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Coping strategies and burden stress in caregivers of patients with schizophrenia and patients with bipolar disorder

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Abstract

Background Mental illness has a great impact not only on patients but also on their carers as it makes them more prone to stress, interferes with their daily life activities, and can negatively affect their social, psychological, and physical health quality of life. They neglect seeking medical help that may negatively affect clinical outcome of patients and quality of their life. Therefore, it is important to evaluate the magnitude of burden on such caregivers and to investigate the coping strategies used by them in order to develop tailored biopsychosocial interventions to reduce their stress.

Objective To assess the magnitude of burden and patterns of coping with stress in caregivers of patients with schizophrenia. To assess the magnitude of burden and patterns of coping with stress in caregivers of patients with bipolar affective disorder. To compare both the coping strategies and burden stress scores among carers of patients diagnosed with schizophrenia and bipolar patients.

Patients and methods This cross-sectional study was done on 100 caregivers to assess burden in caregivers of schizophrenia patients and caregivers of bipolar patients, the coping style used by the caregivers of both groups and comparing between two groups.

Results There was statistically significant difference found between bipolar group and schizophrenia group regarding coping inventory scores make fun and behavioral withdrawal, which showed higher median score in schizophrenia group than bipolar group. Burden of caring and coping with this burden, affect each other mutually. As, according to the results of our study, rural residence of caregiver, positive reassessment ≤ 12 and denial > 8 were found significantly associated with high burden in bipolar group. While employed caregivers were associated with high burden among schizophrenia group. Burden is higher in bipolar group than schizophrenia group.

Conclusion The burden placed on caregivers has a significant impact on their capacity to offer service and care to patients. It also has an impact on how service providers adjust to and deal with their families' illnesses. Reduced caregiver load and increased awareness of the condition may help caregivers to use more flexible coping techniques.

Keywords Schizophrenia, Burden, Bipolar, Coping

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Introduction

Schizophrenia and bipolar affective disorder are two instances of chronic episodic mental disorders that necessitate long-term pharmaceutical use, require hospitalization on occasion, and are accompanied with a loss of function. As a result of these issues, maintaining their social, psychological, financial, and physical needs may become increasingly difficult for their caregivers. Mental illness has a significant influence on both patients and caretakers since it increases susceptibility to stress, interferes with everyday life, and can significantly affect their social, psychological, and physical health. They make the decision not to seek medical treatment; this may negatively affect the clinical outcomes and quality of life of patients. It is critical to assess the level of stress placed on such caregivers and investigate their coping methods in order to design specialized bio-psychosocial treatments to reduce their stress [1]. The most prevalent mental condition in Egypt is schizophrenia. Although schizophrenic patients make up the majority of those hospitalized to our mental health facilities, many of them get treatment at home from their relatives [23].

According to a study done in Egypt from governmental and private psychiatric facilities that included around 426 persons aged 18 to 55 years, bipolar disorder co-morbidity was 20.3% among all psychiatric diseases [2].

One of the main causes of impairments worldwide is bipolar affective disorder [20]. Men and women both experience Bipolar I disorder, which has a lifetime incidence of 1 to 2%. Due to a high frequency of suicide and other comorbidities, it is linked to high death rates [11].

An Egyptian study assessing burnout syndrome among caregivers of patients with schizophrenia, caregivers have high levels of burn out syndrome and a high burden of care; caring for caregivers is critical for providing improved mental health treatments [15].

According to Rowland et al. [20], it is characterized by bouts of severe mood instability, physiological alterations, psychological deficiencies, and functional problems.

When there is an imbalance between the time, social, financial, physical, and emotional needs of caregivers and the needs of patients, this is known as caregiver load. According to Rezaei et al. [18], prolonged caregiving has been shown to have a deleterious impact on both mental and physical health.

The purpose of this study was to evaluate the level of stress experienced by caregivers of schizophrenia patients as well as their coping mechanisms. To evaluate the level of stress experienced by and coping strategies used by those who provide care for people with bipolar affective disorder. To compare the coping mechanisms

and stress levels experienced by caregivers of people with schizophrenia and bipolar disorder.

The present study hypothesizes that burden in caregivers of schizophrenic patients is probably more than burden in care givers of bipolar patients and there is poorer coping strategies' using in caregivers of schizophrenic patients than caregivers of bipolar patients, with a possible positive correlation between the duration of illness and number of hospitalization in patients and the magnitude of burden found in their caregiver.

Patients and methods

Type of the study

It is a cross-sectional, observational, comparative study by convenience sampling.

Study setting

The sample was selected from outpatient clinics at Oka-sha Institute of Psychiatry, Ain Shams University Hospitals, Cairo, that work 6 days a week from 9 AM to 1 PM covering Greater Cairo and from Port-Said Mental Health Hospital, Port-Said, Egypt, from both the inpatient wards and the outpatient clinics. Clinics work daily from 9 AM to 12 PM; they serve a wide range of governorates including (Port Said, Ismailia, and North Sinai).

Sample size

By using PASS 11 program for sample size collection, setting confidence level at 95%, margin of error ± 0.15 , and after reviewing previous study results (Chen et al. 2019) showed that the proportion of caregivers of schizophrenic patients who are extremely worried about future life of patients was (55%) based on that a sample size of at least 50 caregivers of schizophrenic patients and 50 caregivers of bipolar patients will be sufficient to achieve study objective.

Study period

From May 2022 to August 2022.

Sample population

Inclusion criteria

For patients.

Schizophrenia group

Age: 18–65 years old. Gender: males and females. Egyptians only. Diagnosis: confirmed diagnosis of Schizophrenia according to the DSM-4 criteria by the SCID-1 scale. Minimum duration of illness: 2 years.

Bipolar affective disorder group

Age: 18–65 years old. Gender: males and females. Egyptians only. Diagnosis: confirmed diagnosis of bipolar

disorder according to the DSM-4 criteria by the SCID-1 scale. Minimum duration of illness: 2 years.

For caregivers: being a first degree relative, living with the patient either (father–mother–siblings) and is responsible for patient' medical care and for his follow up. Age: 18–65 years old. Egyptians only.

Exclusion criteria

For patients: comorbid mental retardation or any other Axis-I psychiatric disorders. Present history of acute or chronic general medical disease. Patients living alone.

For caregivers: any current or past history of psychiatric disorder or having a current history of any acute or chronic severe or disabling general medical illness.

Study procedures

The researcher interviewed patients and caregivers in three separate meetings. 1st interview: addressing the patients group only to collect clinical history data and to apply the SCID-I scale to confirm the diagnosis of either schizophrenia or bipolar disorder. 2nd interview: collecting sociodemographic and clinical data from the patients' caregivers, in addition to applying SCID-I questionnaire. 3rd interview: addressing the caregivers to answer the ZBI and Coping Inventory.

Data collection

Study tools

The following tools of assessment will be used:

A predesigned sheet for sociodemographic and clinical data of caregivers including age, gender, nationality, residence, educational level, occupation, current psychiatric history, and general medical illness. Clinical data for patients: age, gender, diagnosis, duration of illness, and number of hospital admission.

Patients will be assessed by the Structured Clinical Interview for DSM-4 (SCID-1) Clinician version [10]: The Arabic version will be used [9]: (interviewer questionnaire) a common scale used by mental health professionals is the SCID-I scale, which is broken down into seven categories: mood, psychotic, drug use, anxiety, somatoform, eating, and adjustment disorders.

El Missiry et al. [9] at the Okasha Institute of Psychiatry, Ain Shams University, translated and validated the Arabic version of the SCID-1 that was utilized in this study. Depending on the intricacy of the patient's mental history and the clinician's expertise and experience, it is delivered in a single session and takes 1 to 3 h. It was used to rule out additional mental comorbidities in patients as well as to rule out any psychiatric disorders in the caregiver group, as well as to confirm the diagnosis of schizophrenia or bipolar affective disorder.

Caregivers will be assessed by the Structured Clinical Interview for DSM-4 (SCID-1) Clinician version [10]: the Arabic version will be used [9] to exclude psychiatric morbidity in caregivers.

Caregivers were assessed with Cope Inventory [7]. Arabic version will be used (Alien and Kahlout, 2011): (interviewer questionnaire) it is an inventory to evaluate the various coping mechanisms that people employ to deal with stress. It is made up of five scales, each of which includes four items, and it assesses problem-focused coping as well as emotional coping (emotional support, denial, acceptance, and returning to religion). There are only four of these measures, and three of them are focused on behavior, mental detachment, and release of emotion [7].

Each question is graded on a scale of 1 to 4 (never to almost), with 4 being the highest.

Zarit Caregiver Burden Interview (ZBI) [27]-Short version (12 items) [4]: by Bédard and colleagues (2001), an (interviewer questionnaire) 12-item scale short version of ZBI was created and is now frequently used. It was employed to gauge how much stress carers were under. It is interview scale separated into two categories: role strain and personal strain. Each question is graded on a Likert scale of 0 to 4 (never to almost always), with 4 being the highest. High scores correspond to a heavier burden. The range of the total score is 0–48. The study's Arabic translation was examined and verified by [3].

Ethical considerations

The study was conducted after obtaining the necessary approvals: approval from the Ain Shams University Department of Neurology and Psychiatry's ethical committee. Before beginning the interviews, all study participants provided written informed consent: the patient had the option to join the study at any time or to leave it at any time. The patient had a right to complete disclosure of the trial. Only the researchers were given access to all patient data and identities in the trial. His access to therapy was unaffected by whether he chose to take part in the trial or not. The patients had a right to be informed about the study's name, research team, methods used, risks, and advantages. The only projected direct advantages or dangers from this study were the psychological discomfort from the protracted interview. By breaking it up into many interviews, depending on the participant's capacity, that was reduced.

Statistical analysis

The data was collected, tabulated, and analyzed using the appropriate statistical methods using the statistical package of social sciences (SPSS).

Results

The previous table shows that there was no statistically significant difference found between bipolar group and schizophrenia group regarding caregiver's demographic data and characteristics except residence showed statistically significant difference between both groups with p value=0.016.

The previous table shows that there was higher statistical significance in the median Zarit Burden Inventory score in the bipolar group than in the group of schizophrenia with p value=0.032 while no statistically significant difference found between both groups regarding Zarit Burden Inventory classification with p value=0.307.

The previous table shows that there was no statistically significant difference found between bipolar group and schizophrenia group regarding coping inventory scores except make fun and behavioral withdrawal showed higher median score in schizophrenia group than bipolar group with p value=0.008 and 0.021, respectively.

The previous table shows that there was statistically significant negative correlation found between caregiver's age and social support, make fun, behavioral withdrawal, and occupying the mind with thinking scores.

While the duration of illness showed negative correlation with mental distraction, religious conditioning, make fun, behavioral withdrawal, and emotional support scores and also positive correlation was found between duration of illness and anger control score.

The previous table shows that there was statistically significant negative correlation found between caregiver's age and mental distraction, denial, make fun, and behavioral withdrawal scores while there was statistically significant positive correlation found between caregivers age and social support, religious conditioning, and acceptance scores.

While the duration of illness showed negative correlation with religious conditioning, emotional support and occupying the mind with thinking scores and also positive correlation was found between duration of illness and mental distraction score.

The previous table shows that there was higher statistical significant in median scores of positive reassessment, social support, denial, and active handling in female patients than male patients with p value=0.010, 0.002, 0.019, and 0.018, respectively and also there was lower statistical significant in the median scores of acceptance and occupying the mind with thinking in female patients than male patients with p value=0.035 and 0.010, respectively.

The previous table shows that there was lower statistical significant found in median scores of denial, planning, and active handling in female caregiver than male caregiver with p value=0.019, 0.003, and 0.018; respectively.

The previous univariate logistic regression analysis shows that rural residence of caregiver, positive reassessment ≤ 12 and denial > 8 was found significantly associated with high Zarit Burden Inventory score among patients with bipolar affected disorders, also the multivariate logistic regression analysis shows that the rural residence was the most important factor associated with high Zarit Burden Inventory score among patients with bipolar affected disorders with p value=0.045 and OR (95% CI) of 11.401 (1.056–123.084) followed by denial > 8 with p value=0.019 and OR (95% CI) of 10.953 (1.476–81.294) and lastly positive reassessment with p value=0.041 and OR (95% CI) of 7.055 (1.081–46.043).

The previous univariate logistic regression analysis shows that only employed caregiver was associated with high Zarit Burden Inventory score among schizophrenia group with p value=0.006 and OR (95% CI) of 5.464 (1.627–18.357).

Discussion

Sociodemographic and clinical data of patients

The mean age of bipolar patients was 38.02 ± 12.47 , ranging from 23 to 64, while the mean age of schizophrenic patients was 34.16 ± 8.07 , ranging from 22 to 51.

The majority of them were males with duration of illness ranging between 2 and 35 years in patients with bipolar disorder and 2–21 years in patients with schizophrenia. Differences between two groups about duration of illness and number of hospitalization were not significant.

According to Table 1 the mean age of the caregivers of bipolar patients was 46.54 ± 11.08 ranging from 27 to 64 and mean age of the caregivers of schizophrenic patients was 48.46 ± 10.27 ranging from 18 to 68.

The majority in both groups lived in rural areas and belonged to female gender which indicates that females has higher responsibilities of caring.

Burden between both groups

According to Table 2, the median Zarit Burden Inventory score is greater in the bipolar group (22.5) than in the schizophrenia group (21) with p value=0.032. This conclusion might be attributed to a variety of causes, one of which being the patient's length of disease, which is longer in the bipolar group than in the schizophrenia group. The age of the patients is crucial since older people require more care, whether for their mental illness or medical difficulties, which increases the load on their caregivers. In our study, the age range of the patients was larger in the bipolar group (23 to 64) than in the schizophrenia group (22 to 51 years).

In contrast to our findings, Abbaslou et al. [1] discovered that caregivers of patients with schizophrenia faced

Table 1 Comparison between bipolar and schizophrenia group regarding caregiver’s demographic data and characteristics

Caregivers data		Bipolar group No. = 50	Schizophrenia group No. = 50	Test value	P value	Sig
Sex	Male	19 (38.0%)	11 (22.0%)	3.048*	0.081	NS
	Female	31 (62.0%)	39 (78.0%)			
Age (years)	Mean ± SD	46.54 ± 11.08	48.46 ± 10.27	-0.899•	0.371	NS
	Range	27–64	18–68			
Residence	Rural	16 (32.0%)	6 (12.0%)	5.828*	0.016	S
	Urban	34 (68.0%)	44 (88.0%)			
Occupation	Unemployed	30 (60.0%)	25 (50.0%)	1.010*	0.315	NS
	Employed	20 (40.0%)	25 (50.0%)			
Educational level	Illiterate	10 (20.0%)	9 (18.0%)	0.167*	0.920	NS
	Middle level education	29 (58.0%)	31 (62.0%)			
	High education	11 (22.0%)	10 (20.0%)			

P value > 0.05: non-significant; P value < 0.05: significant; P value < 0.01: highly significant

* Chi-square test

• Independent t test

Table 2 Comparison between bipolar and schizophrenia group regarding Zarit Burden Inventory

Zarit Burden Inventory	Bipolar group No. = 50	Schizophrenia group No. = 50	Test value	P value	Sig
Median (IQR)	22.5 (15–29)	21 (16–23)	-2.140 ≠	0.032	S
Range	5–34	5–31			
Low	4 (8.0%)	9 (18.0%)	2.362*	0.307	NS
Moderate	15 (30.0%)	15 (30.0%)			
High	31 (62.0%)	26 (52.0%)			

P value > 0.05: non-significant; P value < 0.05: significant; P value < 0.01: highly significant

* Chi-square test

≠ Mann–Whitney test

far higher burden than caregivers of chronic bipolar patients (Table 3).

According to the findings of the current investigation, an Egyptian study on caregivers of patients with bipolar illness (Allah Mohsen [2] found that fewer than half of the caregivers evaluated had a significant degree of caregiving stress. Furthermore, nearly one-third of them had considerable caring responsibilities. While 25% had just little care obligations.

Karambelas et al. [13] discovered that caregivers of people with schizophrenia had a significantly higher total objective burden score, a higher burden in needs for external support and disruptions to caregivers’ routine. Also, [15] Zarit Carer Burden comprised 120 schizophrenia patients and their 120 caregivers in the research. The interview score was 25.758 ± 7.382, indicating a high burden level.

According to an Egyptian study, data analysis revealed that less than three-quarters of the carers investigated had a severe degree of overall load. In

terms of depression symptoms, the majority of the carers surveyed experienced them. Furthermore, three-fifths of them had a high level of emotional empathy. There were considerable positive associations between the total load of the carers evaluated and their level of emotional empathy and sadness. There was also a considerable negative association between the total levels of emotional empathy of the carers tested and their degree of depression [22].

When caregivers of bipolar patients are evaluated, there are relatively little changes in burden, coping mechanisms, and support requirements. Burden had a stronger link with the degree of symptoms than the diagnosis [25].

In agreement with our results, [28] demonstrated that caregivers of people with bipolar illness had a much higher caregiving burden than caregivers of people with schizophrenia. He found that caregiver perceptions of aggressive behavior ($B=2.01, p.001$) and suicide risk ($B=0.51, p.05$) were higher in caregivers of people with

Table 3 Comparison between bipolar and schizophrenia group regarding coping inventory

Coping inventory		Bipolar group No. = 50	Schizophrenia group No. = 50	Test value	P value	Sig
Positive reassessment	Median (IQR)	11 (10–12)	11 (10–12)	–0.621 ≠	0.535	NS
	Range	6–15	8–15			
Mental distraction	Median (IQR)	7 (5–10)	6 (5–11)	–0.073 ≠	0.942	NS
	Range	4–13	4–13			
Focus and mental emptying	Median (IQR)	9.5 (8–12)	10 (6–12)	–1.366 ≠	0.172	NS
	Range	5–14	4–13			
Social support	Median (IQR)	12 (7–14)	12 (10–14)	–1.413 ≠	0.158	NS
	Range	4–15	6–16			
Denial	Median (IQR)	6 (4–10)	5 (4–9)	–1.378 ≠	0.168	NS
	Range	4–13	4–15			
Religious conditioning	Median (IQR)	14 (13–15)	15 (13–16)	–1.722 ≠	0.085	NS
	Range	11–16	4–16			
Make fun	Median (IQR)	4 (4–5)	5 (4–10)	–2.634 ≠	0.008	HS
	Range	3–13	4–15			
Behavioral withdrawal	Median (IQR)	6 (5–9)	8 (6–10)	–2.309 ≠	0.021	S
	Range	3–12	4–14			
Anger control	Median (IQR)	11 (10–12)	11 (10–12)	–0.797 ≠	0.426	NS
	Range	6–16	4–16			
Emotional support	Median (IQR)	11.5 (9–13)	11.5 (8–14)	–0.014 ≠	0.989	NS
	Range	6–16	6–19			
Acceptance	Median (IQR)	11 (9–13)	12 (10–13)	–0.761 ≠	0.447	NS
	Range	4–23	4–14			
Occupying the mind with thinking	Median (IQR)	10 (8–11)	9.5 (8–12)	–0.150 ≠	0.881	NS
	Range	6–14	2–14			
Planning	Median (IQR)	12 (11–14)	12 (10–13)	–1.440 ≠	0.150	NS
	Range	8–16	4–16			
Active handling	Median (IQR)	11 (10–12)	11 (9–12)	–1.146 ≠	0.252	NS
	Range	7–15	7–15			

P value > 0.05: non-significant; P value < 0.05: significant; P value < 0.01: highly significant

≠ Mann–Whitney test

acute bipolar disorder than in those with acute schizophrenia spectrum disorders.

Another research in Nepal found that caregivers for both conditions had comparable levels of stress, with 72% reporting higher levels of stress for both BPAD and schizophrenia. There have been few studies that compare the burden in these two groups. Despite early research revealing a higher degree of stress among caregivers of schizophrenia, other investigations indicated that caregivers of both disorders bear the same burden. Because schizophrenia and bipolar affective disorder are both chronic mental illnesses that need continuing care from family members, there may be a greater and similar level of stress in both groups [24].

In our study, there was a positive relationship between the frequency of hospitalizations and caregiver burden in both groups. Hospitalization of chronic mentally ill

people suggests recurrence, noncompliance with drugs, or neglect in patient care. Hospitalization causes caregivers' psychological and financial burden.

Similarly, [13] related increasing caregiver's burden to more frequent patient relapses, hospitalizations, and mental symptoms.

According to a study done by Sharma et al. 2017, caregiver's load increases with the duration of sickness as well as the age of the caregiver.

Coping

Coping strategies between two groups

Both groups of caregivers utilized a variety of coping mechanisms to deal with the patient's illness.

There are two major coping methods that have been identified. Problem-focused coping strategies include problem-solving, information-seeking, and employing

effective communication skills to modify unfavorable situations. Less successful emotion-focused treatments, on the other hand, require the caregivers to seek to moderate their emotional reaction to stress through behaviors such as avoidance or resignation. Many distinct elements appear to impact whether caregivers utilize one or the other coping strategy.

In our study, there was no statistically significant difference in coping inventory scores between the bipolar and schizophrenia groups, with the exception of making fun and behavioral withdrawal, which had a higher median score in the schizophrenia group than the bipolar group. Except for residence, which indicated a statistically significant difference between the two groups of persons with BPAD and those with schizophrenia, neither socio-demographic or clinical factors differed significantly between the two groups. This study’s findings matched the conclusions of numerous others by establishing striking similarities between BPAD and schizophrenia on criteria such as malfunction, burden, and symptom severity. The findings of this study indicated that, as expected, the coping techniques of both groups of caregivers were reasonably comparable. Alternatively, given both groups of patients were chronic; there may have been no changes. Because of the chronic nature of the condition and the increased time of caregiving, caregivers resort to maladaptive and unhealthy coping techniques such as sarcasm and withdrawal.

According to one study that compared BPAD and schizophrenia, caregivers’ general methods of coping in terms of the most popular approaches were somewhat identical. Those who cared for persons with bipolar illness, on the other hand, were significantly more likely to utilize tactics such as increasing the patient’s social involvement and positive communication. Caregivers of schizophrenia patients, on the other hand, employed avoidance, resignation, and seeking spiritual aid considerably more frequently. Other strategies used did not differ considerably from one another [6].

Sharma et al. [24] did a study on this topic. Both bipolar affective disorder and schizophrenia had significant levels of patient dysfunction and caregiver burden, low levels of disease awareness, and low levels of perceived control over patients’ behavior, with no discernible differences between the two groups on these criteria. Despite the fact that caregivers of patients with schizophrenia used specific emotion-focused tactics significantly more frequently, their coping styles were also generally similar. Despite having a significant influence on coping patterns, caregiver gender, patient dysfunction, and caregiver neuroticism only explained a portion of the heterogeneity in the use of various coping techniques.

According to Kate’s assessment of caregiver load and coping in connection to the degree of functioning in

patients with chronic schizophrenia, the two most preferred coping techniques were fatalism and problem-solving. Problem-focused coping methods such as problem-solving and expressive action reduced caregiver strain, but emotion-focused strategies such as fatalism and apathy increased it. As the patient’s level of functioning decreased, the importance of the coping mechanisms that altered the load increased. A significant correlation was shown between caregivers’ use of problem-solving coping and patients’ higher levels of functioning [14].

Allah Mohsen Zaki et al. [2] reported in his study that caregivers of BD patients had low levels of problem-solving and cognitive restructuring. These findings corroborate the findings of Bridi et al. [5], who discovered that less than three-quarters of the caregivers in the study utilized problem-focused engagement less frequently. Sharma et al. [24] and Chakrabarti et al. [8] also discovered that caretakers of BD patients employed problem-focused coping, which is congruent with our findings.

There are elements influencing the pattern of coping techniques that contribute to patients and other aspects that contribute to their caregivers.

Correlates of coping

Caregivers age

According to Table 4, this study indicated a statistically significant negative link between caregiver age and utilizing emotional focused coping strategies such as

Table 4 Correlation for caregiver’s age and duration of illness with coping inventory among bipolar affective disorder group

Bipolar group	Caregivers age (years)		Duration of illness (years)	
	r	P value	r	P value
Positive reassessment	-0.156	0.280	-0.212	0.139
Mental distraction	0.023	0.876	-0.514**	0.000
Focus and mental emptying	-0.005	0.974	-0.197	0.171
Social support	-0.501**	0.000	-0.252	0.078
Denial	-0.158	0.272	-0.084	0.560
Religious conditioning	-0.277	0.052	-0.331*	0.019
Make fun	-0.391**	0.005	-0.478**	0.000
Behavioral withdrawal	-0.404**	0.004	-0.341*	0.015
Anger control	-0.031	0.830	0.383**	0.006
Emotional support	-0.043	0.769	-0.539**	0.000
Acceptance	-0.005	0.971	0.033	0.820
Occupying the mind with thinking	-0.493**	0.000	0.239	0.094
Planning	-0.187	0.193	0.051	0.724
Active handling	-0.155	0.282	-0.093	0.523

P value > 0.05: non-significant; P value < 0.05: significant; P value < 0.01: highly significant

Spearman correlation coefficient

requesting for social support with p value (0.000), make fun with p value 0.005 and behavioral withdrawal with p value (0.004) in the bipolar group.

According to Table 5, the current study found a statistically significant positive correlation between caregiver’s age and asking for social support with p value (0.018), religious conditioning with p value (0.005), and acceptance with p value (0.024) in the schizophrenic group, but a statistically significant negative correlation between caregiver’s age and mental distraction with p value (0.000), denial with p value (0.001), make fun with p value (0.000), and behavioral withdrawal scores with p value (0.006) in the bipolar group.

The elderly are more mature and attempt to employ rational explanations for situations, and taking on duty for care at a younger age increases the load, causing them to utilize avoidance and denial strategies more than others.

Caregiver’s age was shown to be positively and substantially associated with coping techniques, with older caregivers employing more problem-focused solutions. In line with this conclusion, other studies demonstrate that as caregivers get older, their capacity to deal with difficulties and manage pressures improves [19].

Caregiver’s gender

Both groups employ a diverse set of coping strategies.

According to Table 6, there was a substantial difference in coping mechanisms between men and women in the

bipolar group. Female patients had significantly higher scores of positive reassessment, social support, denial, and active handling than male patients, with p values of 0.010, 0.002, 0.019, and 0.018, respectively, and male patients had significantly higher scores of acceptance and occupying the mind with thinking than female patients, with p values of 0.035 and 0.010, respectively.

According to Table 7, in the schizophrenia group, female caregivers had lower statistical significance in median scores of denial, planning, and active handling than male caregivers, with p values=0.019, 0.003, and 0.018, respectively.

Women tend to utilize their emotional side to solve difficulties, such as requesting assistance from the community, assisting family and friends, and turning to religion. The strain is heavier on them, especially if the sufferer is the spouse. Furthermore, like in the bipolar group, the high level of burden increases the adoption of maladaptive coping methods.

According to the findings of the study of Kamarulbahri et al. [12], female caregivers utilize much more emotion-focused coping mechanisms than their male counterparts. Furthermore, women sought social assistance at a higher rate than males. Their major coping method is to seek support, which includes expressing emotions such as sobbing, sharing sentiments to decrease stress, and participating in religiously related group support activities.

However, Mora-Castaeda et al. [16] disagreed, arguing that studies have revealed minimal difference between men and women, with some claiming that women adopt more ineffective and avoidant coping techniques.

According to Sharma et al. [24], male caregivers of BAD patients utilized Active Emotional Coping, followed by Problem Focused Coping, whereas female caregivers employed Avoidant Emotional Coping. Schizophrenic patients’ caregivers utilized Active Emotional coping first, followed by Problem Focused coping.

Clinical data of patients

According to Table 4, in the bipolar group, the duration of illness had a positive correlation with anger control score with a p value of 0.006 and a negative correlation with mental distraction, religious conditioning, making fun, behavioral withdrawal, and asking for emotional support with p values of 0.000, 0.019, 0.000, 0.015, and 0.000, respectively.

According to Table 5, in schizophrenia, the duration of illness showed a positive correlation with the mental distraction score with a p value of 0.010 and a negative correlation with religious conditioning, emotional support, and occupying the mind with thinking scores with p values of 0.025, 0.011, and 0.016, respectively.

Table 5 Correlation for caregiver’s age and duration of illness with coping inventory among schizophrenia group

Schizophrenia group	Caregivers Age (years)		Duration of illness (years)	
	<i>r</i>	<i>P</i> value	<i>r</i>	<i>P</i> value
Positive reassessment	0.251	0.078	−0.021	0.883
Mental distraction	−0.572**	0.000	0.360*	0.010
Focus and mental emptying	−0.231	0.106	−0.045	0.754
Social support	0.334*	0.018	−0.203	0.158
Denial	−0.446**	0.001	0.105	0.467
Religious conditioning	0.395**	0.005	−0.316*	0.025
Make fun	−0.585**	0.000	0.219	0.126
Behavioral withdrawal	−0.387**	0.006	0.038	0.791
Anger control	0.239	0.095	−0.019	0.896
Emotional support	0.196	0.173	−0.357*	0.011
Acceptance	0.319*	0.024	−0.169	0.240
Occupying the mind with thinking	0.055	0.706	−0.338*	0.016
Planning	0.176	0.221	−0.181	0.208
Active handling	−0.045	0.755	−0.105	0.467

P value > 0.05: non-significant; *P* value < 0.05: significant; *P* value < 0.01: highly significant

Spearman correlation coefficient

Table 6 Relation between gender of caregiver and coping inventory among bipolar group

Bipolar group		Sex of patients		Test value	P value	Sig
		Male	Female			
		No.= 33	No.= 17			
Positive reassessment	Median (IQR)	11 (9–12)	12 (11–14)	−2.573 ≠	0.010	S
	Range	6–13	9–15			
Mental distraction	Median (IQR)	7 (5–10)	8 (5–11)	−0.765 ≠	0.444	NS
	Range	4–13	4–12			
Focus and mental emptying	Median (IQR)	9 (8–13)	10 (9–11)	−0.703 ≠	0.482	NS
	Range	5–14	8–12			
Social support	Median (IQR)	10 (7–13)	14 (13–15)	−3.094 ≠	0.002	HS
	Range	4–14	4–15			
Denial	Median (IQR)	6 (4–9)	9 (6–10)	−2.340 ≠	0.019	S
	Range	4–12	4–13			
Religious conditioning	Median (IQR)	14 (13–15)	15 (14–16)	−1.662 ≠	0.097	NS
	Range	11–16	11–16			
Make fun	Median (IQR)	4 (4–8)	4 (4–4)	−1.241 ≠	0.215	NS
	Range	3–13	4–7			
Behavioral withdrawal	Median (IQR)	6 (5–10)	5 (4–7)	−1.663 ≠	0.096	NS
	Range	3–12	4–10			
Anger control	Median (IQR)	11 (9–12)	11 (11–12)	−0.825 ≠	0.410	NS
	Range	6–16	10–13			
Emotional support	Median (IQR)	11 (9–13)	12 (8–16)	−0.897 ≠	0.370	NS
	Range	6–14	7–16			
Acceptance	Median (IQR)	11 (9–14)	11 (8–11)	−2.110 ≠	0.035	S
	Range	7–23	4–13			
Occupying the mind with thinking	Median (IQR)	11 (9–11)	8 (7–11)	−2.581 ≠	0.010	S
	Range	6–14	6–11			
Planning	Median (IQR)	12 (10–14)	12 (12–15)	−1.793 ≠	0.073	NS
	Range	8–16	10–16			
Active handling	Median (IQR)	11 (10–12)	12 (11–13)	−2.375 ≠	0.018	S
	Range	7–13	9–15			

P value > 0.05: non-significant; P value < 0.05: significant; P value < 0.01: highly significant
 ≠ Mann-Whitney test

Long-term care may result in burnout, financial challenges, and concessions on personal objectives, all of which contribute to the development of stress and the employment of maladaptive coping strategies. In addition, the early phases of the condition are accompanied by a lack of understanding about it, an inability to explain the disease’s symptoms, incapacity to deal with it, and the stigma of mental illness. All of these variables may contribute to the employment of unhealthy coping strategies including denial, avoidance, and distraction.

An Egyptian study resulted that a strong positive correlation was found between the burden on carers of patients with bipolar mood disorders, as measured by

both the CSI and the CSAQ, and the frequency of hospitalization; the carers’ age; the severity of depression and anxiety, as measured by the HDRS and HARS; and the frequency of electroconvulsive therapy [21].

In his study, Rao et al. [17] observed that information seeking was positively associated with a higher socioeconomic level. Younger patients, married patients, and shorter illness durations were all linked to caregivers’ employment of the three emotions centered tactics collusion, coercion, and spiritual aid.

Mora-Castaeda et al. [16], do you agree with us? According to some findings, caregivers were more likely to utilize emotional-focused treatments if the patient was older, single, and had been unwell for a longer period of time.

Table 7 Relation between gender of caregiver and coping inventory among schizophrenia group

Schizophrenia group		Sex		Test value	P value	Sig
		Male	Female			
		No. = 11	No. = 39			
Positive reassessment	Median (IQR)	12 (11–14)	11 (10–12)	–1.620 ≠	0.105	NS
	Range	10–15	8–13			
Mental distraction	Median (IQR)	8 (4–11)	6 (5–11)	–0.154 ≠	0.877	NS
	Range	4–12	4–13			
Focus and mental emptying	Median (IQR)	10 (4–11)	10 (7–12)	–1.250 ≠	0.211	NS
	Range	4–13	4–13			
Social support	Median (IQR)	12 (10–15)	12 (9–14)	–0.472 ≠	0.637	NS
	Range	10–15	6–16			
Denial	Median (IQR)	9 (4–12)	4 (4–7)	–2.341 ≠	0.019	S
	Range	4–15	4–14			
Religious conditioning	Median (IQR)	14 (13–16)	16 (13–16)	–0.810 ≠	0.418	NS
	Range	12–16	4–16			
Make fun	Median (IQR)	5 (4–11)	5 (4–10)	–0.329 ≠	0.742	NS
	Range	4–12	4–15			
Behavioral withdrawal	Median (IQR)	6 (5–11)	8 (6–10)	–0.177 ≠	0.859	NS
	Range	5–14	4–12			
Anger control	Median (IQR)	12 (10–15)	11 (10–12)	–1.306 ≠	0.192	NS
	Range	9–16	4–14			
Emotional support	Median (IQR)	13 (11–14)	11 (7–13)	–1.314 ≠	0.189	NS
	Range	8–16	6–19			
Acceptance	Median (IQR)	12 (9–13)	12 (11–13)	0.048 ≠	0.962	NS
	Range	9–14	4–14			
Occupying the mind	Median (IQR)	11 (10–12)	9 (7–12)	–1.706 ≠	0.088	NS
	Range	7–14	2–14			
Planning	Median (IQR)	13 (12–16)	11 (9–13)	–2.925 ≠	0.003	HS
	Range	11–16	4–14			
Active handling	Median (IQR)	12 (10–13)	11 (9–12)	–2.367 ≠	0.018	S
	Range	10–15	7–12			

P value > 0.05: non-significant; P value < 0.05: significant; P value < 0.01: highly significant

≠: Mann–Whitney test

Predictors of burden

According to Table 8, rural residence of caregiver, positive reassessment ≤ 12 and denial > 8 was found significantly associated with high Zarit Burden Inventory score among patients with bipolar affected disorders; also, the multivariate logistic regression analysis shows that the rural residence was the most important factor associated with high Zarit Burden Inventory score among patients with bipolar affected disorders with p value = 0.045 and OR (95% CI) of 11.401 (1.056–123.084) followed by Denial > 8 with p value = 0.019 and OR (95% CI) of 10.953 (1.476–81.294) and lastly positive reassessment with p value = 0.041 and OR (95% CI) of 7.055 (1.081–46.043).

According to Table 9 in schizophrenia, only employed caregiver was associated with high Zarit Burden Inventory score among schizophrenia group with p value = 0.006 and OR (95% CI) of 5.464 (1.627–18.357).

This might be explained by the fact that increased load from relapses, multiple hospitalizations, or difficulty dealing with patients causes caregivers to utilize maladaptive coping strategies such as avoidance, denial, mental diversion, and behavioral withdrawal.

According to Wang et al. [26], low levels of available support and high levels of load, dysfunction, and expressed emotion have been associated to a variety of maladaptive, largely emotion-focused responses, including avoidance, resignation, and coercion.

Table 8 Univariate and Multivariate logistic regression analysis for factors associated with high Zarit Burden Inventory among bipolar group

	Univariate				Multivariate			
	P value	Odds ratio (OR)	95% C.I. for OR		P value	Odds ratio (OR)	95% C.I. for OR	
			Lower	Upper			Lower	Upper
Residence of caregiver (rural)	0.009	16.875	1.999	142.473	0.045	11.401	1.056	123.084
Positive reassessment < = 12	0.012	6.788	1.516	30.392	0.041	7.055	1.081	46.043
Denial > 8	0.005	10.321	2.028	52.520	0.019	10.953	1.476	81.294

Table 9 Univariate logistic regression analysis for factors associated with high Zarit Burden Inventory among schizophrenia group

	Univariate			
	P value	Odds ratio (OR)	95% C.I. for OR	
			Lower	Upper
Occupation of caregiver (employed)	0.006	5.464	1.627	18.357
Mental distraction > 5	0.053	3.208	0.984	10.454
Focus and mental emptying < = 9	0.163	0.446	0.144	1.386
Make fun < = 5	0.088	0.367	0.116	1.160

Our study was subject to some limitations

Small sample size cannot be generalized. Sample in the present study was restricted to hospital patients with chronic and severe illnesses and their caregivers. Patients were also quite stable and relatively asymptomatic. In our study, we did not take into account the type of relationships between caregivers and patients due to the presence of many variables.

Conclusion

The burden placed on caregivers has a significant impact on their capacity to offer service and care to patients. It also has an impact on how service providers adjust to and deal with their families’ illnesses. Reduced caregiver load and increased awareness of the condition may help caregivers to use more flexible coping techniques.

Abbreviations

SCID-1 The Structured Clinical Interview for DSM-4
ZBI Zarit Burden Inventory

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Authors’ contributions

All authors contributed to the study’s conception and design. Data collection and analysis were performed by YS, DA, and RS. The first draft of the manuscript was written by YS; the first draft was revised by RS, NZ, MF, and YW. The last manuscript was edited by YS and RS. All authors commented on previous versions of the manuscript and approved the final version of the manuscript.

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Availability of data and materials

The datasets analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval for the study was granted by Ain Shams Faculty of Medicine Research ethical Committee (FMASU M S 342/2020) and an informed written consent was obtained from all participants in the study before conducting the interview.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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