



Is history of suicidal behavior related to social support and quality of life in outpatients with bipolar I disorder?



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ABSTRACT

Bipolar disorder (BD) affects the social functioning and quality of life (QoL) of its patients. This study aimed to investigate whether there is an association between social support (SS), and suicidal behavior in BD I patients compared to healthy controls; secondarily, we evaluated the influence of QoL on those variables. A total of 119 euthymic outpatients with BD I, 46 of whom had attempted suicide (SAs) and 73 who had not (non-SAs), were compared to 63 healthy controls, through the Medical Outcomes Study Social Support Scale and World Health Organization's Quality of Life Instrument. No differences were noted in SS and QoL between SAs and non-SAs. Compared to healthy controls, non-SAs showed lower values in the positive social interaction domain of SS, and the patients, as a whole, showed lower values in affectionate and positive social interaction domains of SS. Compared to healthy controls, SAs had lower values in the environmental domain of QoL, and the patients, as a whole, had lower values in the environmental, social, and psychological domains of QoL. There was positive correlation between SS and QoL. Although BD is a disabling disease, patients receive inadequate SS. Interventions that may alter the SS in these patients should be investigated.

1. Introduction

Bipolar disorder (BD) is a chronic, recurring illness, with estimated prevalence rates of 2% if only the classic presentation of symptoms is considered. When subsyndromic forms of BD are included, prevalence rates reach 4% in the general population (Merikangas et al., 2011). There are negative impacts on the overall functioning of the patient, placing BD among the top 10 causes of years lost to disability (Murray and Lopes, 1997). Furthermore, the literature shows that BD is a potentially lethal illness. It is estimated that 25–50% of patients with BD will attempt suicide at least once in their lifetime, and that 15–19% will commit suicide (Novick et al., 2010; Pompili et al., 2013). Given these statistics, studies that investigate not only the risk factors for suicide, but also the protective factors against suicidal behavior in this population, are relevant (Kleinman and Liu, 2013). In fact, little attention has been given to protective factors; thus, as psychosocial factors may reduce the risk of suicide, we observed the need for better understanding the influence of these aspects (Finseth et al., 2012; Schaffer et al., 2014).

Among the constructs that measure psychosocial aspects, two different, albeit related, concepts are noted: 1- structural social support (SS) and 2- functional SS. The structural SS comprises the quantitative aspects of social relationships and includes the number of people with whom the individual maintains contact or a social bond (social network) and who might or might not offer help. This type of support also involves the interconnectedness of a person's relationships and describes the existence of and relationships among network members. The functional SS comprises the qualitative dimension of the relationship, referring to the resources made available to people in time of need, such as emotional, material, and affective assistance. Furthermore, SS refers to the individual's perception of being valuable to the groups of which the individual is a part (Sherbourne and Stewart, 1991; Helgeson, 2003; Griep et al., 2004).

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network) and who might or might not offer help. This type of support also involves the interconnectedness of a person's relationships and describes the existence of and relationships among network members. The functional SS comprises the qualitative dimension of the relationship, referring to the resources made available to people in time of need, such as emotional, material, and affective assistance. Furthermore, SS refers to the individual's perception of being valuable to the groups of which the individual is a part (Sherbourne and Stewart, 1991; Helgeson, 2003; Griep et al., 2004). Previous studies regarding SS and BD reported that patients with BD receive less SS, and that those with deficient SS have poorer symptomatic outcomes than healthy controls (Romans and MacPherson, 1992; Beyer et al., 2003; Wilkins, 2004; Eidelman et al., 2012). In addition, prospective studies confirmed that SS has a positive influence on only the recurrence of depressive episodes (Johnson et al., 2000; Cohen et al., 2004; Weinstock and Miller, 2010; Oddone et al., 2011); another study showed the positive effect of SS only in the manic period (Strauss and Johnson, 2006). Others affirm that the presence of SS is important in reaching remission for both states of the illness (O'Connell et al., 1985; Kulhara et al., 1999; Johnson et al., 2003). Additionally, only one study showed that SS is not an important factor in the individual's recovery (Staner et al., 1997).

Although there are favorable empirical results corroborating the position that satisfactory SS provides beneficial consequences, data concerning this topic are still scarce and methodologies vary, such as including patients in different phases of the disease and simultaneously evaluating patients with different subtypes of BD (types I and II). Moreover, most studies have small sample sizes.

The influence of SS in the life of the BD patient is misunderstood. According to the World Health Organization, quality of life (QoL) is described as an "individual's perception 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, stands, and concerns" (The WHOQOL group, 1995). Despite the use of adequate pharmacotherapy, the course of BD is often characterized by persistent symptoms and by high rates of relapse, recurrence, and hospitalizations. After the acute phase, although the individual may recover substantially, reaching a state of symptomatic remission, the patient still presents an elevated degree of psychological suffering, cognitive dysfunction, and losses in the social and work spheres, with a subsequently negative impact on QoL. The subsyndromal symptoms, especially depressive ones, may remain, thus resulting in a higher frequency of recurrences, with the exacerbation of symptomatology and a decrease in one's general health (Dean et al., 2004; Çakir and Ozerdem, 2010). Within this context, routine inclusion of QoL assessment in clinical practice is helpful, as QoL may be considered an important indicator of the level of efficiency of medical treatment (Murray and Michalak, 2012).

Thus, to our knowledge, this is the first study that aimed primarily to examine whether there is an association between SS and suicidal behavior in BD I patients, evaluated only in the euthymic phase, according to strict symptomatologic criteria. In addition, our second aim was to assess the relationship between SS and QoL. Our main hypothesis is: SAs have lower values in the domains of SS and QoL compared to non-SAs and health controls.

2. Methods

2.1. Participants

This cross-sectional study evaluated a convenience sample represented by BD I patients and healthy controls. Participants were recruited from an outpatient clinic, which also has a research center, the Mood and Anxiety Program, located at a teaching hospital at Federal University of Bahia-Brazil.

2.1.1. Patients

All the BD I patients treated at the outpatient clinic were invited to participate in this study. The inclusion criteria were 18 years of age or older who were diagnosed with BD I according to the Structured Clinical Interview for DSM-IV (SCID-I). The patients had to present in the euthymic phase as defined by scores lower than 7 on the Hamilton Depression Rating Scale (HAM-D) (Hamilton, 1960) and Young Mania Rating Scale (YMRS) (Young et al., 1978; Vilela et al., 2005), and they must not have had episodes in the past two months. A total of 135 outpatients with BD I were initially selected. Three patients were excluded because they did not reach the state of euthymia during the period of assessment, and 13 patients were excluded because they had difficulty understanding and completing all of the instruments. Finally, 119 patients with BD I were assessed: 46 (38.6%) SAs and 73 (61.3%) non-SAs.

2.1.2. Healthy controls

The healthy control group comprised volunteers who were from the same community and were being treated for other medical conditions at the outpatient center. They had similar socio-demographic characteristics, such as family income, years of study, and place of residence. We tried to select a group of individuals equally distributed among genders and age groups to prevent bias associated with these variables. A total of 89 individuals without previous history of mental illness were initially invited to be interviewed for the healthy control group, and they were submitted to the same procedure as the BD patients. The exclusion criterion was having any axis I mental disorder diagnosed by SCID I interviewers, and 26 (32.6%) individuals were excluded for this reason. Finally, 63 healthy controls were submitted to the complete protocol.

Two researchers (PSB, SBF) trained in these rating scales conducted the patients' evaluations, and two others conducted the healthy controls' evaluations (AC, NRA). If necessary, the participants were assessed more than once. Individuals who were unable to understand the study and those who refused to sign the informed consent form were excluded.

2.2. Procedure

After ensuring the remission of symptoms through the HAM-D and YMRS, the patients participated in a semi-structured interview derived from the Brazilian Research Consortium for BD. Information was collected on clinical and socio-demographic characteristics, and patients were interviewed with SCID-I and II (Structured Clinical Interview for mental disorders and personality disorders, respectively, DSM-IV) (APA, 1994; First et al., 1998). Upon completion, the participants were evaluated with the Medical Outcomes Study Social Support Scale (MOS-SSS) (Sherborne and Stewart, 1991; Griep et al., 2004) and the World Health Organization's Quality of Life Instrument—Short Version (WHOQOL-Bref) (The WHOQOL Group, 1995; Fleck et al., 1999).

The MOS-SSS is a brief and multidimensional questionnaire developed to assess the structure and functions of interpersonal relationships. This SS battery contains five structured SS items and 19 functional SS items that cover four dimensions. These functions include (1) tangible support: the provision of material aid or behavioral assistance; (2) affectionate support: physical demonstrations of love and affection; (3) emotional/informational support: empathetic understanding and the encouragement of expression of feelings as well as relying on others who offer advice, information, guidance, or feedback and (4) positive social interaction: people with whom to have fun and relax.

The WHOQOL-BREF is a multidimensional scale formulated to measure four domains: psychological, environmental, social relationships, and physical health.

After the assessment, the patients were divided into two groups

according to previous history of suicide attempts: suicide attempters (SAs) and non-suicide attempters (non-SAs). A suicide attempt was defined as one or more self-injurious acts committed with the intent to die.

All of these instruments were validated for use in Brazilian populations. All procedures were approved by the ethical committee of this hospital and followed the guidelines of the Declaration of Helsinki/1989 and Resolution 196/96 on human research of the National Health Council. All patients and healthy controls received information regarding the research, and they were interviewed only after signing the Informed Consent Form (ICF).

2.3. Statistical analyses

The Statistical Package for Social Sciences (SPSS) software, version 18.0, was applied for statistical analysis. Normality was evaluated by a Kolmogorov-Smirnoff test. The categorical variables were expressed as simple frequency and percentages, and the numerical variables as median and interquartile intervals because some variables were not normally distributed or were scores (SS and QoL). Comparing the social support between BD patients and health controls, the power of the study was 81.47%. A Mann-Whitney test was used to investigate the possible differences between the groups of SAs and non-SAs, and a Kruskal-Wallis H test was used to compare the three groups (SAs, non-SAs, and healthy controls). After the initial analysis, the variables that showed a p -value < 0.20 between the groups of SAs and non-SAs were adjusted in the logistic regression (age, sex, employment, individual income, years of study, age of first episode, rapid cycling, comorbidity axis I and II, and the environmental and psychological domains of QoL). The categorical variables were compared using Pearson's chi-square, and Spearman's rank correlation coefficient was used for correlations. A p value < 0.05 was considered significant.

3. Results

3.1. Sample

The SA group had more women ($n=31$; 67.4%), a higher presence of axis II comorbidity ($p=0.041$), and lower values of year of study ($p=0.023$). SAs and non-SAs showed higher presence axis II comorbidity ($p=0.001$) and lower rates of employment ($p < 0.001$) and individual income ($p=0.019$) than healthy controls (Table 1). In the group of bipolar men, the percentage who attempted suicide was 55.5% (15/27), and in the group of bipolar women, the percentage who attempted suicide was 33.7% (31/92) ($p=0.04$).

3.2. SS and QoL

SAs and non-SAs did not show statistical difference among any of the SS functional domains. Comparing the three groups, the positive social interaction domain was lower in non-SAs than in healthy controls ($p=0.015$) (Table 2). SAs and non-SAs also did not show statistical difference among any of the QoL domains. Comparing the three groups, SAs showed lower scores in the environmental, social, and psychological domains ($p=0.001$, $p < 0.001$, $p < 0.001$, respectively) than healthy controls. Non-SAs showed lower values in social and psychological domains than healthy controls ($p < 0.001$, $p < 0.001$, respectively) (Table 2).

The patient group as a whole had lower scores on the SS positive social interaction ($p=0.018$) and affectionate ($p=0.029$) domains than the healthy control group (Table 3).

The BD patients as a whole presented lower scores in the QoL environmental, social, and psychological domains than the healthy controls ($p=0.010$, $p < 0.001$, $p < 0.001$, respectively) (Table 3).

In the structural SS, SAs had fewer close friends than healthy controls ($p=0.016$). Regarding the number of close relatives, a statis-

tically significant difference among the three groups was not reached. We also did not find differences among the three groups regarding participation in sports or artistic group activities; resident meeting associations; employee groups or unions; political parties; and unpaid voluntary work in non-governmental organizations, charities, etc. (Table 4).

3.3. SS, QoL and suicidal behavior

A positive and significant correlation was observed among all SS domains and QoL dimensions, but stronger correlations were found between the affectionate and positive social interaction domains of SS and the environmental and social domains of QoL in all correlations ($p < 0.001$) (Table 5).

4. Discussion

To the best of our knowledge, the present study is a pioneer research study on examining the association between SS, QoL, and suicidal behavior in patients with BD I, evaluated only in the euthymic state and according to rigid criteria of euthymia. The use of such restrictive inclusion criteria is intended to reduce biases in the answers; in other words, the intent was to prevent distortion in the understanding of the patients' reality in relation to their own vision of SS and QoL. Although, we did not detect that SAs had more losses in SS and QoL than non-SAs, our study confirms that patients with BD have lower SS and QoL than healthy controls.

Our data concerning the percentage of BD I SAs (39%) was in agreement with those of others studies. In fact, a systematic review revealed that 36.3% of patients with BD I reported a lifetime history of at least one suicide attempt (Novick et al., 2010). In addition, the SAs presented more axis II comorbidities and had a higher percentage of women (De Abreu et al., 2012; Finseth et al., 2012; Kleiman and Liu, 2013; Costa et al., 2014; Isometsa, 2014; Tidemalm et al., 2014); than the non-SAs. We also found that the individual income was not different between the SAs and non SAs, and this result corroborated the findings of another study that showed no difference between SA and non-SA groups (Finseth et al., 2012).

As expected, the only difference in socio-demographic characteristics between patients with BD and controls were occupation and individual income; just as the diagnosis of BD negatively interferes with normal daily activities and social roles, it also affects rates of employment and productivity (Wilkins, 2004). Moreover, we tried to include controls of similar age and gender to avoid confounding interpretations of results.

4.1. SS and suicidal behavior

Studies suggest that SS is an important factor affecting the course of BD, but the literature is still scarce on this topic. In this line of investigation, we can understand the relationship between suicidal behavior and SS in two ways: 1- SS would be more deficient in patients with suicidal behavior than in those without suicide behavior and in healthy controls, because suicidal phenomena is possibly a consequence of social deprivation or their peers are unable to cope with suicidal behavior; 2- SAs would have better SS than non-SAs and healthy controls because their family and community have a realistic perception of the disorder's severity.

Supporting the idea that SS is more deficient in SAs than in non-SAs and in healthy controls, Durkheim was the first to show that suicide varies inversely with the individual's degree of social integration in the groups to which he or she belongs (Durkheim, 1951). Additionally, it has been found that SS, such as family cohesion or a social peer group, and parenthood may reduce the risk of suicide (Kleiman and Liu, 2013; Isometsa, 2014; Miller et al., 2015) and are highly modifiable factors that can be used to improve existing suicide

Table 1
Clinical and socio-demographics characteristics of participants.

Characteristics	Bipolar patients		p	OR (IC 95%)	Healthy Controls (n=63)	P*
	Attempters	Non-attempters				
	(n=46; 39%)	(n=73; 61%)				
Age in years†	40 (32–48)	45 (34–55)	0.099	0.982 (0.934–1.034)	40 (26–51)	0.054
Gender						
Male	15 (33%)	12 (16%)	0.040	3.674 (1.117–12.089)	18 (29%)	0.094
Female	31 (67%)	61 (84%)				
Have children	30 (67%)	41 (59%)	0.435		34 (55%)	0.468
Employed	9 (20%)	22 (30%)	0.201	0.615 (0.204–1.858)	35 (56%)	< 0.001
Individual Income	140(0–236)	217(0–389)	0.033	0.999 (0.999–1.000)	249 (0–428)	0.019
Marital status						
With partner	19 (41%)	23 (32%)	0.276		29 (43%)	0.341
Years of study†	12(8–12)	12 (10–13)	0.115	0.868 (0.760–0.990)	12 (10–12)	0.257
Physical activity (yes)	10 (22%)	17 (24%)	0.813		22 (36%)	0.168
Length of illness	14 (6–24)	14 (9–22)	0.647		–	–
Age at BD diagnosis	30 (24–39)	32 (24–44)	0.290		–	–
Age of first episode	24 (20–30)	25 (18–34)	0.198	0.981 (0.929–1.037)	–	–
Polarity						
Positive	23 (52%)	39 (55%)				
Negative	15 (34%)	20 (28%)	0.766		–	–
No polarity	6 (14%)	12 (17%)				
Hospitalization	32 (70%)	56 (77%)	0.380			
Rapid cycling	9 (20%)	6 (9%)	0.076	3.076 (0.770–12.293)	–	–
Comorbidity Axis I	25 (54%)	18 (25%)	0.001	1.849 (0.717–4.765)	–	–
Comorbidity Axis II	25 (54%)	20 (27%)	0.003	2.861 (1.105–7.405)	14 (23%)	0.001

BD: bipolar disorder.

Adjusted for: age, sex, employed, individual income, years of study, age of first episode, rapid cycling, comorbidity axis I and II.

* Comparison between the three groups; † Median (Interquartile interval).

prevention programs worldwide (Kleinman and Liu, 2013).

Indeed, some studies cite living alone or without a partner as a factor associated with suicidality (Nery-Fernandes et al., 2012; Poorolajal et al., 2015). This factor is likely aggravated for individuals with BD I who have never married or are separated or divorced. This probably reflects the adverse effect that the disorder has on intimate relationships (Wilkins, 2004). Nevertheless, there are studies that showed no difference in marital status between SAs and non-SAs (De Abreu et al., 2012; Finseth et al., 2012), which agrees with our research.

Another important point in our study is that SAs and non-SAs have lower numbers of close friends, a fact also reported by previous investigations. According to those studies, the social networks of

patients with BD are limited in size (Romans and McPherson, 1992; Cohen et al., 2004), and these data can be corroborated in our sample because the patients have lower rates of employment and individual income than healthy controls. In fact, being employed is usually associated with having good social relationships, as it provides enhanced opportunities for work-based social contacts (Romans and McPherson, 1992). Additionally, some studies have showed that in patients with BD I, the likelihood of employment was significantly greater for those with higher levels of the four dimensions of SS (O’Connell et al., 1985; Hammen et al., 2000; Wilkins, 2004).

Comparing SAs, non-SAs, and healthy controls, there is only a discrete difference in the positive interaction domain that is greater in healthy controls (p=0.049). Surprisingly, in our sample, when we

Table 2
Functional social support and quality of life among bipolar I outpatients with and without suicide attempt, and healthy controls.

Domains	Bipolar patients		P	OR (IC 95%)	Healthy controls (n=63)	P*
	Attempters (n=46)	Non-attempters (n=73)				
Functional SS						
Affectionate	93.3(733–100.0)	93.3(80.0–100.0)	0.954		100.0(86.7–100.0)	0.092
Tangible	90.0(65.0–100.0)	90.0(65.0–100.0)	0.896		90.0(75.0–100.0)	0.982
Positive Social Interaction	82.5(63.8–100.0)	80.0(65.0–95.0)	0.521		90.0(75.0–100.0)	0.049^a
Emotional/Information	85.0(68.1–95.0)	80.0(67.5–97.5)	0.643		85.0(72.5–97.5)	0.661
QoL						
Physical	60.7(49.1–67.9)	60.7(50.0–71.4)	0.769		60.7(53.6–71.4)	0.948
Environmental	51.6(40.6–59.4)	56.2(45.3–68.7)	0.047	0.770 (0.334–1.776)	59.4(50.0–71.9)	0.005^b
Social	58.3(33.3–75.0)	58.3(41.6–75.0)	0.544		83.3(66.7–91.7)	< 0.001^c
Psychological	54.2(45.8–62.5)	58.3(50.0–66.7)	0.056	0.750 (0.269–2.094)	70.8(62.5–75.0)	< 0.001^d

SS: Social Support; QoL: Quality of Life. The data are expressed as median and interquartile interval.

* Comparison between the three groups.

^a Non-attempters vs. controls p=0.015.

^b Attempters vs. controls p=0.001.

^c Attempters vs. controls p < 0.001. Non-attempters vs controls p < 0.001.

^d Attempters vs. controls p < 0.001. Non-attempters vs. controls p < 0.001. Adjusted for: age, sex, employed, individual income, years of study, age of first episode, rapid cycling, comorbidity axis I and II, the environmental and psychological domains of QoL.

Table 3
Functional social support and quality of life between bipolar I patients and healthy controls.

Domains	Bipolar I Patients (n=119)	Healthy Controls (n=63)	p
Functional SS			
Affectionate	93.3(73.3–100.0)	100.0(86.7–100.0)	0.029
Tangible	90.0(70.0–100.0)	90.0(75.0–100.0)	0.911
Positive Social Interaction	80.0(65.0–100.0)	90.0(75.0–100.0)	0.018
Emotional/information	85.0(65.5–95.0)	85.0(72.5–97.5)	0.421
QoL			
Physical	60.7(50.0–71.4)	60.7(53.6–71.4)	0.880
Environmental	56.2(43.7–62.5)	59.4(50.0–71.9)	0.010
Social	58.3(41.7–75.0)	83.3(66.7–91.7)	< 0.001
Psychological	58.3(50.0–66.7)	70.8(62.5–75.0)	< 0.001

SS: Social Support; QoL: Quality of Life

Table 4
Structural social support among bipolar I outpatients with and without suicide attempt, and healthy controls.

Structural SS	Bipolar		P	Healthy controls	P*
	Attempters	Non-attempters			
Number of close relatives	2 (1–4)	2 (2–5)	0.159	3 (2–5)	0.234
Number of close friends	2 (0–2)	2 (0–3)	0.477	2 (1–3)	0.047^a
Sports or artistic group activities ^b					
Yes ^c	16 (34.8%)	17 (23.3%)	0.173	21 (33.3%)	0.300
Resident meeting associations, employee unions or political parties ^b					
Yes ^c	9 (19.6%)	14 (19.2%)	0.958	20 (31.7%)	0.174
Unpaid voluntary work ^b					
Yes ^c	10 (21.7%)	11 (15.1%)	0.353	19 (30.2%)	0.106

SS: Social Support.

* Comparison between the three groups ^aAttempters vs healthy controls p=0.016.

^b Participation in the last twelve months.

^c Attendance at least once a year.

Table 5
Correlation between social support and quality of life in bipolar I patients.

SS/QoL	Physical	Psychological	Social	Environmental
Tangible	r=0.182 p=0.014	r=0.196 p=0.008	r=0.274 p < 0.001	r=0.324 p < 0.001
Affectionate	r=0.226 p=0.002	r=0.333 p < 0.001	r=0.406 p < 0.001	r=0.363 p < 0.001
Positive Social Interaction	r=0.261 p < 0.001	r=0.343 p < 0.001	r=0.424 p < 0.001	r=0.398 p < 0.001
Emotional/Informational	r=0.163 p=0.028	r=0.218 p=0.003	r=0.335 p < 0.001	r=0.322 p < 0.001

SS: Social Support; QoL: Quality of Life.

compared SAs with non-SAs no significant differences were found in the four SS functional domains. The negative finding concerning SS and suicidal behavior in patients with BD may be because our sample was too small to detect differences, or because the presence of history of suicide attempts really does not interfere with the care that relatives provide for these patients. In fact, cultural issues may explain our data because some studies report that social and family groups in developing countries may better support individuals with psychiatric disorders.

Although afflicted with a limited health infrastructure and fewer resources, patients in countries like Brazil seem to have a better prognosis specifically due to their greater dependence on family members, which predisposes them to a better SS and social network (Padma, 2014). Additionally, it is possible that patients with BD I in general may perceive their SS to be inadequate, independently of the efforts of their social groups to be supportive (Helgeson, 2003). Indeed, we have already stated that excluding the history of suicide attempts, our SA and non-SA BD I patients have similar characteristics, such as rapid cycling, history of hospitalization, marital and parental status, and polarity.

Our results also show that patients with BD as a whole perceive their SS to be more inadequate than that of healthy controls, but the differences were significant only in the affectionate and positive social interaction domains. One hypothesis is that patients with BD may really receive fewer manifestations of joy, compassion, love, awe, and contentment than healthy controls, because their impulsive/aggressive behavior that sometimes discourages family or friends from staying in contact, as described in another study (Gruber et al., 2009). The difference between patients and healthy controls may also be explained by this disorder's great stigma that can contribute to a family's or friend's absence. In fact, stigma causes considerable negative repercussions on SS, functioning, and QoL (Hawke et al., 2013).

It is possible that patients with BD have difficulties in interacting with their relatives and friends because of their high levels of “expressed emotions,” a concept defined by the presence of criticism/hostility/emotion involved in family relationships. In fact, patients with BD seem to exhibit higher levels of self-criticism and trend toward a greater decrease in positive affect after negative feedback than healthy controls, even when controlling mood symptoms (Muralidharan et al., 2015). Thus, despite the attempts of people who want to help, even those willing to do the best they can for those with BD, dealing with this chronic disorder is very difficult and can result in unpleasant emotions and maladaptive coping strategies among the relatives of the patients (Çuhadar et al., 2014).

Corroborating our data, a recent review found that social relationships are significantly compromised in individuals with BD, and that lower levels of perceived SS were related to unfavorable outcomes in BD compared to patients with other mood disorders and to healthy controls (Greenberg et al., 2014). Considering the biopsychosocial dimensions in patients with BD, SS plays a significant role in their treatment, and researchers have showed that higher levels of perceived SS lead to a better prognosis in both longitudinal (O’Connell et al., 1985; Kulhara et al., 1999; Johnson et al., 2000; Cohen et al., 2004; Weinstock and Miller, 2010; Oddone et al., 2011) and cross-sectional studies (Romans and MacPherson, 1992; Beyer et al., 2003; Wilkins, 2004; Eidelman et al., 2012). However, in the most of these studies the four domains of SS was not evaluated separately. In fact, it is possible that evaluating the dimensions of SS separately would contribute to a better understanding of how this construct measures health and various outcomes in patients with BD.

In this sense, the hypothesis that SAs have better SS than non-SAs and healthy controls is still very difficult to justify. The cross-sectional design of some studies may not allow the affirmation of SS status at the time of the suicide attempt, and other methodologies could show that better SS may be a result of the suicide attempt. Thus, to better understand this relationship, longitudinal studies are necessary to compare SA and non-SA groups with the same instruments, in order to make prospective connections between SS and suicidal behavior. Despite the lack of evidence regarding this issue, it is reasonable to think that SAs are a subgroup of individuals with a greater severity of illness who need to be monitored carefully by their families and caregivers.

4.2. SS, QoL and suicidal behavior

Our study found that patients with BD as a whole perceive the social, psychological, and environmental domains of QoL to be worse than healthy controls. These findings are consistent with previous studies that showed that BD patients have a lower QoL (De Abreu et al., 2012). As BD is a progressive, chronic-course disease, which causes severe disability of the individual's global functioning, patients have in lower QoL and troubles with relationships throughout life, as shown in reviews of literature (Michalak et al., 2005; Greenberg et al., 2014). This impairment in QoL seems to persist even in clinically euthymic patients (Cook et al., 1996; Roob et al., 1998; Vojta et al., 2001; Sierra et al., 2005; Gutiérrez-Rojas et al., 2008; De Abreu, 2012). People who are affected with BD may experience frequent relapses and may not return to full functioning between episodes, resulting in a lowered quality of family and social life, changes in the environment, and dissatisfaction with him- or herself and with life, but not necessarily physical impairment. We did not find a statistically significant difference in the physical domain. In fact, these patients have no physical limitations such as other diseases, so this outcome would be expected. Another relevant factor that may have influenced this result is that our patients with BD are regularly monitored in a specialized clinic for the treatment of mood disorders at a teaching hospital, which allows prompt liaison with other specialties, and ensures access to free exams and medications from various medical specialties.

It is noteworthy that the poorer scores in two domains of the four functional SS (affectionate and positive social interaction), and lower scores in three of the four domains of QoL (environmental, psychological and social), evaluated when compared to healthy controls, cannot be related to the presence of subsyndromal symptoms because we evaluated only subjects in the euthymia state, as discussed below. In addition, we found a positive correlation between SS and QoL, a fact that seems concordant with other studies that identify SS as a better prognostic variable. Gutiérrez-Rojas et al. (2008) found that SS may have a protective effect on mental QoL. Helgeson (2003) reported that the relationship between QoL and SS is linear. The stress-buffering hypothesis indicates that the relationship between SS and QoL depends on a person's level of stress. According to this hypothesis, if there is no stress or little stress, SS is unrelated to QoL (Helgeson, 2003). Therefore, as previously stated, BD is characterized by mood swings and the disease itself can be a stressor for the patient. In this sense, SS may be an important predictor of improved QoL.

4.3. Limitations and strengths

Some limitations of the study are noted. First, this was a cross-sectional study and no causal association could be assumed. Therefore, we were not able to determine whether lower SS and QoL scores were already present before or after the suicide attempts, and therefore influencing the decision to attempt suicide. Second, patients were enrolled at only one outpatient clinic, which limits the possibility of generalizing the findings. Third, we only inferred socio-demographic similarities between patients and the control group, comparing them as a whole. Fourth, the sample size was relatively small for many of the analyses. Fifth, we did not use a specific instrument to measure suicidal behavior.

Despite these limitations, our study has many strengths, as it includes only outpatients with BD I evaluated during the euthymic phase, which was established under strict criteria. The importance of this lies in the fact that studies conducted on symptomatic patients are biased because their perception is normally distorted during the presence of depressive and manic symptoms. Additionally, we used a specific and validated scale to measure SS and also studied the correlation between SS and QoL, comparing BD with and without suicidal behavior and healthy individuals. Additionally, it should be stressed that using a healthy control group may result in more reliable

and real-to-life findings.

4.4. Conclusions

Although the results suggest that SS and QoL in SA and non-SA patients with BD I may not differ, the group of BD patients as a whole is deficient in SS and QoL compared to healthy controls. Additionally, a positive correlation is observed between SS and QoL that may suggest that SS has an impact on QoL in this sample of patients. This study is an initial step for future researchers and may contribute to a better understanding of the aspects of SS and QoL dimensions, which may influence the course of BD, helping to improve treatment and prognosis of the patient. The presence of satisfactory SS increases the chances of adherence treatment and improves vigilance for symptoms that could characterize a relapse of BD, contributing to a better prognosis.

In the future, the use of prospective longitudinal designs is needed to more thoroughly examine temporal associations between SS, QoL, and suicidal behavior in patients with BD. Therefore, it is necessary to conduct better investigations of social aspects that might exacerbate symptoms and help prevent suicide attempts. Equally important is to know how SS influences the course of BD and to test dimensions of SS as predictors of leading outcomes of BD evolution, which may establish causal relationships and indicate clinically relevant areas for evolution of patients.

Disclosures

The authors of this paper do not have any commercial associations that might pose a conflict of interest in connection with this manuscript.

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