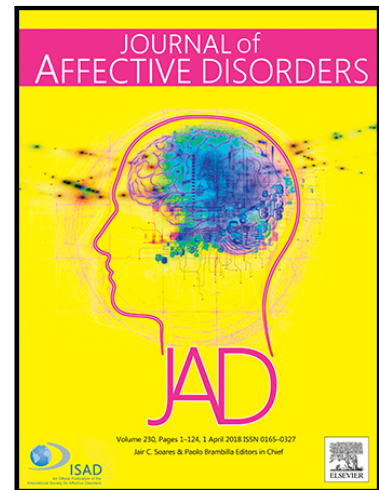# Journal Pre-proof

Religiosity, spirituality, suicide risk and remission of depressive symptoms: a 6-month prospective study of tertiary care Brazilian patients

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Highlights

- Tertiary care depressed patients experience a chronic and disabling course, with recurrent episodes, higher suicide risk, and decreased changes of recovery.

- Different dimensions of religiosity/spirituality (R/S) are prospectively associated with a better course of depression.

- In Brazil most people report a religious affiliation and identify religion as a very important domain of their lives.

- Higher religious attendance, intrinsic religiosity and WHOQOL-SRPB scores were inversely correlated to suicide risk among tertiary care Brazilian patients.

- Religious attendance and social support were identified as the main predictors of remission of depressive symptoms at follow-up.

- Findings reinforce the importance of attending to religiosity/spirituality in order to improve outcomes and promote the recovery, especially for those patients with increased symptomatology and suicide risk.

Religiosity, spirituality, suicide risk and remission of depressive symptoms: a 6-month prospective study of tertiary care Brazilian patients

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Abstract

Religiosity and spirituality (R/S) are increasingly recognized as significant aspects in the evaluation of depressed patients. Limited research, however, has investigated the impact of R/S on outcomes of more severe or chronic depressed patients. The present study investigated the impact different religiosity dimensions in tertiary care Brazilian depressed patients over suicide risk scores measured at baseline and remission of depressive symptoms in a 6-month prospective follow-up. In 277 individuals interviewed, 226 presented a diagnosis of depressive episode and 192 were assessed in the follow-up. Religiosity was evaluated using the Duke University Religion Index, comprising three dimensions of religiosity (organizational religiosity, non-organizational religiosity, intrinsic religiosity). Other potential predictors of outcomes included the Childhood Trauma Questionnaire (CTQ), Maudsley Staging of illness (MSM), Medical Outcomes Study Social Support Survey (MOS), World Health Organization Spirituality, Religiousness and Personal Beliefs instrument (WHOQOL-SRPB) and Hamilton Depression Scale (HAM-D). Results showed that almost half (46.1%) of the patients reported previous suicide attempts. Linear regression models identified that religious attendance (t-statistic -2.17, P=0.03), intrinsic religiosity (t-statistic -2.42, P=0.01) and WHOQOL-SRPB (t-statistic -3.67, P=0.00) were inversely correlated to suicide risk scores. In a prospective follow-up 16.7 % of patients (n=32/192) achieved remission of depressive symptoms (HAM-D scores ≤7). Religious attendance (OR 1.83, P=0.02) was identified as the main predictor of remission. Findings reinforce the importance of attending to religiosity/spirituality in order to improve outcomes and promote the recovery especially among severely depressed patients with increased suicide risk.

Keywords

Introduction

Depression is a chronic and recurrent disorder with serious impacts on mental health (Herrman et al., 2018). Large prospective cohort studies report that only 17% of patients achieve full recovery of depression in a 6-year follow up, with most patients presenting a chronic and disabling course, 67.8% experiencing recurrent episodes and 14.7% manifesting consistently chronic symptomatology (Verduijn et al., 2017). The likelihood of recovery markedly decreases over time in patients with severe or chronic depressive episodes (Keller et al., 1992). Furthermore, suicide represents a serious concern among those patients, with estimated 10 times higher suicide rates compared to the general population (Bachmann, 2018; Fazel & Runeson, 2020). Tertiary care depressed patients experience an even worse course of illness, with higher suicide risk, multiple psychiatric comorbidities, and higher rates of exposure to childhood trauma and neglect (Caldieraro et al., 2013; Paterniti, Sterner, Caldwell, & Bisserbe, 2017; Vares, Salum, Spanemberg, Caldieraro, & Fleck, 2015).

Religiosity and spirituality are increasingly recognized as significant aspects in the evaluation of depressed patients (Miller et al., 2012). Many people turn to religion as a coping resource to deal with depressive symptoms (Pargament & Lomax, 2013). Religious social support provided by community members also offers many patients a relevant resource in the face of suffering and distress (Gureje et al., 2015). Furthermore, evidence demonstrates that different dimensions of religiosity/spirituality (R/S) are prospectively associated with a better course of depression (Braam & Koenig, 2019). Some dimensions of religious involvement, such as intrinsic religiosity, have been associated with faster remission of depressive symptoms among elderly outpatients, lower suicide risk and better outcomes among depressed inpatients (Koenig et al., 1998; Mosqueiro et al., 2015). Religious attendance has been associated with fewer depressive symptoms and is a strong protective factor against suicide (Li et al., 2016; VanderWeele et al., 2016). Limited research, however, has investigated the impact of R/S on outcomes of more severe or chronic depressed patients (Braam & Koenig, 2019).

The majority of the world's population (84% or 6.9 billion people) reports affiliation with religious institutions (Hackett et al., 2012). Particularly in Brazil, most people (83.8%) identify religion as a very important domain of their lives (Moreira-Almeida et al., 2010). Nevertheless, it has been estimated that around three quarters of research regarding R/S and health has been performed in North America and Europe and predominantly with Christian populations (Koenig et al., 2012). A recent systematic review, for instance, identified only one prospective study evaluating the impact of R/S on depression outcomes in Latin America (Braam & Koenig, 2019). Considering that, there is a clear need for more R/S research in different cultures and religious backgrounds (Braam et al., 2010).

The present study evaluated the impact of different dimensions of R/S (religious attendance, private religious practices and intrinsic religiosity and spiritual quality of life) in tertiary care Brazilian depressed patients with respect to two main outcomes: (1) a suicide risk score measured at baseline assessment; and (2) remission rates of depressive symptoms in a 6-month prospective follow-up. The effects of R/S over remission rates were controlled for social support (Ai et al., 2013), and different clinical variables potentially implicated with clinical outcomes of depressed patients in tertiary care and treatment resistant depression, including the presence of early childhood traumatic experiences (Mandelli et al., 2015), and the staging of illness (e.g. severity of symptomatology at baseline, duration of illness, treatment failures and use of augmentation strategies)(Fekadu et al., 2018).

Materials and Methods

Participants and Treatment Setting

The present study evaluated patients with a diagnosis of depressive episode in the mood disorder outpatient clinic at Hospital de Clínicas de Porto Alegre (HCPA), a tertiary care university hospital in Brazil. The mood disorder outpatient clinic provides specialized treatment for individuals with chronic, refractory or severe depressive symptomatology referred by primary care settings and other medical specialties at HCPA. The treatment of depression follows standard international guidelines and best available evidence-based practices for management of depression, adapted to psychiatric medications available at Brazilian public health system (Fleck et al., 2009; Kennedy et al., 2016; Yatham et al., 2018). Structured clinical consultations are scheduled every 2 to 4 weeks to evaluate the response to pharmacotherapy as well as the emergence of side effects. Outcomes are routinely monitored using measurement-based care. The approach to treatment resistant depression involves a careful and comprehensive psychosocial assessment and stepwise clinical strategies, including optimizing antidepressant doses, switching of antidepressants, use of adjunctive medications (e.g. lithium, tricyclic antidepressants, bupropion, atypical antipsychotics), evidence-based psychotherapy (eg. IPT) and for more chronic resistant depression, electroconvulsive therapy or monoamine oxidase inhibitors (MAOIs). A routine assessment of patients R/S is performed by health professionals, according the Joint Commission International in accrediting patient-centered clinical care.

In 277 individuals interviewed from 2014 to 2018, 226 subjects presented a diagnosis of depressive episode and were included in the study. Written informed consent was obtained according to the approval provided by the hospital ethics committee[1]. Patients with severe clinical comorbidities or individuals with significant cognitive deficits that limited comprehension of self-report instruments and individuals with acute manic or hypomanic episodes were not included in the study.

From the baseline sample, 157 patients were prospectively evaluated in a 6-month scheduled follow-up. Of the 69 patients who missed the scheduled interview, HAM-D scores for 34 patients were retrieved from hospital records in their last observation. The total sample considered for statistical analysis in the follow-up comprised 192 patients (flowchart of patients inclusion adapted from PRISMA guidelines, Figure 1).

Assessments

Depressive Symptoms and Suicide Risk

The diagnosis of depressive episode and psychiatric comorbidities was performed using the Brazilian Portuguese version of Mini International Neuropsychiatric Interview (MINI-Plus) (Amorim, 2000). Depressive symptoms were assessed at baseline and follow-up by the Brazilian Portuguese validated version of 17-item Hamilton Depression Rating Scale (HAM-D) (Hamilton, 1967). The HAM-D scores at follow-up were used to define depressive symptom remission (HAM-D ≤7). Suicide risk scores were retrieved from MINI-Plus (C1-C6 items). A continuous score of suicide risk was defined by the sum of the six items ranging from 0 to 33 points, with greater scores reflecting higher suicide risk (Amorim, 2000). The Maudsley staging method (MSM) was used to evaluate the severity of depression course and treatment resistant-depression (Fekadu et al., 2018). The instrument comprises 5 questions quantifying the duration and severity of current depressive episode, number of previous treatment failures, use of augmentation strategies and electroconvulsive therapy. Higher MSM scores predict a more severe course of illness and worse treatment outcomes.

Childhood Traumatic Experiences

The Childhood Trauma Questionnaire (CTQ) Brazilian validated version was used for assessment of childhood abuse and neglect experiences (Grassi-Oliveira et al., 2014). The instrument is composed by 28 Likert-scale questions. The results of multilinear regression models analysis were classified into two broad categories with continuous scores of childhood abuse experiences (encompassing emotional, physical and sexual abuse) and childhood neglect experiences (emotional and physical neglect). Early childhood traumatic experiences of abuse and neglect have been significantly associated with depression in literature and therefore were included as significant potentially predictors of outcomes in our study (Mandelli et al., 2015).

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Socio-Demographics and Religious Denomination

A general questionnaire with demographic and clinical variables was developed for the study to evaluate the general characteristics of the sample, including age, sex, marital status, employment, family history of suicide and main religious denominations (Roman Catholic, Protestant, Spiritism, Afro-Brazilian Religions, Buddhism, Islamism, Judaism, and other religious denominations). For those not religiously affiliated the options "spiritual but not religious", "atheist" or "agnostic" were available.

Religiosity

Religiosity was assessed using the Brazilian-Portuguese validated version of Duke University Religion Index (DUREL) (Taunay et al., 2012). The instrument consists of 5 Likert-scale questions, comprising three dimensions of religiosity. The first question evaluates the frequency of religious attendance (organizational religiosity), the second the frequency of private religious practices (such as prayer, meditation or religious reading -non-organizational religiosity) and the last three questions cover intrinsic religiosity (the degree of personal religious faith and commitment to religious beliefs in life).

Spiritual Quality of Life

The 8-item version of World Health Organization Quality of Life Spirituality, Religiousness and Personal Beliefs instrument (WHOQOL-SRPB), validated in Brazilian Portuguese, was used to evaluate characteristics related to spirituality and quality of life (Zimpel, Panzini, Bandeira, Fleck, & da Rocha, 2019). The instrument is composed of 8 domains that provide a an overall score, including measures of connection (*extent that any connection to a spiritual being helps through hard times*), meaning (*extent that life has a purpose*), awe (*experiences of awe from surroundings such as art, nature, music*), wholeness & integration (*balance between mind, body and soul*), spiritual strength (*extent that spiritual strength helps one to live better*), peace (*extent of inner peace*), hope (*extent that an individual is hopeful about life*) and faith (*extent that faith gives comfort in daily life*).

Social Support

Social support was assessed with the Brazilian validated version of the Medical Outcomes Study Social Support Survey (MOS), a 28-item Likert scale, with scores ranging from 5 to 140 points (Griep, Chor, Faerstein, Werneck, & Lopes, 2005). Higher scores indicate a greater perception of social support. The instrument evaluates an individual's perceived availability of different functional aspects of support, including emotional support (availability of people expressing positive affect, empathetic understanding, encouragement), informational support (availability of people offering advice, information, guidance or feedback), material support (people available to provide material or behavioral assistance), positive social interaction (availability of people to fun or recreation), and affectionate support (availability of people who express care and affection).

Statistical Analysis

Descriptive analysis provided an overview of sample clinical and socio-demographic characteristics. Data are presented as means ± standard deviations or percentages unless specified otherwise.

Multilinear regression models were used to test for the effects of different R/S domains on suicide risk continuous scores at baseline. Considering the high colinearity between R/S dimensions, each dimension was individually tested as an independent predictor for the multilinear regression models. The R/S domains included in analysis were (1) religious attendance (DUREL), (2) private religious practices (DUREL), (3) intrinsic religiosity (DUREL) and (4) WHOQOL-SRPB (total score). Other independent variables included in the multilinear regression models, selected according to literature as relevant predictors of suicide risk in tertiary care depressed patients, were socio-demographic factors (age, sex), early developmental factors (CTQ continuous scores of childhood trauma and neglect) and variables related to the present episode and condition (HAM-D severity of depressive symptoms at baseline and social support).

Additional alternative statistical analyses are presented as supplementary material, including the Pearson correlation and regression models investigating the role of R/S over different suicide risk measures (suicide risk global score, previous suicide attempts and HAM-D item 3 suicide risk at follow-up). An alternative two-factor structure setting apart a WHOQOL-SRPB spiritual domain (connection + spiritual strength+ faith) and WHOQOL_SRPB positive mental health domain (awe + whole + peace + hope + meaning) evaluated the effects of WHOQOL-SRPB over suicide risk scores in a multilinear regression model (supplementary material) (Krägeloh et al., 2015).

In a second step, a logistic regression model evaluated the impact of religiosity dimensions (DUREL) and WHOQOL-SRPB (total score) on the odds of remission of depressive symptoms in a 6 month-follow up. Relevant variables related to R/S and potentially confounders of depressive symptoms were included in the model, including social support (MOS), childhood trauma (CTQ) and neglect (CTQ) and Maudsley staging of illness (MSM). Diverse dimensions of MSM were included in the model to understand their impact on the odds of remission of depressive symptoms (e.g. duration of illness, severity, treatment failure and use of augmentation strategies). The limited number of patients who underwent ECT limited the inclusion of the last MSM dimension in the model. Alternative statistical analysis included in supplementary material include a logistic regression model controlling the effects of R/S for the severity of depressive symptoms at baseline and a multilinear regression model including HAM-D continuous scores at follow-up as the dependent variable. For all analyses, statistically significant results were defined as a P<0.05.

Results

Depressive Symptoms, Childhood Traumatic Experiences and Baseline Characteristics

Study participants were mainly women (78.2%), white (84.9%), middle-aged (mean 51.0±11.2 years), with most unable to attend work (35.1%) or unemployed (23.1%). Most participants reported mean moderate to severe depressive symptoms at baseline (mean HAM-D = 21.5±5.54), with a long trajectory of lifetime depressive symptoms (mean 18.1±13.8 years since the first episode), and multiple depressive episodes (3.52±2.79). Diverse psychiatric features and comorbidities were identified by the psychiatric interview (MINI) along with a diagnosis of depressive episode, the most common being melancholic characteristics (55.3%), generalized anxiety disorder (45.7%), previous psychosis (37.8%) and social phobia (20.5%) (Table 1). The Maudsley staging instrument (MSM) revealed mean moderate to severe scores, indicating a poor course and potential treatment-resistant depression (mean MSM 8.6, SD 1.7).

Adding to that, almost half (46.1%) of the patients reported previous suicide attempts and a quarter a family history of suicide (24.1%). The reported prevalence of moderate to severe experiences of childhood trauma according to the different categories assessed by the CTQ were: neglect: 9.3%, physical abuse: 9.7%, sexual abuse: 9.8%, and emotional abuse: 16.4%.

Religious and Spiritual Profile

The religious profile of the sample revealed that the most common religious denominations were Roman Catholic (42.2%), Protestant (20.6), Spiritism (14.3%) and Afro-Brazilian Religions (3.1%). Buddhism (n=1) and Judaism (n=2) were reported by 1.3% of patients. Among the religiously non-affiliated, 13.5% of patients identified themselves as "spiritual but not religious" and 2.2 % as atheist or agnostic (table 2). Around 33% of the sample reported attendance at religious meetings at least once a week, 29.6% a few times a month, and only 9.7% of patients never attended religious meetings. Furthermore, 54% of patients reported private religious practices (e.g. prayer, meditation, religious reading) at least a few times a month, 26.6% with daily practices. Higher intrinsic religious scores were reported by 66.8% of patients (table 2).

The WHOQOL-SRPB scores showed that a connection to a spiritual being was a source of help during hard times for most patients (71.8%), and for 52.6% of them to a very or extremely significant extent. Faith represented a source of comfort in daily life for 74.4% of patients and spiritual strength helped 66.7% to live better. A half of the patients reported that they were able to experience feelings of awe and well being with art, nature or music. Fewer patients reported perceptions of peace (30.1%), hope (37%) and satisfaction with a balance of mind, body and soul (11.6%) (Table 2).

Predictors of Suicide Risk

Linear regression models evaluated the effect of R/S dimensions and social support on suicide risk scores at baseline. Results indicated that religious attendance (t-statistic -2.172, P=0.03), intrinsic religiosity (t-statistic -2.421, P=0.01) and WHOQOL-SRPB total score (t-statistic -3.670, P=0.00) were statistically significantly inversely correlated to suicide risk (Table 3). Depressive symptoms at baseline were directly correlated to suicide risk in all regression models. Age, sex, private religious practices, and social support otherwise did not present statistically significant associations

with suicide risk in multilinear regression models (Table 3). The effects of WHOQOL-SRPB over suicide risk scores remained statistically significant using a two-factor structure of WHOQOL-SRPB for a spiritual domain (beta -0.198, p=0.02) and positive mental health domain (beta -0.309, p=0.00) (supplementary material).

A spiritual but not religious designation was positively correlated with suicide risk scores at baseline (r=0.12, p=0.05) and atheism (r=0.18, p=0.04) was positively correlated with suicide risk at 6-month follow-up (supplementary material). Religious attendance (r=-0.12, p=0.05), private religious practices (r=-0.15, p=0.02) and WHOQOL-SRPB scores were inversely correlated with suicide risk scores at baseline (r=-0.34, p=0.00). WHOQOL-SRPB scores were additionally inversely correlated with previous suicide attempts (r=-0.16, p=0.04) and suicide risk evaluated by HAM-D item 3 at 6-month follow-up (r=-0.40, p=0.00). The effects of WHOQOL-SRPB scores over suicide risk at follow-up remained statistically significant controlling for age, sex, childhood traumatic experiences and depressive symptoms at baseline (beta -0.356, p=0.00) (supplementary material).

Response and Remission

In a prospective follow up, 25.2% of patients (n=57/192) responded to treatments (improvements in depressive symptoms ≥ 50% in HAM-D scores) and 16.7 % of patients (n=32/192) achieved remission of depressive symptoms (HAM-D scores ≤7). The mean time of observation of the patients who missed the scheduled follow-up interview (n=39) was 2.6 months (SD 1.6). For those patients, HAM-D scores were retrieved from hospital records in their last observation carried forward in previous consultations. The mean HAM-D scores for those patients were quite similar to that of those patients who attended the 6-month interview (15.2 vs. 15.0, respectively, view Table 1).

Predictors of Remission

Table 3 describes the predictors of remission of depressive symptoms in the prospective follow-up. Religious attendance (DUREL) was the main predictor of remission of depressive symptoms (OR 1.82, P=0.02). Social support (MOS), then, was also identified as a significant predictor of remission (OR 1.03, P=0.02). Other socio-demographic and clinical variables were not significant predictors of remission of depressive symptoms, including age, sex, childhood experiences of trauma and neglect (CTQ), staging of illness domains (MSM) and other R/S dimensions (private practices, intrinsic religiosity and WHOQOL-SRPB) (Table 3, figure 2).

A multilinear regression model showed no association between R/S variables or social support using HAM-D continuous scores at follow-up (supplementary material). An alternative logistic regression model confirmed a statistically significant role of religious attendance (OR 2.34, p=0.00) and social support (OR 1.08, p=0.00) to predict the odds of remission at follow-up, controlling for the HAM-D severity of depressive symptoms at baseline (OR 0.72, p=0.00) (supplementary material).

Discussion

This study found that different R/S dimensions were correlated with relevant outcomes among tertiary care Brazilian depressed patients. Religious attendance, intrinsic religiosity and WHOQOL-SRPB scores were inversely correlated with suicide risk scores at baseline. Furthermore, religious attendance was identified as the main predictor of remission in a 6-month follow-up of depressed individuals.

The patterns of R/S beliefs and affiliation among severe Brazilian depressed patients are of potentially great interest. The religious profile of this sample revealed that 84.3 % of the patients were religious affiliated, most of them Catholics (42.2%), Protestants (20.6%) and Spiritists (14.3%). Around 33% of the sample reported attendance at religious meetings at least once a week and the majority (80.6%) reported frequent private religious practices (e.g. prayer, meditation, religious reading). Most patients revealed that spiritual beliefs, faith and spiritual strength are significant sources of help in their lives. A Brazilian nationally representative survey, for instance, including 3,007 subjects confirmed our findings of the high levels of religious involvement in Brazil with 83% of interviewed adults considering religion very important (compared to 57% of people considering religion "very important" in United States, for instance) and 37.2% of adults attending religious meetings at least once a week (Moreira-Almeida et al., 2010). The religious affiliation of our sample is slightly different from the general Brazilian population, which presents a higher percentage of Roman Catholics (65%), a quite similar number of Protestants (22.%) but only 2.0% of Spiritists (Brazilian Institute of Geography and Statistics, 2010). Notably, the study reported a significant number of people

identifying themselves as "spiritual but not religious". One reason that might explain the significant number of religious non-affiliated would be difficulties of depressed individuals in participating in conventional religious worship and attending religious meetings. Traditionally in Brazil, the search for alternative faith traditions (e.g. Spiritism) might reflect a search for different spiritual practices in order to find support, meaning and improvement of depressive symptoms (Lucchetti et al., 2016). Our study did not investigated R/S struggles or conflicts, another condition consistently associated with depressive symptoms in the literature, and perhaps another reason for religious disaffiliation or search for alternative sources of spiritual beliefs (Braam & Koenig, 2019; Rosmarin et al., 2013). Indeed, Brazil is often described as a multi-religious country with different patterns of R/S beliefs and participation in religious organizations (Maraldi et al., 2020). In a Brazilian survey 10.4% of adults reported attending to more than one religion (religious syncretism), and many more people hold spiritual beliefs outside the traditional boundaries of their religious affiliation (Moreira-Almeida et al., 2010; Vitorino et al., 2018). Furthermore around one third of Brazilian religious believers switched their religions over time (Maraldi et al., 2020)

The correlation of R/S dimensions with suicide risk is particularly relevant in a tertiary care depressed patient sample with elevated suicide risk. WHOQOL-SRPB scores were additionally inversely correlated to suicide risk scores at follow-up. Those findings are consistent with other evidence supporting the role of R/S generally as protective factor to suicide (Fazel & Runeson, 2020). A study of Brazilian psychiatric patients with bipolar disorder found non-organized religious practices and intrinsic religiosity to be inversely associated with suicidal behavior (Caribe et al., 2015). A systematic review of 89 studies also reported that religious affiliation and religious service attendance were significant protective factors of suicide attempts across different countries worldwide (Lawrence, Oquendo, & Stanley, 2016). A recent large prospective cohort study of US women (n=89,708) found that frequent religious attendance reduced by 5 times the odds of completed suicide (VanderWeele et al., 2016).

R/S dimensions or social support were not directly correlated to continuous scores of depressive symptoms at 6-month follow-up. Despite that, among those who achieved remission, religious attendance increased by 82% the odds of remission in the follow-up. It is of interest that the impact of religious attendance on remission of depressive symptoms in our study persisted after controlling for the potentially confounding effects of social support and stage of depression. Other empirical work has established that religiosity is mainly a protective factor against incident depression (Miller et al., 2012) and for recovery from depressive episodes (Koenig et al., 1998). Religious attendance, specifically, has been demonstrated to be a predictor of better outcomes among depressed patients (Braam & Koenig, 2019). A large prospective cohort study of 48,984 women in United States found that women with higher religious service attendance had the lowest risk for development of depression (OR 0.71) compared to those women who never attended religious groups (Li et al., 2016). The protective effects of religious attendance on depressive symptoms might be explained by multiple factors, including the use of religious-based coping strategies, a worship-based sense of meaning, coherence and belonging, religiously motivated positive mental attitudes (e.g. forgiveness, gratitude, hope, optimism) and encouragement of healthy behaviors (e.g. volunteering, lower alcohol consumption or smoking) (Krause et al., 2016; Moreira-Almeida et al., 2006; VanderWeele et al., 2017).

Social support was also independently a significant predictor of remission of depressive symptoms in our study. Extent recent literature in that regard reinforces the relevance of perceived social support to recovery among depressed patients (Leskela et al., 2006). For instance, loneliness has been associated with more severe depressive symptoms and lower remission in 2-year prospective follow-up of patients with late-life depression (Holvast et al., 2015). Similarly, a recent study of 1474 depressed patients in the Netherlands reported that different aspects of social support (e.g. living a large household, negative social relationships and loneliness) were related to the course of depression (Van den Brink et al., 2018). Adding to that, improving interpersonal relationships and social support represent a key element of interpersonal psychotherapy interventions for depression (Souza et al., 2016).

The present study showed that 16% of patients achieved remission of depressive symptoms in a 6-month follow-up. Different prospective studies in clinical outpatient settings report remission rates of depression that vary from 50% in 6-months (Keller, 1992) to 3.6% in a year for patients with treatment-resistant depression (Dunner et al., 2006). Despite that, chronic depressed patients often need more time to achieve recovery. The likelihood of remission decreases with multiple episodes in what has been called treatment-resistant depression (Richards, 2011). According to the STAR-D study, remission of depressive symptoms with pharmacological treatments is more likely to occur during the first trials (around 20-30%) and significantly decreases with multiple attempts (10-20%) (Gaynes et al., 2009). In agreement with our findings, a recent prospective study reports a less successful long-term course of depressed patients, with only 41% to 32% of remission rates at 4 and 6 years of follow-up, and up to 34% of patients experiencing chronic episodes lasting more than 2 years (Verduijn et al., 2017).

Notably, other potentially relevant variables were not predictors of outcomes in the present sample, including childhood traumatic experiences and course of illness staging. These findings might suggest that in a middle age sample of persistently depressed patients, variables related to the current episode (e.g. spirituality, religious involvement and social support) play a more significant role in achieving improvement of depressive symptoms compared to trajectory of illness or lifetime variables (childhood traumatic experiences and depressive staging). Nevertheless, a few caveats should be considered. First, the whole sample reported lower mean scores of childhood trauma and neglect. Second, the retrospective evaluation of childhood experiences in a single evaluation among middle age patients could be subject to bias due to underreporting such traumatic experiences (Brietzke et al., 2012). Marked social vulnerabilities of this specific Brazilian sample would partially explain the predominant effect of psychosocial variables over clinical ones in depression outcomes (Bosworth et al., 2003). Otherwise, our findings accord with life-course models for suicide risk, suggesting that different risk factors come into play in different stages of life (Fazel & Runeson, 2020). Based on this model, for middle-age patients recent life experiences (R/S resources and social support) and characteristics related to the present episode (depression severity) would have more impact as compared with past childhood experiences.

The fact that religious attendance and intrinsic religiosity, but not private religious practices correlated with improvement raises the question whether engaging in such practices alone or without strong personal conviction is clinically meaningful (Koenig et al., 2020). This is of interest in light of the widespread recommendation of spiritual practices such as mindfulness, and suggests a need for further qualitative (as well as quantitative) research into the role of R/S in recovery from depression. This study was subject to some limitations. First, patients were followed using a naturalistic design without controlling for the treatment received. Second, prospective studies of naturalistic samples suffer from missing data, though in our study this did not seem to influence results. Nevertheless, the present findings in a population of patients with major psychiatric and social vulnerabilities, including high suicide risk and treatment resistance are quite meaningful in reinforcing previous findings reporting the benefits of R/S and social support for recovery from depression, particularly in a country demonstrating special interest in R/S (Moreira-Almeida et al., 2010).

Conclusions

Different religious dimensions inversely correlated with suicide risk at baseline evaluation in a population of tertiary care, severely depressed Brazilian patients. Furthermore, religious attendance and social support were found to be the main predictors of remission in a 6-month follow-up. These findings reinforce the importance of attending to religiosity/spirituality in order to improve outcomes and to promote the recovery of severely depressed patients.
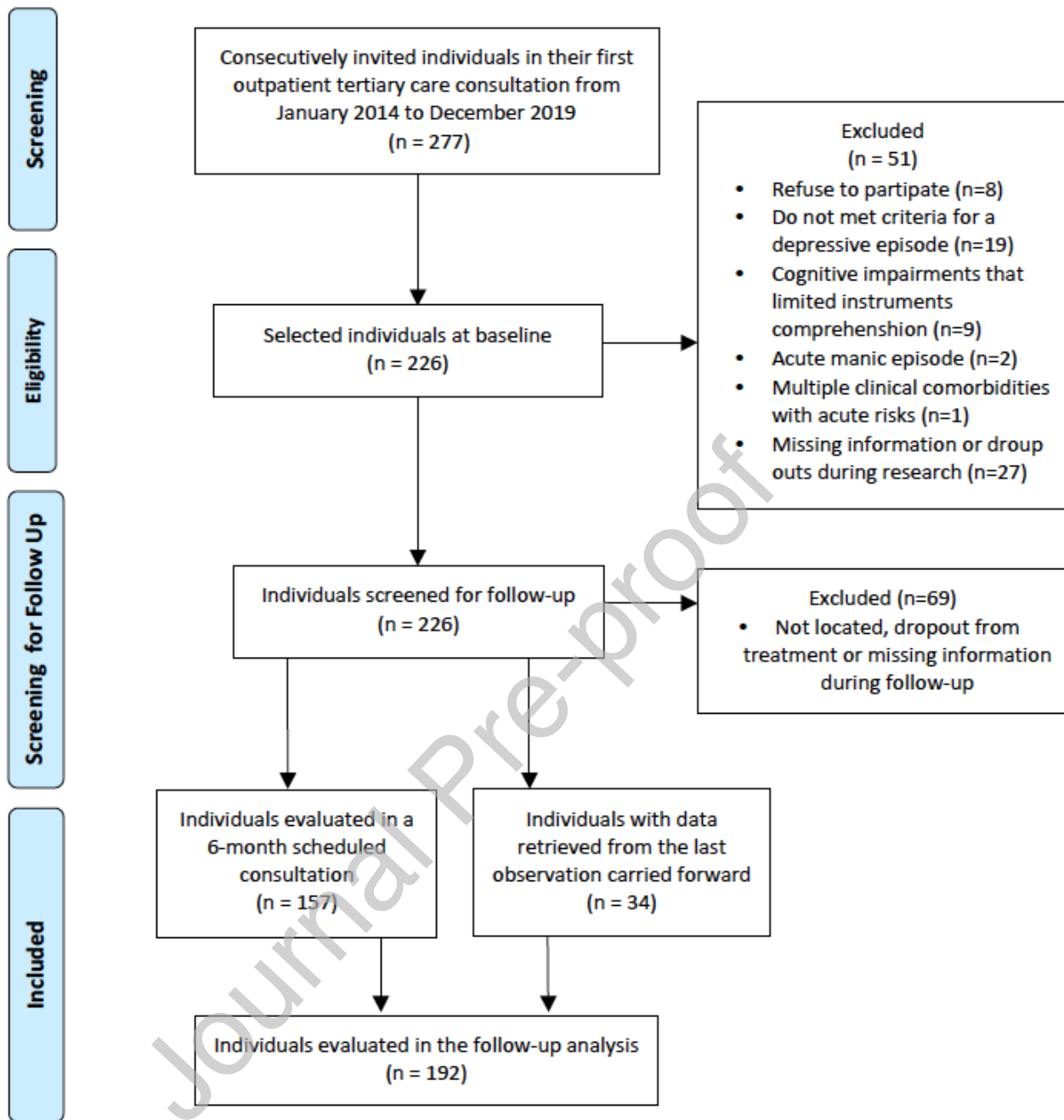
Figure 1.

Figure 1. Flowchart of depressed patient's inclusion and follow-up adapted from PRISMA guidelines.

Table 1.

Table 1. Socio-Demographic and Clinical Variables of Depressed Patients (n=226)

	Freq.	Perc. (%)
Female	176	78.2
White	191	84.9
Non-White	34	15.1
Single	24	10.7
Married	119	52.9
Divorced	56	24.9
Widowed	26	11.6
Employed	40	17.8
Unemployed	52	23.1
Stay at home	25	11.1
Student	3	1.3
Retired	15	11.6
Health insurance	79	35.1
Familiar History of Suicide	56	24.7
Previous Suicide Attempt	104	46.0
Psychiatric Comorbidities		
Melancholic Features	125	55.3
Previous Hypomania	17	7.6
Previous Mania	20	8.9
Current Psychosis	45	20.0
Previous Psychosis	85	37.8
Panic Disorder	30	13.7
Social Phobia	45	20.5
OCD	33	15.1
PTSD	15	6.8
GAD	100	45.7

	Mean	(SD)
Age	51.0	11.2
Education (years study)	8.32	3.97
Age of Onset Depression	33.0	14.9
Number of Depressive Episodes	3.52	2.79
Years Since the First Episode	18.1	13.8
Maudsley (MSM global score)	8.6	1.7
Childhood Physical Abuse (CTQ)	3.8	4.4
Childhood Emotional Abuse (CTQ)	6.7	5.5
Childhood Sexual Abuse (CTQ)	2.0	4.2
Childhood Emotional Neglect (CTQ)	8.6	4.4
Childhood Physical Neglect (CTQ)	4.1	4.1
Social Support (MOS)	64.8	18.3
Depressive symptoms (HAM-D)	21.5	5.54
Depressive symptoms 6-month follow-up (HAM-D)	15.0	7.1
Depressive symptoms last observation carried forward (HAM-D)	15.2	7.2
Religious Attendance (DUREL)	3.2	1.5
Private Religious Practices (DUREL)	3.9	1.7
Intrinsic Religiosity (DUREL)	10.7	3.6
WHOQOL-SRPB (total score)	10.6	2.9

Table 2

	Freq.	Perc. (%)
Religious Denomination		
Catholic	94	42.2
Protestant	46	20.6
Spiritism	32	14.3
Afro-Brazilian Religions	7	3.1
Buddhism	1	0.4
Judaism	2	0.9
Spiritual But Not Religious	30	13.5
Agnosticism	2	0.9
Atheism	3	1.3
Religious Attendance (DUREL)		
More than once a week	36	15.9
Once a week	39	17.3
A few times a month	67	29.6
A few times a year	31	13.7
Once a year or less	31	13.7
Never	22	9.7
Private Religious Practices (DUREL)		
More than once a day	44	19.5
Daily	16	7.1
Two or more times a week	8	3.5
Once a week	32	14.2
A few times a month	82	36.3
Rarely or never	44	19.5
Intrinsic Religiosity (DUREL)		
Low IR (<10)	75	33.2
High IR (>10)	151	66.8
WHOQOL-SRPB		
Connect To what extent any connection to a spiritual being help you get through hard times?	**Freq.**	**Perc. (%)**
Not at all	27	17.3
A little	17	10.9
A moderate amount	30	19.2
Very much	61	39.1
An extreme amount	21	13.5
Meaning To what extent do you feel your life has a purpose?		
Not at all	34	21.8
A little	47	30.1
A moderate amount	40	25.6
Very much	30	19.2
An extreme amount	5	3.2
Faith To what extent does faith give you comfort in daily life?		
Not at all	23	14.7
A little	17	10.9
A moderate amount	39	25.0
Very much	53	34.0
An extreme amount	24	15.4
Hope To what extent are you hopeful about your life?		
Not at all	43	27.9

Slightly	54	35.1
Moderately	39	25.3
Very	14	9.1
Extremely	4	2.6

Awe To what extent are you able to experience awe from your surroundings (e.g. art, nature, music)?

Not at all	21	13.5
A little	57	36.5
Moderately	41	26.3
Mostly	31	19.9
Completely	6	3.8

Strength How much does spiritual strength help you to live better?

Not at all	26	16.7
A little	26	16.7
Moderately	42	26.9
Mostly	48	30.8
Completely	14	9.0

Peace To what extent do you have inner peace?

Not at all	28	17.9
A little	81	51.9
Moderately	39	25.0
Mostly	5	3.2
Completely	3	1.9

Whole How satisfied are you that you have a balance between mind, body and soul?

Very dissatisfied	46	29.7
Dissatisfied	46	29.7
Neither satisfied nor dissatisfied	45	29.0
Satisfied	14	9.0
Very satisfied	4	2.6

Table 3

Table 3. Multilinear Regression Models of Religiosity Dimensions and Suicide Risk among Depressed Patients (N=135)

Predictors	Suicide Risk Global Score (MINI)			
				Adjusted R-Square
Model 1	**Beta**	**t**	**Sig.**	(0.18, P=0.00)
Age	-0.147	-1.83	0.06	
Female	-0.083	-1.05	0.29	
Childhood Trauma (CTQ)	0.151	1.28	0.20	
Childhood Neglect (CTQ)	-0.058	-0.48	0.62	
Social Support (MOS)	0.007	0.08	0.93	
Depressive symptoms (HAM-D)	0.393	4.96	**0.00**	
Religious Attendance (DUREL)	-0.173	-2.17	**0.03**	
				Adjusted R-Square
Model 2	**Beta**	**t**	**Sig.**	(0.18, P=0.00)
Age	-0.128	-1.52	0.13	
Female	-0.076	-0.95	0.34	
Childhood Trauma (CTQ)	-0.134	1.13	0.25	
Childhood Neglect (CTQ)	-0.054	0.02	0.65	
Social Support (MOS)	0.023	0.27	0.78	
Depressive symptoms (HAM-D)	0.393	4.91	**0.00**	
Private Practices (DUREL)	-0.142	-1.65	0.10	
				Adjusted R-Square
Model 3	**Beta**	**t**	**Sig.**	(0.20, P=0.00)
Age	-0.117	-1.41	0.15	
Female	-0.043	-0.54	0.59	
Childhood Trauma (CTQ)	0.148	1.26	0.20	
Childhood Neglect (CTQ)	-0.053	-0.45	0.65	
Social Support (MOS)	0.024	0.29	0.77	
Depressive symptoms (HAM-D)	0.388	4.93	**0.00**	
Intrinsic Religiosity (DUREL)	-0.202	-2.42	**0.01**	
				Adjusted R-Square
Model 4	**Beta**	**t**	**Sig.**	(0.24, P=0.000)
Age	-0.102	-1.23	0.21	
Female	-0.048	-0.61	0.53	
Childhood Trauma (CTQ)	0.085	0.74	0.45	
Childhood Neglect (CTQ)	-0.001	-0.00	0.53	
Social Support (MOS)	0.084	1.00	0.99	
Depressive symptoms (HAM-D)	0.345	4.44	**0.00**	
WHOQOL SRPB (total score)	-0.309	-3.67	**0.00**	

Table 4

Table 4. Multivariate Logistic Regression Odds for Remission of Depressive Symptoms* among Depressed Outpatients (n=111)

Predictors	Odds for remission			
	OR	**95% C.I.**	**Wald**	**Sig.**
Age	0.99	(0.93-1.05)	0.012	0.84
Female	0.35	(0.08-1.40)	2.180	0.05
Childhood abuse (CTQ)	0.99	(0.90-1.08)	0.039	0.66
Childhood neglect (CTQ)	1.01	(0.88-1.17)	0.052	0.75
Maudsley 1 (duration)	1.81	(0.54-6.07)	0.942	0.32
Maudsley 2 (severity)	0.59	(0.25-1.38)	1.468	0.21
Maudsley 3 (treatment failures)	0.60	(0.21-1.73)	0.870	0.38
Maudsley 4 (augmentation)	0.76	(0.16-3.65)	0.110	0.92
Social Support (MOS)	1.05	(1.00-1.09)	5.170	**0.02**
Religious Attendance (DUREL)	1.82	(1.08-3.07)	5.105	**0.02**
Private Practices (DUREL)	0.84	(0.50-1.42)	0.405	0.35
Intrinsic Religiosity (DUREL)	0.93	(0.68-1.27)	0.195	0.77
WHOQOL-SRPB	0.98	(0.72-1.34)	0.008	0.95

*Remission of depressive symptoms= HAM-D scores <7 within a 6 month follow-up (categorized into remission=1, no remission=0). Nagelkerke R Square 0.36, n=111, P=0.000. Significant variables in equation are underlined in bold for a P<0.05.

Conflict of interest

The authors have no conflicts of interest to report.

Authors Contributions Form
Study conception and design: BPM, MM, FB, MC, MF

Acquisition of data: BPM, MM, FB

Analysis and interpretation of data: BPM, MM, FB, MC, JP, MF

Drafting of manuscript: BPM, MM, FB, MC, JP, MF

Critical revision: BPM, MM, FB, MC, JP, MF

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