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Determinants of mental and physical health-related quality of life among patients hospitalized for suicidal behavior

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Abstract

The current study was interested in exploring the clinical factors related to mental and physical health-related quality of life among patients hospitalized for suicidal behavior. A multicenter cross-sectional study was designed to compare data obtained form 246 patients hospitalized for suicide behavior. Results suggest that mental health-related quality of life was negatively associated with hopelessness while physical health-related quality of life was negatively associated with age, medical disease and the number of previous suicide

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attempts and positively associated with employment. Findings are discussed in the context

of theoretical evidence and clinical implications.

Key words: suicide attempt, suicidal ideation, health-related quality of life, SF-12

1. Introduction

Quality of life (QoL) is an important aspect of clinical research and patient care,

with the aim of understanding a patient's perspective of their functioning, which is

distinctive from identifying symptom levels and mortality rates (Berlim & Fleck, 2003).

The World Health Organization (WHO) defines quality of life as, *the individual's*

perception of his or her position in life, within the cultural context and value system he or

she lives in, and in relation to his or her goals, expectations, parameters and social

relations. It is a broad ranging concept affected in a complex way by the person's physical

health, psychological state, level of independence, social relationships and their

relationship to salient features of their environment (WHOQOL, 1995) Indeed, QoL is a

broad multidimensional construct, including physical, mental, and social dimensions.

Health related quality of life (HRQoL) is separate from QoL in that it directly targets

understanding the impact on the patient's perception of health. Specifically, HRQoL is

partly determined by the patient's perception of their state of mental and physical health

(Gigantesco & Giuliani, 2011). Understanding a patient's HRQoL helps shed light on a

patient's health perception while undergoing treatment or while adapting to their condition

in their daily context. Despite the increase of studies examining HRQoL among psychiatric populations, little attention has been given to HRQoL among patients with suicidal behavior. The limited work among suicidal populations is surprising, given the serious global problems associated with suicide and suicidal behavior.

Research from the World Health Organization (WHO) estimated 804.000 suicide deaths occurred worldwide in 2012, representing an annual global age-standardized suicide rate of 11.4 per 100 000 in the population (i.e., 15.0 for males and 8.0 for females) (WHO, 2015a). These rates suggest that one person dies by suicide every 40 seconds. This is only a fraction of the problem since suicide attempts (SA) and suicidal ideation (SI) is more frequent as compared to suicide. For each adult who died by suicide, there are likely to be more than 20 others who made one or more suicide attempts and the estimated global annual prevalence rate of self-reported suicide attempt is approximately 4 per 1000 adults (WHO, 2015a). Moreover, SI is even more frequent; the worldwide lifetime prevalence of suicide ideation is 9.2% (Nock et al., 2008). For this reason, identifying suicidal behavior (SB) and SI is critical. Indeed, suicidal thoughts and behaviors are risk factors for suicide (Brown et al., 2000; WHO, 2015b). Notwithstanding the potential for fatal outcomes, there is a high economic burden on the overall health system (Shepard et al., 2016). In fact, nearly one-third of patient admissions to a psychiatric hospital are due to SI or SA (Teti et al., 2014). Based on these findings, it is not surprising that the WHO has declared reducing suicide-related mortality as a global imperative (WHO, 2015a). For this purpose, understanding factors associated with suicidal behavior (SB), such as HRQoL, may be considered a critical piece for reducing risk for suicide.

Previous work suggests that psychiatric patients with SB are more likely to report low levels of QoL as compared to patients without SB, as observed in patients with

schizophrenia (Kao et al., 2012), depression (Berlim et al., 2003) and bipolar disorder (de Abreu et al., 2012) In addition, among depressive patients with SB, a low QoL level has been associated with repeated attempts (Wang et al., 2013). To the best of our knowledge, there are no previous studies aimed to understand the different dimensions of HRQoL (i.e., mental vs. physical) as related to SB in patients with different psychiatric diagnoses. Taken together, the aim of the present study is to examine the sociodemographic and clinical factors associated with mental and physical components of HRQoL among patients hospitalized for suicidal behavior.

2. Method

2.1. Study Design

The present study used a cross-sectional design to compare baseline data obtained as part of a larger study with patients admitted for a suicide attempt at the Emergency Departments of Dr. Braulio A. Moyano Neuropsychiatric Hospital, José Tiburcio Borda Neuropsychiatric Hospital and the Hospital de Clínicas José de San Martín. The Dr. Braulio A. Moyano Hospital and José Tiburcio Borda Neuropsychiatric Hospital are neuropsychiatric hospitals. Hospital de Clínicas José de San Martín Hospital is a general hospital with a service for psychiatric hospitalization. All of these hospitals serve a large urban catchment area in Buenos Aires and predominantly treat lower-income, uninsured patients.

2.2. Procedure

Participants were patients admitted to the psychiatry emergency department of three different Hospitals of the City of Buenos Aires for SI or a recent SA between August 2012 to August 2016, and those who were admitted for suicidal behavior were further evaluated

to determine eligibility in the current study. Interviews were conducted by three psychiatrists with at least 5 years of experience in clinical psychiatry. All psychiatrists also received training in the semi-structured interviews administered as part of the study protocol. Suicidal ideation was defined as any current self-reported thought of engaging in suicide-related behavior (Nock, 2014), and suicide attempt was defined as a potentially self-injurious behavior with a nonfatal outcome, for which there was evidence (either explicit or implicit) that the person intended at some (non-zero) level to kill him or herself (Silverman et al., 2007). Initial evaluation was performed to determine if patients met inclusion criteria: a) age between 18 and 65 years, b) admission for suicide ideation or attempt, and c) provided written informed consent. Patients were excluded if: a) unable to respond autonomously (i.e., due to sedative effects of medication or language limitations) and b) were transferred to another institution. Patients who met inclusion criteria were given a complete description of the study and invited to participate. Each patient who agreed to participate provided written informed consent. The Ethics Committee of the three hospitals approved all study procedures.

2.3. Measures

Each participant underwent a semi-structured interview with a psychiatrist from the research team, which included questions specific to clinical and demographic variables as described previously (Teti et al., 2014).

2.3.1. HRQoL.

Patient HRQoL was evaluated with the 12-Item Short Form Health Survey (SF-12) a shorter version of the Short Form 36 (SF-36). It is psychometrically, comprehensive, reliable and as precise in its estimates as the SF-36 (Augustovski et al., 2008; Sanderson & Andrews, 2002). The measure is made of two components, a physical component

summary (PCS) and a mental component summary (MCS). The two primary SF-12 scales (i.e., PCS and MCS) were examined as opposed to the eight subscales because summary scores facilitated hypothesis testing, and reduce the risk associated with multiple statistical comparisons between subscales, or significant findings arising by chance. In addition, interpretation of scores obtained by the two major scales of the SF-12 is possible via comparison with population norms (Hurst et al., 1998). The SF-12 was used to assess patient HRQoL given it is a reliable instrument for use among patients with severe mental illness (Salyers et al., 2000). Higher scores indicate greater mental or physical QoL.

2.3.2. Psychopathology.

The Mini International Neuropsychiatric Interview (MINI) (Bobes, 1998) and the Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II) (Villar Garcia et al., 1995) were used for diagnostic purposes. Additional information included the self-reported questionnaires (Mikulic et al., 2009), Barratt Impulsiveness Scales (BIS-11) (Lopez et al., 2012), Buss-Durkee Hostility Inventory (BDHI) (Oquendo et al, 2001), the Social Readjustment Rating Scale (SRRS) (Holmes & Rahe, 1967) and Beck's Hopelessness Scale (BHS). The psychometric properties of the Spanish version of the Beck's Hopelessness Scale (BHS) have been provided for an Argentine population. Internal consistency, factorial, predictive, differential and concurrent validity have been demonstrated. Cronbach alpha was 0.78 for the total scale. The BHS also demonstrated acceptable construct and discriminative validity (Mikulic et al., 2009).

2.4. Data Analytic Approach

Categorical measures are reported as frequencies or percentages, and continuous measures are reported as means ± standard deviations (SD). A univariate analysis was

performed using linear regression to analyze the variables associated with SF-12 scores. To identify the factors independently associated with SF-12, two multivariate linear regression models were constructed. Each of the SF-12 subscales was used as dependent variables, adjusting for factors identified by preliminary univariate analysis. Independent variables were included stepwise from the least to the most significant in preliminary testing. Specifically, we entered variables that were significant in the univariate analysis. Second, we entered variables that were clinically relevant to the dependent variable". We inspected the correlations between independent variables for multicollinearity. Statistical significance was set at two-tailed $p<0.05$. The threshold of statistical significance was set at $p<0.05$. Statistical analyzes were performed using STATA 13.0.

3. Results

As shown in table 1, the sample included 246 patients. The average age of the participants was 36.78 years ($SD = 12.54$) and 86.59% of the sample were female. The majority of the sample identified as Argentine (88.57%), while other patients reported their country of origin as Paraguay (4.08%), Peru (1.22%), Bolivia (1.22%), Chile (1.40%), Columbia (1.22%), Uruguay (0.41%), Dominican Republic (0.41%), Russia (0.41%), Italy (0.41%), and Ukraine (0.41%). Almost 82.11% ($n = 202$) were married/cohabitating at the time of hospitalization, and one-third of the patients had a job ($n = 93$, 37.8%). Approximately, 71.84% of the patient sample met criteria for affective disorders, and 19.19% met criteria for schizophrenia and related psychotic disorders. Approximately 46% of the patients presented comorbidity with borderline personality disorder (BPD). The BIS mean score was 61.12 ($SD = 15.35$), BDHI mean score was 44.05 ($SD = 10.51$), BHS mean score was 9.245 ($SD = 5.05$), and the SRRS mean score was 367.10 ($SD = 183.06$). Specific

to HRQoL, the MCS mean score was 28.10 (SD = 8.89), whereas the PCS mean score was

40.8 (SD = 9.98).

The results of a simple linear regression analysis are shown in table 2. The variables

significantly associated with the MCS were being female (p = 0.003), BPD (p= 0.004), BIS

(p = 0.03), BHS (p < 0.001), and BDHI (p = 0.004). The variables significantly associated

with PCS included age (p = 0.01), employment (p = 0.003), medical disease (p = 0.001),

four or more previous SA (p = 0.001), hospitalization for suicide attempts (p = 0.03), SRRS

(p = 0.02) and BDHI (p = 0.05).

Two models of multiple regression analysis were performed to assess the unique

contribution of the variables associated with MCS and PCS. Variables were included in the

models if they were significant in the univariate analysis and of clinical relevance. The

variables included in the model for MCS (Table 3) explained 11% of variance (F = 6.30, p

< 0.001) (F = 6.30, p < 0.001). Only hopelessness was negatively and independently

associated with MCS. The variables in the model for PCS (Table 4) explained for 12% of

total variance (F= 5.22, p<0.001). Age (p = 0.05), medical disease (p = 0.05) and four or

more previous SA (p = 0.02), were negatively and independently associated with PCS.

Employment (p = 0.004) was positively and independently associated with PCS.

4. Discussion

HRQoL is a well-studied variable among patients presenting with a variety of

chronic illness and mental disorders (Mystakidou et al, 2008; Penner-Goeke et al., 2015),

but it is an understudied variable among patients with SB. The current study aimed to

address this gap in the literature by examining the relation between HRQoL (mental and

physical dimensions) and different clinical variables among patients presenting with SB.

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Among all the clinical variables examined, hopelessness was the only variable significantly associated with mental HRQoL, while age, employment, medical disease and the number of previous SA were independently related to physical HRQoL among patients hospitalized for SB.

Findings from the current study reveal that levels of HRQoL among patients with SB are lower as compared to the general population in Argentina (Daray et al., 2017). In accordance with this observation, previous work suggests psychiatric patients without SB (Caron et al., 2005; Hodgson et al., 2007) and depressive patients with SB (Shepard et al., 2016; Wang et al., 2013) endorse lower scores of HRQoL as compared to the general population. The data extend previous work by examining HRQoL among a patient population presenting with diverse psychopathology and SB.

Patient scores of HRQoL in the current study were lower as compared to scores reported among a population of individuals with SB in Australia (Fairweather-Schmidt et al., 2016). Lower HRQoL scores among patients in the current study may in part be due to the fact that the patients in our sample were inpatients evaluated at the time they were hospitalized for SB which shows a greater severity and it would be expected to find lower HRQoL scores when comparing with the community sample of Australia. Prospective work examining levels of HRQoL among suicidal patients from hospitalization to follow-up is needed to understand the stability of HRQoL among suicidal individuals.

To the best of our knowledge, the present study is the first study evidencing the significant inverse relationship between mental HRQoL and hopelessness among patients with SB. These findings are consistent with previous work demonstrating higher levels of depression were associated with low levels of mental HRQoL among depressed patients (Wang et al., 2013). However, other studies fail to evidence an association between the

severity of psychiatric symptoms, including, psychological distress, and HRQoL (Eack & Newhill, 2007; Huang et al., 2012). The current study describes a relation between hopelessness and mental HRQoL which is an extension of previous work given it examines hopelessness among suicidal patients with different psychiatric diagnoses and not only depression (Penner-Goeke et al., 2015). Hopelessness is considered a critical component in the formation of SB (Klonsky & May, 2015; Mann et al., 2006; Van Orden et al., 2010). Previous work also demonstrates that hopelessness predicts SA (Mann et al., 2006), suicidal ideation (Brown et al., 2000) and is significantly associated with high medical severity of SAs (Trakhtenbrot et al., 2016). Interestingly, after successful treatment for major depression, hopelessness is greater among suicide attempters as compared to non-attempters (Rifai et al., 1994). Taking into account previous theoretical models for SB and empirical evidence highlighting the role of hopelessness in SB, our findings underscore the importance of addressing the relation between HRQoL and hopelessness among a sample hospitalized for recent SA or severe SI.

The number of previous SA and medical disease were two important clinical variables related to lower levels of physical HRQoL among patients with SB. The present study found that a greater number of previous SA was significantly associated with a lower level of physical HRQoL. Specifically, physical HRQoL was significantly and independently associated with 4 or more previous SA. This finding is in the same line of previous work among patients hospitalized for a SA which revealed that lower levels of HRQoL were significantly related to a future suicide attempts after discharge (Wang et al., 2013). Furthermore, repeated SA has a detrimental effect on physical HRQoL, as demonstrated in a longitudinal study (Fairweather-Schmidt et al., 2016). Indeed, considering the high risk for repeated SA among recently discharged patients (Haukka et

al., 2008), treatment efforts aimed at prioritizing quality care and reducing the burden of physical HRQoL may be beneficial. Studies evaluating the relationship between physical HRQoL and medical illness have been reported previously (Didsbury et al., 2016; Penner-Goeke et al., 2015) and this association have been found among depressed patients (Jung et al., 2012). Nonetheless, the current study is the first one to demonstrate this association among patients hospitalized for recent SA or severe SI. The finding that age is significantly related to physical HRQoL may not be surprising and is in accordance with previous work (Penner-Goeke et al., 2015) suggesting older age was associated with poor HRQoL. This association was also observed in depressive patients with SB (Wang et al., 2013) and without SB (Jung et al., 2012). Finally, an interesting finding of the present study is the positive association between employment and higher levels of physical HRQoL, which was similar to that reported in patients with schizophrenic or affective disorders (Caron et al., 2005; Hodgson et al., 2007; Ruesch et al., 2004).

The results of the present study should be interpreted in the context of some limitations. First, the current study is limited to a unique patient sample hospitalized for severe SI or SA, which limits our ability to generalize findings. Secondly, suicidal ideation and suicide attempts were assessed with the Columbia-Suicide Severity Rating Scale (CSSRS) and referred the patient's most recent suicide event (i.e., severe suicidal ideation, suicide attempt) while quality of life was evaluated with the SF-12 with a 4-week time frame, based on this is not possible to established a temporal relationship between both variables. It is also unclear if recent hospitalization influences patients' perceived HRQoL or whether lower HRQoL scores were already present prior to hospitalization. In addition, the sample is predominantly female; thus, caution should be taken when making inferences specific to men. Third, the cross-sectional design of the study limits our ability to make

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inferences specific to the temporality and causality from the findings. For this reason, prospective studies are needed to clarify the causal and temporal relationships between low quality of life and SB.

Despite the limitations of the current study, it provides important information specific to this area of work among a suicidal patients. To the best of our knowledge, this is the first study to explore the association between various clinical risk factors and the different components of HRQoL among patients with different mental disorders hospitalized for severe SI or SA. Findings from the current study may help inform the comprehensive approach taken when treating patients presenting with recent suicidal behavior by assessing levels of mental and physical HRQoL during risk assessment and continuity of care.

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Table 1: General characteristics of the sample

	(n=246)
Socio-demographic	*Mean (SD)*
Age	36.78 (12.54)
Education (years)	11.14 (3.16)
	N (%)
Sex (Female)	213 (86.59)
Employment	93 (37.80)
Religious practice	96 (39.00)
Married/cohabitating	202 (82.11)
Comorbility	N (%)
Medical disease	101(41.06)
Suicidality	*Mean (SD)*
Age of first SA	26 (14.34)
	N (%)
Previous SA	
1 attempt	63(25.61)
2 to 3 attempts	61 (24.80)
4 or more attempts	57 (23.17)
Previous hospitalizations for SA	143 (58.13)
Lethality of most recent SA (index via C-SSRS)*	
Low lethality	64 (33.33)
High lethality	128 (66.67)
Current suicidal ideation	54 (21.95)
Diagnosis	N (%)
Axis I	
Bipolar disorder	38 (15.44)
Unipolar depresion	138 (56.10)
Schizophrenia and related disorders	47 (19.10)
Other	23 (9.35)
Asix II	
Borderline Personality Disorder	113 (46.12)
Psychopathology	*Mean (SD)*
Impulsiveness (BIS)	61.12 (15.35)
Hostility (BDHI)	44.05 (10.51)
Hopelessness (BHS)	9.42 (5.05)
Stressful life events (SRRS)	367.10 (183.06)
Quality of life	*Mean (SD)*
Mental (SF12-MCS)	28.10 (8.89)
Physical (SF12-PCS)	40.81 (9.98)

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Note. SD= standard deviation; SA= suicide attempt; BIS= Barratt Impulsiveness Scale; BDHI= Buss-Durkee Hostility Inventory; BHS= Beck Hopelessness Scale; SRRS= The Social Readjustment Rating Scale; SF12-MCS= Mental components of 12-Item Short Form *Health Survey; SF12-PCS= Physical* components of 12-Item Short Form *Health Survey.* [*]Lethality of most recent suicideattempt was assessed only for patients that were admitted to the hospital for a suicide attempt as compared to patients admitted for ideation (n = 192).

Table 2: Univariate analysis of the SF12 subscales among patients hospitalized for suicidal behavior

	MCS			PCS		
	B	SE	*p*	*B*	SE	*p*
Age	0.04	0.04	0.28	-0.12	0.05	**0.01**
Sex (Female)	-4.91	1.63	**0.003**	-2.06	1.86	0.26
Education (years)	-0.24	.017	0.17	0.22	0.20	0.25
Religious practice	1.98	1.15	0.08	-1.09	1.30	0.40
Employment	0.04	1.17	0.96	3.87	1.29	**0.003**
Married/cohabitating	-1.16	1.48	0.43	-0.52	1.66	0.75
Medical disease	0.93	1.15	0.41	-4.19	1.26	**0.001**
BPD	-3.28	1.11	**0.004**	-0.33	1.28	0.79
Highly lethality of most recent SA	0.88	1.37	0.52	-0.23	1.49	0.87
Previous SA						
1 time	-0.47	1.57	0.76	-0.57	1.72	0.73
2 to 3 time	-2.20	1.58	0.16	-2.80	1.74	0.10
More than 4 time	-1.44	1.61	0.37	-5.83	1.77	**0.001**
Previous hospitalizations for SA	-1.25	1.14	0.27	-2.69	1.28	**0.03**
Stressful life events (SRRS)	0.002	0.003	0.41	-0.008	0.003	**0.02**
Impulsiveness (BIS)	-0.07	0.03	**0.03**	-0.05	0.04	0.15
Hopelessness (BHS)	-0.59	0.11	**<0.001**	-0.23	0.13	0.08
Hostility (BDHI)	-0.16	0.05	**0.004**	-0.12	0.06	**0.05**

Table 3: Multiple linear regression analysis of the subscale MCS.

Dependent variable: MCS	*B*	ES	*p*
Constant	38.79	3.99	**0.000**
Sex (female)	-1.43	1.72	0.40
Age	0.01	0.04	0.72
BPD	-1.86	1.15	0.10
Impulsiveness (EIB)	-0.003	0.03	0.93
Hopelessness (BHS)	-0.52	0.12	**0.000**

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Hostility (BDHI)	-0.09	0.05	0.10

Note. R^2 adjusted = 0.11; $F(6,233)= 6.30$; $p<0.001$.

Table 4: Multiple linear regression analysis of subscale PCS.

Dependent variable: PCS	*B*	ES	*p*
Constant	53.53	4.01	**<0.001**
Sex (female)	0.001	1.86	0.99
Age	-0.10	0.05	**0.05**
Medical disease	-2.60	1.33	**0.05**
Previous SA			
1 time	-0.47	1.70	0.78
2 to 3 time	-1.38	1.79	0.44
More than 4 time	-4.17	1.88	**0.02**
Previous hospitalization for SA	-0.67	1.38	0.62
Employment	3.72	1.27	**0.004**
Stressful life events (SRRS)	-0.006	0.003	0.08
Hopelessness (BHS)	-0.17	0.13	0.19
Hostility (BDHI)	-0.08	0.06	0.20

Note. R^2 adjusted = 0.12; $F(8,236)= 5.22$; $p<0.001$.

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Highlights:

- Suicidal patients have lower health-related quality of life than the general population.
- Hopelessness was associated with lower mental health-related quality of life in suicidal patients.
- The number of previous suicide attempted together with age and medical disease were associated with lower physical health-related quality of life among these patients.