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# Quality of life and symptom dimensions of patients with obsessive–compulsive disorder

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ABSTRACT

The aim of this study was to evaluate the impact of different dimensions of obsessive–compulsive symptoms, of co-morbid anxious depressive symptoms, and of sociodemographic characteristics on the quality of life of patients with obsessive–compulsive disorder (OCD). We evaluated 53 patients with OCD and 53 age- and gender-matched individuals from the community with a sociodemographic questionnaire, the Structured Clinical Interview for the Diagnosis of Diagnostic and Statistical Manual of Mental Disorders, fourth Edition, (DSM-IV), the Short-Form Health Survey-36 (SF-36), the Saving Inventory–Revised, the Obsessive–Compulsive Inventory–Revised, the Beck Depression Inventory and the Beck Anxiety Inventory. A series of stepwise linear regression analyses were performed, having the SF-36 dimensions as the dependent variables and the sociodemographic and clinical features as the independent ones. Patients with OCD displayed significantly lower levels of quality of life in all dimensions measured by the SF-36, except bodily pain. A model that included depressive symptoms, hoarding and employment status predicted 62% of the variance of the social functioning dimension of the quality of life of patients with OCD. Washing symptoms explained 31% of the variance of limitation due to physical health problems. Further, a series of models that included depressive, but not obsessive–compulsive symptoms, explained the remaining SF-36 dimensions. The severity of depressive and anxiety symptoms seems, therefore, to be powerful determinants of the level of quality of life in patients with OCD.

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## 1. Introduction

Only a small number of studies have assessed the relationship between quality of life and different dimensions of patients with obsessive–compulsive disorder (OCD) (Stengler-Wenzke, 2007). Among those who did it, most have evaluated patients with predominantly obsessive, predominantly compulsive or mixed symptoms. For instance, Masellis et al. (2003) found that quality of life was particularly affected by obsessions, but not by compulsions. They also reported that co-morbid depression severity was the single greatest predictor of poor quality of life among patients with OCD. In the study by Moritz et al. (2005), a strong association was found between self-assessed or clinician-rated depression and the scores of the mental health, social functioning, role-emotional and vitality subscales of the Medical Outcomes Study 36-Item Short-Form Healthy Survey (SF-36). Severity and the number of obsessions were most strongly associated with the role-emotional and mental health components, whereas the number of compulsions showed a relatively uniform pattern of correlations with the SF-36 subscales.

Similarly, Eisen et al. (2006) found that marital status and the severity of depressive and obsessive (but not compulsive) symptoms was significantly associated with the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) scores and accounted for 42% of their variance. In the same vein, Rodriguez-Salgado et al. (2006) found that the severity of the obsessive and of depressive symptoms correlated with all SF-36 subscales, while compulsive symptoms subscale was associated only with the social functioning, emotional role, mental health and vitality subscales.

Finally, in the study by Stengler-Wenzke et al. (2007), compulsions were associated with reduced scores in the World Health Organization Quality of Life-Brief Version (WHOQOL-BREF) 'physical well-being', 'psychological well-being' and 'environment' domains, whereas obsessions had no significant impact on quality of life at all. However, in this study, depressive symptoms were found to be strong predictor of poor quality of life in OCD patients.

In some studies, patients with OCD reported levels of quality of life that are lower than those exhibited by individuals with chronic and disabling conditions, such as schizophrenia (Moritz, 2008). Often,

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treatment for OCD is started only after the disorder has progressed significantly and important personal and social resources (e.g., social support and employment) have already been severly compromised (Moritz, 2008). As reported earlier, the reasons for the low quality of life in OCD are probably multidimensional and may vary largely across studies (Moritz, 2008).

While co-morbid depression seems to play a definite role in the impairment of quality of life seen in OCD (Masellis et al., 2003; Moritz et al., 2005; Eisen et al., 2006; Rodriguez-Salgado et al., 2006; Stengler-Wenzke et al., 2007; Niederauer et al., 2007), it is still unclear whether quality of life is more affected by obsessions, by compulsions or by both equally. Indeed, for the purpose of studying the pathophysiology of OCD, splitting this disorder into predominantly obsessive, compulsive or mixed subtypes did not turn out to be as fruitful as previously expected. Although it is unquestionable that OCD is a phenomenologically homogeneous disorder, there is tremendous variation in its symptoms content. For example, in a recent review paper reporting on 12 principal components and confirmatory factor analytic studies and involving more than 2000 patients with OCD, at least four symptom content dimensions were consistently extracted: symmetry/ordering, contamination/cleaning, obsessions/checking and hoarding (Mataix-Cols et al., 2005).

The so-called 'compulsive hoarding syndrome' in OCD is associated with distinctive features, including earlier age at onset (Samuels et al., 2002; Fontenelle et al., 2004), worse global functioning (Saxena et al., 2002; Wheaton et al., 2008), greater levels of disability (Frost et al., 2000; Lochner et al., 2005), poor insight into symptoms (Damecour and Charron, 1998; Storch et al., 2007), more frequent reports of traumatic events in the past (Hartl et al., 2005; LaSalle-Ricci et al., 2006), greater occurrence of certain types of OCD symptoms (e.g. symmetry/ordering) and co-morbid axis I and II disorders (Frost et al., 2000; Samuels et al., 2002; Fontenelle et al., 2004; Lochner et al., 2005; Hasler et al., 2005; LaSalle-Ricci et al., 2006), stronger association with certain genotypes (Lochner et al., 2005; Samuels et al., 2007a,b), heavier genetic load (Hasler et al., 2007) and higher prevalence of hoarding behaviour among first-degree relatives (Samuels et al., 2007a), characteristic neuroanatomical (Saxena et al., 2004) and neuropsychological (Lawrence et al., 2006) markers, putative dopaminergic involvement (Stein et al., 1999) and inadequate response to treatment with serotonin-reuptake inhibitors (Black et al., 1998; Winsberg et al., 1999; Mataix-Cols et al., 1999), with cognitive behavioural therapy (Mataix-Cols et al., 2002), or with their combination (Frost et al., 2000).

The objectives of this study were threefold: (1) to compare patients with OCD and individuals from the community in terms of quality of life, as assessed by the SF-36, (2) to evaluate the relationship between the severity of different OCD dimensions [measured by the Obsessive–Compulsive Inventory–Revised (OCI–R; Souza et al., 2008) and by the Saving Inventory–Revised (SI–R; Soares et al., 2007)] with the levels of quality of life of patients with OCD and (3) to investigate whether sociodemographic factors and co-morbid depressive and anxious symptoms [measured by the Beck Depression and Anxiety Inventories (BDI and BAI; Cunha, 2001)] play any role in the impairment of quality of life of patients with OCD. Since hoarding is emerging as the most distinctive OCD subtype (Mataix-Cols et al., 2005), with unique biological and clinical features, we predicted that individuals with more significant hoarding symptoms would be associated with a pervasive pattern of impairment in the physical, mental and social aspects of quality of life.

## 2. Methods

Volunteers for this study were consecutively recruited among patients undergoing treatment in the (1) Anxiety and Depression Research Program at the Institute of Psychiatry of the Universidade Federal do Rio de Janeiro (IPUB/UFRJ), the (2) Division of Applied Psychology at the Institute of Psychology of the same university (DPA/UFRJ) and (3) the first author's private practice. The inclusion criteria were (1) the diagnosis of OCD, with or without psychiatric comorbidity confirmed by means of the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, fourth Edition, (DSM-IV) Axis I disorders (SCID-IV) (Del-Ben et al., 2001), (2) age between 18 and 80 years and (3) the absence of any other neurological, endocrinological or systemic disorder that could interfere with the interpretation of the results. In the presence of any psychiatric co-morbidity, only patients who developed OCD as a primary disorder, either in terms of chronology or in terms of severity of symptoms, were included. Regarding the patients with OCD, 47 (72.3%) were recruited in the Anxiety and Depression Research Program of the IPUB/UFRJ, 10 (15.4%) in the Division of Applied Psychology of the IP/UFRJ and eight (12.3%) from the first author's private practice. Since patients in different stages of treatment were invited to participate in our study, the severity of the obsessive–compulsive symptoms varied largely. We believe, however, that this feature has provided our sample with a desirable degree of heterogeneity.

The control group consisted of community members recruited through local advertisements and included medical and administrative staff of the Universidade Federal do Rio de Janeiro. Inclusion criteria for the control group were (1) age between 18 and 80 years, and (2) the absence of any other neurological, endocrinological, or systemic disorder that could interfere with the interpretation of our results. Controls were not screened beforehand for the presence of psychiatric disorders, since we intended to avoid the selection of a 'supernormal' sample, which would be not representative of the general population.

### 2.1. Procedures

The local Institutional Review Board approved this research protocol and all participants signed an informed consent after receiving a detailed explanation on the procedures and risks involved in the study. Patients with OCD, but not controls, were evaluated with the Brazilian version of the SCID-IV (Del-Ben et al., 2001). The SCID-IV is a semistructured clinical interview to be administered by clinicians in order to diagnose Axis I mental disorders according to the DSM-IV criteria. The inter-rater reliability of the Brazilian Portuguese version of SCID-IV was deemed to be at least satisfactory for mood disorders ($\kappa = 0.87$); psychotic disorders ($\kappa = 0.90$); substance-related disorders ($\kappa = 0.76$); anxiety disorders ($\kappa = 0.61$); and the specific diagnostic categories.

Since two different centres (IPUB/UFRJ and IP/UFRJ) were responsible for the recruitment and administration of the SCID in the majority of cases, questions could be raised over the reliability of the methods employed. However, two expert diagnosticians with a doctoral degree and extensive experience in the assessment and treatment of patients with OCD (ISF and LFF) reviewed all case materials and assigned final best-estimate diagnoses. Ten cases presenting difficult differential diagnoses had their Axis I disorders diagnoses confirmed at the consensus conferences.

Patients and controls were asked to fill out a sociodemographic questionnaire probing issues such as age, gender, educational level, marital and employment status and monthly income. A clinical questionnaire was employed to collect data on the age at onset of subclinical obsessions and/or compulsions (i.e., the age at which the patient first remembers presenting obsessive–compulsive symptoms, even those not accompanied by significant feelings of distress or impairment), psychiatric co-morbidities (according to the SCID-I) and previous and current therapeutic strategies.

### 2.2. Instruments

#### 2.2.1. Saving Inventory–Revised (SI–R)

The SI–R was developed by Frost et al. (2004) to evaluate the severity of hoarding behaviours in clinical and non-clinical populations. It is a self-administered Likert-type scale containing 23 items that are divided into three subscales: hoarding (nine items), difficult discarding (seven items) and acquisition (seven items). The Brazilian version of the SI–R exhibited excellent internal consistence (Cronbach's alpha = 0.94 in patients with OCD and 0.84 in community individuals), excellent to good test–retest reliability ($r = 0.94$ in patients with OCD and $r = 0.59$ in community individuals) and moderate to good convergent validity with the hoarding dimension of the Obsessive–Compulsive Inventory–Revised (Soares et al., 2007), that is, $r = 0.55$ in community individuals and $r = 0.88$ in patients with OCD.

#### 2.2.2. Beck Depression Inventory (BDI)

The BDI is the most widely used self-rated instruments for evaluating the severity of depressive symptoms in clinical and nonclinical samples. The scale has 21 items, each one consisting of four statements describing increasing intensities of symptoms of depression. Items are rated on a scale from 0–3, reflecting how participants have felt over the past week. Possible scores range from 0 to 48, with higher scores reflecting more severe depressive symptoms. The Brazilian Portuguese version of the BDI has adequate psychometric properties, including at least satisfactory internal consistency (Cronbach's alpha = 0.82); construct validity ($r = 0.65$) and test–retest reliability ($r = 0.86$) (Cunha, 2001).

#### 2.2.3. Beck Anxiety Inventory (BAI)

The BAI is a self-report instrument designed to measure the severity of anxiety. The scale has 21 items describing subjective, somatic or panic-related symptoms. Items are rated on a scale from 0 to 3, reflecting how participants have felt over the past week. Possible scores range from 0 to 63, with higher scores reflecting more severe anxiety symptoms. The Brazilian Portuguese version of the BAI has satisfactory psychometric properties, including good to excellent internal consistency (Cronbach's alpha = 0.83),

**Table 1**
Comparison between the socio-demographic and clinical features of patients with OCD and that of community controls.

| Socio-demographic features | Patients with OCD ($n=65$) | Community controls ($n=70$) | Tests results |
|---|---|---|---|
| Age (yr) | 39.3 (±13.8) | 35.5 (±13.0) | $t=-1.6$; $df=133$; $P=0.1$ |
| Gender | | | $\chi^2=1.1$, $df=1$; $P=0.3$ |
| Female | 36 (55.4%) | 46 (65.7%) | |
| Male | 29 (44.6%) | 24 (34.3%) | |
| Marital status | | | $\chi^2=1.7$, $df=1$; $P=0.2$ |
| Married | 19 (29.2%) | 28 (40.0%) | |
| Non-married | 46 (70.8%) | 42 (60.0%) | |
| Educational level (yr) | 13.0 (±3.9) | 13.4 (±4.3) | $t=-0.5$; $df=132$; $P=0.6$ |
| Monthly income | 1.577 (±1121) | 2.497 (±2615) | $Z=-1.08$; $P=0.3$ |
| BAI | 15.8 (±13.0) | 6.0 (±6.0) | $t=-5.0$; $df=73.2$; $P<0.001^{***}$ |
| BDI | 18.2 (±11.4) | 7.1 (±5.0) | $t=-6.4$; $df=69.5$; $P<0.001^{***}$ |
| OCI–R | 27.2 (±16.8) | 9.2 (±7.7) | $t=-7.1$; $df=72.8$; $P<0.001^{***}$ |
| Checking | 5.3 (±4.4) | 1.6 (±2.0) | $Z=-4.4$; $P<0.001^{***}$ |
| Hoarding | 4.0 (±4.1) | 1.5 (±1.9) | $Z=-3.0$; $P=0.002^{**}$ |
| Neutralization | 3.4 (±3.4) | 1.0 (±1.7) | $Z=-4.2$; $P<0.001^{***}$ |
| Obsession | 5.77 (±3.6) | 1.4 (±1.9) | $Z=-6.2$; $P<0.001^{***}$ |
| Ordering | 4.6 (±3.7) | 3.0 (±2.2) | $t=-2.6$; $df=85.8$; $P<0.001^{***}$ |
| Washing | 4.2 (±4.2) | 0.7 (±1.2) | $Z=-4.8$; $P<0.001^{***}$ |
| SI–R | 30.7 (±23.7) | 17.7 (±10.7) | $t=-3.4$; $df=72.5$; $P=0.001^{***}$ |
| Clutter | 10.7 (±11.0) | 4.7 (±4.5) | $Z=-2.3$; $P=0.02^{*}$ |
| Difficult discarding | 10.9 (±8.7) | 6.1 (±4.1) | $t=-3.6$; $df=73.5$; $P=0.001^{***}$ |
| Acquisition | 9.2 (±7.3) | 6.8 (±4.1) | $t=-2.1$; $df=82.5$; $P=0.04^{*}$ |

Note: BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; OCI–R = Obsessive–Compulsive Inventory–Revised; SI–R = Saving Inventory–Revised; $^{*}P<0.05$; $^{**}P<0.01$; $^{***}P<0.001$.

convergent validity [with the State ($r=0.76$)-Trait ($r=0.78$) Anxiety Inventory] and test–retest reliability ($r=0.99$) (Cunha, 2001).

#### 2.2.4. Obsessive–Compulsive Inventory–Revised (OCI–R)

The OCI–R (Foa et al., 2002) is the shorter, revised version of the Obsessive-Compulsive Inventory (OCI), an instrument that evaluates the severity of a series of obsessive–compulsive symptoms (Foa et al., 1998). The OCI–R is a self-administered Likert-type scale that contains 18 items and provides a total score and six subscale scores: washing, checking, ordering, rumination, hoarding and neutralisation.

The Brazilian Portuguese version of the OCI–R exhibited excellent internal consistency (0.94) and test–retest reliability (0.98). It also showed moderate convergent validity with the Yale–Brown Obsessive–Compulsive Scale nt (0.47) (Souza et al., 2008).

#### 2.2.5. Medical outcomes study 36-item short-form health survey (SF-36)

The SF-36 (Ware and Sherbourne, 1992) is the most commonly used measure of quality of life and has been amply employed in studies of diverse medical and psychiatric conditions. The SF-36 is generic and multidimensional and, since its use is not restricted to specific age ranges or types of patients, allows comparisons among different disorders and treatments.

The scale is composed of 36 items and captures eight major domains of quality of life: physical functioning, limitations due to physical health problem, bodily pain, general health, vitality, social functioning, limitations due to emotional problems (role-emotional) and mental health. The raw scores for each of the eight subscales span from 0 to 100, with 0 representing the worst and 100 representing the best possible quality of life status. General health, vitality and mental health subscales differ from the other five in that they are 'bipolar' (i.e., a score of 100 in one of them does not denote a mere absence of problems but implies the existence of positive health states such as happiness or well-being).

In Ciconelli et al.'s (1997) validation study of the Brazilian Portuguese version of the SF-36, inter-rater and test–retest reliability for the eight subscales ranged from 0.55 to 0.81 and 0.44 to 0.84, respectively. Acceptable levels of convergent validity were found between comparable dimensions of the SF-36, of the Health Assessment Questionnaire, and of the Nottingham Health Profile. The Brazilian Portuguese version of the SF-36 exhibited satisfactory Cronbach's alpha coefficients for seven out of the eight dimensions of the SF-36 (the only exception being the General Health Perception dimension, with a Cronbach's alpha of 0.60) (Saccomann et al., 2007).

### 2.3. Statistical analyses

Comparisons of categorical variables were done by means of the chi-square test. Continuous variables were compared using the independent Student's *t*-test or the Mann–Whitney test, depending on the normality of data distribution. Stepwise linear regression analyses were employed to explore the relationship between a series of variables (including current age, marital status, employment status, washing, checking, ordering, obsession and neutralisation dimensions of the OCI–R, different SI–R dimensions, the BDI and the BAI) and each of the SF-36 dimensions. Given its colinearity with other OCI–R subscores, we decided not to include the total OCI–R score in the regression analyses. All analyses were performed by means of the SPSS statistical software (SPSS 10 for Windows, SPSS, Chicago, IL, USA). The statistical level of significance chosen was 5%.

## 3. Results

We recruited a total of 135 participants who fulfilled the inclusion criteria: 65 patients with OCD and 70 community individuals. The volunteers were predominantly female ($n=82$; 60.7%) with a mean age of 37.3 (±13.5) years. Sixty-nine (51.1%) participants were single, 48 (35.6%) were married, seven (5.2%) were divorced, six (4.4%) were separated and five (3.7%) were widowed. The volunteers had on average 13.2±4.1 years of formal education and 78 (57.8%) were currently employed. Their mean monthly income was 2.120 (±2.172) *reais* (about 1.100 US dollars). A comparison between the sociodemographic characteristics of patients with OCD and individuals from the community is depicted in Table 1.

Although we believe it would be worthwhile to contrast the characteristics of patients and volunteers recruited in different centres, small numbers precluded valid comparisons. In general, however, they were deemed quite similar from the sociodemographic and clinical points of view.

Patients with OCD reported the onset of obsessions and compulsions at age 14.5±10.5 and 15.9±12.7 (years±standard deviation), respectively. Regarding co-morbid disorders, 35.9% of the patients with OCD exhibited a current major depressive episode, 6.3% had social phobia and 6.3% presented a dysthimic disorder. Most patients were already undergoing psychological and/or pharmacological treatment. For example, 79.7% of patients were being medicated with a serotonin reuptake inhibitor, 40% with a benzodiazepine and 32.3% with an antipsychotic. Further, 32.3% of the patients were being treated with cognitive-behavioural therapy.

Patients with OCD and community controls were matched on the basis of age and gender, creating two groups with 53 participants each. Patients with OCD presented greater severity of depressive symptoms (according to the BDI) and of anxiety symptoms (according

**Table 2**
Quality of life of patients with OCD compared to that of community controls, according to the SF-36.

| SF-36 subscales | Patients with OCD ($n=53$) | Community controls ($n=53$) | Results |
|---|---|---|---|
| Physical functioning | 73.30 (25.05) | 86.88 (15.03) | $t=-3.38$; $df=85.16$; $P=0.001$ |
| Limitations due to physical health problem | 60.84 (40.87) | 83.49 (28.56) | $t=-3.30$; $df=93.00$; $P=0.001$ |
| Bodily pain | 65.47 (29.65) | 74.94 (20.57) | $t=-1.91$; $df=92.65$; $P=0.059$ |
| General health | 63.07 (24.03) | 80.09 (15.65) | $t=-4.30$; $df=89.61$; $P<0.001$ |
| Vitality | 43.96 (26.24) | 67.07 (16.96) | $t=-5.38$; $df=89.00$; $P<0.001$ |
| Social functioning | 51.70 (32.38) | 83.25 (22.98) | $t=-5.78$; $df=93.79$; $P<0.001$ |
| Role-emotional | 37.10 (41.68) | 84.90 (29.64) | $t=-6.80$; $df=93.88$; $P<0.001$ |
| Mental health | 50.64 (21.61) | 79.39 (12.53) | $t=-8.37$; $df=83.43$; $P<0.001$ |

Note: $df$ = degrees of freedom.

**Table 3**
Multiple stepwise regression analyses with the subscores of the SF-36 as the dependent variables.

| | B | EP | B | *t* | Sig |
|---|---|---|---|---|---|
| *Physical functioning ($R^2$ = 0.53)* | | | | | |
| Current age | −1.05 | 0.24 | −0.52 | −4.38 | <0.001 |
| BDI | −0.94 | 0.28 | −0.41 | −3.46 | 0.001 |
| Employment | 0.005 | 2.81 | −4.09 | 2.09 | 0.04 |
| *Limitations due to physical health ($R^2$ = 0.31)* | | | | | |
| Washing | −5.75 | 1.41 | −0.56 | −4.06 | <0.001 |
| *Bodily pain ($R^2$ = 0.62)* | | | | | |
| BDI | −1.17 | 0.32 | −0.44 | −3.60 | 0.001 |
| BAI | −0.85 | 0.26 | −0.39 | −3.22 | 0.003 |
| Current age | −0.56 | 0.24 | −0.25 | −2.34 | 0.02 |
| *General health ($R^2$ = 0.46)* | | | | | |
| BDI | −1.64 | 0.29 | −0.68 | −5.54 | <0.001 |
| *Vitality ($R^2$ = 0.52)* | | | | | |
| BDI | −1.84 | 0.29 | −0.72 | −6.24 | <0.001 |
| *Social functioning ($R^2$ = 0.62)* | | | | | |
| BDI | −1.30 | 0.30 | −0.50 | −4.25 | <0.001 |
| SI–R | −0.39 | 0.13 | −0.34 | −2.90 | 0.006 |
| Employment | 0.005 | 0.03 | 0.25 | 2.35 | 0.02 |
| *Role-emotional ($R^2$ = 0.39)* | | | | | |
| BDI | −2.71 | 0.56 | −0.62 | −4.80 | <0.001 |
| *Mental health ($R^2$ = 0.67)* | | | | | |
| BDI | −1.33 | 0.25 | −0.58 | −5.23 | <0.001 |
| BAI | −0.66 | 0.20 | −0.35 | −3.20 | 0.003 |

Note: BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory; SI–R: Saving Inventory–Revised.

to the BAI) (see Table 1). Further, they had a lower quality of life than community controls in all but one dimension of the SF-36, bodily pain, where only a trend towards significance was found (see Table 2).

The eight SF-36 subscales were entered as dependent variables in a series of multiple stepwise linear regression analyses conducted with the whole sample of patients with OCD ($n = 65$). Several relevant sociodemographic and clinical attributes were entered as independent variables, including the patients' current age, marital status, employment status and the BDI, BAI, OCI–R subscales and SI–R scores. The results generated by these analyses and the models that explained the most variance for each of the SF-36 dimensions are depicted in Table 3.

## 4. Discussion

As noted previously, OCD is a multidimensional mental disorder, encompassing a large variety of forms of presentation, putative neurobiological substrates and possible treatment outcomes. The objective of this study was to evaluate whether different OCD symptom dimensions were associated with impairment in distinctive aspects of the quality of life. Our results support the initial hypotheses only partially: as we expected, hoarding and washing symptoms accounted significantly for the decline in particular aspects of our patients' quality of life, but co-morbid symptoms, especially depressive and anxiety ones, remained the most significant predictors of the impairment of quality of life of subjects with OCD. These findings, which have been reported in other studies (Masellis et al., 2003; Moritz et al., 2005; and Strenger-Wenzke et al., 2007), seem to imply that treating depression and anxiety symptoms in OCD might be a critical step toward restoring quality of life and well-being in these patients.

The SF-36 social functioning subscale evaluates how much impaired physical or emotional health interferes in the social activities involving family, neighbours or friends. In our study, a model that included the severity of depressive and hoarding symptoms and the employment status of our patients with OCD explained 62% of the variance of this subscale. Besides the well-known and somewhat obvious impact of depression and unemployment status on the quality of life of patients with OCD, the role of hoarding symptoms in the impairment of social functioning-related aspects of quality of life deserves some additional comments. It is conceivable that hoarding of 'rubbish' may exhort negative effects through several mechanisms: (1) affecting the family members' sense of comfort, (2) limiting the utilisation of dwelling space, (3) interfering in the relationship with neighbours due to sanitary problems (such as excessive dust, insects or malodorous environments) or to an increased risk of fire accidents and (4) restricting visits from relatives or friends due to feelings of shame and embarassment. All these factors may contribute to increase stigmatisation and social isolation, and, ultimately, lead to the reduced social quality of life observed in OCD hoarders.

A study conducted in a service that provides assistance to the elderly of a North-American community found that the majority of individuals with pathological hoarding were single, separated or widowed women living by themselves (Kim et al., 2001). Individuals who were never married presented more severe hoarding symptoms, which were associated with increased levels of dysfunction and with less than satisfactory response to general intervention measures (Kim et al., 2001). Further, the severity of hoarding was found to correlate with the severity of social anxiety in a sample of US college students (Coles et al., 2003). On a clinical level, Frost et al. (2000) compared patients with OCD with and without hoarding and found that the former group presented significantly higher levels of disability in working environments, family and domestic responsibilities, social life and leisure activities. It is still unclear, however, how social isolation and hoarding relate to each other: either severe hoarding behaviour could discourage potential matrimonial partners or the lack of a spouse might increase the possibility that such behaviour goes on unchecked or even escalates without any consistent opposition (Frost et al., 2004).

The SF-36 limitation to physical health problems subscale evaluates how much the physical health of the respondents interferes with their work or regular daily activities. In our regression analyses, the scores on the washing subscale of the OCI–R were able to explain 31% of the variance of this subscale. We have already discussed the possibility that different types of compulsions (including washing) may result in physical limitations in an independent sample (Soares, 2003). Indeed, Moritz et al. (2005) also found that washers as categorised according to the Hamburg Obsessive–Compulsive Inventory (HOCI) normative data, presented greater physical limitations than non-washers, It is unclear whether the relationship between washing and physical limitations represents a mere statistical artefact or reflects a true physical disability in a sense comparable to that associated with many chronic medical illnesses [such as rheumatoid arthritis (Ciconelli, 1997)]. Nevertheless, it has been shown that sustained washing symptoms may lead to physical exhaustion and to severe dermatological problems (Moritz et al., 2005). It is noteworthy that this was the SF-36 dimension most sensitive to treatment in Moritz et al.'s (2005) study.

The physical functioning subscale of the SF-36 evaluates not only the presence but also the extension of the limitations related to functional capacity. Patients with OCD exhibited significantly lower levels of functional capacity than age- and gender-matched community controls. A model that included current age, the severity of co-morbid depressive symptoms and employment status explained 53% of the variance of functional capacity subscale of the SF-36. These results suggest that this modality of quality of life is more heavily influenced by certain sociodemographic features and by the presence of co-morbid depression than by any type of obsessive–compulsive symptom.

As expected, bodily pain scores in patients with OCD were not significantly different from those reported by age- and gender-matched community controls. Rodriguez-Salgado et al. (2006) described similar

findings. A statistical model that included the severity of co-morbid anxiety and depression and current age explained 62% of the variance in the SF-36 pain subscale. These findings suggest that patients with OCD and painful complaints should be assessed for the presence of co-morbid depressive or anxiety disorders (Kroenke, 2003).

Finally, patients with OCD showed reduced vitality, general health, role-emotional aspects and mental health subscales scores when compared to age- and gender-matched community controls. Indeed, depressive symptoms alone were able to explain 52% of the variance of the vitality scale, 46% of the general health state and 39% of the emotional aspects of the SF-36. Additionally, depressive and anxiety symptoms together explained 67% of the mental health subscale scores. Similar findings were described by Masellis et al. (2003), who evaluated 43 patients with OCD with the Illness Intrusiveness Rating Scale (IIRS) as a measure of quality of life. In this study, the severity of depression, evaluated by means of the BDI, was able to predict 54% of the variance of the scores of the IIRS, significantly more than the severity of obsessive symptoms *per se*. In a study by Stengler-Wenzke et al. (2007), depressive symptoms (as measured by the BDI) also had the strongest negative effect on quality of life, as assessed with the WHOQOL-BREF, a self-administered questionnaire developed by the World Health Organization. Effect sizes of BDI scores were larger than those of the Y-BOCS subscores in all domains of the WHOQOL-BREF, except for 'environmental well-being', which includes questions regarding physical safety and security, home environment, health and social care, among others.

The fact that the depression and anxiety, but not hoarding symptoms, explained a significant portion of the variance of several dimensions of the quality of life in patients with OCD is difficult to explain. Nevertheless, we speculate that the lack of insight into the severity of illness that characterises individuals with hoarding symptoms (Damecour and Charron, 1998; Storch et al., 2007) may have contributed to raise some aspects of their self-esteem and thus different dimensions of their quality of life. On the other hand, the social pressures experienced by the same patients with OCD and hoarding are likely to decrease self-esteem and social functioning.

Admittedly, our study has some limitations that need to be brought to attention. First, our sample was recruited in specialised centres and was thus unlikely to be representative of Brazilian patients with OCD. Second, the control group was composed of non-clinical individuals; a feature may have led to an overestimation of their quality of life. Third, as Stengler-Wenzke et al. (2007) have pointed out, ratings on depression scales (e.g., BDI) and on quality of life instruments (e.g., SF-36) may be state-dependent and change during the course of OCD. Fourth, in the absence of a tool specifically designed to measure quality of life in OCD, we employed a generic instrument (the SF-36) that may not be able to fully capture the particularities and daily difficulties of our patients. Future studies aimed at developing a quality of life instrument to be employed in patients with OCD spectrum disorders are badly needed. Further, while we assessed hoarding with a 'sophisticated' 23-item instrument (SI–R), we employed brief measures to assess other types of OCD symptoms (i.e., different dimensions of the OCI–R). This may account, at least in part, for the different relationships observed between hoarding and non-hoarding symptoms to quality of life identified in the current study. Fifth, we acknowledge that stepwise regression analyses such as those we have employed have some significant limitations. Nevertheless, given the exploratory nature of our investigation [i.e., no previous study has examined the relationship between OCD symptom dimensions (including a hoarding measure) and different domains of quality of life], we felt that an atheoretical approach could provide a more unbiased basis for this preliminary exploration of this uncharted territory. Additionally, the issue of multicollinearity is always an important limitation in research evaluating depression and anxiety symptoms among patients with OCD. Finally, although the number of variables included in our regression analyses could be considered somewhat excessive, we tried to keep it to the minimum by just including items deemed essential for our purposes.

The low prevalence of co-morbid conditions in our sample of patients with OCD may be attributed to the cross-sectional nature of the study and to the fact that many patients were undergoing psychological and/or pharmacological treatment (which included serotonin reuptake inhibitors, benzodiazepines, and antipsychotics).

In sum, although hoarding and washing symptoms may adversely affect discrete aspects of quality of life, our findings suggest that the severity of co-morbid depression and anxiety may be responsible for most of the deficits presented by patients with OCD. Certainly, there is an urgent need to develop methods for social rehabilitation for patients with OCD and hoarding symptoms. In addition, the fact that limitation to physical health problems of patients with OCD was partially explained by the severity of their washing symptoms suggests that early treatment of these pathological behaviours may prevent the decline of specific domains of OCD patients' quality of life.

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