Original Article

Childhood Trauma, Loneliness, and Quality of Life in Adults with Euthymic Bipolar Disorder

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Abstract

Background: Individuals with childhood trauma may experience loneliness throughout their lives, which can potentially aggravate mental and physical health conditions. Moreover, accumulating evidence suggests that associations exist between childhood trauma and certain features of bipolar disorder (BD), including cognitive dysfunction, severity, and clinical course. But, it remains unclear whether loneliness is associated with childhood trauma or quality of life in adult patients with BD. **Methods:** We recruited 83 patients with euthymic BD and 40 control participants from the psychiatric outpatient clinic at National Cheng Kung University Hospital. Their severity of mood symptoms was measured according to the Hamilton Depression Rating Scale (HDRS) and Young Mania Rating Scale (YMRS). All study participants completed the childhood trauma questionnaire (CTQ), World Health Organization Quality of Life (WHOQOL) Scale and University of California, Los Angeles Loneliness Scale. **Results:** Compared with controls, patients with euthymic BD had significantly higher scores of HDRS ($p < 0.01$), YMRS ($p < 0.001$), CTQ ($p < 0.001$), loneliness scores ($p < 0.001$), but significantly lower WHOQOL scores ($p < 0.001$). In patients with euthymic BD, a significantly positive correlation was found between loneliness and CTQ scores ($p < 0.001$) and a significantly negative correlation was present between loneliness and WHOQOL scores ($p < 0.001$). These correlations were also present in the control group ($p < 0.05$ and $p < 0.001$). **Conclusion:** Euthymic BD patients had stronger feelings of loneliness than controls overall. In both euthymic BD and control patients, loneliness was positively correlated with childhood trauma and negatively correlated with quality of life. These findings warrant further investigations to strengthen the findings of the causal relationship between childhood trauma and loneliness.

Key words: childhood neglect, childhood trauma questionnaire, University of California, Los Angeles Loneliness Scale, World Health Organization Quality of Life-BREF

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Introduction

The term "loneliness" refers to the subjective feeling that one's social relations are insufficient [1]. Both loneliness and social isolation are associated with increased mortality [2, 3]. Loneliness is also associated with psychiatric conditions, such as depression, anxiety, suicidal ideation [4], and psychosis [5]. Similarly, loneliness is often present in patients who suffer from mood disorders, and in those with serious mental illness, loneliness has been shown to lead to less healthy behavior [6]. One study has also been reported that patients with schizophrenia have higher loneliness scores than healthy controls [7] and a systemic review showed that most studies have focused on the clinical effects of loneliness in patients with unipolar depression [8]. Despite the breadth of literature on loneliness and mental health, only a few studies have addressed how the effects of loneliness in psychiatric patients as compared to those in healthy controls.

Regarding the factors that possibly contribute to feelings of loneliness, Hojat [9] suggested that childhood relationship disruptions can lead to emotional dysfunction, fragility, anxiety, and fears of intimacy and rejection in adults. These obstacles

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to forming and maintaining attachment relationships may then be associated with experiences of loneliness. Not surprisingly, loneliness in the young adulthood is associated with early attachment disorders [10], i.e., childhood trauma. Nenov-Matt et al. [11] reported that high levels of perceived loneliness in patients with persistent depressive disorder and borderline personality disorder are associated rejection sensitivity, which likely is resulted from a history of childhood emotional abuse and neglect. Wilkialis et al. [12] published a narrative review in which they proposed that loneliness induces depression in adulthood through the reward system, and the further identified childhood adversity as a distal factor in the process. Aas et al. [13] found that childhood trauma is a risk factor for clinical severity of patients with bipolar disorder (BD) and childhood trauma causes alterations of affect regulation, impulse control, and cognitive functioning decreases the ability to cope with later stressors. The lifetime effects of childhood trauma on BD susceptibility and severity are evident [14]. But, few studies have yet examined the prevalence and effects of loneliness in BD or the association between loneliness and childhood trauma [8] in a BD population.

The World Health Organization considers the quality of life (QoL) to be a person's perception of their position in life in the context of the culture and values in which they live and in relation to their goals, expectations, standards and concerns [15]. Severe and moderate loneliness has been shown to reduce both physical and mental components of QoL in older adults [16]. Childhood trauma, including subtypes of neglect, psychological maltreatment, physical maltreatment and sexual abuse, has also been repeatedly associated with QoL in children and adult survivors [17]. In addition, the presence of psychiatric disease, such as BD, contributes to the adverse effects of childhood neglect and psychological maltreatment on QoL [17]. Poorer QoL is routinely found in BD patients, whether they are in a euthymic state [18] or a manic state [19]. Despite this set of strong associations, the relationship between loneliness, childhood trauma, and QoL in patients with BD is not fully known.

In the present study, we intended to study the associations between childhood trauma, loneliness, and QoL in adult euthymic BD patients. We hypothesized (a) that higher childhood trauma scores would be associated with higher loneliness in BD patients, and (b) that higher loneliness would be associated with poorer QoL in the BD population. We also intended to study whether there is any indication that subtypes of childhood trauma may play a specific rôle in causing adulthood loneliness in patients with BD.

Methods

Study subjects

The institutional review board at National Cheng Kung University Hospital approved the research protocol (IRB protocol number = B-BR-107-032, and date of approved = August 20, 2018), with the stipulation that all participants signed written informed consent forms before the study. The study took from October 2015 to August 2020.

We recruited 83 euthymic BD patients (aged 19–64 years) from the psychiatric outpatient clinic at National Cheng Kung University Hospital, and 40 healthy controls (aged 20–64 years), enrolled from National Cheng Kung University or from the community using advertisement on the billboard or on the Internet after their eligibility diagnosis was assessed according to *the Diagnostic and Statistical Manual of Mental Illness, 4*th *Edition* (*DSM-IV*) in an interview with a therapist for euthymic BD patients. Symptom severity was assessed using the 17-item Hamilton Depression Rating Scale (HDRS) and the 11-item Young Mania Rating Scale (YMRS), and the euthymic state was defined as YMRS and HDRS scores that were both 7 or lower. We consecutively enrolled patients who were receiving mood-stabilizer treatment, including valproic acid (VPA) or lithium (n = 19, 15.4%), VPA + antipsychotics (n = 45, 36.6 %), antipsychotics (n = 15, 12.2 %), and other treatments (including SSRI or no medication use) (n = 4, [3.3 %]).

Euthymic BD patients were rejected if they met the following exclusion criteria (as identified by chart evaluation and self-reporting): (a) major surgical or physical illnesses (including chronic illnesses, heart disease, stroke, kidney dialysis, transplantation, etc.); (b) pregnant or lactating patients; (c) *DSM-IV* diagnosis of substance abuse within the last three months, and (d) organic mental disease, mental retardation or dementia.

Study instrument

World Health Organization Quality of Life-brief

The World Health Organization Quality of Life-brief (WHOQOL-BREF) Taiwan version was used to assess the overall and specific features of quality of life [20-23]. This test is a powerful psychometric tool that includes an overall index and covers four components: physiology, psychology, social relations between individuals, and the environment. Cronbach's α ranges from 0.70 to 0.77 for the four domains, and the retest confidence factor ranges from 0.76 to 0.80 at the domain level [23].

Childhood Trauma Questionnaire

The childhood trauma questionnaire (CTQ) addresses five subtypes of abuse and neglect: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect [24]. Each item is rated on a scale of 1–5, ranging from "never true when you were growing up" to "very often true when you were growing up." Scores range from 5 to 25 for each category of negative childhood experiences. Higher scores reflect higher levels of negative trauma in childhood. We used a cutoff score of "no/minimal" to "low to moderate" to represent the presence and absence of childhood trauma for each subtype. CTQ results have shown trial-retest reliability between 0.79 and 0.86 above the four-month average, and internally consistent confidence coefficients ranging from 0.66 to 0.92 for all samples [24]. Previously, Scher et al. [25]. explored the factor structure and reliability of CTQs in a sample of men and women from an ethnically mixed community, and

the results have shown an acceptable internal consistency throughout the measurement.

University of California, Los Angeles loneliness scale

The University of California, Los Angeles Loneliness Scale (version 3) is a tool designed to measure loneliness [26] that is widely used and has high reliability and validity. The scale contains 20 items, and the Cronbach's α for this sample is 0.65. Participants rate how often they felt as described in the entry using a four-point Likert scale, from "never" to "often." The loneliness classifications, low degree, moderate degree, moderately high degree, and high degree, have also been provided [27].

Statistical analysis

The Chi-squared test and two-sample Student's *t*-test were used to assess the differences in demographic characteristics between groups (euthymic BD patients vs. controls). A partial correlation analysis (controlling for years of education because the euthymic BD group had a lower level of education) was done to examine the relationship between the loneliness score, childhood trauma, and QoL in the euthymic BD and control groups.

The Statistical Package for the Social Sciences software version 20.0 for Windows (SPSS Inc., Chicago, Illinois, USA) was used for analyzing all the study variables. The difference between the groups was considered significant if *p*-value was smaller than 0.05 (two-tailed).

Results

Childhood trauma experience and loneliness between groups

The summary characteristics of the participants are presented (Table 1). Patients with euthymic BD had significantly lower numbers of education years and QoL scores, but higher HDRS, YMRS, CTQ, and loneliness scores compared to the controls. These significant differences mostly remained when education years was controlled (data not shown). The prevalence of childhood trauma experiences was higher in euthymic BD patients than in the control group.

Correlation between loneliness and childhood trauma questionnaire between groups

Partial correlation tests showed positive associations between loneliness and CTQ sum scores in both patients with euthymic BD ($r = 0.52$, $p < 0.001$) and controls ($r = 0.35$, $p < 0.05$) (Table 2). With regard to the CTQ subscales, emotional abuse, physical abuse, emotional neglect, and physical neglect were positively associated with loneliness in the euthymic BD group. However, only the emotional neglect subscale was positively correlated with loneliness in the control group. Most of correlations survived after Bonferroni correction (significant $p = 0.05/6 = 0.0083$).

Correlation between loneliness and quality of life between groups

Pearson's correlation test showed negative correlations between loneliness scale and WHOQoL sum score in both euthymic BD patients ($r = -0.69$, $p < 0.001$) and controls ($r = -0.51$, $p = 0.001$). Loneliness was negatively correlated with all WHOQoL subscales (i.e., overall, physical, psychological, social, and environment) in the euthymic BD group. In the control group, loneliness was negatively correlated with the physical, psychological, and social, but not overall and environment subscales of the WHOQoL. Most of correlations survived after Bonferroni correction (significant p-value = 0.05/6 = 0.0083).

Table 1. Demographic data, childhood trauma experiences, loneliness, and social support in patients with bipolar disorder and controls

	Mean ± SD	
	Control ($n = 40$)	BD ($n = 83$)
Sex (male), *n* (%)	18 (45)	36 (43)
Age (years)	33.55 ± 11.12	36.05 ± 12.44
Education years	16.95 ± 2.51	14.53 ± 2.47***
YMRS scores	0.00 ± 0.00	0.83 ± 1.40***
HDRS scores	0.53 ± 0.93	1.54 ± 1.88**
CTQ emotional abuse	6.85 ± 2.62	9.22 ± 4.30**
CTQ physical abuse	6.58 ± 2.32	7.64 ± 3.52
CTQ sexual abuse	5.48 ± 1.01	6.12 ± 1.94
CTQ emotional neglect	10.10 ± 3.06	12.46 ± 4.34**
CTQ physical neglect	6.90 ± 1.75	9.07 ± 3.74***
CTQ sum	35.90 ± 6.21	44.51 ± 12.46***
With trauma, *n* (%)		
CTQ emotional abuse	7 (18)	38 (46)**
CTQ physical abuse	8 (20)	29 (35)
CTQ sexual abuse	9 (23)	33 (40)
CTQ emotional neglect	21 (53)	60 (72)*
CTQ physical neglect	11 (28)	45 (54)**
CTQ sum	15 (38)	64 (77)***
WHOQOL overall[a]	6.65 ± 0.95	6.22 ± 1.16*
WHOQOL physical health	26.4 ± 3.15	22.61 ± 3.94***
WHOQOL psychological	20.65 ± 2.5	18.57 ± 3.77**
WHOQOL social relationship	14.4 ± 1.66	12.67 ± 2.32***
WHOQOL environment	33.45 ± 3.95	31.32 ± 4.73**
WHOQOL sum[a]	101.55 ± 9.03	90.64 ± 12.5***
Loneliness	37.25 ± 8.41	46.51 ± 11.43***
Loneliness classification, *n* (%)***		
Low degree	15 (38)	12 (14)
Moderate degree	22 (55)	38 (46)
Moderately high degree	3 (8)	28 (34)
High degree	0 (0)	5 (6)

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$;

[a]Overall was the sum score of item "How would you rate your quality of life?" and item "How satisfied are you with your health?". Sum was the sum score of all items.

YMRS, Young Mania Rating Scale; HDRS, Hamilton Depression Rating Scale; CTQ, childhood trauma questionnaire; WHOQOL, World Health Organization quality of life; SD, standard deviation; BD, bipolar disorder

Discussion

To our knowledge, this is the first study to compare euthymic BD patients and controls in loneliness and to test

Table 2. Partial correlations between loneliness and childhood trauma questionnaire or World Health Organization quality of life scores in bipolar disorder patients and controls, controlling for education years

	Control	BDa
CTQ emotional abuse	0.03	0.51***
CTQ physical abuse	0.21	0.33**
CTQ sexual abuse	0.06	−0.03
CTQ emotional neglect	0.43**	0.51***
CTQ physical neglect	0.14	0.29**
CTQ sum	0.35*	0.52***
WHOQOL overall	−0.28	−0.49***
WHOQOL physical health	−0.36*	−0.61***
WHOQOL psychological	−0.56***	−0.62***
WHOQOL social relationship	−0.65***	−0.63***
WHOQOL environment	−0.20	−0.52***
WHOQOL sum	−0.51***	−0.69***

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$;
[a]The results were similar if YMRS and HDRS were further controlled.
CTQ, childhood trauma questionnaire; WHOQOL, World Health Organization Quality of Life; BD, bipolar disorder; YMRS, Young Mania Rating Scale; HDRS, Hamilton Depression Rating Scale

the associations of loneliness with childhood trauma and QoL in both groups. Our findings suggested that loneliness scores were generally higher in euthymic BD patients than in controls. Furthermore, more severe childhood trauma was associated with higher loneliness scores in both euthymic BD and control groups. Finally, negative correlations were observed between loneliness and QoL in both euthymic BD and control groups.

As shown in Table 1, we found that loneliness was significantly higher in patients with BD at a euthymic stage than controls (46.51 ± 11.43 vs. 37.25 ± 8.41). Similarly, Nenov-Matt et al. [11] found higher levels of loneliness and rejection sensitivity in patients with persistent depressive disorder and borderline personality disorder. The authors further concluded that rejection sensitivity is likely to mediate the effects of emotional abuse and neglect on loneliness in the patients. In addition, state rejection sensitivity was shown to be increased in both bipolar depression and unipolar depression [28, 29]. The potential role of rejection sensitivity in mediating the loneliness of patients with BD needs further investigation. Wilkialis et al. [12] suggested that a mechanism of loneliness in adulthood depression, involves attachment style, genetics, resilience, the social network, and the reward system. A similar mechanism may exist in BD, as associations have been observed between personality difficulties, insecure attachment, and symptom load in BD patients [30]. Notably, these factors have also been linked to childhood trauma [31].

In the social domain, patients with BD and those with unipolar depression may face similar challenges. Depression-associated mood symptoms interfere with a patient's ability to form meaningful interpersonal relationships, both during and between mood episodes [32]. This point is emphasized by a review article that 30%−60% of individuals with BD do not regain full social function between mood episodes [33].

Social functioning of patients with BD has been linked to coping styles. Patients with BD have lower adaptive and higher maladaptive coping style scores than controls [34]. One may speculate that childhood trauma may have impacts on attachment and coping style of BD patients, which then lead to social dysfunction and loneliness. In line with this hypothesis, our data (Table 1) showed that more severe childhood trauma was associated with significantly higher loneliness scale in BD with the control group ($p < 0.001$). Daruy-Filho et al. [35] reported that an association of childhood maltreatment exists with poor coping strategies in patients with BD, which may have negative impacts on objective social support and subjective feelings of loneliness. Studies have shown that childhood trauma leads to individual indifference, possibly as a coping strategy for living in abusive families [36]. In college students, childhood trauma increases loneliness through indifference, and recognition from a social group could act as a protective factor [37]. Furthermore, childhood trauma has been found to be associated with loneliness in the general population [38]. Shevlin et al. [39] examined the relationship between childhood abuse, loneliness, and psychiatric disease. They found that loneliness mediates the association between childhood abuse and several adult psychiatric disorders, including depression. But, the influences of loneliness on BD remain unclear. In our study (Table 2), only the emotional neglect subscale of the CTQ was significantly associated with loneliness in both euthymic BD ($p < 0.001$) and control groups ($p < 0.001$). Musetti et al. [40] conducted a study to investigate childhood emotional neglect and parent-related loneliness in high school students and found that childhood emotional neglect is associated with parent-related loneliness. Our results further support that emotional neglect plays an important role in loneliness in both controls and patients with BD. Russo et al. [41] found that noted a history of emotional neglect in patients with BD is associated with lower ability to recognize anger on the emotion recognition task, although the results for Russo et al. could not be replicated using the Mayer–Salovey–Caruso Emotional Intelligence Test [42]. Zhao et al. [43] discovered that emotional negligence is positively associated with adolescent depressive symptoms. In the same study, quality of friendship is found not only to be negatively associated with adolescent depressive symptoms but also alleviated the negative effects of emotional negligence on depressive symptoms in girls from immigrant families [43]. Those results imply that social support, especially from peers, is a protective factor and a possible target of intervention. Those results also hinted that childhood trauma and loneliness have a significant impact on mood symptoms of patients with BD. We should note the relationship between childhood trauma and loneliness when treating patients with BD.

Sayegh et al. [44] conducted a nonrandomized, single-arm prospective pilot study on the use of a group cognitive behavioral analysis system of psychotherapy (CBASP) for

patients with BD. They found that this form of therapy can improve depressive symptoms and in social functioning of BD patients [44].The authors concluded that BD patients in depression episodes are likely to benefit from the 20-week group CBASP model [44].

As we predicted, our data (Table 2) showed that higher loneliness scale was significantly correlated with poorer QoL in euthymic BD ($p < 0.001$), and this significant association was also seen in the control group ($p < 0.001$). Several articles have reported a negative correlation between loneliness scale and QoL in community-dwelling older people [45, 46]. Indeed, social support influences QoL through reducing loneliness and thus is an effective target for intervention. When interpersonal interactions have been increased (e.g., by the use of smartphones), loneliness scores are decreased and QoL is increased in an elderly cohort [47]. Warren et al. [48] investigated the influence of social support on psychological distress in adults with BD and have found lower perceived social support in the BD group. Poor social support is associated with psychological distress, but reassurance of worth and social integration is a protective factors. In their review on interventions for reducing loneliness, Veronese et al. [49] highlighted three main interventions (i.e., meditation/ mindfulness, social cognitive training, and social support) can reduce in loneliness.

Study limitations

The main strength of this study is that we used a euthymic BD group and also included a control group. But, the readers are warned against over-interpret the study results because the study has five limitations:

- Causal relationships were unclear due to the cross-sectional study design.
- The sample size of this study was small. The potential mediating role of loneliness in the effects of childhood trauma on BD or QoL could not be tested. Future work on this topic should involve larger sample sizes and longitudinal study design.
- The mechanisms of increased loneliness in patients with BD remain ambiguous because we did not collect related psychological measures, such as attachment style and personality structure. We also did not make related biological measurements, such as functional connectivity or genetic factors. Future studies including these measures are warranted, to clarify the mechanisms underlying the associations.
- The current mood status of patients might be bias in the questionnaire scores, but was not re-verified in this study.
- The recall of traumatic experience might also be biased by the memory distortion for traumatic event.

Summary

Euthymic BD patients had overall stronger feelings of loneliness than controls. In both the euthymic BD and control groups, loneliness was positively correlated with childhood trauma and negatively correlated with QoL. The causal relationship between childhood trauma and loneliness should therefore be further investigated.

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Conflicts of Interest

The authors declare no conflicts of interest in relation to this work. The funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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