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Quality of Life in Major Depressive Disorder and Bipolar Disorder during Euthymia: Association with Neuropsychological Performance

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Abstract

Major depressive disorder (MDD) and bipolar disorder (BD) are characterized by depressive episodes and associated with impairments in quality of life. In addition to depressive symptoms, neurocognitive impairment can be an important factor responsible for the impairment of quality of life in these patients. This study aimed to investigate the relationship between neuropsychological functioning and self-reported quality of life in euthymic patients with MDD and BD. A total of 53 patients (21 BD, 32 MDD), who were remitted at least 8 weeks, were included in the study. The quality of life was evaluated by WHOQL-BREF-TR and neurocognitive performance was assessed by Wechsler Adult Intelligence Scales Revised Form (WAIS-R) and Wisconsin Card Sorting Test (WCST). Psychological functioning and environmental domains of quality of life were found more impaired in patients with BD compared to those with MDD.

Keywords: Bipolar, Major Depressive Disorder, Quality of life, Neurocognitive Performans

1. Introduction

Mood disorders are a public health problem. MDD and BD rank as two of the ten major causes of disability (Ferrari et al., 2016). MDD and BD are often associated with extensive impairments in all fields of functioning even it leads elevated suicidal risk(Ruggero

et al., 2007). Depressive episodes characteristic of both major depressive disorder (MDD) and bipolar disorder (BD) are complex chronic illnesses which affect mood and associated with considerable impairments in psychological function including quality of life (Ishak et al., 2015). Also they have a high prevalence, especially major deprressive disorder. Major depressive disorder's (MDD) lifetime prevalence , overruns 20% (Kessler et al., 2010) and bipolar spectrum disorder's (BD) overruns 2.4% of the general population (Reilly-Harrington et al., 2018).

Quality of life is a state which belongs to the way one perceives oneself within the place of culture and value system in which he/she lives, and in link to his/hers norms, worries, expectations, and goals includes physical, mental and social wellbeing (Whoqol Group, 1995). Quality of life has four aspects. First aspect is physical health, second one isepsychological functioning, third one is social relationships and the last one is environment (Skevington et al., 2004). Earlier studies showed that impairments in quality of life correlated with the intensity of depressive symptoms in depressive patients (Daly et al., 2010). However, impairments in quality of life were also shown to persist in remitted patients both in BD and MDD (Pilar et al., 2005). Preiss et al. (2009), suggesting that factors other than depressive symptoms might account for the determination of quality of life in depressive disorders.

Neurocognitive impairment, which can remain even in the nonexistence of symptomatology, is a candidate factor that can be responsible for impaired quality of life in remitted patients. Because cognitive impairment, the most widespread features of bipolar (BD) (Kozicky et al., 2013) and major depressive disorder (MDD) (Greer et al., 2014), have a substantial impact on clinical recovery (Cotrena et al., 2016). However, the results of studies that analyzed the relationship between quality of life and neurocognitive functioning remain contradictory. Some studies demonstrated a relationship between them (McCall & Dunn, 2003; Naismith et al., 2007) whereas some did not (Baune, 2010). One of the reason[i]s for this inconsistency between studies is the heterogeneity of the severity of depressive symptoms. For this reason, this study focused on investigating the correlation between neuropsychological performance and self-reported quality of life in euthymic patients sufferinf from MDD and BD. Therefore, with the current study we aimed to identify the MDD and BD patients' outlines of quality of life and to assess the relationship between both MDD and BD Patients' quality of life and neurocognitive performans.

2.Methods

2.1. Participants

The sample consisted of 53 participants, 21 of whom had been diagnosed with BD I and 32 of whom with MDD. Participants were recruited from the mood disorders outpatient unit of Kocaeli University Faculty of Medicine Psychiatry Polyclinic from June 2006 to June 2007. Patients who were aged between 18 to 65 and who had at least 5 years of education, who were diagnosed with either BD I or MDD according to SCID-I, who volunteered to participate and remitted at least for 8 weeks (Hamilton depression scale score<8, Young mania score <6) at the time of admission were included in the study.

The present study was approved by the research ethics committee of the Kocaeli University. Also all participants provided written consent for participation. Participants were assessed individually and evaluated based on DSM-IV criteria and their Diagnoses were established by consensus with a psychiatrist (APA, 2012). Patients who had a serious physical or neurological disorder like head trauma, neurodegenerative diseases, mental retardation, substance abuse or dependence were excluded from the sample because of the possibility of interfering with neurocognitive functions.

2.2. Instruments

Demographical questionnaire was filled by a clinician whereas WHOQL was filled by the participant. Depressive or manic symptoms was investigated using the Hamilton Depression Rating Scale (HDRS) (Hamilton, 1960) and the Young Mania Rating Scale: (YMRS) (Young et al., 1978). The demographical data were collected with the help of a form which was developed by the investigators. Quality of life was assessed with WHOQL-BREF-TR which is a shorter version of the original instrument and comprises 27 items, measuring: physical health, psychological health, social relationships, and environment (Eser et al., 1999). A comprehensive neuropsychological assessment battery which consisted of i) Wechsler Adult Intelligence Scales Revised Form (WAIS-R) (Wechsler, 1981) ii) Wisconsin Card Sorting Test (WCST), completed participants (Heaton, 1981).

2.3. Statistical Analysis

Statistical analysis was carried out using SPSS 12.0 software. All the data for MDD patients were compared with those for BD patients. The results of the groups were compared with unpaired two-tailed t-tests for continuous variables or chi-square tests for categorical variables. The analysis of correlations between demographical, clinical and neurocognitive variables, and quality of life were done with Spearman correlation analysis. P values less than 0.05 were considered statistically significant.

3. Results

No significant difference was found between groups regarding suicide attempt (p=0.063), illness duration (p=0.111), illness free duration (p=0.355) and duration of hospitalization (p=0.05). On the other hand, there were significant differences between groups in terms of age (p<0.05), gender (p<0.01), education duration (p<0.01), antidepressant use (p<0.01), antipsychotic use (p<0.01), mood stabilizer use (p<0.01), presence of psychotic features (p<0.01), number of depressive episodes (p<0.01) and number of total episodes (p<0.01).

Bipolar patients (11,59±2,44) had significantly lower scores in terms of psychological functioning and environment compared to MDD (13,52±1,71) patients (p<0.01).

3.1.Tables

Table 1: Correlations between WAIS-R scores and WHOQOL-BREF scores

	Physical health		**Psychological functioning**		**Social relationships**		**Environment**		**Environment (national)**	
	MDD	**BD**	**MDD**	**BD**	**MDD**	**BD**	**MDD**	**BD**	**MDD**	**BD**
Information	-0,09	0,16	-0,049	0,245	-0,056	0,148	0,198	0,26	0,125	0,246
Picture completion	-0,138	0,21	-0,127	0,061	-0,112	0,079	0,027	0,36	-0,045	0,353
Digit span	-0,27	0,448*	-0,171	0,18	-0,044	0,123	-0,084	0,075	-0,077	0,11
Picture arrangement	0,033	0,205	0,124	0,134	-0,161	0,163	0,369*	0,225	0,388*	0,154

Vocabulary	-0,244	0,346	-0,059	0,25	0,239	0,128	0,034	0,13	0,035	0,12
Block design	-0,066	0,440*	-0,078	0,377	0,101	0,288	-0,108	0,266	-0,195	0,323
Arithmetic	-0,085	0,346	0,08	0,257	0,12	0,222	0,084	0,216	0,102	0,251
Object assembly	-0,137	0,288	-0,221	0,459*	-0,099	0,417	-0,041	0,339	-0,133	0,341
Comprehension	0,002	-0,089	0,03	0,092	-0,076	0,049	0,135	0,078	0,079	0,057
Digit symbol coding	-0,042	0,630**	-0,059	0,712***	-0,121	0,591**	0,095	0,514*	0,083	0,51*
Similarities	0,211	-0,088	0,237	0,201	0,188	0,266	0,324	0,305	0,243	0,235

Table 2: Correlations between WCST scores and WHOQOL-BREF domain

	Physical Environment (national)		**Psychological health**		**Social functioning**		**Environment relationships**			
	MDD	**BD**	**MDD**	**BD**	**MDD**	**BD**	**MDD**	**BD**	**MDD**	**BD**
-Number of trials Administered	0,303	-0,177	0,204	-0,466*	-0,065	-0,303	0,186	-0,043	0,168	-0,087
-Total number of correct responses	-0,081	-0,223	-0,223	-0,039	0,065	0,083	0,028	0,064	-0,022	-0,012
-Total number of errors	0,101	-0,088	0,234	-0,393	-0,069	-0,438*	-0,01 4	-0,207	0,033	-0,188
-Perseverative Responses	0,164	0,035	0,215	-0,327	-0,069	-0,376	0,25	-0,3	0,238	-0,303
-Non-perseverative Errors	-0,009	-0,149	0,062	-0,25	-0,035	-0,276	-0,199	0,006	-0,146	0,042
-Perseverative Errors	0,177	-0,009	0,246	-0,388	-0,054	-0,434*	0,204	-0,318	0,205	-0,318

-Number of completed categories	-0,06	-0,038	0,025	0,322	0,177	0,337	0,08	0,102	0,059	0,14
-Percent perseverative errors	0,17	0,039	0,285	-0,352	-0,06	-0,402	0,259	-0,305	0,259	-0,299
-Trials to complete first category	-0,171	0,351	-0,277	0,185	0,046	-0,139	-0,403 *	0,124	-0,427*	0,117
-Percent conceptual level responses	-0,086	-0,033	-0,247	0,313	0,027	0,331	0,051	0,099	0,012	0,085
- Failure to maintain set	-0,269	-0,247	-0,453**	-0,39	-0,165	-0,491*	-0,082	-0,15	-0,079	-0,262
- Learning to learn	0,012	0,019	0,003	0,33	0,037	0,32	0,207	0,071	0,192	0,13

4. Discussion

Our MDD and BD patient groups showed significant differences in terms of some of the demographical characteristics. First of all BD patients were younger and more educated. Typically BD patients start showing symptoms at younger age (Miskowiak et al., 2018, Patella et al., 2019), averagely at 22 years, than those with MDD whose average age starts from 26 years (Goodwin & Jamison, 2007; Zisook et al., 2007). And also nearly %75 of patients say that they observed notable of the disorder (Hirschfeld & Lewis, 2003).

Our BD group had higher rates of mood stabilizer use and it is something common between BD patients. It is known that, BP patients are more likely to not presenting just sad mood they also indicate mood reactivity. Bipolar patients may have had difficulties with antidepressant treatment. They are experiencing mood elevations or becoming more depressed or irritable during antidepressant treatment. BP patients may have even shifted into hypomania or mania on antidepressants (Goodwin & Jamison, 2007). So it makes they need to get help from mood stabilizers. Not just more mood regulation problems, also more psychotic features and so more antipsychotic use were in our BD group. Other studies shows similar findings with us. They show individuals with BD are more likely have cognitive impairment (Bora & Pantelis, 2015) and to have psychotic features (Goodwin & Jamison, 2007).

In our study, number of total depressive episodes were higher in bipolar patients compared to MDD patients, which reflects the episodic nature of bipolar disorder. Our

findings are compatible with the studies which say bipolar patients tends to have had a greater number of prior affective episodes and psychiatric hospitalizations than unipolar depressed patients (Goldberg & Harrow, 2004; Goodwin & Jamison, 2007).

Our results indicated that psychological functioning and environment fields of quality of life are more impaired in BD patients. On the other hand, physical health and social relationship domains did not show significant differences between groups. The psychological domain of the quality of life projects the patients' perceptions of their self-esteem, feelings (both negative or positive), thinking, learning, memory, concentration and also appearance and bodily image (The Whoqol Group; 1998). Some previous studies comparing psychological functioning between MDD and BD patients showed a similar finding of lower psychological quality of life among BD patients (Berlim et al., 2004). Also other studies have determined that BD patients, even in euthymic or remission episodes, have lower quality of life than healthy controls (Amini & Sharifi, 2012; Xiang et al., 2014). Another study determined that functional impairment of MDD and BP during a current depressive episode was the same. Both BD and MDD patients not only neglecs housework, but also shows low performans at work and they withdraws theyself from family members, friends and joyful activities like hobies (Vander Voort et. al., 2007). Consequently, both MDD and BP patients are very dissatisfied in most areas in their daily life and derived little pleasure from life, during a major depressive episode (Marangell et al., 2009). So we think that the difference between the research results is due to being in depressive episode not being in remission like our patients.

The environmental domain which addresses the financial resources, safety and security, accessibility and quality of health and social care, opportunities for acquiring new information and skills, participation in leisure activities, physical environment and transportation were also found more impaired among bipolar patients. It is reported that quality of life is markedly impaired in patients with bipolar depression (Prabhakaran et al., 2021). Depressive symptoms are the most potent predictors of lower quality of life which are also associated with greater impairment in work, family, and social life (Lorenzo-Luaces, 2018) and individuals spent three times more time in a depression episode than they spent in a hypomania episode (Kupka et al., 2007).

Since both patient groups were in remission of current depression, this difference observed in quality of life can be due to factors other than mood symptoms. Presence of

psychotic features or use of antipsychotics might be responsible from the difference seen in psychological functioning and environment domains in such a way that antipsychotic use can affect adversely bodily image, self-esteem, sexual activity as well as the presence of psychotic features can influence personal relationships and concentration which are the facets incorporated within these domains. Our findings also can be explained by Joiner et al.'s hypothesis which proposes that the effects of bipolar disorder on psychological quality of life specifically involve decreased optimism, hopelessness, and impaired problem-solving abilities (Joiner et al, 2003). It is also observed frequently that bipolar disorder patients may feel especially demoralized about handling the disorder compared to other mood disorders because of its recurrent nature (Frank et al., 2006).

Present study did not find any correlation between clinical characteristics and QOL scores. There are studies which demonstrated the correlations between QOL domains and illness duration (Tatay-Manteiga, et al., 2019) as well as number of hospitalizations (Sierra, 2005) and depression symptom intensity was consodilated with poor quality of life and poor functioning (Ishak et al., 2015). These findings are consistent between studies. Some studies also found that poor QOL was common in MDD or BP patients who were in euthymic phase (Woo, et al., 2014; Ishak et al., 2015).

The cognitive deficits which occurs in bipolar depression appear to be the same as those emerges in unipolar depression, but they are more severe (Marvel, 2004). Growing evidence has shown cognitive dysfunction regarding attention, processing speed, working memory and visual memory is prevalent in bipolar disorder even in euthymic stages (Hasselbalch, 2011; Jabben et al., 2012) which affect psychosocial functioning and occupational functioning, further impact on patients' quality of life (Khafif, 2021). Our results were in line with the literature which showed that cognitive performance was correlated with quality of life in patients with both bipolar and major depressive disorder. In MDD group, picture arrangement score, measuring non-verbal reasoning and sequencing skills as well as social judgement were found related to environmental domain whereas they were not correlated in bipolar patients. This difference can be a result of the difference seen in clinical and demographical characteristics of two groups. In BD group, physical health domain, showing activities of daily living, energy, mobility, work capacity, was found related to verbal working memory measured by digit span subtest and visual-motor skills measured by block design test.

Among the subtests of WAIS-R, digit symbol coding test was the one that was most relevant to quality of life in bipolar patients. Digit symbol coding test, which measures the visual-motor speed and complexity as well as motor coordination, was found correlated with all domains of quality of life in bipolar patients. Because a global deceleration emerges on sensorimotor and cognitive processes pending unipolar and bipolar depression. Since it is a reflection of motor and memory skills, it is not surprising that it is correlated with all physical health, psychological functioning, social interactions and environmental domains of quality of life. Depressed patients exhibited inhibiton in cognitive processes and their ability for mobilizing their attantional resources (Depp et al., 2007) and dealing with various sources of information (Pardo, 2006) and carrying out synchronous tasks (Martínez -Aran et al., 2007) were limited. They also had difficulty in problem solving because of limited ability for generating new, proper strategies or solutions (Bell & D'Zurilla, 2009). However, this correlation was not detected in our MDD patients. This can be due to either different characteristics of two populations or the different neuroanatomical structures which are playing role in their pathophysiology.

Our study has some limitations. The first one ise being the relatively small number of patients recruited. The presence of differences between two patient groups regarding demographical and clinical characteristics also complicates the interpretation of study results. The cross-sectional design of the study enables us to show only the relationship between neurocognitive performance and quality of life rather than a causality. So, in order to show the influence of neurocognitive functioning on and quality of life, longitudinally designed studies are needed.

The present study investigated the relationship between neurocognitive function and and quality of life in both MDD and BD patients by excluding the effect of depressive symptoms through including only remitted patients. These results might indicate that clinicians should be careful about detecting neurocognitive impairments that may interfere with domains of quality of life, and the need for using a neurocognitive battery of tests in daily practice for this purpose.

Ethical statement

The study was approved by the ethics committee of Kocaeli University. The date and number of approval is, 01.06.06 – İAEK 9/17.

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Conflict of interest

The authors declare that they have no conflict of interest

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