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"Assessment and Measuring of the Bipolar Disorder, Major Depressive Disorder and Healthy Controls using Functioning Assessment Short Test (FAST)"

Ajay Mahant[1]; Rohit Seth[2]
[1,2] Cell Biology and Neuroscience Laboratory
Department of Zoology, School of Life Sciences
Guru Ghasidas Vishwavidyalaya (A Central University)
Bilaspur (C.G.), India
[2] ORCID 0000-0001-5729-6197

Correspondence Author: **Rohit Seth**

Abstract

Background: Several studies have shown that, even in periods of remission, individuals with bipolar disorder (BD) have high rates of functional impairment. However, rather than concentrating on particular areas of psychosocial functioning, the bulk of tools currently available for use in functional assessment have concentrated on global measures of functional recovery. A quick test called the Functioning Assessment Short Test (FAST) was developed to evaluate the primary functioning issues experienced by psychiatric patients, particularly those with bipolar disorder. **Methods:** Study participants were recruited from the State Mental Hospital Sendri Bilaspur Chhattisgarh between January 2021 and December 2022 at the Guru Ghasidas University to study the phenotypic and biological outcomes of bipolar disorder, 56 healthy controls (HC), 112 MDD, and 186 persons with verified BD were selected for the longitudinal cohort. Each participant provided informed consent prior to participation. **Results:** It is an easy assessment tool used to evaluate primary functioning issues faced by patients with mental health problems. The MDD group's mean score was 19.1, the BD group's mean score was 24.6, and the mean score for the healthy controls was the lowest at 5.81. This suggests that individuals with BD have higher impairment levels in almost every category. The significance of the F-ratio (44.99) was established. The data indicated a significant difference in the mean FAST scores between patients with BD and MDD, and healthy controls ($p < 0.05$). These results indicate that patients with MDD and BD exhibit functional deficits. **Conclusion:** Strong psychometric qualities were demonstrated by the FAST, which also demonstrated its ability to distinguish between major depressive disorder, patients with BD, and Healthy Controls. To improve psychosocial functioning, professional or community interventions for patients with bipolar disorder should incorporate family techniques and emphasize boosting social support while focusing on patients' suicidal thoughts.

Keyword: BD, MDD, HC, FAST, Functioning.

Introduction

Bipolar disorder (BD) is a severe, episodic, lifelong mood illness characterized by periods of euthymia phases and alternating or concurrent episodes of mania or hypomania with depression (Fagiolini et al., 2013). Despite the apparent fall in incidence with age, 8–10% of psychiatric inpatients aged 55–60 years have a BD diagnosis (Depp & Jeste, 2004). Recent research has painted a far less positive image than the conventional belief that people with BD are asymptomatic between episodes and resume regular functioning (Pope et al., 2007). Residual mood symptoms, social dysfunction, cognitive impairment, and stigma are common in patients with BD in clinical remission (Samalin et al., 2016). Consequently, low psychosocial functioning affects 30–60% of adult patients with BD (MacQueen et al., 2001). Functioning is a complicated concept encompassing a wide range of social, professional, and recreational interactions and activities. Consequently, it is difficult to create a precise definition (Tohen et al., 2000; Zarate et al., 2000). Future research should consider the necessity of measuring how illness characteristics affect each domain of functioning (MacQueen et al., 2000), as well as the need to develop tools that specifically capture the problems associated with severe mental illness, especially borderline depression (Vieta et al., 2007). The Functional Assessment Short Test (FAST) was used to assess functional impairment in people with mental illnesses such as bipolar disorder. It is a straightforward tool that requires little time to administer and is simple to use. The six distinct domains of functioning—autonomy, occupational functioning, cognitive functioning, financial concerns, interpersonal interactions, and leisure time— were represented by the 24 items in the measure. The items mentioned above were determined to be the primary issues faced by mentally ill people, especially bipolar patients, by considering the opinions of specialists, the results of earlier scales, and the literature (Coryell et al., 1998; Strakowski et al., 2000). However, quantifying disability in mood disorders involves more consideration than calculating lost productivity or workdays. Even though assessing functioning using straightforward metrics like absenteeism is undoubtedly relevant, it does not allow for a more comprehensive description of the disability linked to mood disorders (Berns et al., 2007); crucial functional domains like autonomy, interpersonal relationships, and cognition may be overlooked (Huxley & Baldessarini, 2007).The FAST is a concise, global assessment tool that was created to capture the primary areas of disability for individuals with BD and be responsive to change (Rosa et al., 2006). Multinational clinical trials and comparative studies are rapidly promoting the use of functional and patient-centered outcomes; therefore, it is necessary to make instruments with established validity and reliability available in several languages (Rothman et al., 2007; Swaine-Verdier et al., 2004). Here, we provide information on FAST's concurrent validity, discriminate, construct, content, and reliability for the Indian edition.

Method

Selection of participants

Study participants were recruited from the State Mental Hospital, Sendri Bilaspur, between January 2021 and December 2022 at Guru Ghasidas University to study the phenotypic and biological outcomes of bipolar disorder. Of the 354 participants recruited for the longitudinal cohort, 186 individuals with confirmed BD, 112 with MDD, and 56 healthy controls (HC) were included in the present study. The BD, MDD and HC samples were matched for age, education, and verbal intelligence using FAST. All participants provided informed consent prior to participation. Participants were evaluated using neuropsychological testing, life event and symptom questionnaires, the Hamilton Depression Rating Scale (HDRS) (Chang et al., 2024), and the Young Mania Rating Scale (YMRS) (Rabinowitz et al., 2024). The Human Ethics Committee of Guru Ghasidas Vishwavidyalaya Bilaspur, Chhattisgarh, India approved this study.

Selection Criteria

Inclusion Criteria for Patients

1. Both inpatient and outpatient
2. The age range between 18 and 50 years
3. Could read and understand English or Hindi
4. Duration of illness: more than one year

Exclusion Criteria for Patients

1. Any H/O physical, neurological, and psychiatric co-morbidity
2. with acute phase

Inclusion Criteria for the Healthy Group

1. Age between 18 and 50 years
2. Could read and understand English and Hindi

Exclusion Criteria for the Healthy Group

1. Chronic psychiatric, neurological, or physical disorder
2. Unwilling or uncooperative

A written informed consent form

Following an explanation of the study's objective to the participants, a written informed consent form was provided to them for quick completion. Additionally, it was stated that no one would discuss their personal information with them, and that their responses to any questions would remain confidential.

Procedure

This study aimed to explore the FAST among patients with BD, MDD, and healthy controls. The patient population was included in the current study. It was approached at the hospital or institute as per convenience, whereas healthy controls were contacted either at their homes or community places at their convenience. The sample was selected based on the inclusion and exclusion criteria. The purpose of the study was explained to the participants who provided written consent. General information regarding the illness was provided by the patients. Consequently, the following tools reflect the psychosocial characteristics measured by the FAST. The FAST consists of 24 items and is used to evaluate psychosocial functioning (Bonnin et al., 2016). Higher FAST scores indicate worse psychosocial functioning, with the total score ranging from 0 to 72 (Zhang et al., 2018). Every FAST item has a four-point Likert scale value, which ranges from 0 to 3. The bipolar disorder program at the State Mental Hospital in Bilaspur, Chhattisgarh, India created the FAST.

In the first version of the FAST, a total of 24 items were divided into six distinct areas (autonomy, cognitive performance, financial worries, interpersonal relationships, and leisure time). It has 24 components and is divided into six functional areas:

1) The ability of a patient to act independently and make decisions for them is known as autonomy.

2) The ability to maintain a paid job, the effectiveness with which one completes tasks at work, working in a field in which one receives education, and earning a salary commensurate with one's degree of employment are all considered aspects of occupational functioning.

3) Cognitive functioning includes the capacity for focus, basic mental computation, problem-solving, acquisition of new knowledge, and retention of previously acquired knowledge.

4) Financial issues involve the capacity of managing the finances and spending in a balanced way.

5) Interpersonal relationships included friendships, familial ties, social interactions, sexual relationships, and the capacity to stand up with beliefs and views.

6) Leisure Time refers to the capacity to perform physical activities (sports and exercise) and the enjoyment of hobbies.

On a 4-point rating system, 0 = no difficulty, 1 = mild difficulty, 2 = considerable difficulty, and 3 = severe difficulty. After adding the points for each item, overall scores

were calculated. In actuality, the FAST measures impairment because the greater the score, the more severe the challenge.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 25.0 and IBM AMOS version 23.0 were used to conduct the analyses. For categorical variables, numbers (n) and percentages (%) were used, whereas means and standard deviations (SD) were used for descriptive variables.

Result and Discussion

The current study aimed to investigate phenotypic classes in individuals with bipolar disorder and MDD using the FAST Scale. Based on established standards, three groups were chosen to participate in the study. Patients with bipolar illness constituted the first group, those with MDD constituted the second group, and healthy controls comprised the third group. A sample of 354 men and women aged between 18 and 50 years was chosen, of whom 186 had bipolar affective disorder, 112 had MDD, and 56 were healthy controls. Responses were evaluated using the guidelines provided in the corresponding manuals. The scores obtained were examined using statistical techniques, and the results were clarified and explained as necessary. Initially, the sociodemographic factors of each of the three participant groups were assessed using descriptive statistics in the form of frequencies and percentages. Graphical representations of the Functional Assessment Short Test and social support among patients with bipolar disorder, MDD, and healthy controls were employed in conjunction with descriptive statistics in the form of means and standard deviations. Next, the significance of the mean difference between the three participant groups' scores on the FAST was examined using inferential statistics.

One-way analysis of variance (ANOVA) was used to comply with this, and the t-test was used to determine the significance of the group comparison. Table 1 presents the tables related to the computations of the aforementioned results along with an explanation. Furthermore, a few graphical representations of the results have been shown to provide fast reflection. The results are shown in Figures 1. Additionally, an attempt was made to interpret the current study's findings in light of earlier confirmatory studies cited by other researchers. Additionally, specific justifications and explanations have been provided for the current findings. These results are highlighted by the goals and theories proposed in this study.

FAST analysis

The goal of this investigation was to evaluate and compare the degree of functional impairment in patients with bipolar affective disorders and major depressive disorders

with that of healthy controls. With this viewpoint in mind, a hypothesis was developed that proposes a substantial difference in the degree of functional impairment between patients with bipolar disorder and major depressive disorder (MDD) and healthy controls. Higher scores on this parameter indicated greater functional impairment. Hence, the means and S.Ds were calculated separately for all facets of functional impairment as well as for total impairment, which are presented in Table 1.

Table 1: Summary of one-way ANOVA for FAST Score

Variable	**Bipolar disorder**		**MDD**		**Healthy Controls**		**ANOVA**
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**F**
Total score of FAST	24.6	11.42	19.1	9.4	5.81	4.89	44.99*
Autonomy	3.97#	1.90	3.24$	1.47	0.91	0.78	220.37*
Occupational functioning	3.90#	1.95	3.19$	1.51	0.92	0.82	198.26*
Cognitive functioning	5.24#	2.28	3.7$	1.88	0.97	0.80	277.78*
Financial issue	3#	1.42	2.82$	1.37	1.16	0.96	118.34*
Interpersonal relationships	5.27#	2.38	3.04$	1.70	0.91	0.76	288.89*
Leisure time	3.22#	1.49	3.11$	1.47	0.94	0.77	182.83*

***ANOVA Significant at p≤0.05 levels, # Significance between healthy controls and Bipolar Disorder, $ Significant difference between Healthy Controls and MDD.**

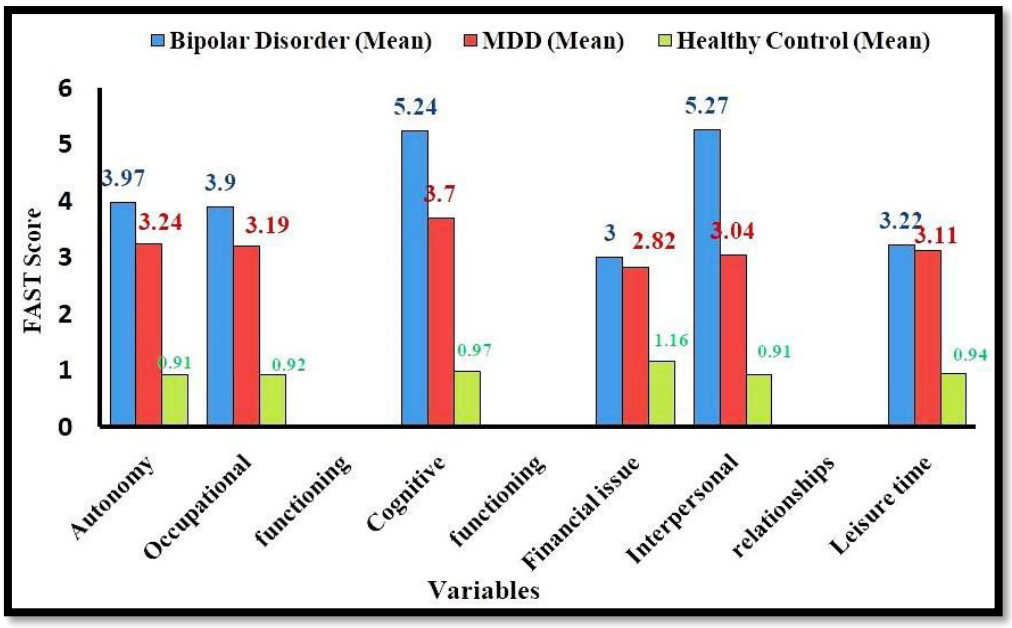

Figure 1: Mean and SD scores on FAST

Table 1 show that the mean scores of patients with MDD, BD, and healthy controls differed on the facet of FAST,

Autonomy shows differences in the mean scores of patients with MDD and BD and healthy controls. The mean score for the healthy controls was the lowest (0.91), followed by the MDD group (3.24) and the mean score for the BD group (3.97), indicating that patients with BD had a higher level of impairment in the school area.

Occupational functioning: The mean scores of patients with MDD and BD and healthy controls differed in the next occupational functioning. The healthy controls had the lowest mean score (0.92), followed by the MDD group (3.19), whereas the BD group had the highest mean score (3.90). This finding suggests that patients with BD have a higher level of impairment in occupational functioning, indicating a lack of occupational functioning.

Cognitive function: The mean scores of patients with MDD or BD and healthy controls differed in terms of cognitive function. The HC group had the lowest mean score (0.97), followed by the MDD group (3.7), whereas the BD group had the highest mean score (5.24), indicating that patients with BD had higher levels of impairment in the area of work.

Financial issues: The mean scores for patients with BD, MDD, and healthy controls varied in the subarea of financial issues. The BD group had the highest mean score (3), indicating that patients with BD had higher levels of financial issues and a lack of

income. The healthy controls had the lowest mean score (1.16), followed by the MDD group (2.82). The mean functional impairment scores of the patients with BD, MDD, and healthy controls varied.

Interpersonal relationships The BD group received the highest mean score (5.27), indicating that patients with BD had higher levels of impairment in interpersonal relationships. The healthy controls had the lowest mean score (0.91), followed by the MDD group (3.04).

Leisure time: In the leisure subcategory, the mean scores of the patients with BD, MDD, and HC varied. Specifically, the mean score for healthy controls was the lowest (0.94), followed by the MDD group (3.11) and the highest (3.22). This finding suggests that patients with BD have a higher degree of impairment in their leisure time.

The mean score for healthy controls was the lowest (5.81), followed by the MDD group (19.1) and the mean score for the BD group (24.6), indicating that patients with BD had higher levels of impairment in nearly all areas. The graphical representation in Figures 2 is effectively expressed as these data.

Only the mean differences in the overall level of FAST and its six components have been discussed above. One-way ANOVA was performed with this goal in mind for further analysis. The F-ratio (44.99) was determined and found to be statistically significant at p≤0.05; there was a significant difference in the mean FAST scores of patients with BD, MDD, and healthy controls.

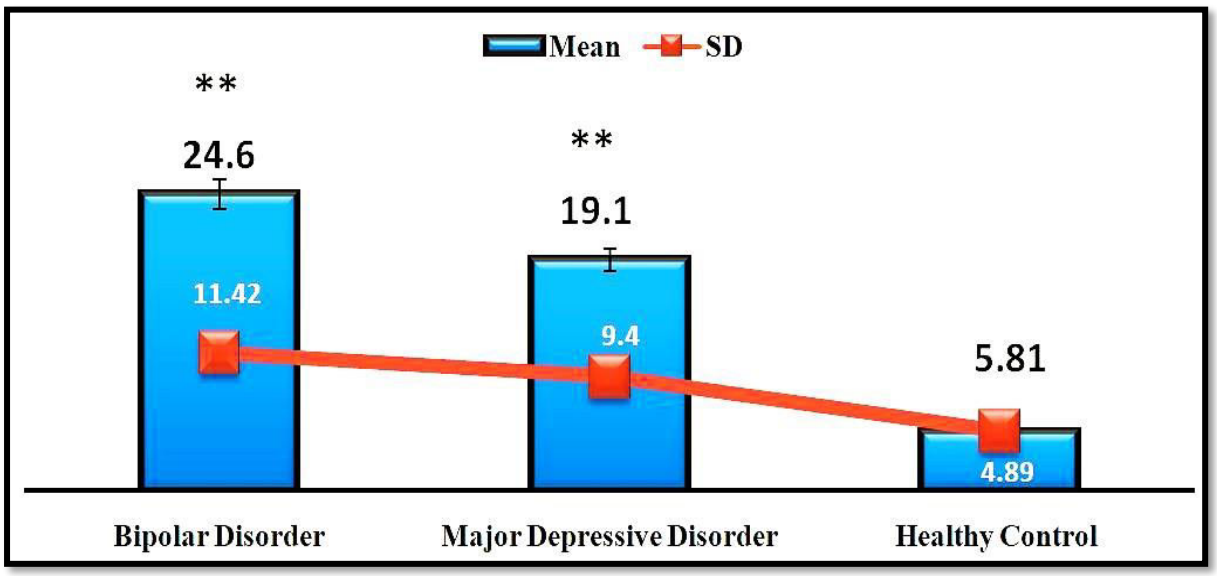

Figure 2: Total Mean and SD scores on total FAST. **Significance at the level of p≤0.05.

A sample of patients with BD responded well to the FAST, a quick interview intended to assess the impact of mental illness on functioning. In addition to successfully differentiating between patients and controls, FAST was also able to identify BD, MDD patients and controls. Twenty-four items comprise the FAST, which evaluates six distinct domains of functioning: financial concerns, interpersonal relationships, autonomy, vocational competence, and cognitive performance (Rosa et al., 2007). Because of the instrument's ease of use, short implementation time, and ease of application, the FAST offers advantages. Furthermore, FAST exhibits excellent practicality, which allows its use in research and clinical settings. Three languages were used for the instrument: Spanish, Portuguese, and English (Rosa et al., 2011). Strong discrimination and concurrent validity were also observed. Only patients with stable mood states were included in the test-retest reliability, and the results were comparable (Valerio et al., 2023). The FAST can capture several impairment aspects linked to BD, except for a leisure factor, indicating both content and construct validity. While affective morbidity linked to borderline personality disorder (BD), particularly depressive symptoms, may inhibit functioning and autonomy, incomplete functional recovery has been documented even after symptom remission (Rosa et al., 2014). This significant sickness impact was effectively demonstrated by this version of FAST. Thus, this report confirms the existence of BD-associated disability even in the absence of syndromic-level morbidity, as well as findings previously published in the English version of the instrument (Akers et al., 2019), such as construct and discriminant validity. The more evidence an instrument reliably measures what it is specifically supposed to measure, the more confidence one has in it. This action should be taken to support FAST's use as a global tool.

Multiple studies have reported high rates of functional impairment in patients with bipolar disorder (Goldberg & Harrow, 2005; Keck, 2006; Strakowski et al., 2000; Zarate et al., 2000) even in those whose symptoms have remitted. The primary functional issues that patients present include cognitive impairment, work impairment, difficulty with domestic duties, interpersonal connection difficulties, difficulties in leisure time, and sexual difficulties (Altshuler et al., 2002; Gitlin et al., 1995; Tohen et al., 2000; Vieta et al., 2007). However, rather than focusing on distinct areas of psychosocial activity, most currently available instruments are very long and focus on global or limited measures of functional recovery (Strakowski et al., 2000). Consequently, there is still a need to develop specialized tools to evaluate the functional results of BD ((Vieta et al., 2007). FAST was particularly useful in this case.

The fact that euthymic individuals had functioning values twice as high as those of depressive and manic patients indicated that FAST is a sensitive tool for identifying various mood states. Previous studies have revealed a substantial correlation between the duration of depressive symptoms and impairments in several areas of functioning,

ranging from moderate to mark ((Altshuler et al., 2002). According to Strakowski et al. (2000) ((Strakowski et al., 2000), recovery from manic symptoms is linked to functional recovery and recovery in interpersonal interactions. This study demonstrated a correlation between higher FAST scores, lower functioning scores, and symptom severity.

Currently, no devices have been specifically designed to measure health issues related to BD. Because of this, there is a lack of consistency among the various instruments, making it harder to interpret the findings. Furthermore, as Spanish is spoken by over 352 million people worldwide, the scales must be validated in other languages, especially Spanish ((Coryell et al., 1998) and local languages spoken in different geographical area. In this regard, the FAST was created with the primary challenges faced by mental health patients—both those mentioned by bipolar patients and those documented in the literature—in mind. As a result, it offers a new method for evaluating functional impairment in particular domains that bipolar patients may find problematic.

Conclusion

Comparing bipolar patients to healthy people and those with other mood disorders, the current study found that bipolar patients have severe psychosocial and familial dysfunction, as well as lower levels of social support. In patients with bipolar disorder, relationships between social supports, psychosocial functioning, and family functioning have been discovered. In patients with bipolar disorder, the impact of family functioning on psychosocial functioning may be indirectly mediated by social support. These results imply that, to improve psychosocial functioning, professional or community interventions for bipolar patients should incorporate family techniques and place an emphasis on boosting social support while keeping an eye on patients' suicidal thoughts.

Limitation

The current research provides potentially important information about FAST in patients with MDD, patients with BPAD, and healthy controls, each of these groups. The limitations and inadequacies of this study are confined to a limited scope. With this, the study being done now opens the door for certain opportunities to provoke reflection.

1. The primary constraint was the combination of state psychiatric conditions. Even if they fall into parallel categories of severity and chronicity, there may not be much consistency between them. Further investigation in this area is required.

2. As the data were collected at a specific point in time and the design was cross-sectional, the investigator was compelled to refrain from making generalizations and drawing generalizations. Patients' moods and susceptibilities at that time may have intimidated them, especially when they were admitted to the hospital or clinic, and both indoor and outdoor patients were taken. Further investigation of these issues is necessary.
3. Even though the current investigation utilized quantitative data to highlight statistical consistency, it would have been preferable if qualitative data were also included to improve the understanding of the various ideas examined and strengthen the study overall.
4. Although the current inquiry was founded on a mixed-gender group, it would be beneficial to compare other participant groups once gender disparities are taken into account.
5. A study that focuses specifically on the clinical group and addresses the underlying characteristics, such as FAST, could be devised as an intervention.
6. To increase the generalizability of the findings, further studies using larger and more identifiable samples are required.

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Ethics approval
My research study involves human subjects hence a research proposal "**Assessment and Measuring of the Bipolar Disorder, Major Depressive Disorder and Healthy Controls using Functioning Assessment Short Test (FAST)**" was presented to the institutional ethics committee GGV, Koni Bilaspur Chhattisgarh. My proposal was approved by the committee after a thorough investigation of the work **(letter reference # GGV/IEC/2020/02)**. This Collaborative Memorandum of Understanding was approved by the director of mental health indrawati Bhawan Naya Raipur (C.G) with reference no. **/DSH/NMHP/2021/72** Date 02.02.2021 and subsequently signed by the superintendant of State Mental Hospital, Sendari, Bilaspur C.G India.

Author's Contribution – Ajay Mahant: Investigation, Design the experiments, perform the experiment, Data analysis, Writing - original draft. **Dr. Rohit Seth:** Conceptualization, Project administration, Supervision, Validation, Visualization, Writing - review & editing.

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• **Competing Interests** - The authors declare that they have no competing interests.
• **Statement Regarding Research Involving Human Participants and/or Animals** – YES
• **Consent to Participate** – YES
• **Consent to Publish** – NA

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