

Burden of Care among Caregivers of Patients with Bipolar Affective Disorder at the Federal Neuropsychiatric Hospital, Calabar

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Abstract

Background: The advent of community-based care and de-institutionalization of persons with mental disorders have led to a progressive shift of care from formal health-care systems to informal care providers such as the family. This shift of care, from hospitals to the families, has led to a significant level of the burden on the family caregiver. This study aimed to identify factors which are associated with burden of care among caregivers of patients with bipolar affective disorder (BAD) seen at the Federal Psychiatric Hospital, Calabar. **Materials and Methods:** A simple random sampling technique of “yes or no” balloting was utilized to select 105 caregivers of bipolar patients seen at the outpatient clinic of the hospital. The selected caregivers (those who picked “yes”) were recruited along with their respective patients after obtaining their consent. They were assessed using a set of five questionnaires, of which three (Patient Health Questionnaire-9 [PHQ-9], Young Mania Rating Scale [YMRS] and Brief Psychiatric Rating Scale [BPRS]) were administered by the researchers on the patients whereas the remaining two (sociodemographic questionnaire and Family Burden Interview Schedule) were self-completed by the caregivers. **Results:** One hundred out of the 105 caregivers who were recruited completed the study procedure and returned properly filled questionnaires. The rates of objective and subjective burden on the caregivers were 79% and 74%, respectively. While the objective burden was associated with the patient’s educational attainment and his/her scores on the YMRS and BPRS, the subjective burden was associated with the caregiver’s monthly income and marital status, the patient’s gender, number of suicide attempts, and scores on PHQ-9, YMRS, and BPRS. Of all the variables, the patients’ scores on YMRS ($P = 0.025$) and PHQ-9 ($P = 0.011$) were the significant predictors of objective and subjective burden, respectively. **Conclusion:** This study identified the extent and factors associated with burden of care on caregivers of patients with BAD. Awareness of those factors might guide clinicians in instituting treatment strategies toward reducing the burden on caregivers.

Keywords: Bipolar affective disorder, burden, Calabar, caregiver, psychiatric hospital

INTRODUCTION

In the field of mental health, there has been a progressive shift of care from hospital-based care to community care of persons with mental illness.^[1] Care providers such as family members or other relatives are central to this practice, particularly in Africa where the extended family system provides most of the economic and social supports needed for ill patients.^[2] Caring for a relative with mental illness could lead to a significant level of strain known as “burden of care” on the caregiver.^[3]

Burden of care is any unwanted consequences experienced by the caregiver of an ill patient as a result of taking care of responsibilities for the ill patient.^[2] It includes all the physical, psychological, emotional, financial, and social difficulties

encountered by caregivers as a result of responsibilities toward the ill patient. Burden of care is further divided into objective and subjective burden. While objective burden refers to the outwardly measurable resources such as time and finances devoted by the caregiver in the course of caregiving, the subjective burden deals with how the caregiver perceives the burden of care.^[4]

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Psychiatric disorders contribute almost 11% to the current global burden of disease, and bipolar affective disorder (BAD) is the sixth leading cause of disabilities worldwide.^[5,6] BAD is a severe psychiatric illness characterized by intermittent episodes of mania, depression, or both (mixed episode). Caring for patients with BAD is usually tasking and could be associated with potentially adverse effects on the physical and psychological well-being of the caregivers. Manic episodes for example, can be devastating to personal relationships as it carries a high risk of aggression toward the caregivers. Depressive episode with its associated risk of suicide can be very worrisome for caregivers. Furthermore, the lack of optimal functioning and low productivity between episodes can add to the financial strain on the caregivers.^[7]

Studies conducted in diverse settings have reported various prevalence rates of burden among caregivers of patients with BAD. In India, Chakrabarti *et al.* in 1992 studied the extent of burden among families of patients with affective disorder using the Family Burden Interview Schedule (FBIS).^[8] They reported that 98% and 78% of the caregivers had some level of objective and subjective burden, respectively. Using the same assessment instrument (FBIS) in 2012, Sing and colleagues found a far lower rate (10%) of objective burden among the caregivers of bipolar patients living in a transit home in Nepal.^[9]

There are a number of patients' and caregivers' variables that have been linked with an elevated level of burden on caregivers of patients with BAD.^[8] Using the family burden questionnaire, Targum *et al.* in 1981 assessed the views of 19 patients and their spouses on the long-term burden of bipolar illness.^[10] They observed that both patients and spouses reported financial difficulties and unemployment as the most troubling long-term consequences. In 1999, Perlick *et al.* used the Social Behavior Assessment Schedule (SBAS) to study objective and subjective burden on 500 family members of patients with bipolar disorder.^[11] They found that higher levels of burden were seen in younger caregivers, spouses, caregivers living with patient, caregivers with less social support, caregivers who contributed more financial resources to patient, and on caregivers caring for patients with lower educational attainment. Although they found higher burden in caregivers living with patients, they did not assess for the number of hours of contact with patient per week, which is a better indicator of the degree of caregiver burden. Reinares *et al.* in 2006 also used SBAS to evaluate the subjective burden of caregivers of 86 euthymic bipolar patients.^[12] In that study, subjective burden was notably associated with poor social and occupational functioning, frequent relapses, and being a female caregiver. No relationship was found between subjective burden and hours of contact per week with the patient, duration of illness, and number of suicide attempts. A major limitation of that study was that it utilized only stable euthymic patients. Had psychotic patients been included, the result of the study might have been different.

Till date, most studies on burden of chronic psychiatric disorders have concentrated on schizophrenia while BAD

received scant attention.^[13] Consequently, interventions for caregivers of patients with chronic mental disorders (MDs) have largely focused on schizophrenia.^[14,15] Without data on the burden on caregivers of bipolar patients, it will be difficult for clinicians to plan appropriate family intervention programs. The present study will contribute data on the burden experienced by the caregivers of patients with BAD in Nigeria.

MATERIALS AND METHODS

Study location

This descriptive cross-sectional study involved caregivers of patients with BAD seen at the general outpatient clinic of the Federal Psychiatric Hospital, Calabar (FPHC). The clinic runs on Monday, Tuesday, Thursday, and Friday every week (except on public holidays). The FPHC has over 1200 staff comprising 10 consultant psychiatrists and resident doctors in psychiatry among other categories of staff. The hospital receives patients from the host state – Cross River State, the adjoining states, and across the border from Cameroon.

Study participants

The study was conducted among patients with BAD and their informal caregivers. These informal caregivers included the patients' family members, close relatives, and friends who had a pre-existing relationship with the patients and rendered totally unpaid care services to the patients. A desired sample size was estimated using Leslie Kish formula ($n = Z^2 pq/d^2$) where n = the desired minimum sample size, Z = standard normal deviate for desired significance level = 1.96 (for 95% confidence), $P = 50\%$ burden = 0.5, $q = 1 - p = 1 - 0.5 = 0.5$, and d = margin of error = 10% = 0.1. Thus, $n = (1.96)^2 \times 0.5 \times 0.5 / (0.1)^2 = 96.04$. This estimate was adjusted by adding 10% of its value. Thus $96.04 + 9.604 = 105.644$, this was rounded off to 105. The reason for the adjustment was to give room for non-respondents.

The criteria used to recruit participants were (i) consenting caregiver and patient with a diagnosis of BAD confirmed using the Mini International Neuropsychiatric Inventory. (ii) Caregiver must not be <18 years of age and should directly be involved in caring for the patient on a day-to-day basis. (iii) He or she must have been living with the patient for at least one year. Exclusion criteria were (i) caregiver with another family member (other than the patient) with psychiatric disorder or a major medical illness such as diabetes or hypertension and (ii) caregiver who was not able to read and understand the questions in questionnaires.

Sampling technique

A simple random sampling using "yes or no" balloting was employed to recruit respondents on all clinic days until the required sample size was attained.

Study instruments

These were sociodemographic questionnaire (SDQ), FBIS, Patient Health Questionnaire-9 (PHQ-9), Young Mania Rating

Scale (YMRS), Brief Psychiatric Rating Scale (BPRS), and the Mini International Neuropsychiatric Interview (MINI).

The SDQ was designed by the researchers and has two parts. The first part sought for the demographic and clinical information of the patient while the second part asked for the sociodemographic information of the caregiver. Items in the questionnaire include age, gender, marital status, educational status, employment status, income per month, amount spent on medication, type of relationship, hours of contact with patient providing care per week, duration of illness, number of hospitalization, number of relapse, and suicide attempts among others. This questionnaire was completed by the caregiver.

The FBIS was originally developed in India by Pai and Kapur.^[16] It is a semi-structured interview schedule that assesses both objective and subjective burden. The objective burden part comprises 24 items grouped under six areas which are financial burden, disruption of routine family activities, disruption of family leisure, disruption of family interactions, effect on physical health of others, and effect on mental health of others. Each item of the objective burden is rated on a three-point Likert scale (0 = no burden, 1 = moderate burden, and 2 = severe burden). The total score on objective burden is obtained by adding the rating for each of the 24 items and the range of possible score is 0–48. A score of 0 represents no burden, 1–24 means moderate burden, and 25–48 indicates severe burden. To measure the subjective burden, one standard question (“how much would you say you have suffered owing to the patient’s illness”) is asked. The response can be scored as follows: 0 = not at all, 1 = little, and 2 = severely. A modified version of this FBIS was developed in Ibadan, Nigeria.^[17] The modifications took into consideration the socioeconomic and cultural peculiarities of Nigeria. This modified version has good psychometric properties with a reported significant Cronbach’s alpha in the range of 0.62–0.82 for each item and an inter-rater reliability of between 0.48 and 0.92.^[17] The present study utilized this modified version of the FBIS.

The PHQ-9 is the depressive module of the Primary Care Evaluation of MD diagnostic instrument.^[18] It consists of 9 items that measure depressive symptoms. Each item can be scored from 0 to 3 and the range of possible total score is 0 to 27. In terms of severity, total scores of 1–4 = none, 5–9 = mild depression, 10–14 = moderate depression, 15–20 = moderately severe depression, and 21–27 = severe depression. This instrument was used by the researchers in this study to measure depressive symptoms among the patients.

The YMRS was introduced in 1978 for assessment of symptoms of mania in bipolar patient. The scale has 11 items and is based on the patient’s subjective report of his or her condition over the last 2 days. While 7 of the 11 items (elevated mood, language-thought disorder, sexual activity, sleep, appearance, increased motor activity, and insight) are graded on a scale of 0–4, the remaining four items (irritability, speech, thought content, and disruptive/aggressive behavior) are

graded as 0, 2, 4, and 8. The instrument has been previously used in Nigeria and has a reference point of 12 as its cutoff.^[19]

The BPRS is an 18-item scale developed by Overall and Gorham.^[20] It has undergone several modifications. The instrument is used by clinicians to measure symptoms in major psychiatric disorders. The 18 items are scored on a seven-point scale, (1 = not present and 7 = extremely severe). The rating is made on observation during a 15–30-min interview. It has good reliability in clinical use and has previously been used in Nigeria.^[21,22]

The MINI is a structured diagnostic interview developed jointly by psychiatrists and clinicians in the United States and Europe.^[23] It was designed for clinicians to use and diagnose psychiatric disorders according to the ICD-10 and DSM-IV criteria. It takes about 15 minutes to administer the instrument. The use of MINI requires training, and the researchers are trained in its use. MINI has previously been used in research studies in Nigeria.^[24,25]

Ethical consideration

Ethical clearance to conduct this study was obtained from the Research Ethics Committee of the FPHC. The participants were duly informed about the nature and purpose of the research after which they signed a consent form indicating their permission and willingness to participate.

Procedure

Every clinic day, eligible caregivers of patients with diagnosis of BAD (and had been staying with the patient for about a year) were identified and approached for selection using “yes or no” balloting. The selected caregivers (those who picked “yes”) and their respective patients were requested to participate after explaining the procedure/purpose of the study. Those who agreed were recruited after signing the consent form. Each of the patients were interviewed by the researchers using the MINI in order to confirm the diagnosis of BAD. A patient whose diagnosis was confirmed as BAD had the YMRS, PHQ-9, and BPRS administered on him or her by the researchers. Thereafter, the patient was excused from the consulting room while the caregiver who was present with the patient at the time of recruitment completed the SDQ and FBIS. The caregivers of unaccompanied patients were contacted on phone and were requested to come with the patients during the next clinic visit so as to participate in the study. These steps were followed until 105 caregivers (together with their respective patients) were engaged.

Data analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 20.0 (SPSS Inc., Chicago, IL, USA). Results were presented using descriptive statistics such as frequency counts, percentages, mean, and standard deviations (SDs). The statistical difference between the means of the burden scores was determined using Student’s *t*-test. Regression analysis was performed to determine the predictors of burden. Level of significant was set at $P = 0.05$.

RESULTS

Although 105 caregivers were recruited into this study, data from five were excluded in the analysis (two were due to improperly filled questionnaire while three were due to either withdrawal or refusal to complete the research procedure).

Table 1 shows the characteristics of the patients. As shown in the table, majority of the patients were female (57.0%), not married (66.0%), and had less than tertiary education (59.0%). Regarding the clinical characteristics, the mean duration of the illness was 8.56 years (SD \pm 6.42) while the mean number of hospitalization was 1.41 (SD \pm 1.48).

Table 2 gives the demographic profile of the caregivers. As shown in the table, their mean age was 51.24 (SD \pm 10.73) years. Majority of them (72.0%) were within the age range of 41–64 years. There were more female caregivers (61.0%) than males. Most were married (84.0%) and employed (94.0%).

Seventy-nine percent of the caregivers suffered some level of objective burden (57% had moderate level while 22% had severe level of burden). The mean total score for objective burden was 16.71 (SD \pm 20.28).

In terms of the subjective burden, 58.0% of the caregivers had moderate level while 16.0% had severe level. Thus, 74% of the caregivers of bipolar patients experienced subjective burden.

Table 1: Sociodemographic and clinical characteristics of the patients

Sociodemographic variables	(n=100), n (%)
Age group (years)	
≤40	67 (67.0)
41-64	32 (32.0)
≥65	1 (1.0)
Mean±SD	35.32 (11.40)
Gender	
Male	43 (43.0)
Female	57 (57.0)
Marital status	
Not married	66 (66.0)
Married	34 (34.0)
Educational status	
<tertiary	59 (59.0)
≥tertiary	41 (41.0)
Occupation	
Unemployed	48 (48.0)
Employed	52 (52.0)
Clinical variables (mean±SD)	
Duration of illness (years)	8.56±6.42
Number of relapses	3.12±2.18
Number of suicide attempts	0.29±0.80
Number of hospitalization	1.41±1.48
PHQ-9 score	5.46±4.25
YMRS score	7.30±1.36
BPRS score	25.56±6.87

SD: Standard deviation, PHQ-9: Patient Health Questionnaire-9, YMRS: Young Mania Rating Scale, BPRS: Brief Psychiatric Rating Scale

The mean score for subjective burden was 0.90 (SD \pm 0.64). These are illustrated in Table 3.

As shown in Table 4, male gender ($P = 0.047$), high PHQ-9 scores ($P = 0.001$), high BPRS scores ($P < 0.001$), more frequent suicide attempts ($P = 0.035$), and high YMRS score ($P = 0.006$) were the patient's factors with significant association with high subjective burden score. The table also shows that the patient's factors significantly associated with the total objective burden were level of education ($P = 0.025$), BPRS score ($P < 0.001$), and YMRS score ($P = 0.001$). Being a patient with no tertiary education was significantly associated with higher level of total objective burden on the caregivers than being a patient with tertiary education. Furthermore, high

Table 2: Sociodemographic profile of the caregivers

Variables	(n=100), n (%)
Age group (years)	
≤40	20 (20.0)
41-64	72 (72.0)
≥65	8 (8.0)
Mean±SD	51.24±10.73
Gender	
Male	39 (39.0)
Female	61 (61.0)
Marital status	
Not married	16 (16.0)
Married	84 (84.0)
Number of children	
None	10 (10.0)
1-3	34 (34.0)
>3	56 (56.0)
Mean±SD	3.86±2.33
Educational status	
<Tertiary	69 (69.0)
≥Tertiary	31 (31.0)
Occupation	
Unemployed	6 (6.0)
Employed	94 (94.0)
Monthly income (naira)	
<40,000	48 (48.0)
40,000-60,000	26 (26.0)
>60,000	26 (26.0)
Amount spent on treatment (naira) per month	
<3838.90	50 (50.0)
≥3838.90	50 (50.0)
Hours of contact (hours) per week	
<71.9	49 (49.0)
≥71.9	51 (51.0)
Mean±SD	68.79±39.06
Type of relationship	
Parents	54 (54.0)
Spouse	23 (23.0)
Children	5 (5.0)
Siblings	13 (13.0)
Others	5 (5.0)

SD: Standard deviation

scores on the rating scales (score of 31 or more on BPRS and scores more than 12 on YMRS) were also associated with high level of objective burden.

Table 3: The level of burden in caregivers of patients with bipolar affective disorder

Categories of burden score	Frequency, <i>n</i> (%)
Objective burden (scores)	
0 (no burden)	21 (21.0)
1-24 (moderate burden)	57 (57.0)
25-48 (severe burden)	22 (22.0)
Mean total (standard deviation)	16.71 (20.28)
Subjective burden (score)	
0 (no burden)	26 (26.0)
1 (moderate burden)	58 (58.0)
2 (severe burden)	16 (16.0)
Mean total (standard deviation)	0.90 (0.64)

Table 5 shows that unmarried caregivers bore more subjective burden than the married caregivers ($P = 0.17$). Furthermore, caregivers with low monthly income (<₦40,000) experienced more subjective burden than those with higher monthly income ($P = 0.005$). No significant association was found between the caregiver's characteristics and objective burden score.

Factors that had a significant association with burden of care were selected and entered as independent variables against each burden area which were the dependent variables in a linear regression model. Table 6 illustrates that the predictor of the total objective burden was the YMRS score ($P = 0.025$) while the predictor of the subjective burden was the PHQ-9 score ($P = 0.011$).

DISCUSSION

The aim of this study was to assess the burden of care among the caregivers of patients with BAD in a Federal

Table 4: The relationship between patients characteristics and subjective/objective burden

Variables	Subjective burden				Objective burden			
	Mean±SD	<i>t</i> -test	df	<i>P</i>	Mean±SD	<i>t</i> -test	df	<i>P</i>
Patients								
Age group								
<40	0.92±0.66	0.523	98	0.602	16.62±13.09	0.102	98	0.919
≥40	0.85±0.61				16.88±9.95			
Gender								
Male	1.05±0.65	2.007	98	0.047	18.88±12.54	1.577	98	0.118
Female	0.79±0.62				15.07±11.53			
Education								
<Tertiary	1.00±0.67	1.888	98	0.062	18.95±11.84	2.273	98	0.025
≥Tertiary	0.76±0.58				13.49±11.78			
Employment status								
Unemployed	0.96±0.54	0.870	98	0.387	17.23±13.64	0.412	98	0.681
Employed	0.85±0.72				16.23±11.61			
PHQ score								
<5	0.69±0.61	3.551	98	0.001	15.40±11.75	1.128	98	0.262
≥5	1.13±0.60				18.13±12.36			
Duration of illness								
<10	0.88±0.67	0.651	98	0.517	16.20±13.01	0.590	98	0.556
≥10	0.94±0.60				17.71±9.86			
BPRS								
<31	0.76±0.63	4.071	98	<0.001	14.33±9.65	3.768	98	<0.001
≥31	1.33±0.48				24.25±15.65			
Number of relapse								
<3	0.83±0.71	1.061	98	0.291	16.02±14.47	0.525	98	0.601
≥3	0.96±0.58				17.30±9.66			
Number of hospitalization								
<3	0.90±0.67	0.038	98	0.970	16.65±12.80	0.103	98	0.918
≥3	0.90±0.54				16.95±9.01			
Number of suicide attempt								
<3	0.88±0.63	2.123	98	0.035	16.66±12.03	0.235	98	0.814
≥3	1.67±0.58				18.33±16.07			
YMRS								
≤12	0.81±0.63	2.792	98	0.006	14.55±11.23	3.562	98	0.001
>12	1.23±0.61				24.36±12.06			

SD: Standard deviation, PHQ: Patient Health Questionnaire, YMRS: Young Mania Rating Scale, BPRS: Brief Psychiatric Rating Scale

Table 5: The relationship between caregiver characteristics and subjective/objective burden

Caregiver	Subjective burden				Objective burden			
	Mean±SD	t-test	df	P	Mean±SD	t-test	df	P
Age group (years)								
<40	1.14±0.66	1.533	98	0.129	16.79±14.35	0.025	98	0.980
≥40	0.86±0.64				16.70±11.75			
Gender								
Male	0.77±0.67	1.639	98	0.105	15.87±11.23	0.554	98	0.581
Female	0.98±0.62				17.25±12.36			
Number of children								
<3	0.91±0.64	0.125	98	0.901	17.98±12.17	0.930	98	0.354
≥3	0.89±0.65				15.71±12.00			
Educational status								
<Tertiary	0.88±0.65	0.368	98	0.714	16.64±12.52	0.089	98	0.929
≥Tertiary	0.94±0.69				16.87±11.87			
Marital status								
Unmarried	1.25±0.58	2.342	98	0.017	21.38±11.50	1.704	98	0.092
Married	0.83±0.64				15.82±12.03			
Monthly income (naira)								
<40,000	1.08±0.64	2.865	98	0.005	19.00±12.20	1.884	98	0.062
≥40,000	0.73±0.60				14.51±11.63			
Amount spent per month (naira)								
<3838.90	0.82±0.63	1.247	98	0.216	16.62±11.87	0.074	98	0.941
≥3838.90	0.98±0.65				16.80±12.38			
Hours of contact per week								
<71.9	0.80±0.71	1.598	98	0.113	15.73±14.22	0.791	98	0.435
≥71.9	1.00±0.57				17.65±9.61			

SD: Standard deviation

Table 6: Regression analysis for the total objective burden and subjective burden in caregivers

Variables	B	SE	β	t	P	R ²
Total objective burden						
BPRS score	3.865	2.258	0.158	1.712	0.090	0.254
Educational status of patients	4.683	2.824	0.179	1.658	0.101	
YMRS score	6.408	2.804	0.242	2.285	0.025	
Subjective burden						
PHQ-9 score	0.175	0.067	0.238	2.600	0.011	0.375
BPRS score	0.257	0.145	0.184	1.768	0.080	
Gender of patient	-0.207	0.110	-0.160	-1.880	0.063	
Marital status of caregivers	-0.145	0.152	-0.083	-0.956	0.342	
Monthly income	-0.091	0.069	-0.119	-1.331	0.187	
YMRS	0.259	0.145	0.183	1.780	0.078	

SE: Standard error, PHQ-9: Patient Health Questionnaire-9, YMRS: Young Mania Rating Scale, BPRS: Brief Psychiatric Rating Scale

Neuropsychiatric Hospital in Nigeria. The mean age of the patients (35.32 ± 11.40) fell within the productive age range.

There were more female caregivers than males. This is in keeping with the findings in some previous studies.^[26,27] The preponderance of female caregivers may be due to the social gender role in which women are seen as naturally adapted to caregiving role and as such spend more time in caregiving than men.^[27]

Over two-thirds of the caregivers (79%) in the present study reported some form of objective burden with majority of them

having a moderate level of burden. This rate is lower than the 98% reported among caregivers of bipolar patients in India by Chakrabarti *et al.*^[8] The higher rate of burden found in the Indian study may have been due to the inclusion of hospitalized patients in the sample. In addition, many of the patients in the Indian study were on lithium therapy. The high costs of lithium and routine laboratory investigations during lithium therapy in addition to the cost of hospitalization were likely to have contributed to the higher rate of objective burden found in the Indian study. On the other hand, a study by Sing *et al.* in Nepal using the same assessment instrument (FBIS)

reported a far lower prevalence rate of objective burden (10%) on the caregivers of patients with BAD.^[9] This lower rate may have been due to the population from where the sample was selected. The sample in that study was drawn from a transit home (patients not living with caregivers), and this may have contributed to the lower rate of burden recorded. Thus, depending on setting and patients' population, the prevalence of burden on caregivers of bipolar patients may vary considerably.

As regards the subjective burden, 74% of the caregivers who participated in the present study had subjective burden. This is comparable to the 78% found in another study by Chakrabarti *et al.*^[8] A study conducted by Dore and Romans on the impact of bipolar disorder on the family and partners estimated the rate of subjective burden to be 71%.^[28]

The present study shows that both objective and subjective burden are considerably associated with some patients'/caregivers' characteristics. With regard to the patients' characteristics, it was observed that the caregivers of patients with severe illnesses were associated with higher level of both objective and subjective burden. A possible explanation for this observation is the fact that severe illness places greater demand on the caregiver's personal time and finances. Bipolar patients with severe illness may be prone to more hospital admissions which will incur more financial cost and disrupt family routine activities. Moreover, severe illness may be a cause of constant worry for the caregiver resulting in a high level of burden. Previous studies have reported an association between illness severity and burden on caregivers of bipolar patients.^[8,29]

Another patients' factor associated with objective burden in this study was level of education. Those caring for patients with tertiary education bore lower level of objective burden than caregivers of those with no tertiary education. Tertiary education may confer on the patient an ability to access information and know more about the illness. Thus, a patient who had tertiary education may be more knowledgeable in handling the demands of his/her illness. This may reduce the caregiver's responsibilities toward the patient. It is also possible that patient with less than tertiary education has lower ability to make income, thereby contributing less to the cost of his/her upkeep. This implies more pressure on the finances of the caregiver leading to a high level of objective burden.

With regard to the other patients' factors associated with subjective burden in this study, it was observed that caregivers of male patients had higher level of subjective burden compared to caregivers of female patients. This corroborates the idea of Roychaudhuri *et al.* who found higher level of subjective burden on caregivers of young male patients and suggested that any problem affecting young males (who are considered the most productive segment of any society) will have negative consequence on the caregivers.^[30] Another factor that had a significant association with subjective burden as observed in this study was the depressive status of the patients. Caregivers of depressed bipolar patients experienced higher level of subjective burden compared to the caregivers

of those who were not depressed. Depression may affect a patient's productivity/level of functioning, thereby making the caregiver to worry and devote more time providing care at the expense of income earning/leisure activities. This study also revealed that the frequency of suicide attempts by the patient was related to the level of subjective burden on the caregiver. The caregivers of cases with more number of suicide attempts experienced higher level of subjective burden when compared with caregivers of cases with less number of suicide attempts. Frequent suicide attempts may signify more severe illness which may require the caregiver to be around and always alert watching over the patient. This will likely result in higher degree of burden on the caregivers.^[8,29]

Another key finding in this study was that marital status and monthly income were the caregivers' factors significantly associated with burden on caregivers. Married caregivers experienced lower level of subjective burden when compared with the unmarried caregivers. A possible explanation for this is that partners of the married caregivers may be providing emotional support to their spouses. This spousal support may be important in ameliorating the negative psychological consequences encountered by caregivers in the course of caring for the patients. Regarding the monthly income status, caregivers with lower monthly income experienced higher subjective burden than those with higher monthly income. Low income may aggravate the stressors on a caregiver, particularly in the present study setting where mental health services are paid out of pocket by the consumers.

As observed earlier, when the variables associated with subjective and (or) objective burden in this study were subjected to regression analysis, the severity of the patients' manic and depressive states (as indicated by the scores on YMRS and PHQ-9) emerged the most important predictors of objective and subjective burden, respectively. This observation underscores the need for clinicians to ensure adequate control of manic and depressive symptoms in patients with BAD.

CONCLUSION

This study showed that caregivers of patients with BAD experience high level of burden in carrying out their caregiving roles. The study also highlighted caregiver's/patient's characteristics which were significantly associated with high level of burden. These include caregiver who had no spouse, caregiver with low monthly income, bipolar patient with severe illness, depression and (or) repeated number of suicide attempts, and bipolar patient with no tertiary education. Awareness of these findings will help clinicians to fashion out interventions that will reduce the burden experienced by caregivers of bipolar patients in this setting.

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Conflicts of interest

There are no conflicts of interest.

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