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Quality of Life of Individuals with Bipolar Disorder and Schizophrenia

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ABSTRACT

Introduction: Quality of life (QoL) is a concept defined as a subjective perception of one's position in life and is negatively affected in many psychiatric illnesses such as bipolar disorder (BD) and schizophrenia (SCZ). It is hypothesized that therapeutic approaches based on QoL can increase the patient's adherence to treatment and contribute to a satisfactory life. This study aimed to compare the QoL of individuals having BD and schizophrenia with that of healthy controls (HCs) and to investigate the impact of the state of remission on QoL.

Method: The World Health Organization QoL Scale-Short Form (WHOQOL-Bref) was administered to individuals with BD (n=124) and SCZ (n=74) and to HCs (n=81) to evaluate QoL. The WHOQOL-Bref subscale and total scores were compared between the groups using multifactor analysis of covariance (MANCOVA) by considering age and education level as the covariates. Then, the patient groups were compared using MANCOVA based on the state of remission by taking age, level of education, and Global Assessment of Functioning scores as the covariates. The relationship between clinical features and QoL scores was evaluated using correlation analysis, and linear regression analysis was applied for the variables that were found to be significant.

Results: It was found that individuals with SCZ or BD had lower WHOQOL-Bref psychological, social, and total scores than HCs. Those with SCZ additionally had lower physical and environmental subscale scores than HCs. Furthermore, those with SCZ had lower WHOQOL-Bref physical, psychological, social, and total scores than individuals with BD. There was no significant difference in WHOQOL-Bref scores between individuals with BD and SCZ in the remission period. WHOQOL-Bref physical, psychological, and total scores were found to be significantly lower in unremitted BD patients when compared with remitted BD patients. Unremitted BD patients were found to have significantly lower WHOQOL-Bref psychological, environmental, and total scale scores than unremitted SCZ patients.

Conclusion: It can be concluded that the QoL of individuals with BD is between that of healthy individuals and those with SCZ. However, unremitted BD patients have lower QoL than unremitted SCZ patients. Both patient groups display similar features during remission. Identifying the similarities and differences in terms of QoL in both patient groups is of great importance to develop the best type of treatment for the patients.

Keywords: Bipolar disorder, schizophrenia, quality of life

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INTRODUCTION

Bipolar disorder (BD) and schizophrenia (SCZ) are lifelong, disabling disorders. In the lifelong follow-up of these disorders, a holistic approach toward life should prevail over individual symptoms. Quality of life (QoL) is an important concept that considers a person's life holistically, emphasizing the importance of living a meaningful and satisfying life despite the negative effects of the disease. The World Health Organization defines QoL as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." (1). Improving QoL has been viewed by modern medicine as a holistic understanding that goes beyond the treatment of disease symptoms. Since, by definition, it is a subjective assessment of the position of the individuals, there may be some limitations arising from the use of self-reported scales in the measurement of this feature. However, QoL is also known to be associated with areas such as the severity of symptoms, neurocognitive functions, and psychosocial functioning in psychiatric disorders (2,3).

Highlights

- **Individuals with SCZ and BD have lower WHOQOL-Bref scores than healthy controls.**
- **There is no difference in WHOQOL-Bref scores between patient groups in remission.**
- **Unremitted BD patients have lower WHOQOL-Bref scores than unremitted SCZ patients.**

QoL has been shown to be lower in many psychiatric disorders such as SCZ, BD, and depression when compared with that of healthy individuals (4–6). Studies comparing BD and SCZ in terms of QoL have provided conflicting results. While some studies have not found any difference

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in QoL between these two groups of disease (2,7), others have found a worse QoL in SCZ than in BD (8,9), or vice versa (10). There are a few studies comparing QoL according to state of remission in SCZ and BD. In a study in 2015, Sum et al. compared remitted and unremitted individuals with BD and SCZ and found no difference in QoL between remitted individuals with BD and SCZ. Nevertheless, QoL of unremitted individuals with SCZ was lower than that of unremitted individuals with BD (11).

QoL assessment is thought to be an important marker in determining the well-being of patients and the efficacy of treatment (12–14). Identifying the differences in QoL among individuals with psychiatric disorders is of immense importance in providing appropriate treatments. This study aimed to compare the QoL of individuals having BD and schizophrenia with that of healthy controls (HCs) and to investigate the impact of state of remission on QoL.

METHODS

This study is a cross-sectional and observational study. The study included subjects with BD (n=124) and SCZ (n=74) who were followed up in Dokuz Eylül University Faculty of Medicine Psychiatry Department and Maltepe University Faculty of Medicine Psychiatry Department during 2013–2021. Patients and HCs (n=81) were selected, by order of arrival, among the individuals who applied to participate in the study upon referral of a physician and based on information provided in flyers distributed in the psychiatry clinic. The research was approved by Maltepe University Clinical Research Ethics Committee. (Decision no: 2021/900/70, Date: 04/05/2021)

Participants

The clinician conducted a Structured Clinical Interview developed according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) (SCID-I), with all the participants to validate the diagnoses of BD and SCZ. Subsequently, the Hamilton Depression Rating Scale (HAMD-17) and Young Mania Rating Scale (YMRS) were administered to individuals with BD, and the Positive and Negative Syndrome Scale (PANSS) to individuals with SCZ. The Global Assessment of Functioning Scale (GAF) was used to evaluate psychosocial functioning in the patient groups. QoL of all the participants was evaluated using the World Health Organization QoL Scale-Short Form (WHOQOL-Bref).

All participants were aged between 18 and 65 years. In individuals with SCZ, remission was determined according to the criteria recommended by the "Remission in Schizophrenia Working Group" (a score of<3 for eight PANSS criteria during a 6-month period) (15). For individuals with BD, the criterion for remission was defined as obtaining a score of<7 on HAMD-17 and YMRS.

Statistical Analysis

IBM Statistical Package for the Social Sciences (SPSS) version 23.0 (Chicago IL, USA) was used for statistical analysis. Categorical variables were compared with the Chi-Square test. Skewness and Kurtosis values were examined to see whether the continuous data conformed to normal distribution. The t-test was used for pairwise group comparisons, and analysis of variance was used for multi-group comparisons for normally distributed data. To compare the WHOQOL-Bref scores among the BD, SCZ, and HCs, age and level of education were taken as the covariates. Multifactor analysis of covariance model (MANCOVA) was used and compared with post-hoc Bonferroni. In the comparison of WHOQOL-Bref scores between individuals with BD and SCZ according to the state of remission, MANCOVA was used by considering age, level of education, and GAF scores as the covariates, and post-hoc Bonferroni test was performed. Pearson correlation analysis was performed among age, level of education, age of onset of disease, duration of disease, GAF scores, and WHOQOL-Bref scores. Variables with significant differences were evaluated using linear regression analysis. The relationship among the scales was used to evaluate disease symptom severity (YMRS, HAMD-17, and PANSS), and WHOQOL-Bref scores were assessed with Pearson correlation analysis. The level of significance was taken as 0.05, and the mean ± standard deviation value was given for all test results.

RESULTS

Comparison of demographic and clinical characteristics among the study groups is given in Table 1. While no significant difference was found

Table 1. Comparison of demographic and clinical characteristics among the study groups

	BD (n=124)	SCZ (n=74)	HC (n=81)	Test statistics F/χ^2	p
Age, Mean (Standard Deviation)	37.73 (10.18)	39.05 (10.42)	37.01 (13.37)	0.654	0.521
Sex (n, %) Male Female	 43 (34.7) 81 (65.3)	 45 (60.8) 29 (39.2)	 33 (40.7) 48 (59.3)	13.208	0.001
Years of education, Mean (Standard Deviation)	12.34 (4.22)	10.34 (2.98)	13.35 (4.23)	11.704	<0.001
Employment status Employed Unemployed	 54 (43.5) 70 (56.5)	 14 (18.9) 60 (81.1)	 49 (60.5) 32 (39.5)	27.689	<0.001
Marital status Married Single/Divorced	 57 (46.0) 67 (54.0)	 30 (40.5) 44 (59.5)	 41 (50.6) 40 (49.4)	1.582	0.453
Age of onset, Mean (Standard Deviation)	26.71 (8.77)	24.05 (7.84)	-	2.029	0.044
Illness duration, (years) Mean (Standard Deviation)	11.26 (7.81)	15.04 (9.19)	-	-2.861	0.005
GAF, Mean (Standard Deviation)	87.05 (10.41)	60.96 (17.79)	-	11.438	<0.001
PANSS, Mean (Standard Deviation) Positive Negative General Total score	 - 	 13.34 (5.43) 17.18 (6.28) 29.71 (8.10) 60.28 (16.83)	 - 	 - 	 -
HAMD-17, Mean (Standard Deviation)	3.85 (4.92)	-	-	-	-
YMRS, Mean (Standard Deviation)	0.85 (2.42)	-	-	-	-

BD: Bipolar disorder; GAF: The Global Assessment of Functioning Scale; HAMD-17: Hamilton Depression Rating Scale; HC: Healthy control; n: number; PANSS: Positive and Negative Syndrome Scale; SCZ: Schizophrenia; YMRS: Young Mania Rating Scale.

Table 2. Comparison of study groups in terms of WHOQOL-Bref scores

	Mean ± SD				
WHOQOL-Bref Scores	**BD (n=124)**	**SCZ (n=74)**	**HC (n=81)**	**F**	**p**
Physical	25.11±4.87	21.84±3.77	25.91±4.54	20.362	<0.001 SCZ<BD p<0.001 SCZ<HC p<0.001
Psychological	20.90±4.18	19.45±3.97	23.19±3.00	20.503	<0.001 SCZ<BD p<0.013 SCZ<HC p<0.001 BD<HC p<0.001
Social	9.90±2.39	8.86±2.67	11.31±1.99	17.699	<0.001 SCZ<BD p<0.023 SCZ<HC p<0.001 BD<HC p<0.001
Environment	28.60±4.76	27.34±4.71	30.40±4.68	6.558	0.002 SCZ<HC p<0.001 BD<HC p<0.037
Total scores	84.52±13.33	77.49±11.57	90.68±11.66	21.011	<0.001 SCZ<BD p<0.013 SCZ<HC p<0.001 BD<HC p=0.002

BD: Bipolar disorder; HC: Healthy control; n: number; SCZ: Schizophrenia; SD: Standard Deviation; WHOQOL-Bref: World Health Organization Quality of Life Scale-Short Form.

between the groups in terms of age (p=0.521), a significant difference was found in terms of sex (p=0.001), years of education (p<0.001), and employment status (p<0.001). Individuals with SCZ had significantly lower levels of education than those with BD (p=0.002) and HCs (p<0.001).

Individuals with BD were found to have an older age of onset of the disease (p=0.044), shorter duration of the disease (p=0.005), and higher GAF scores (p<0.001) than those with SCZ.

Quality of Life

Group comparisons made with MANCOVA, corrected for age and level of education and subjected to post-hoc Bonferroni test, showed that individuals with SCZ had a significantly lower physical (p<0.001, p<0.001, respectively), psychological (p<0.001, p=0.013, respectively), social subscale (p<0.001, p=0.023, respectively), and WHOQOL-Bref total scores (p<0.001, p=0.013, respectively) when compared the HC and BD groups. Environment subscale scores of individuals with SCZ were also significantly lower than those of the HCs (p<0.001). Psychological, social, environmental, and WHOQOL-Bref total scores of individuals with BD were also found to be significantly lower than those of the HCs (p<0.001, p<0.001, p=0.037, and p=0.002, respectively). A comparison of the study groups in terms of WHOQOL-Bref scores is given in Table 2 and Figure 1.

In the comparison of the WHOQOL-Bref scores between individuals with BD and SCZ according to the state of remission, with age, education level, and GAF scores taken as the covariates, those with unremitted BD patients were found to have lower psychological and total subscale scores than all other patient groups. Unremitted BD patients were found to have lower physical subscale scores when compared with those with remitted (p=0.006), and lower environmental subscale scores than those with unremitted SCZ patients (p=0.013). There was no significant difference in WHOQOL-Bref scores between individuals with BD and SCZ in the remission period. Comparison of the WHOQOL-Bref scores of individuals with BD and SCZ according to state of remission is shown in Table 3 and Figure 2.

Association between Disease Symptom Severity and Quality of Life

A weak positive correlation was found between the patient groups' GAF scores and WHOQOL-Bref physical, psychological, social and environmental subscales and total scores (p<0.001, r=0.455; p<0.001, r=0.408; p<0.001, r=0.429; p<0.001, r=0.335; p<0.001, r=0.496, respectively). Regression analysis showed that the GAF scores had an effect on the WHOQOL-Bref total scores (R^2=0.246, p<0.001, t=7.861).

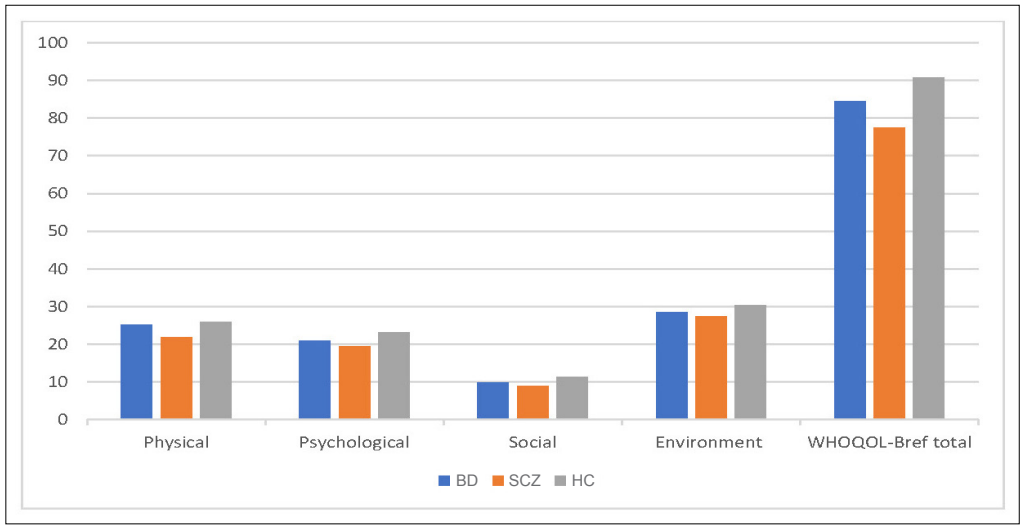

Figure 1. Comparison of study groups in terms of WHOQOL-Bref scores.

BD: Bipolar disorder; HC: Healthy control; SCZ: Schizophrenia; WHOQOL-Bref: World Health Organization Quality of Life Scale-Short Form.

Table 3. Comparison of WHOQOL-Bref scores of individuals with BD and SCZ according to state of remission

WHOQOL-Bref Scores	Mean ± SD				F	P
	BDr (n=101)	BDu (n=15)	SCZr (n=30)	SCZu (n=44)		
Physical	25.80±4.48	20.13±4.85	23.13±2.79	20.95±4.11	4.195	0.007 BDu<BDr p=0.006
Psychological	21.57±3.54	16.07±5.31	20.70±3.00	18.59±4.34	4.927	0.003 BDu<BDr p=0.024 BDu<SCZr p=0.014 BDu<SCZu p=0.004
Social	10.14±2.23	8.20±2.86	10.13±2.19	8.00±2.63	1.671	0.175
Environment	29.25±4.55	23.93±3.59	28.57±5.23	26.50±4.17	3.676	0.013 BDu<SCZu p=0.013
Total scores	86.75±11.74	68.33±13.40	82.53±10.73	74.05±10.95	4.744	0.003 BDu<BDr p=0.011 BDu<SCZr p=0.013 BDu<SCZu p=0.011

BDr: Remitted bipolar disorder patients; BDu: Unremitted bipolar disorder patients; n: number; SCZr: Remitted schizophrenia patients; SCZu: Unremitted schizophrenia patients; WHOQOL-Bref: World Health Organization Quality of Life Scale-Short Form.

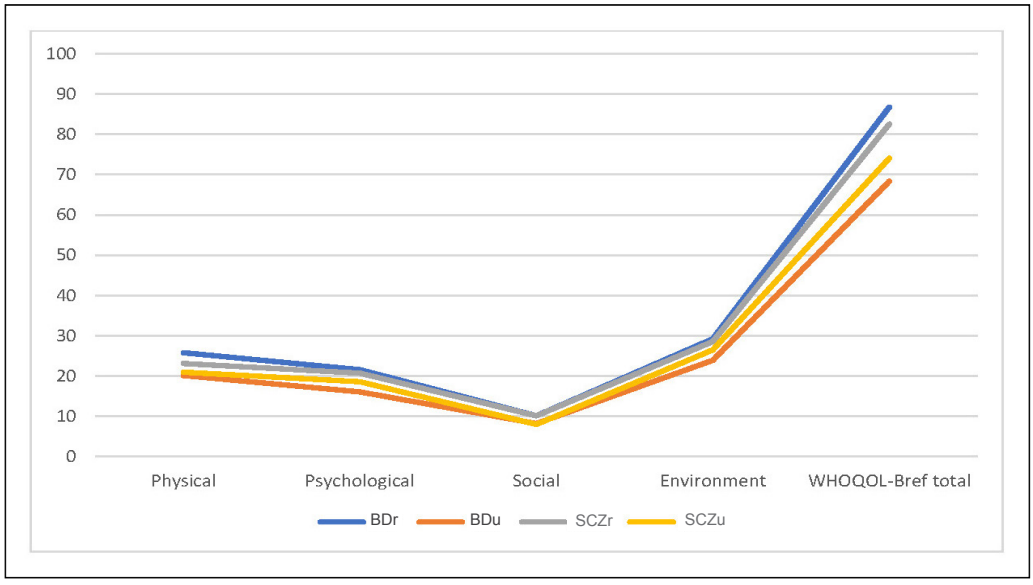

Figure 2. Comparison of WHOQOL-Bref scores of individuals with BD and SCZ according to state of remission.

BDr: Remitted bipolar disorder patients; BDu: Unremitted bipolar disorder patients; SCZr: Remitted schizophrenia patients; SCZu: Unremitted schizophrenia patients; WHOQOL-Bref: World Health Organization Quality of Life Scale-Short Form.

When the correlation between the HAMD-17 and YMRS scale scores and WHOQOL-Bref scores in individuals with BD was examined, a weak-to-moderate negative correlation was found between HAMD-17 scores and WHOQOL-Bref physical, psychological, social and environmental subscales and total scores ($p<0.001$, $r=-0.454$; $p<0.001$, $r=-0.610$; $p<0.001$, $r=-0.372$; $p<0.001$, $r=-0.406$; $p<0.001$, $r=-0.563$ respectively). In individuals with SCZ, a weak-to-moderate negative correlation was found between the PANSS total scale scores and WHOQOL-Bref physical, psychological, social and environmental subscales and total scores ($p=0.003$, $r=-0.340$; $p=0.001$, $r=0.395$; $p<0.001$, $r=-0.551$; $p<0.001$, $r=-0.458$; $p<0.001$, $r=-0.559$ respectively).

DISCUSSION

This study found that individuals with SCZ or BD had lower WHOQOL-Bref psychological, social, and total scores when compared with HCs, and individuals with SCZ also had lower physical and environmental subscale scores than HCs. Moreover, individuals with SCZ had lower WHOQOL-Bref physical, psychological, social, and total scores than those with BD. In the remission period, no significant difference was found between individuals with BD and SCH in terms of WHOQOL-Bref scores. Unremitted BD patients had significantly lower WHOQOL-Bref physical and psychological subscale and total scores than those with remitted. Similarly, unremitted BD patients had significantly lower WHOQOL-Bref psychological, environmental, and total scale scores than unremitted SCZ patients. These findings show that the QoL was lower in both patient groups when compared with the healthy individuals. QoL was lower in individuals with SCZ than in those with BD; however, periods of relapse in BD affected QoL more negatively than periods of relapse in SCZ.

As observed in our study, it is a widely accepted finding in the literature that the quality of life of individuals with a diagnosis of BD or SCZ is lower than that of healthy controls (2,7,11). Most studies in the literature have not found a difference in terms of QoL between individuals in remission in both patient groups (2,7,16). On the other hand, some studies have emphasized that individuals with SCZ have lower QoL than those with BD during the state of remission (8,9). Although there are studies comparing individuals with BD and SCZ in terms of quality of life in the literature, the number of studies comparing patients according to remission state is limited (11). In our study, individuals with SCZ, regardless of their state of remission, were found to have lower QoL than individuals with BD; on the other hand, no difference was observed between the groups in the state of remission. Our findings are similar to those from a study by Sum et al. (11) comparing the QoL of individuals with BD and SCZ according to the state of remission. No difference was found between the patient groups in remission. However, the same study found that unremitted individuals with SCZ had lower QoL than unremitted individuals with BD, which contradicts the findings of our study (11). It is known that SCZ is a disorder

with a chronic course and that BD is a disorder with periods of relapse and remission. In this study, remission in individuals with SCZ was determined according to the criteria proposed by Andreasen et al. (15). In clinical practice, it is known that individuals with SCZ who are not fully in relapse but fail to meet the remission criteria and continue their lives with a moderate level of functioning constitute the majority. In this respect, it can be hypothesized that some of the individuals with SCZ who were included in the study and considered to be unremitted were individuals who continued their lives with moderate functioning and residual symptoms. Their QoL did not change much according to the chronic course of the disease. On the other hand, individuals with BD almost always return to their former functionality, except when in relapse. From this point of view, it can be expected that individuals with BD compare their periods of relapse with periods of remission and subjectively conclude that their QoL decreases more during periods of relapse.

Another reason why unremitted BD patients were found to have lower WHOQOL-Bref psychological and environmental subscale and total scores than unremitted SCZ patients is that the WHOQOL-Bref psychological subscale includes items assessing enjoyment of life, the meaningfulness of life, self-satisfaction, mood symptoms such as attention, depression, sadness, and satisfaction with the environment. Since the scale better reflects mood symptoms, it can be thought that it captures complaints of individuals with mood disorders to a greater extent. In addition, our study found lower WHOQOL-Bref physical and psychological subscale and total scores in unremitted BD patients when compared with remitted BD patients. Since QoL is a subjective assessment of the condition of individuals, there are some limitations arising from the use of self-reported scales in the measurement of this feature. In a depressive episode of BD, individuals may tend to view their QoL as below normal due to thoughts of worthlessness and negative thinking (17,18). Hence, some of the studies conducted in this area include only euthymic patients (19). Some researchers, on the other hand, have stated that the administration of these scales in periods of relapse would be beneficial in obtaining useful data that reflect the patients' own perspective of QoL (20).

In our study, a significant relationship was found between psychosocial functioning and scale scores used to determine the severity of the disease. Studies have shown that QoL is related to the severity of symptoms in BD and SCZ and to areas such as psychosocial functioning (2,3). Sum et al. found in their study conducted in 2015 that decreased severity of negative psychotic symptoms and increased psychosocial functioning were associated with better QoL (11). However, it is known that one of the factors that decrease QoL in BD is residual depressive symptoms (5). In a study evaluating the QoL of individuals with BD, it has been shown that HAMD scale scores were negatively correlated with all QoL subscales (21). Studies with different depression rating scales have also shown that quality of life and depressive symptoms are highly correlated (22).

One of the main limitations of our study is the use of a scale based on self-reported values rather than objective measurements in the evaluation of QoL. In addition, the low number of unremitted BD patients is an important limitation that should be considered when interpreting the results. Studies involving more patients and investigating the impacts of conditions such as neurocognitive functions, drug effects, and clinical course on QoL could add value to the literature.

In conclusion, it can be stated that individuals with BD and SCZ have lower QoL than the healthy individuals and that those with SCZ are affected strongly by decreased QoL. Furthermore, unremitted BD patients have lower QoL more than unremitted SCZ patients, and in remission, both patient groups show similar characteristics. From this point of view, revealing the similarities and differences in terms of QoL between both groups of disease is of great importance in determining the most effective treatment for the patients.

Ethics Committee Approval: The research was approved by Maltepe University Clinical Research Ethics Committee (Decision no: 2021/900/70, Date: 04/05/2021).

Informed Consent: All participants provided signed written informed consent.

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REFERENCES

1. The WHOQOL GROUP. Development of the World Health Organization WHOQOL-BREF quality of life assessment. Psychol Med. 1998;28(3):551–558. [Crossref]
2. Brissos S, Dias VV, Carita AI, Martinez-Aran A. Quality of life in bipolar type I disorder and schizophrenia in remission: clinical and neurocognitive correlates. Psychiatry Res. 2008;160(1):55–62. [Crossref]
3. Woon PS, Chia MY, Chan WY, Sim K. Neurocognitive, clinical and functional correlates of subjective quality of life in Asian outpatients with schizophrenia. Prog Neuropsychopharmacol Biol Psychiatry. 2010;34(3):463–468. [Crossref]
4. Pascual-Sanchez A, Jenaro C, Montes-Rodriguez JM. Quality of life in euthymic bipolar patients: A systematic review and meta-analysis. J Affect Disord. 2019;255:105–115. [Crossref]
5. Bo Q, Tian L, Li F, Mao Z, Wang Z, Ma X, et al. Quality of life in euthymic patients with unipolar major depressive disorder and bipolar disorder. Neuropsychiatr Dis Treat. 2019;15:1649–1657. [Crossref]
6. Hofer A, Mizuno Y, Wartelsteiner F, Wolfgang Fleischhacker W, Frajo-Apor B, Kemmler G, et al. Quality of life in schizophrenia and bipolar disorder: The impact of symptomatic remission and resilience. Eur Psychiatry. 2017;46:42–47. [Crossref]
7. Yen C-F, Cheng C-P, Huang C-F, Yen J-Y, Ko C-H, Chen C-S. Quality of life and its association with insight, adverse effects of medication and use of atypical antipsychotics in patients with bipolar disorder and schizophrenia in remission. Bipolar Disord. 2008;10(5):617–624. [Crossref]
8. Chand PK, Mattoo SK, Sharan P. Quality of life and its correlates in patients with bipolar disorder stabilized on lithium prophylaxis. Psychiatry Clin Neurosci. 2004;58(3):311–318. [Crossref]
9. Latalova K, Prasko J, Diveky T, Kamaradova D, Velartova H. Quality of life in patients with bipolar disorder –a comparison with schizophrenic patients and healthy controls. Psychiatr Danub. 2011;23(1):21–26. https://www.psychiatria-danubina.com/UserDocsImages/pdf/dnb_vol23_no1/dnb_vol23_no1_21.pdf
10. Atkinson M, Zibin S, Chuang H. Characterizing quality of life among patients with chronic mental illness: a critical examination of the self-report methodology. Am J Psychiatry. 1997;154(1):99–105. [Crossref]
11. Sum MY, Ho NF, Sim K. Cross diagnostic comparisons of quality of life deficits in remitted and unremitted patients with schizophrenia and bipolar disorder. Schizophr Res. 2015;168(1-2):191–196. [Crossref]
12. Michalak EE, Yatham LN, Lam RW. Quality of life in bipolar disorder: a review of the literature. Health Qual Life Outcomes. 2005;3:72. [Crossref]
13. Jha MK, Greer TL, Grannemann BD, Carmody T, Rush AJ, Trivedi MH. Early normalization of Quality of Life predicts later remission in depression: Findings from the CO-MED trial. J Affect Disord. 2016;206:17–22. [Crossref]
14. Thunedborg K, Black CH, Bech P. Beyond the Hamilton depression scores in long-term treatment of manic-melancholic patients: prediction of recurrence of depression by quality of life measurements. Psychother Psychosom. 1995;64(3-4):131–140. [Crossref]
15. Andreasen NC, Carpenter WT, Jr., Kane JM, Lasser RA, Marder SR, Weinberger DR. Remission in schizophrenia: proposed criteria and rationale for consensus. Am J Psychiatry. 2005;162(3):441–449. [Crossref]
16. Amini H, Sharifi V. Quality of life in bipolar type I disorder in a one-year followup. Depress Res Treat. 2012;2012:860745. [Crossref]
17. Russo J, Roy-Byrne P, Reeder D, Alexander M, Dwyer-O'Connor E, Dagadakis C, et al. Longitudinal assessment of quality of life in acute psychiatric inpatients: reliability and validity. J Nerv Ment Dis. 1997;185(3):166–175. [Crossref]

18. Gazalle FK, Frey BN, Hallal PC, Andreazza AC, Cunha AB, Santin A, et al. Mismatch between self-reported quality of life and functional assessment in acute mania: a matter of unawareness of illness? J Affect Disord. 2007;103(1-3):247–252. [Crossref]
19. Sierra P, Livianos L, Rojo L. Quality of life for patients with bipolar disorder: relationship with clinical and demographic variables. Bipolar Disord. 2005;7(2):159–165. [Crossref]
20. Bonnín CM, Sánchez-Moreno J, Martínez-Arán A, Solé B, Reinares M, Rosa AR, et al. Subthreshold symptoms in bipolar disorder: impact on neurocognition, quality of life and disability. J Affect Disord. 2012;136(3):650–659. [Crossref]
21. Yatham LN, Lecrubier Y, Fieve RR, Davis KH, Harris SD, Krishnan AA. Quality of life in patients with bipolar I depression: data from 920 patients. Bipolar Disord. 2004;6(5):379–385. [Crossref]
22. Saarni SI, Viertiö S, Perälä J, Koskinen S, Lönnqvist J, Suvisaari J. Quality of life of people with schizophrenia, bipolar disorder and other psychotic disorders. Br J Psychiatry. 2010;197(5):386–394. [Crossref]