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Influence of Life Events on First and Recurrent Episodes of Bipolar Disorder: A Cross-Sectional Study

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ABSTRACT
Background: Stressful life events (SLEs) are significant personal or social changes that may influence mental health and are known to play a role in the onset and recurrence of bipolar disorder. This study aimed to assess the prevalence and types of pre-onset stressful life events among patients with bipolar disorder.
Methods: This cross-sectional study was conducted over a period of 18 months at a tertiary care hospital and included 94 patients diagnosed with bipolar disorder as per ICD-10 DCR criteria. Socio-demographic and clinical details were collected using a semi-structured proforma. Stressful life events were assessed using the Presumptive Stressful Life Events Scale (PSLES). At the same time, symptom severity was evaluated using the Hamilton Rating Scale for Depression (HAM-D) and the Young Mania Rating Scale (YMRS). Statistical analysis was performed using IBM SPSS Statistics version 23.0, and associations were tested using the chi-square test.
Results: Pre-onset stressful life events were identified in 66.0% (n=62) of the patients, while 34.0% (n=32) reported no such events. The association between bipolar disorder episodes and the presence of stressful life events was statistically significant (χ^2 = 9.57, p = 0.002). The most frequently reported stressors were family conflicts (17.7%), broken engagement or love affairs (11.3%), and death of a close family member (9.7%).
Conclusion: Stressful life events are commonly observed before the onset of first and recurrent episodes of bipolar disorder. Careful assessment and timely psychosocial interventions targeting these stressors may play a crucial role in improving clinical outcomes and preventing future relapses.

Key-words: Bipolar Disorder, Bipolar Affective Disorder (BPAD), Presumptive Stressful Life Events Scale (PSLES), Stressful Life Event (SLE)

INTRODUCTION

Stress is the term used to describe the behavioral, emotional, cognitive and physical responses to difficult circumstances in life. Ciccarelli and White studied this phenomenon in 2018 [1]. The stress–diathesis model highlights increased vulnerability to stress as the core of

psychiatric illness by explaining how environmental factors or stressors combine with non-biological or genetic vulnerabilities (diatheses) to cause psychiatric illness [2]. Stressors, which are typically operationalized as life events, represent the environmental component most frequently investigated in psychiatric research [3].

Holmes and Rahe devised the Social Readjustment Rating Scale, based on the Schedule of Recent Experience, to evaluate life events [4]. The Life Events and Difficulties Schedule (LEDS) is considered the gold standard for quantifying life stress, as described by Bender and Alloy [5]. The Presumptive Stressful Life Events Scale (PSLES), developed by Leibenluft and

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Charney in 2000, is a standardized tool suitable for the Indian population and incorporates life events relevant to Indian socio-cultural settings [6].

Life events are defined as significant changes in an individual's personal circumstances that impact personal and social functioning, thereby influencing physical and mental health [7]. It has been proposed that stressful life events and the development of mental illness are positively correlated [8]. Patients with bipolar affective disorder (BPAD) are more likely to experience stressful life events before the onset of first and recurrent episodes [9].

Several mechanisms have been proposed to explain the association between stressful life events and BPAD, including early adversity sensitization, dysregulation of the hypothalamo–pituitary–adrenal axis, neurogenic hypothesis, and disruption of social rhythms [10–12]. Socio-environmental factors and molecular alterations at the central nervous system level are known to interact, influencing dopaminergic pathways, immune responses, and endocannabinoid signaling [13]. Thus, the present study aimed to assess the prevalence of pre-onset stressful life events and to determine the frequency of different types of stressful life events associated with the occurrence of bipolar episodes.

MATERIALS AND METHODS

Study Design, Setting, and Sample Size– This cross-sectional study was conducted on both outpatient and inpatient populations in the Department of Psychiatry, NSCB Medical College & Hospital, Jabalpur, Madhya Pradesh. The study spanned 18 months, from August 2022 to February 2024, and included a total of 94 patients attending the department during this period.

Inclusion Criteria- Patients aged between 18 and 60 years, belonging to either sex, who were diagnosed with bipolar disorder according to the International Classification of Diseases, 10th Edition Diagnostic Criteria for Research (ICD-10 DCR) classification of Mental and Behavioural Disorders were included. Written informed consent was obtained from the patients and/or their family members or relatives when the patient lacked the capacity to provide valid consent.

Exclusion Criteria- Patients having other comorbid psychiatric conditions, such as organic mental disorders and substance abuse, as well as those who did not give consent, were excluded from the study.

Ethical Permission and Consent- The study was conducted after obtaining ethical clearance from the Institutional Ethics Committee (IEC), NSCB Medical College, Jabalpur (IEC No. IEC/2022/8629-57, dated 05-09-2022).

Pre-Onset Period- Stressful life events were assessed during the one year preceding the onset of illness and during the previous one-month period in cases of recurrent episodes. [6,14]

**Assessment Tools-** The following standardized tools were used for assessment:
1. Presumptive Stressful Life Events Scale (PSLES) [6]
2. Hamilton Rating Scale for Depression (HAM-D) [15]
3. Young Mania Rating Scale (YMRS) [16]

Procedure- Socio-demographic details were collected using a semi-structured proforma. Clinical assessment was performed using the YMRS, HAM-D, and PSLES. Stressful life events were evaluated during the defined pre-onset period. For each life event, the mean stress score was assigned according to the PSLES rank. For multiple stressors, the total stress severity score was calculated by summing the individual mean stress scores.

Statistical Analysis- Statistical analysis was performed using IBM SPSS version 23.0 with the assistance of a statistician. Results were expressed as frequencies and percentages and presented in tables. The Chi-square goodness-of-fit test was applied at the 95% confidence level to determine statistical significance, with p-values <0.05 considered significant.

RESULTS

Fig. 1 depicts the proportion of patients with bipolar disorder who experienced stressful life events before the onset of illness. A majority of participants reported at least one pre-onset stressful life event, while a smaller proportion reported none.
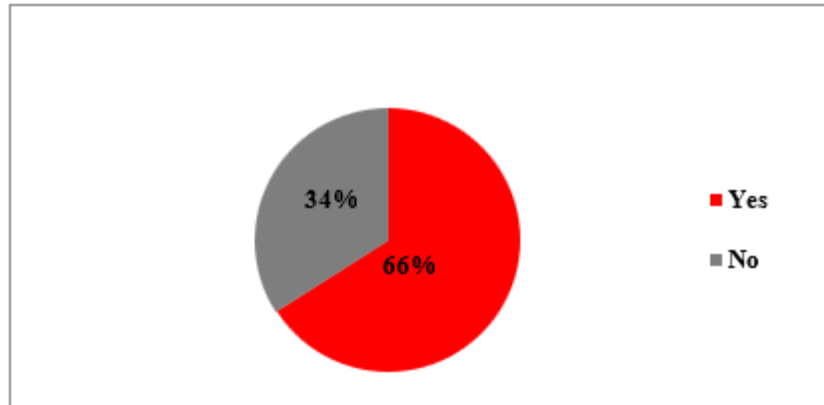
Fig. 1: Prevalence of Pre-onset Stressful Life Events

Fig. 2 represents the various types of stressful life events occurring before the onset of bipolar episodes, classified as per the Presumptive Stressful Life Events Scale (PSLES). Interpersonal and family-related stressors constituted the most frequently reported events.
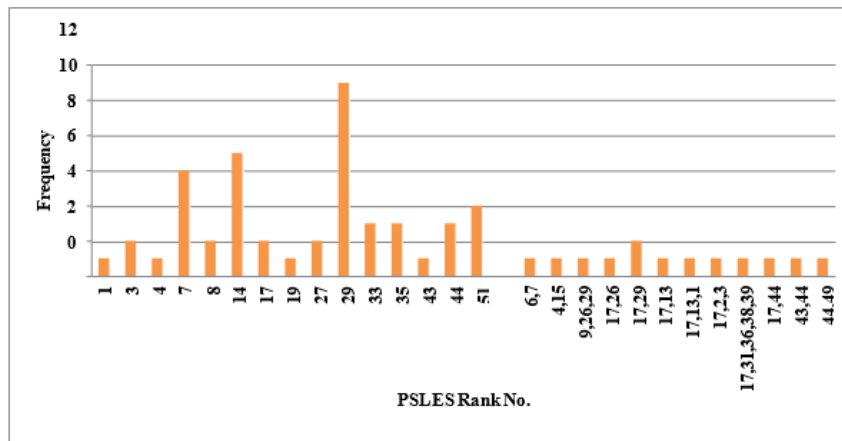
Fig. 2: Pattern of Pre-onset Stressful Life Events According to PSLES

Table 1 presents the detailed sociodemographic and clinical profiles of the 94 patients with bipolar disorder included in the study. Variables such as age distribution, gender, educational status, place of residence, marital status, and religious background are summarized. The table highlights that most participants were young to middle-aged adults, with a near-equal gender distribution, varied educational attainment, and representation from rural, suburban, and urban areas, providing a comprehensive overview of the study population.

Table 1: Sociodemographic and Clinical Profile of Study Participants

Variables		n (%)
Age in years	18-25	30 (31.9)
	26-35	31 (33.0)
	36-45	21 (22.3)
	46-55	9 (9.6)
	56-60	3 (3.2)
Gender	Male	50 (53.2)
	Female	44 (46.8)
Education	Illiterate	8 (8.5)

	Primary School	14 (14.9)
	Middle School	23 (24.5)
	High School	21 (22.3)
	Intermediate/Diploma	20 (21.3)
	Graduation	5 (5.3)
	Professional Degree	3 (3.2)
Residence	Rural	35 (37.2)
	Sub-urban	35 (37.2)
	Urban	24 (25.5)
Marital status	Single	36 (38.3)
	Married	51 (54.3)
	Divorced/Separated	5 (5.3)
	Widowed/Widower	2 (2.1)
Religion	Hindu	83 (88.3)
	Muslim	7 (7.4)
	Sikh	2 (2.1)
	Christian	1 (1.1)
	Others	1 (1.1)

Table 2 details the frequency and percentage distribution of pre-onset stressful life events experienced by patients before the first and recurrent episodes of bipolar disorder. Stressful life events are categorized according to the Presumptive Stressful Life Events Scale (PSLES) rank numbers and include both single and multiple stressors. The table demonstrates a predominance of interpersonal, family-related, and financial stressors, along with lifestyle-related changes, reflecting the wide range of psychosocial factors preceding bipolar episodes.

Table 2: Frequency and Distribution of Pre-onset Stressful Life Events

PSLES Rank No.	Life Events	Frequency	Percentage
1	Death of spouse	1	1.6
3	Marital separation/divorce	2	3.2
4	Suspension or dismissal from job	1	1.6
7	Death of close family member	6	9.7
8	Marital conflict	2	3.2
14	Broken engagement or love affair	7	11.3
17	Financial loss or problems	2	3.2
19	Trouble at work with colleagues, superiors or subordinates	1	1.6
27	Marriage of daughter or dependant sister	2	3.2
29	Family conflict	11	17.7
33	Failure in the examination	3	4.8
35	Getting married or engaged	3	4.8
43	Change in working conditions or transfer	1	1.6
44	Change in sleeping habits	3	4.8
51	Going on pleasure trip or pilgrimage	4	6.5
6,7	Lack of child, Death of close family member	1	1.6

4,15	Suspension or dismissal from job Major personal illness or injury	1	1.6
9,26,29	Property or crops damaged, Large loan, Family conflict	1	1.6
17,26	Financial loss or problems, Large loan	1	1.6
17,29	Financial loss or problems, Family conflict	2	3.2
17,13	Financial loss or problems Conflict with in-laws (other than over dowry)	1	1.6
17,13,1	Financial loss or problems Conflict with in-laws (other than over dowry) Death of spouse	1	1.6
17,2,3	Financial loss or problems Extra- marital relation of spouse Marital separation/divorce	1	1.6
17,31,36,38,39	Financial loss or problems Major purchase or construction of house Trouble with neighbor Change in residence Change or expansion of business	1	1.6
17,44	Financial loss or problems, change in sleeping habits	1	1.6
43,44	Change in working conditions or transfer Change in sleeping habits	1	1.6
44,49	Change in sleeping habits Change in eating habit	1	1.6

DISCUSSION

The present study demonstrates a statistically significant association between pre-onset stressful life events (SLEs) and the occurrence of first as well as recurrent episodes of bipolar disorder. In this study, 66% of patients reported one or more stressful life events before the onset of illness, supporting the role of psychosocial stressors in precipitating bipolar episodes. These findings are consistent with earlier studies reporting a high prevalence of stressful life events before mood episodes in bipolar disorder [14,17,18].

The mean age of participants in the present study was comparable to previous Indian studies, suggesting that bipolar disorder commonly manifests during early adulthood, a period marked by significant psychosocial challenges [17,18]. Like the observations of Jose et al. and Sam et al., a substantial proportion of patients in the current study experienced stressful life events in the pre-onset period, reinforcing the stress–diathesis model of bipolar disorder [14,18].

In the present study, the most frequently reported stressful life events were family conflict, broken engagement or love affair, and death of a close family member. These findings highlight the predominance of interpersonal and family-related stressors in triggering bipolar episodes. Comparable patterns have been reported in previous studies, where family conflicts, interpersonal difficulties, financial stress, and loss-related events were commonly identified as precipitating factors [14,19,20]. Such stressors may disrupt social rhythms and emotional regulation, thereby increasing vulnerability to affective episodes.

However, some studies have failed to establish a clear association between stressful life events and the onset or relapse of bipolar disorder [21,22]. These discrepancies may be attributed to methodological differences, variations in assessment tools, recall bias, differences in pre-onset periods considered, and socio-cultural factors influencing stress perception and reporting.

Overall, the findings of the present study underscore the importance of assessing stressful life events in

patients with bipolar disorder, as early identification and targeted psychosocial interventions may contribute to improved clinical outcomes and relapse prevention.

Table 3 presents the Presumptive Stressful Life Events Scale (PSLES), which includes a comprehensive list of life events commonly encountered in the Indian socio-cultural context, each assigned a specific presumptive stress score. The scale covers a wide range of events related to family, marital life, occupational stress, financial difficulties, health-related issues, and lifestyle changes. In the present study, PSLES was used to identify and quantify stressful life events occurring during the pre-onset period of bipolar disorder. Individual life events as well as combinations of multiple stressors were recorded, and the cumulative stress burden was calculated by summing the respective stress scores. The use of PSLES allowed objective assessment of both the nature and severity of stress experienced by patients before the onset of first and recurrent bipolar episodes, thereby providing a standardized framework to evaluate the role of psychosocial stressors in bipolar disorder.

Table 3: Presumptive Stressful Life Events Scale (PSLES)

Rank No.	Life Event	Mean Stress Score
1	Death of spouse	95
2	Extra-marital relation of spouse	80
3	Marital separation/divorce	77
4	Suspension or dismissal from job	76
5	Detention in jail of self or close family member	72
6	Lack of child	67
7	Death of close family member	66
8	Marital conflict	64
9	Property or crops damaged	61
10	Death of friend	60
11	Robbery or theft	59
12	Excessive alcohol or drug use by family member	58
13	Conflict with in-laws (other than over dowry)	57
14	Broken engagement or love affair	57
15	Major personal illness or injury	56
16	Son or daughter leaving home	55
17	Financial loss or problems	54
18	Illness of family member	52
19	Trouble at work with colleagues, superiors, or subordinates	52
20	Prophecy of astrologer or palmist, etc.	52
21	Pregnancy of wife (wanted or unwanted)	52
22	Conflict over dowry (self or spouse)	51
23	Sexual problems	51
24	Self or family member unemployed	51
25	Lack of son	51
26	Large loan	49
27	Marriage of daughter or dependent sister	49
28	Minor violation of the law	48
29	Family conflict	47

30	Break-up with a friend	47
31	Major purchase or construction of a house	46
32	Death of a pet	44
33	Failure in the examination	43
34	Appearing for an examination or interview	43
35	Getting married or engaged	43
36	Trouble with neighbour	40
37	Unfulfilled commitments	40
38	Change in residence	39
39	Change or expansion of business	37
40	Outstanding personal achievement	37
41	Begin or end schooling	36
42	Retirement	35
43	Change in working conditions or transfer	33
44	Change in sleeping habits	33
45	Birth of daughter	30
46	Gain of new family member	30
47	Reduction in number of family functions	29
48	Change in social activities	28
49	Change in eating habits	27
50	Wife begins or stops work	25
51	Going on pleasure trip or pilgrimage	20

LIMITATIONS

The sample was taken from a tertiary care hospital; hence it would not represent patients with bipolar disorder in the general population. The sample size was limited and obtained through convenience sampling, which restricts the generalizability of the findings. The data on life events were gathered retrospectively, which could introduce recall bias.

CONCLUSIONS

The presence of stressors should be thoroughly evaluated, as addressing these concerns may be critical to the outcome of the current episode and to the prevention of future ones, thereby improving functional recovery and quality of life for these patients. A faster recovery may be achieved with targeted psychosocial interventions such as cognitive-behavioral therapy, interpersonal psychotherapy, and family therapy. Therefore, the approach to the illness and the therapeutic process should integrate the patient's recent and lifetime stressful events.

RECOMMENDATIONS

Our findings will provide a useful reference for future studies aiming to assess the impact of life events on the onset of bipolar disorder. Mental health programs should also focus on identifying stressful life events as part of a preventive strategy. Further research with a larger sample size and regular follow-up is recommended to obtain more sensitive and generalizable results. Future studies should also focus on key areas, such as the critical time period of onset, severity, and the subjective experience of stressful life events.

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CONTRIBUTION OF AUTHORS

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Article editing- Ankur Nayan, Arindam Maiti
Final approval- Ankur Nayan, Pooja Dhurvey

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