

## ORIGINAL ARTICLE

# Functional Ability of Clients with Bipolar Disorders in Tertiary Hospital, Puducherry

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### ABSTRACT

**Background:** Bipolar Disorder (BD) is a common long standing mental illness which is episodic in nature, affecting approximately 1-2% of the world adult population. BD frequently affects the patient's life. Few studies have examined the functional impairment in patients with affective illness. The main objective of the current study was to assess specific domains of functioning as well as the overall functioning of the clients with BD.

**Methods:** This cross-sectional study aimed to assess the level of function among the clients with BD in JIPMER Hospital, Puducherry during 2015-2016 and to identify the socio- demographic and clinical factors associated with the level of functioning. Ninety clients who fulfilled the inclusion criteria of having the diagnosis of BD were selected after written informed consents were obtained. After collecting basic demographic and clinical variables, function was assessed using 2 different sets of tools LIFE-RIFT and FAST. Data were analyzed using SPSS 20. Independent sample t-test, ANOVA and Pearson correlation were used as different statistical methods. A P value less than .05 was considered as statistically significant.

**Results:** Based on the results, the functional level assessed using LIFE -RIFT showed a mean score of 26.7±4.7 for the admitted clients and 21±12.5 for outpatients. The functional level of clients was significantly related to admission and remission status of the clients with a P=0.001. Similarly, FAST scale score for the admitted clients was 51±4.5, clients on remission had 24±12.1 with a P=0.001.

**Conclusion:** Results revealed that even during remission the clients with BD had functional impairment. More interventions are needed to improve the functional ability of clients with BD.

**KEYWORDS:** Bipolar disorders, Functional impairment, Function

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## INTRODUCTION

Bipolar disorder is not an uncommon illness. It is a very chronic and severe mental disorder, affecting approximately 1-2% of the adult population. Psychosocial morbidity is the direct cause of severity of BD which causes substantial problems in the patient's romantic life, offspring's and occupational aspects of the patient's life. Few studies have examined the functional impairment in patients with affective illness. BD is always associated with self-harming behavior and risk taking impulsiveness.<sup>1</sup> In bipolar disorder, suicidal behaviors are frequent, as are impulsive sexual behaviors and reckless spending.<sup>2</sup> Families are frequently affected emotionally and feel helpless by their bipolar member to fix the symptom, treat and handle the relapses. The United States had the highest prevalence rate of bipolar spectrum (4.5%), while India had the lowest rate (less than 1 percent). More than half of BD cases occur in adolescent years of 15 to 25; they continue to suffer relapses, and usually continue treatment even during adult years.<sup>3</sup>

BD has been associated with a better outcome than schizophrenia because of a presumed absence of cognitive impairment and seemingly normal functioning between the episodes.<sup>4</sup> Thus, usually due to normal inter-episode period and recovery from episodes makes us presume that the client has better functioning than other disorders, especially cognitive and psycho-social way. However, in contrast to previous studies, recent studies point to a significant degree of psychosocial dysfunction even when patients are euthymic.<sup>5-9</sup> Functioning is a complex concept since it involves the capacity to work, study, live independently and engage in recreation and romantic life. Functional recovery has been described as the ability to achieve the fullest level of functioning prior to the most recent episode.<sup>9,10</sup> BD represents a chronic and recurrent illness that can lead to severe disruptions in psychosocial, occupational and family functioning. The severity of mood symptomatology has been

associated with functional impairment in this population. Clinical outcome, functional outcome, quality of life, and illness costs of BD are so staggering.<sup>11</sup> Clinical outcome consists of parameters that measure the illness itself, such as symptom severity, episode number, and duration. Functional outcome consists of social and occupational status and subjective quality of life.<sup>12</sup> Even though psychological and pharmacological treatments are available for acute and potential mood episodes, in euthymic condition functional recovery is not associated with recovery of the syndrome.<sup>10,11</sup> Many studies focused on syndromal recovery than functional outcome. However, the majority of studies conducted on functioning have assessed global functioning without considering specific domains and reported Indian studies were scanty.<sup>12</sup> A recent review suggests that functional scales in particular domain-specific measures seem superior to general measures.<sup>13,14</sup> Even these reviews and studies suggested that further research should be conducted to better identify the factors that best predict functioning in BD.<sup>12-14</sup> Hence, the main objective of the current study was to assess specific domains of functioning as well as the overall functioning of patients with BD across different mood states including acute and remission clients.

## MATERIALS AND METHODS

This is a quantitative cross-sectional study conducted at JIPMER, Puducherry during the year 2015-2016, aiming to assess the level of functioning among the clients with Bipolar Affective disorders admitted in JIPMER Hospital, Puducherry and to identify the socio-demographic and clinical factors associated with the level of functioning in clients with Bipolar Affective Disorder.

The inclusion criteria were the client who had ICD 10 diagnosis of bipolar affective disorder both in inpatient and outpatient psychiatric settings at JIPMER Puducherry. Clients with dual diagnosis and comorbid medical illnesses were excluded from the study

since the study dealt with functional ability.

Consecutive sampling was used to select the study participants. Study setting was psychiatric ward and out-patient psychiatric clinic. The clients admitted in the psychiatric ward for treatment as well as those attending the psychiatric out-patient clinic for follow-up fulfilled the inclusion criteria and were consecutively selected during data collection period as subjects; the sample size was 90.

Sample size was estimated using the Epi data software for estimating a population with relative precision. The expected proportion of bipolar clients with functional level was 0.65(Hendry et al)<sup>10</sup> and the sample size was estimated at 5% level of significance and 10% relative precision.

Sample size  $n = [DEFF * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p*(1-p))]$

N-population size (based on admission and OPD strength-2000), DEFF-design effect (1).

Ethical consideration: The investigator approached the participants with a brief introduction after getting due permission from Institute Ethics Committee IEC code JIP/IEC/2015/19/699. The participants signed the written informed consent and one of the family members also signed the LAR (legally authorized representative) consent since the study involved the vulnerable psychiatric clients, after being explained about the risk and benefits of the study. Confidentiality and anonymity were maintained during and after the study.

Data collection was mainly performed by face to face interview methods, using socio- demographic data sheet and structured clinical scales to assess the functional level of the clients with BD.

Socio-demographic information was collected on age, gender, marital status, religion, education, occupation, monthly family income, duration of illness and functional level, using LIFE-RIFT (Longitudinal Interval Follow-up Evaluation-Range of Impaired Functioning Tool) by Leon A C et al 1999<sup>15</sup> and FAST (Functional Assessment Short Test) by Adriane R Rosa et al. 2007<sup>16</sup>.

During the data collection period, privacy was provided for the participants and confidentiality was maintained throughout the study.

The Range of Impaired Functioning Tool (LIFE-RIFT): a brief measure of functional impairment and its Longitudinal Interval Follow-up Evaluation (LIFE). The internal consistency reliability of the scale was supported with alpha coefficients ranging from 0.81 to 0.83. The inter-rater reliability intra-class correlation coefficient (ICC) was 0.94.<sup>17</sup> LIFE-RIFT measures the relationships (family, children, or friends), satisfaction (contentment and fulfilment from activities with family and friends, job, and finances), work/role performance (employment, household, or student roles), and recreational activities/hobbies. It was validated previously on samples of individuals with BD, with adequate internal consistency and inter-rater agreement. The measure assigns the scores from 1 (no impairment/very good functioning) to 5 (very poor/severe impairment) to each of the following four domains. In cases in which the domain subscales yielded different functioning scores (e.g. relations with the spouse were poorer than with children), the more impaired score was used to characterize the domain. A total score was calculated as the sum of the individual subscales.

Functional Assessment Short Test (FAST) by Adriane R Rosa et al. (2007)<sup>16</sup> is a brief instrument designed to assess the main functioning problems experienced by psychiatric patients, particularly bipolar patients. It comprises 24 items that assess six specific areas of functioning: autonomy, occupational functioning, cognitive functioning, financial issues, interpersonal relationships (IPR) and leisure time. Each item is scored in a 0–3 points range (0: no difficulty; 1: mild difficulty; 2: moderate difficulty; 3: severe difficulty) with total score ranging from 0 to 72 points (Higher score=higher disability). FAST is actually measuring impairment /disability. Validity and reliability of FAST were as follows:

internal validity Cronbach's alpha was 0.90. Test-retest reliability showed ICC=0.98;  $P < 0.001$ .<sup>16</sup> The FAST has strong psychometric properties and is able to detect the differences between euthymic and acute BD patients. In addition, it is a short (6 minutes) simple interview-administered instrument.

The collected data were analyzed using IBM SPSS 20 package, and the distribution of categorical variables, such as gender, clinical characteristics treatment factors, was expressed as frequency and percentage. The distribution of data on responses in different items in LIFE\_RIFT scale and FAST scale was expressed as frequency and percentage. The continuous data such as Age, LIFE\_RIFT overall score, FAST overall score etc. were expressed as mean with SD or median with range, whichever was appropriate. The comparison of these continuous variables in relation with the categorical above was carried out using independent student t-test, Mann-Whitney u test or one way analysis of variance. The correlation between continuous variables was determined using Pearson correlation test. A P-value less than .05 was considered as the statistical significant.

## RESULTS

In this study, 90 BD clients participated; 45 out of 90 clients were selected from in patient department and 45 clients were selected from outpatient department for comparison. With regard to gender, the majority of the clients belonged to the female gender (62.2%). As to the educational status of clients, most of them completed secondary education and above (41.1% and 27.8%). Mania was the major subtype (66.7%) and many of them suffered from BD for more than 5 years (42.9%) and belonged to low socio-economic group (78.9%).

The functional level was assessed using LIFE- RIFT and FAST scales and comparison was made. Functional levels were associated with admission and remission status of BD clients. Even though mean score of the difference was identified in the functional

level of clients with regard to demographic variables, none was statistically associated, except for the admission status. None of the socio-demographic factors had a significant influence on the functional level of clients ( $P > 0.05$ ).

Association between clinical and demographic variables with functional level was determined using ANOVA; it showed no significant association between demographic variables such as age, gender, educational status, occupational status, religion, illness duration, and socio-economic status with functional level of clients with BD ( $P > 0.05$ ) (Table 1).

The functional level was assessed using LIFE -RIFT; the mean score for admitted clients was  $26.7 \pm 4.7$  and that for the clients with remission was  $21 \pm 12.5$ . Independent student t-test was used to assess the level of functional difference; the functional level of clients was significantly different for admitted clients and those with remission, with a  $P = 0.001$  for the LIFE RIFT. Similarly, the FAST scale scores for admitted clients were  $51 \pm 4.5$ ; that for the clients on remission was  $24 \pm 12.1$ . FAST score also reported a statistically significant difference in the functional level of clients during admission and in remission with a  $P = 0.001$ . All admitted clients had impairment in functions, with respect to LIFE score. 11(24.4%) clients in remission reached the full functional level. When measured with FAST score, only 9 (20%) clients reached the optimum level of function (Table 2).

The correlation between LIFE score of functional ability and FAST scale functional ability was assessed using Pearson correlation. A high correlation was observed between both scales' measurement of functional level, which was significant statistically ( $P = 0.01$ ).

Domain wise functional level was assessed for BD clients; there was a significant difference in the mean score for admitted clients and clients in remission, which was statistically significant with  $P = 0.001$ . Individual domain wise association was established using

**Table 1:** Correlation of demographic characteristics with LIFE and FAST functional mean score of clients with BD (N=90)

| Variable                  | Category       | N (%)      | LIFE score<br>Mean ±SD | P value | FAST score<br>Mean±SD | P value |
|---------------------------|----------------|------------|------------------------|---------|-----------------------|---------|
| Gender                    | Male           | 34 (37.80) | 23.18±5.213            | 0.46*   | 41.47±18.908          | 0.127*  |
|                           | Female         | 56 (62.20) | 22.18±6.707            |         | 35.38±17.797          |         |
| Education                 | Illiterate     | 17 (18.90) | 20.12±5.510            | 0.80**  | 35.41±15.57           | 0.803** |
|                           | Primary        | 11 (12.20) | 25.18±7.910            |         | 40.18±22.12           |         |
|                           | Secondary      | 37 (41.10) | 23.63±6.340            |         | 37.22±21.12           |         |
|                           | Degree & above | 25 (27.80) | 22.56±5.747            |         | 36.48±17.79           |         |
| Age in years              | Below 30       | 28 (31.10) | 22.21±4.771            | 0.73*   | 37.39±16.224          | 0.922*  |
|                           | Above 30       | 62 (68.90) | 22.71±6.742            |         | 37.81±19.374          |         |
| Type of illness           | Mania          | 60 (66.70) | 23.55±6.537            | 0.13**  | 38.25±18.29           | 0.382** |
|                           | Depression     | 21 (23.30) | 20.71±5.011            |         | 38.48±19.50           |         |
|                           | Mixed          | 9 (10)     | 22.56±4.950            |         | 40.00±16.031          |         |
| Duration of illness (yrs) | Less than 2    | 34 (37.20) | 22.06±5.773            | 0.59**  | 35.38±14.170          | 0.290** |
|                           | 2-5 years      | 18 (20)    | 21.06±5.439            |         | 34.50±20.42           |         |
|                           | More than 5    | 38 (42.90) | 23.71±6.758            |         | 41.24±20.432          |         |
| Marital status            | Single         | 32 (35.60) | 22.38±6.272            | 0.54**  | 36.56±19.183          | 0.477** |
|                           | Married        | 54 (60)    | 22.33±6.225            |         | 37.31±18.099          |         |
|                           | Others         | 4 (4.40)   | 27.33±4.163            |         | 49.67±13.868          |         |
| Religion                  | Hindu          | 77 (85.60) | 22.29±5.842            | 0.57**  | 37.45±17.981          | 0.941** |
|                           | Christian      | 10(11.10)  | 24.50±8.223            |         | 38.40±20.04           |         |
|                           | Muslim         | 3 (3.30)   | 23.00±8.544            |         | 41.00±29.816          |         |
| Economic status           | Lower social   | 71 (78.90) | 22.38±6.368            | 0.86**  | 36.38±18.309          | 0.433** |
|                           | Middle         | 8 (8.20)   | 22.88±6.749            |         | 41.88±16.375          |         |
|                           | High           | 11 (12.90) | 23.45±4.719            |         | 43.00±20.229          |         |
| Occupation                | Employed       | 27 (30)    | 22.11±7.028            | 0.72**  | 45.00±16.186          | 0.582** |
|                           | Un employed    | 26 (28.90) | 23.50±5.932            |         | 38.64±17.968          |         |
|                           | Student        | 3 (3.30)   | 17.67±4.726            |         | 29.00±24.269          |         |
|                           | House wife     | 34 (37.80) | 22.38±6.738            |         | 35.47±17.984          |         |
| Current condition         | Admission      | 45 (50)    | 26.7±4.7               | 0.001*  | 51.27±12.511          | 0.001*  |
|                           | Remission      | 45 (50)    | 18.49±4.556            |         | 24.154±12.154         |         |

\*t-test; \*\*ANOVA

**Table 2:** Comparison of functional level of clients with BD in two the groups of Admission and Remission (N=90)

| Variable    | Functional Impairment<br>N (%) | NoFunctional Impairment<br>N (%) | Mean±SD   | P value  | Confidence Interval |               |
|-------------|--------------------------------|----------------------------------|-----------|----------|---------------------|---------------|
| LIFE Score- | Admission                      | 45 (100)                         | 0         | 26.7±4.7 | 0.001*              | 6.185-10.082  |
|             | Remission                      | 34 (75.6)                        | 11 (24.4) | 21±12.5  |                     |               |
| FAST Score  | Admission                      | 45 (100)                         | 0         | 51.2±4.5 | 0.001*              | 22.011-32.345 |
|             | Remission                      | 36 (80)                          | 9 (20)    | 24±12.1  |                     |               |

\*t-test

independent t-test; individual domain functions were significantly associated with the admission status (Table 3).

The association between the functional level and admission status showed a significant association ( $P=0.001$ ); there was a significant difference in the functional level of clients

during admission and remission. (Table 4)

## DISCUSSION

Bipolar illness is episodic and is reported to have a better outcome than Schizophrenia,<sup>8</sup> but the current study found that functional outcome

**Table 3:** Association of FAST domain functions with admission and remission status of BD clients

| FAST domain      | Group     | N  | Mean±SD    | P value |
|------------------|-----------|----|------------|---------|
| Autonomy         | Admission | 45 | 10±1.85    | 0.001*  |
|                  | Remission | 45 | 4.18±2.50  |         |
| Cognitive        | Admission | 45 | 12.07±2.38 | 0.001*  |
|                  | Remission | 45 | 5.04±2.63  |         |
| Occupational     | Admission | 45 | 12.13±2.60 | 0.001*  |
|                  | Remission | 45 | 6.22±2.76  |         |
| Financial        | Admission | 45 | 4.56±1.14  | 0.001*  |
|                  | Remission | 45 | 1.73±1.29  |         |
| IPR <sup>a</sup> | Admission | 45 | 13.71±3.08 | 0.001*  |
|                  | Remission | 45 | 4.56±3.88  |         |
| Leisure          | Admission | 45 | 4.36±1.05  | 0.001*  |
|                  | Remission | 45 | 2.33±1.21  |         |

\*t-test; <sup>a</sup>interpersonal relationship

**Table 4:** Relationship between LIFE score and FAST score with admission and remission status of BD clients

| Variable | Category  | N  | Mean±SD      | 95% Confidence Interval |             | P value |
|----------|-----------|----|--------------|-------------------------|-------------|---------|
|          |           |    |              | Lower Bound             | Upper Bound |         |
| LIFE     | Admission | 45 | 26.62±4.745  | 25.20                   | 28.05       | 0.001*  |
|          | Remission | 45 | 18.49±4.556  | 17.12                   | 19.86       |         |
| FAST     | Admission | 45 | 51.27±12.511 | 47.51                   | 55.03       | 0.001*  |
|          | Remission | 45 | 24.09±12.154 | 20.44                   | 27.74       |         |

\*t-test

is bad and impairment is evident. Functional improvement among the treated BD cases was less than the syndromal and symptomatic recovery. Like previous studies, the current study also revealed that mania is the major sub-type in BD in Indian population,<sup>18</sup> unlike western countries.<sup>3,18</sup>

Mean longitudinal functional level LIFE score was high, indicating more impairment even during remission. Even FAST score level was also high, which explains higher disability during acute as well as remission period; similar findings have been reported in south India as well as a study conducted in Australia.<sup>18-20</sup>

Poorer overall functions in BD have been reported in a previous study conducted in Massachusetts,<sup>19</sup> which supports the current study findings. However, the study conducted in China was in contrast with the findings of the present study. It was indicated that the patients with schizophrenia had more significant deficits in everyday functioning skills than healthy individuals and, in some domains, than patients with affective

disorders.<sup>20</sup>

LIFE score and FAST score were correlated significantly with admission status. Even during remission, the LIFE score was higher; this indicated that the patients had functional impairment. Fast score was also higher. The significantly higher side score shows that even during remission BD clients suffer from functional impairment significantly. This finding was supported by a previous study conducted on functional outcome of BD; it was concluded that there was considerable evidence that cognitive impairments and functional disability persist while being relatively symptom-free.<sup>14</sup>

Functional level assessed by both scales provides similar results even though both are measuring the function of a client in different time intervals. It implies that admitted clients had more functional impairment than outpatient clients who were at remission. Even clients in remission also had significant impairment, showing that even during remission and in euthymic period functional recovery is yet to be achieved. Admission

status with FAST score and LIFE score were significantly associated. Impairment in their functional level has brought them to admission because the majority of the clients participating in this study were employed; they were housewives who continued their work before the illness. A similar study conducted on functional status across mood states of BD supports the current study results.<sup>5,21</sup> Domain wise assessment clearly states that BD not only affects the work functions, but also affects the over-all functions of life like autonomy, finance, IPR, cognitive even their interest and sex life. Only very few clients had fully functional level during euthymic period, which was not significant statistically. This finding is also supported by previous studies. Even when full syndromal remission is achieved, only about 50% of people with BD recover from premorbid functionality in different places.<sup>22-24</sup>

Another previous study<sup>25</sup> found that manic symptoms had an inverse relationship with activities at home and in the community; depression was negatively associated with work skills, and both types of mood symptoms were associated with poorer interpersonal behavior. An international population-based study found that severe and very severe role impairment was greater in high income countries for both mania and depression than in medium and low income countries<sup>3</sup>, but the current study's findings were contradictory. Earlier studies<sup>3,25</sup> indicated that both mania and depressive clients had interpersonal issues and work functions.

Limitations of the study were its cross-sectional design and time limit to achieve the sample size; in the study period of one year only 45 admitted clients fulfilled the criteria and for comparison purpose an equal number of Bipolar clients were recruited from outpatient department since the study assessed the functional level across the mood states.

## CONCLUSION

Psychiatric nurses should assess the function of the client not only during admission even during remission period and plan for rehabilitation

services since functioning is a complex and demanding task. However, it is very important to bring back the client to his fullest possible level to normal life by planning effective psycho-education about illness, communication training and teaching problem solving skills to client and family. The current study suggests that functional assessment should be performed even during remission, or inter-episode euthymic period.

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