Risk factors for Deliberate Self Harm in Bipolar Affective Disorder patients presenting to Tertiary care center- A cross-sectional study

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Abstract

Background: Deliberate Self Harm (DSH) is a complex event, associated with psychosomatic, biological, social factors and psychiatric disorders. Current literature shows that, there is rise in DSH in psychiatric disorders and it has been recognized as major public health problem in India. So, objective of this study was to assess the underlying risk factors for DSH in patients with Bipolar Affective Disorder (BPAD).

Methods: This cross-sectional study was conducted on 150 patients diagnosed with BPAD as per International Classification of Diseases; tenth revision (ICD-10). Semi-structured socio-demographic proforma was used to record basic profile. Deliberate self-harm inventory (DSHI) was administered to assess the type of DSH. Young Mania Rating scale and Beck Depression Inventory were used to assess severity of symptoms.

Results: Prevalence of DSH in present study was 33%. In socio-demographic profile, younger age group, lower education levels and being single were significant risk factors for DSH (p- value <.001, .016 and <.001 respectively) and among clinical variables, early years of disorder, severe mania, moderate and severe depressive episode in presence of medium to high suicidal intent, family history of mood disorders and co-morbid substance use and medical disorder were significant risk factors for DSH in BPAD with statistical significance (p<.0001).

Conclusion: DSH is considered to be the significant predictor of suicide. BPAD is associated with high risk of DSH, which can be present in either depressive or manic episode. Patients with BPAD in early years of illness, should be evaluated thoroughly for risk factors, so that DSH risk can be minimized

Key words: Bipolar affective Disorder, Deliberate Self-Harm, Deliberate Self-Harm Inventory, Risk factors.

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Introduction

BPAD is a mental disorder characterized by changing moods between extremes of depression and mania. These mood swings are significant, in which an individual experience high of mania and the lows of depression. Mood symptoms can last anywhere from few days to weeks, or even months.[1] *DSH is an act with non-fatal outcome, in which an individual deliberately initiates a behavior that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage, and which is aimed at realizing changes which the subject desired via the actual or expected physical consequences.*[2] It is a complex event, associated with psychosomatic, biological, social factors and psychiatric disorders.[3] Current literature on DSH from countries worldwide show that, there is rise in DSH rates in psychiatric disorders. It is considered to be one of the hidden and unrecognized epidemic in many countries, including India. Owens D et al reported that, people who self-harm, will repeat DSH within one year and eventually 0.5%-1.8% of them die

by suicide and 2.3% die by other causes.[4] DSH is also common in individuals with BPAD and a study done by Krishnaraman et al revealed that, 22.1% of individuals who presented with history of DSH were diagnosed to have either Unipolar or Bipolar depression.[5] Weintraub MJ et al reported higher prevalence of DSH in BPAD compared to other psychiatric disorders and in their study involving 142 mood disorder patients, life time prevalence of DSH in BPAD was 52% and 37% in unipolar depression with odd ratio of 2.3.[6] DSH is considered as significant predictor of suicide in future. However, little is known about the co-relates of DSH in BPAD and studies on the prevalence and risk factors for DSH in BPAD in India, where DSH rates are high and under recognized are limited. Existing literature highlights mainly on DSH in psychiatric disorders in general or personality disorders and there is scarcity of research on prevalence of DSH in BPAD patients in particular.

Materials and methods

Objectives:

Primary objective of the study was to assess the underlying risk factors for DSH in BPAD patients.

Procedure:

This cross-sectional observational study was conducted in a tertiary care center in Karnataka, India on 150 BPAD patients from inpatient setting. Study was conducted for duration of one year from January 2018 to December 2018. As suicide attempts and DSH are decriminalized in India, no medico-legal cases were registered. Data collection was started after obtaining Institutional Ethical Board Clearance and permissions from concerned authorities. Informed written consent was obtained from all participants and their significant relatives.

Inclusion criteria:

1. Patients of either gender in age group of 18-60 years.
2. Diagnosis of BPAD as per ICD 10 criteria.

Exclusion criteria:

1. Diagnosis of organic mood disorder.
2. Diagnosis of mental retardation and other neuro-developmental disorders.
3. Diagnosis of substance induced mood disorder.
4. Patients with chronic debilitating physical illness.

Estimation of sample Size:

Studies have reported that, the frequency of DSH in BPAD to be around 48%. With allowable error of 8% and at confidence interval of 95%, the sample was calculated to be 150. Sample was calculated by following Formula.

$$n = \frac{Z_\alpha{}^2\, p\,(1-p)}{e^2} \qquad Z_\alpha = 1.96\ AT\ \ 95\%\ C.I.$$

p =0.48, e = allowable error and if e = 8%, then **n= 150 (Sample size)**

A total of 163 patients with BPAD, diagnosed as per ICD-10 from inpatient setting were interviewed among which six patients did not consent for the study and seven patients were excluded as they did not meet inclusion criteria (diagnosed with organic mood disorder). A semi-structured socio-demographic proforma was used to collect patient's basic profile. Screening for other psychiatry disorders was done by Mini-International Neuropsychiatric Interview- Plus (M.I.N.I Plus).[7,8] Young mania rating scale (YMRS),[9] Beck depression inventory (BDI)[10] were administered to assess the severity of manic and depressive symptoms. Beck suicidal intent scale (BSI)[11] was used to assess the suicidal intent in patients who presented with depressive episode. DSH was assessed by administering Deliberate self-harm inventory (DSHI) after patients reached remission to reduce recall bias. It is a 17-item, behaviorally based, self-report questionnaire based on the conceptual definition of DSH as the deliberate, direct destruction or alteration of body tissue without conscious suicidal intent, but resulting in injury severe enough for tissue damage (e.g., scarring) to occur. This measure assesses various aspects of deliberate self-harm and has good construct validity and inter rater reliability.[12] Results obtained were analyzed using appropriate statistical methods. Data was recorded, compiled and analyzed using prevalence, percentage and Chi- square test with SPSS version 24 software. In this study, P value <0.05 was considered to be statistically significant.

Results

In present study, prevalence of DSH was found to be 33%. Out of 150 patients, 34.7% were in age group between 26-35 years, and 8% aged less than 25 years. Prevalence of DSH was more among younger patients and younger age group was found to be a risk factor for DSH with *p* value less than 0.001. Around 81% patients in present study were educated less than high school, among which 28.7% were illiterate. Prevalence of DSH in this study was higher among patients with lower levels of education compared to patients with higher education levels and finding was statistically significant. Among 150 patients, 56.7% were married and 37.3% were single. Other finding of the study was, being single was a significant risk factor for DSH with *p* value less than 0.001. Study found no significant association between other socio-demographic profile and DSH (Table 1).

In this study, 38% had illness for less than 5 years and it was found that younger age group in early years of illness was found to be a significant risk factor for DSH with *p* value less than 0.001. 72.7% patients presented with manic episodes, 24.7% with depressive episodes and only 2.7% presented with mixed episodes. Patients having severe mania, moderate to severe depression with high suicidal intent were significant risk factors for DSH. 41% patients had family history of mood disorder and 13.3% had history of DSH. Substance use disorder and medical co-morbidities were present in 47% and 32% of patients respectively and had statistical significance for DSH with *p* value less than 0.001 (Table 2).

SN	Basic profile	Variables	Number/ Percentage		DSH		Total	Pearson's chi-square test	P value
					Present	Absent			
1	Age	<25 26-35 36-45 46-65	12(8%) 52(34.7%) 29(19.3%) 57(38%)	Count & percentage within DSH	9(18.4%) 23(46.9%) 7(14.3%) 10(20.4%)	3(3%) 29(28.7%) 22(21.8%) 47(46.5%)	12(8%) 52(34.7%) 29(19.3%) 57(38%)	x^2- 19.824 df-3	<0.001
2	Sex	Male Female	90(60%) 60(40%)	Count & percentage within DSH	26(53.1%) 23(46.9%)	64(63.4%) 37(36.6%)	90(60%) 60(40%)	x^2- 1.460 df-1	0.227
3	Religion	Hindu Muslim Christian	94(62.7%) 38(25.3%) 18(12%)	Count & percentage within DSH	31(63.3%) 12(24.5%) 6(12.2%)	63(62.4%) 26(25.7%) 12(11.9%)	94(62.7%) 38(25.3%) 18(12%)	x^2- .028 df-2	0.986
4	Caste	Dominant caste Backward class SC/ST	70(46.7%) 79(52.7%) 1(0.7%)	Count & percentage within DSH	27(55.1%) 21(42.9%) 1(2%)	43(42.6%) 58(57.4%) 0(0%)	70(46.7%) 79(52.7%) 1(0.7%)	x^2- 4.500 df-2	.105
5	Education	Illiterate Primary Middle High PUC Degree Post graduate	43(28.7%) 21(14%) 18(12%) 40(26.7%) 13(8.7%) 13(8.7%) 2(1.3%)	Count & percentage within DSH	20(40.8%) 9(18.4%) 7(14.3) 4(8.2%) 4(8.4%) 5(10.2%) 0(0%)	23(22.8%) 12(11.9%) 11(10.9%) 36(35.6%) 9(8.9%) 8(7.9%) 2(2%)	43(28.7%) 21(14%) 18(12%) 40(26.7%) 13(8.7%) 13(8.7%) 2(1.3%)	x^2- 15.589 df-6	.016
6	Marital status	Single Married Separated Divorced Widowed	56(37.3%) 85(56.7%) 3(2%) 2(1.3%) 4(2.7%)	Count & percentage within DSH	32(65.3%) 13(26.5%) 1(2%) 2(4.1%) 1(2.%)	24(23.8%) 72(71.3%) 2(2%) 0(0%) 3(3%)	56(37.3%) 85(56.7%) 3(2%) 2(1.3%) 4(2.7%)	x^2- 31.145 df-4	<0.001
7	Occupation	Unskilled Skilled Govt Private Self	98(65.3%) 24(16%) 2(1.3%) 10(6.7%) 16(10.7%)	Count & percentage within DSH	34(69.4%) 6(12.2%) 0(0%) 5(10.2%) 4(8.1%)	64(63.4%) 18(17.8%) 2(2%) 5(5%) 12(12%)	98(65.3%) 24(16%) 2(1.3%) 26(17.4)	x^2- 3.913 df-6	.668
8	Residence	Rural Urban	77(51.3%) 73(48.7%)	Count & percentage within DSH	24(49%) 25(51%)	49(48.5%) 52(51.5%)	73(48.7%) 77(51.3%)	x^2- .003 df-1	.957
9	Type of family	Nuclear Joint Extended	124(82.7%) 24(16%) 2(1.3%)	Count & percentage within DSH	41(83.7%) 8(16.3%) 0(0%)	83(82.2%) 16(15.8%) 2(2%)	124(82.7%) 24(16%) 2(1.3%)	x^2- .984 df-2	.661

Table 1: Socio-demographic profile and their relationship with DSH

SN	Basic profile	Variables		DSH		Total	Pearson,s chi-square test	P value
				Present	Absent			
1	Years of illness	<5 5-10 11-20 >20	Count & percentage within DSH	35(71.4%) 6(12.2%) 4(8.2%) 4(8.2%)	22(21.8%) 33(32.7%) 31(30.7%) 15(14.9%)	57(38%) 39(26%) 35(23.3%) 19(12.7%)	x^2- 35.038 df-3	<0.001
2	YMRS score	13-19: Minimal symptoms 20-25: Mild mania 26-37: Moderate mania 38-60: Severe mania	Count & percentage within DSH	0(0%) 3(7.9%) 20(52.6%) 15(39.5%)	6(7.3%) 73(89%) 3(3.7%) 0(0%)	6(5%) 76(63.3%) 23(19.2%) 15(12.5%)	x^2- 94.628 df-3 2	<0.001
3	BDI score	Mild mood disturbance Borderline clinical depression Moderate depression Severe depression	Count & percentage within DSH	0(0%) 1(9.1%) 0(0%) 10(90.9%)	2(8.7%) 1(4.3%) 12(52.2%) 8(34.8%)	2(5.9%) 2(5.9%) 12(35.3%) 18(52.9%)	x^2- 11.408 df-3	<0.001
4	Suicidal intent (BSI)	Low intent Medium intent High intent	Count & percentage within DSH	1(10%) 6(60%) 3(30%)	10(100%) 0(0%) 0(0%)	11(55%) 6(30%) 3(15%)	x^2- **16.364** df-2	<0.001
5	Family history of mood disorder	Depressive episode Recurrent depressive disorder Bipolar affective disorder Dysthymia	Count & percentage within DSH	4(14.8%) 2(7.4%) 21(77.8%) 0(0%)	2(5.7%) 11(31.4%) 20(57.1%) 2(5.7%)	6(9.7%) 13(21%) 41(66.1%) 2(3.2%)	x^2- 8.023 df-3 2	<0.001
6	Family history of DSH	Yes No	Count & percentage within DSH	18(36.7%) 31(63.3%)	2(2%) 99(98%)	20(13.3%) 130(86.7%)	x^2- 34.487 df-3	<0.001
7	Co-morbidities	ADS NDS Medical disorders (DM, HTN)	Count & percentage within DSH	5(19.2%) 12(35.6%) 3(9.4%)	21(80.8%) 44(64.4%) 32(90.6%)	26(100%) 46(100%) 3(100%)	x^2- 16.364 df-2	<0.001

Table 2: Association between clinical variables and DSH

Discussion

Present study was conducted on 150 patients with diagnosis of BPAD and was designed to elucidate the underlying risk factors for DSH in these patients. Study found higher risk of DSH in younger age group which is in consensus with study done by Clement et al, in which, higher frequency of DSH in BPAD was found in patients less than 24 years of age.[13] Schmidtke et al reported that younger age group is more vulnerable for DSH and elderly people are at lower risk and if they do, they are more likely to complete suicide.[14] Perlish et al reported that, DSH risk is also thought to be higher at younger age, especially in the years immediately after diagnosis.[15]

In this study, 65.3% patients who presented with history of DSH were single and 4.2% were divorced. It was found that, being single is a risk factor for DSH and this finding is in concordance with other studies.[16] Leverich GS et al gave possible explanation that, divorce acts as a significant risk factor for DSH.[17] However, a study conducted in Iran, which assessed the risk factors for DSH in BPAD patients, found no correlation between marital status and DSH.[18] Particular finding of the study might be due to differences in cultural background of patients and

also more than half of patients in this study were single which might have lead to significant association.

In the present study, 40.8% of patients with history of DSH were illiterate and only 8.2% were educated up to PUC. These findings indicate that, lower levels of education are a risk factor for DSH. The finding in the study is in agreement with Gilbert et al, who reported that, in BPAD, level of education is a predictor of employment status and low levels of education leads to unemployment, which increases the risk of DSH. He also concluded that education and employment status are interdependent risk factors for DSH in BPAD.[19] However, Ryu et al in 2010 reported that there is no association between education status and DSH in BPAD.[20] Particular findings can be due to the significant differences in the educational levels of patients included in these studies and in present study majority of the patients were educated less than primary school.

The findings of the study indicate that, the risk of DSH in BPAD is higher in early years of disorder and in younger age group. The study findings are in agreement with majority of previous studies which revealed higher rates of DSH in early years of disorder.[21, 22] Also some of the studies have shown that, early onset of disorder is associated with significant risk of DSH.[23] However in the current study, age of onset of disorder was not assessed. Study also found that, more severe the mania, it has higher risk of DSH. However, there is debate ongoing over, which phase of BPAD is associated with higher risk of DSH.[24] Various studies have shown that, DSH is rare in mania.[25] The findings in the study can be explained by fact that, the underlying personality traits like aggressiveness and impulsivity, which are not evident during remission of BPAD can get exacerbated during the manic episode, thereby increasing the risk of DSH.[17] Eleven patients with history of DSH presented with depressive episode, out of which 90.9% had severe depressive episode and 9.1% had borderline clinical depression. 60% of study sample with history of DSH, found to have medium intent and 30% had high intent on BSI. The findings of the study indicate that, more severe the depressive episode in the presence of medium to high suicidal intent is associated with high risk of DSH. These findings of the study are in agreement with previous studies, which reported higher DSH rates in depressive phase of BPAD.[26, 27] However, in a systematic review, Hawton et al found no association between DSH and phase of illness.[16] This discrepancy in results can be due to differences in clinical profile of patients included in these studies.

In current study, 77.8% patients with history of DSH had family history of BPAD, 14.8% had Depressive episode, 7.4% had recurrent depressive disorder and 36.7% family history of DSH. This clinical data was statistically significant with P Value of 0.046. This finding of the study is in agreement with other studies.[28, 29] However; Ryu et al reported that family history of psychiatric disorders did not differ significantly between the DSH and non-DSH groups in BPAD.[20]

Other finding of study include, 30% patients with history of DSH had co-morbid Substance use disorder and medical disorders like, Diabetes mellitus and Hypertension. These findings indicate that, presence of co-morbidities is a risk factor for DSH and is in agreement with other studies.[30, 31]

To conclude, the study found that, socio-demographic variables like younger age, being single and low levels education are significant risk factors for DSH and clinical variables like early years of disorder, severe mania, moderate and severe depressive episode in presence of medium to high suicidal intent, family history of mood disorders, family history of DSH and co-morbid Substance use disorder and medical disorders are significant risk factors for DSH in BPAD patients.

Strengths of the current study include, it is one of the few studies which assesses the risk factors that play a role in DSH in BPAD patients with adequate sample size and other strength being use of standard tools such as YMRS, BDI, BSI, DSHI and M.I.N.I-Plus making results more reliable. However, study is not devoid of limitations including cross- sectional nature of study which does not represent the general population as the study sample comprise of patients presenting to hospital. It must be noted that there might be under reporting of DSH due to legal constraints and milder form of illness. As many of the deliberate self-harm is not often reported, the results may be an underestimation of the actual prevalence.

Conclusion

Suicide is a global health burden in many countries including India and DSH is considered to be the significant predictor of suicide. Risk of DSH is significantly higher in BPAD patients compared to general population which warrants timely intervention. Clinical implication of the study is that BPAD patients who present with DSH should be evaluated for factors that precipitates or increases the risk of DSH. This will have future implications in planning psychosocial interventions, including strong psychosocial support system and thus will serve as a reminder to the fact that, prevention, recognition (by members of the public and health care professionals) and treatment of the psychiatric disorder per se will continue to play key roles in self harm prevention

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