	32 (27.83%)	67 (33.50%)	0.048	Chi square test,3.91
Q1.3 Evidence of poor compliance {Ever}	56 (65.88%)	65 (56.52%)	121 (60.50%)	0.181	Chi square test,1.792

Q1.4 Evidence of substance misuse {Current}	14 (16.47%)	10 (8.70%)	24 (12%)	0.094	Chi square test,2.798
Q1.4 Evidence of substance misuse {Ever}	25 (29.41%)	26 (22.61%)	51 (25.50%)	0.275	Chi square test,1.191
Q1.5 Evidence of sexually inappropriate {Current}	8 (9.41%)	7 (6.09%)	15 (7.50%)	0.378	Chi square test,0.779
Q1.5 Evidence of sexually inappropriate {Ever}	18 (21.18%)	9 (7.83%)	27 (13.50%)	0.006	Chi square test,7.46
Q1.6 Any changes in mental state {Current}	18 (21.18%)	12 (10.43%)	30 (15%)	0.035	Chi square test,4.423
Q1.6 Any changes in mental state {Ever}	25 (29.41%)	19 (16.52%)	44 (22%)	0.03	Chi square test,4.732
Q1.7 Evidence of severe stress {Current}	26 (30.59%)	31 (26.96%)	57 (28.50%)	0.574	Chi square test,0.316
Q1.7 Evidence of sever e stress {Ever}	21 (24.71%)	26 (22.61%)	47 (23.50%)	0.729	Chi square test,0.12
Q1.10 Evidence of discontinuation {Current}	32 (37.65%)	34 (29.57%)	66 (33%)	0.23	Chi square test,1.444
Q1.10 Evidence of discontinuation {Ever}	45 (52.94%)	43 (37.39%)	88 (44%)	0.029	Chi square test,4.796

Significant association was seen in the distribution of evidence of poor compliance {Current}, evidence of sexually inappropriate {Ever}, changes in mental state {Current}, changes in mental state {Ever} and evidence of discontinuation {Ever} with risk of coming to harm. (p value<.05) Proportion of patients with evidence of poor compliance {Current} in patients with risk of coming to harm (41.18%) was significantly higher as compared to patients without risk of coming to harm (27.83%). Proportion of patients with evidence of sexually inappropriate {Ever} in patients with risk of coming to harm (21.18%) was significantly higher as compared to patients without risk of coming to harm (7.83%). Proportion of patients with changes in mental state {Current} in patients with risk of coming to harm (21.18%) was significantly higher as compared to patients without risk of coming to harm (10.43%). Proportion of patients with changes in mental state {Ever} in patients with risk of coming to harm (29.41%) was significantly higher as compared to in patients without risk of coming to harm (16.52%). Proportion of patients with evidence of discontinuation

{Ever} in patients with risk of coming to harm (52.94%) was significantly higher as compared to patients without risk of coming to harm (37.39%).

Table 7:-Association of history with risk to others.

History	Yes (n=53)	No (n=147)	Total	P value	Test performed
Q1.3 Evidence of poor compliance {Current}	34 (64.15%)	33 (22.45%)	67 (33.50%)	<.0001	Chi square test,30.41
Q1.3 Evidence of poor compliance {Ever}	39 (73.58%)	82 (55.78%)	121 (60.50%)	0.023	Chi square test,5.166
Q1.4 Evidence of substance misuse {Current}	10 (18.87%)	14 (9.52%)	24 (12%)	0.073	Chi square test,3.221
Q1.4 Evidence of substance misuse {Ever}	18 (33.96%)	33 (22.45%)	51 (25.50%)	0.099	Chi square test,2.718
Q1.5 Evidence of sexually inappropriate {Current}	4 (7.55%)	11 (7.48%)	15 (7.50%)	1	Fisher Exact test
Q1.5 Evidence of sexually inappropriate {Ever}	13 (24.53%)	14 (9.52%)	27 (13.50%)	0.006	Chi square test,7.51
Q1.6 Any changes in mental state {Current}	13 (24.53%)	17 (11.56%)	30 (15%)	0.023	Chi square test,5.135
Q1.6 Any changes in mental state {Ever}	20 (37.74%)	24 (16.33%)	44 (22%)	0.001	Chi square test,10.405
Q1.7 Evidence of severe stress {Current}	16 (30.19%)	41 (27.89%)	57 (28.50%)	0.751	Chi square test,0.101
Q1.7 Evidence of severe stress {Ever}	12 (22.64%)	35 (23.81%)	47 (23.50%)	0.863	Chi square test,0.03
Q1.10 Evidence of discontinuation {Current}	31 (58.49%)	35 (23.81%)	66 (33%)	<.0001	Chi square test,21.191
Q1.10 Evidence of discontinuation {Ever}	36 (67.92%)	52 (35.37%)	88 (44%)	<.0001	Chi square test,16.751

Significant association was seen in the distribution of evidence of poor compliance {Current}, evidence of poor compliance {Ever}, evidence of sexually inappropriate {Ever}, changes in

mental state {Current}, changes in mental state {Ever}, evidence of discontinuation {Current} and evidence of discontinuation {Ever}with risk to others. (p value<.05) Proportion of patients with evidence of poor compliance {Current}, evidence of poor compliance {Ever}, evidence of sexually inappropriate {Ever}, changes in mental state {Current}, changes in mental state {Ever}, evidence of discontinuation {Current} and evidence of discontinuation {Ever} in patients with risk to others (64.15%, 73.58%, 24.53%, 24.53%, 37.74%, 58.49% and 67.92% respectively) was significantly higher as compared to patients without risk to others (22.45%, 55.78%, 9.52%, 11.56%, 16.33%, 23.81% and 35.37% respectively).

Table 8:-Association of history with risk from others.

History	Yes (n=24)	No (n=176)	Total	P value	Test performed
Q1.3 Evidence of poor compliance {Current}	17 (70.83%)	50 (28.41%)	67 (33.50%)	<.0001	Chi square test,17.063
Q1.3 Evidence of poor compliance {Ever}	16 (66.67%)	105 (59.66%)	121 (60.50%)	0.51	Chi square test,0.434
Q1.4 Evidence of substance misuse {Current}	5 (20.83%)	19 (10.80%)	24 (12%)	0.156	Chi square test,2.015
Q1.4 Evidence of substance misuse {Ever}	3 (12.50%)	48 (27.27%)	51 (25.50%)	0.14	Fisher Exact test
Q1.5 Evidence of sexually inappropriate {Current}	4 (16.67%)	11 (6.25%)	15 (7.50%)	0.088	Fisher Exact test
Q1.5 Evidence of sexually inappropriate {Ever}	4 (16.67%)	23 (13.07%)	27 (13.50%)	0.541	Fisher Exact test
Q1.6 Any changes in mental state {Current}	8 (33.33%)	22 (12.50%)	30 (15%)	0.007	Chi square test,7.19
Q1.6 Any changes in mental state {Ever}	10 (41.67%)	34 (19.32%)	44 (22%)	0.013	Chi square test,6.147
Q1.7 Evidence of severe stress {Current}	9 (37.50%)	48 (27.27%)	57 (28.50%)	0.298	Chi square test,1.084
Q1.7 Evidence of severe stress {Ever}	6 (25%)	41 (23.30%)	47 (23.50%)	0.853	Chi square test,0.034
Q1.10 Evidence of discontinuation {Current}	14 (58.33%)	52 (29.55%)	66 (33%)	0.005	Chi square test,7.916

Q1.10 Evidence of discontinuation {Ever}	15 (62.50%)	73 (41.48%)	88 (44%)	0.052	Chi square test,3.788

Significant association was seen in the distribution of evidence of poor compliance {Current}, changes in mental state {Current}, changes in mental state {Ever} and evidence of discontinuation {Current} with risk from others. (p value<.05) Proportion of patients with evidence of poor compliance {Current} in patients with risk from others (70.83%) was significantly higher as compared to patients without risk from others (28.41%). Proportion of patients with changes in mental state {Current} in patients with risk from others (33.33%) was significantly higher as compared to patients without risk from others (12.50%). Proportion of patients with changes in mental state {Ever} in patients with risk from others (41.67%) was significantly higher as compared to patients without risk from others (19.32%). Proportion of patients with evidence of discontinuation {Current} in patients with risk from others (58.33%) was significantly higher as compared to patients without risk from others (29.55%).

Table 9:-Association of mental state with self neglect.

Mental state	Yes (n=58)	No (n=142)	Total	P value	Test performed
Q3.5 Suffer from mental Illness {Current}	44 (75.86%)	82 (57.75%)	126 (63%)	0.016	Chi square test,5.798
Q3.5 Suffer from mental Illness {Ever}	47 (81.03%)	86 (60.56%)	133 (66.50%)	0.005	Chi square test,7.746

Significant association was seen in the distribution of mental state with self neglect. (p value<.05) Proportion of patients who suffer from mental illness {Current} in patients with risk of self-neglect (75.86%) was significantly higher as compared to patients without risk of self-neglect (57.75%). Proportion of patients who suffer from mental illness {Ever} in patients with risk of self-neglect (81.03%) was significantly higher as compared to patients without risk of self-neglect (60.56%).

Table 10:-Association of mental state with risk of coming to harm.

Mental state	Yes (n=85)	No (n=115)	Total	P value	Test performed
Q3.5 Suffer from mental Illness {Current}	63 (74.12%)	63 (54.78%)	126 (63%)	0.005	Chi square test,7.839
Q3.5 Suffer from mental Illness {Ever}	62 (72.94%)	71 (61.74%)	133 (66.50%)	0.097	Chi square test,2.753

Significant association was seen in the distribution of mental state with risk of coming to harm. (p value<.05) Proportion of patients who suffer from mental illness {Current} in patients with risk of coming to harm (74.12%) was significantly higher as compared to patients without risk of coming to harm (54.78%).

Table 11:-Association of mental state with risk to others.

Mental state	Yes (n=53)	No (n=147)	Total	P value	Test performed
Q3.5 Suffer from mental Illness {Current}	42 (79.25%)	84 (57.14%)	126 (63%)	0.004	Chi square test,8.164
Q3.5 Suffer from mental Illness {Ever}	43 (81.13%)	90 (61.22%)	133 (66.50%)	0.008	Chi square test,6.93

Significant association was seen in the distribution of mental state with risk to others. (p value<.05) Proportion of patients who suffer from mental illness {Current} in patients with risk to others (79.25%) was significantly higher as compared to patients without risk to others (57.14%). Proportion of patients who suffer from mental illness {Ever} in patients with risk to others (81.13%) was significantly higher as compared to patients without risk to others (61.22%).

In terms of history, self-harm showed significant association with current evidence of substance misuse (P=0.0002), any changes in the current mental state (P=0.014), and evidence of severe stress {Ever} (P=0.001); Risk of violence showed significant association with evidence of substance misuse {Ever}(P=0.047), any changes in mental state {Current} (P=0.002), Any changes in mental state {Ever} (P=0.026), Evidence of severe stress {Current}(P=0.014), and Evidence of discontinuation of treatment {Current} (P=0.006);
Self-neglect showed significant association with evidence of severe stress {Current} (P<.0001) and {Ever} (P=0.002);
 Risk of coming to harm showed significant association with Evidence of poor compliance {Current} (P=0.048), Evidence of sexually inappropriate {Ever} (P=0.006), Any changes in mental state {Current} (P=0.035), or {Ever} (P=0.03), and Evidence of discontinuation {Ever} (P=0.029); Risk to others showed significant association with Evidence of poor compliance {Current} (P<.0001), or {Ever} (P=0.023), Evidence of sexually inappropriate {Ever} (P=0.006), Any changes in mental state {Current} (P=0.023), or {Ever} (P=0.001), Evidence of discontinuation {Current} (P<.0001), or {Ever} (P<.0001) and Risk from others showed significant association with Evidence of poor compliance {Current} (P<.0001), Any changes in mental state {Current} (P=0.007), or {Ever} (P=0.013), and Evidence of discontinuation {Current} (P=0.005).(Table 4)

Self neglect, risk of coming to harm, and risk to others showed significant association with the patients suffering from mental illness.

Discussion

Bipolar affective disorders carry significant risks to the patient and sometimes others.[14]Bipolar disorder implies a particular risk of both non-fatal self-harm and completed suicide. These risks must be kept in mind and addressed thoroughly.We used the RML-RAI questionnaire for obtaining details and history of risks, assessing whether the person's environment contributes to risk, seriousness of intent, planning and summary risk.[13]

In the present study, out of 200 patients 152(76.00%) had risk of violence followed by risk of coming to harm 85(42.50%), self-neglect 58(29.00%), self-harming 56(28.00%), risk to others 53(26.50%), risk from others 24(12.00%) and fire risk 4(2.00%). Identified area of risks was other risks in only 3 out of 200 patients. Jakhar K et al,[15] examined prevalence of various risks and predictive factors for self-harm, violence and various other risks among Schizophrenia subjects using RML-RAI questionnaire. Findings showed that risk of violence (historical) was reported among 65.55%, and risk of self-neglect among 53.33%, risk to others (47.41%), risk of coming to harm (24.07%), self-harm (22.59%), risk from others (11.85%), fire risk (2.96%). Risk of violence (historical) and risk to others was related to 'ever' having emotions related to harm and self-harm, 'current' emotions related to violence and poor compliance to treatment. In our study, it was seen that self-harm behavior was significantly more among those who had history of substance misuse (P=0.002), changes in mental state (P=0.014), and severe stress (P=0.001).

In the previous researches the factors associated with self-harm in the form of suicidal tendencies have been assessed among BPD patients. Tidemalm et al,[16] found that comorbid substance use disorder was a predictor in men; many lifetime mixed episodes, early onset of mental disorder, personality disorder, and social problems related to the primary group were predictors in women. Subramanian K et al,[17] evaluated the risk factors associated with suicidal attempts in BD type I and observed that on binary logistic regression analysis, the odds ratios (ORs) for predicting a suicide attempt were highest for positive family history of suicide (OR: 13.65, 95% confidence interval [CI]: 1.28–145.38, $p = 0.030$), followed by the presence of an index depressive episode (OR: 6.88, 95% CI: 1.70–27.91, $p = 0.007$), and lower scores on problem-focused disengagement (OR: 0.72, 95% CI: 0.56–0.92, $p = 0.009$).

Hansson et al,[18] reported that male sex, living alone, previous suicide attempts, comorbid psychiatric disorder, recent affective episodes, criminal conviction, psychiatric inpatient care, and involuntary commitment were significant risk factors for suicide.

Weintraub et al,[19] evaluated self-harm in patients with BD. Self-harm history was related to lower levels of current global functioning, more severe depressive symptoms, and high self-reported emotional dysregulation and neuroticism.

Self-injury, including suicide, can occur in both manic and depressed phases of bipolar disorder, although it is much more common in depression. In mania, the risks are generally related to heightened risk-taking behavior, but periods of severe depression can arise during a manic episode (ie, mania may develop into a mixed state) and carry risk of self-injury or injury to others.[14]

Several approaches exist to classify risk factors for suicide in BD. One of the most common systems divides risk factors into proximal and distal ones, where proximal (or precipitating) factors are close to suicidal behaviour in time whereas distal factors are rather considered as traits or predispositions and, accordingly, they are enduring. Prevention strategies should include the provision of psychoeducation (for example, via information leaflets and/or by the members of the health care staff) to the patients, as well as to relatives and friends, in order that they become able to recognize the warning signs of suicidal behaviour, be aware of the risk periods and the importance of adherence to treatment, avoid isolation and call for help in emergency situations.[20]

Violence is an overt destructive behavior with the intention to inflict harm resulting in injury, death or psychological harm.[21]Clinical studies that have investigated aggressive behaviour in BD patients has been focused on aggressive behaviour at hospital admission and during a hospital stay. [22,23] The aggression include physical aggression towards other people, self-aggression, aggression towards objects and verbal aggression.

In present study, risk of violence showed significant association with history of substance misuse (P=0.047), changes in mental state (P=0.002), current severe stress (P=0.014), and evidence of discontinuation {Current} (P=0.006); and emotions to violence (P<.0001). Alnıak İ et al,[24] assessed the factors involved in violent behaviour in 100 male patients with bipolar disorder and found that one of the most significant risk factors for violence was a previous history of violent behaviour.

Another study by Fazel et al.[25]evaluated risk of violence in patients with bipolar disorder and found that there was an increased risk of violence in patients with comorbid substance use(adjusted odds ratio, 6.4; 95% confidence interval, 5.1-8.1).

Violence in schizophrenia and bipolar disorder was studied by Volavka J et al,9 and found that there were statistically significant increases of risk of violence in schizophrenia and in bipolar disorder in comparison with general population and the risk of violence increased by comorbid substance use disorder.

In the present study, Self-neglect showed significant association with history of severe stress (P<.0001) and mental Illness (P=0.016).

Risks associated with the depressed phase of bipolar disorder include poor self-care, including inadequate diet, poor hygiene and poor adherence to medical treatments;[14] however this association was not seen in our study which may be due to low HAM-D scores of the patients signifying less depression. *Depression* carries notable *risks* of suicidal behaviour, *poor self-care* and homicide. Hypomania often escapes medical attention and, even if recognised, there can be a reluctance to seek treatment or prevent recurrence.[14]

About half of the patients diagnosed with bipolar disorder (BD) become non-adherent during long-term treatment, a rate largely similar to other chronic illnesses and one that has remained unchanged over the years. Non-adherence in BD is a complex phenomenon determined by a multitude of influences. Patient-centred variables such as attitudes and beliefs regarding medications, treatment-alliance, family attitudes, knowledge, stigma and access to treatment may be the more seminal influences on medication-taking in BD.[26]

Fire risk showed no significant association with history of substance misuse, stress and mental state (P>0.05).

Karakus G et al,[27] conducted a study on 124 patients of bipolar I disorder, and found high rate of impulse control disorder. It was concluded in the study that fire setting behaviour cannot be ignored in these patients as they have a high prevalence of impulse control disorder. However in our study, we had ruled out other psychiatric illness using MINI screening tool.

In a study by Blanco C et al,[28] the strongest associations with fire-setting were with disorders associated with deficits in impulse control, such as antisocial personality disorder (ASPD) (odds ratio [OR] = 21.8; CI, 6.6-28.5), drug dependence (OR = 7.6; 95% CI, 5.2-10.9), bipolar disorder (OR = 5.6; 95% CI, 4.0-7.9), and pathological gambling (OR = 4.8; 95% CI, 2.4-9.5) , however we in our study ruled out other psychiatric illness using MINI screening tool and used patients affected with bipolar disorder only .

Risk of coming to harm and to others showed significant association with history of poor compliance, Evidence of sexually inappropriate behaviour, and changes in mental state.(p<0.05) Our findings were in line with the study by Basset DL et al.,[14] who suggested that risk of harm to self and others can be associated with depressive and maniac episodes, that is, change in the mental state and thus a proper history regarding the same must be taken for managing the risk. Additionally, risk factors associated with mania include disinhibited behaviour like uncharacteristic sexual behaviour (i.e., unprotected sex, promiscuity, socially

inappropriate propositions, exhibitionism) or other socially inappropriate behaviour which may be potentially damaging to others.[14]

In our study, risk of harm from others also showed significant association with history of poor compliance {Current} (P<.0001), changes in mental state {Current} (P=0.007), Any changes in mental state {Ever} (P=0.013), and Evidence of discontinuation {Current} (P=0.005). This corroborates with the findings that these factors play a common role in causing risk to the individual with BPD and to others around him. This is due to the fact that BPD causes relationship strain with people and thus other people also become inconsiderate and violent towards the BPD patient in order to be protective for themselves and others around them.[14]
The study had some limitations. The questionnaire based approach for collection of data may be a source of potential bias as was done in the study. Secondly, there was a lack of a control group for comparison of the risks.

Conclusion
It can be concluded that Bipolar disease patients in addition to having depression and mania carry a potential of risk of violence, risk of coming to harm, risk of self-neglect, risk of self-harming, risk to others, risk from others, and fire risk in decreasing frequency. The importance lies in creating awareness about them among the patients and the relatives in order to monitor and cautiously manage them.
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