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Mechanisms Behind Religiosity and Spirituality's Effect on Mental Health, Quality of Life and Well-Being

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Abstract This cross-sectional study aims to evaluate the role of meaning, peace, faith and religiosity on mental health, quality of life (QOL) and well-being in 782 adults. We found associations between (a) meaning and peace with less depression and more QOL, (b) peace with less stress and (c) faith and religiousness with more psychological QOL. Meaning and peace were more strongly associated with health outcomes, and those with high levels of intrinsic religiosity but low levels of meaning/peace have worse outcomes than those with low religiousness and high meaning/peace. However, religious participants found great meaning and peace than nonreligious participants.

Keywords Religion and medicine · Spirituality · Optimism · Meaning · Mental health · Quality of life

Introduction

Evidence on a positive effect of spirituality and religiousness in health has been constantly growing (Lucchetti and Lucchetti 2014). A recent bibliometric analysis found that approximately 30 thousand articles were published in the last 15 years in this field of research (Lucchetti and Lucchetti 2014). Religious and spiritual beliefs were associated with better mental health, physical health, survival, well-being measures and quality of life (Moreira-Almeida et al. 2014), but mechanisms for these associations were not fully explored.

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Professional organizations, such as the American College of Physicians, American Medical Association, World Psychiatric Association and American Psychiatric Association, recognize that spiritual care is an important component of health care and that healthcare professionals should integrate it into clinical practice (Moreira-Almeida et al. 2014). Nevertheless, a significant gap between the need for integrating spirituality in clinical practice and feasible tools and protocols for its implementation still exist, which is mostly because religious/spiritual beliefs and practices are heterogeneous among different populations and cultures, and due to the lack of understanding of the mechanisms behind its protective nature. Therefore, interventions could be designed in a broader perspective, not necessarily related to a religion or specific culture.

Koenig (2012) proposed that religious beliefs may provide coping with stress, give social support, encourage human virtues and increase positive emotions such as meaning, purpose in life and peace.

Studies have investigated the role of meaning and peace in mental and physical health (Jafari et al. 2014; Whitford and Olver 2012). Whitford and Olver (2012) evaluated approximately 1000 cancer patients and found peace and meaning were highly correlated with quality of life. Jafari et al. (2014) studied 203 patients with diabetes type 2, in whom meaning and peace were associated with quality of life and depression and peace was associated with lower levels of HbA1C. Interestingly, both studies found these measures were more associated with health outcomes than faith.

We therefore proposed this study in order to better define what spirituality and religiosity aspects are related to quality of life, well-being and mental health in a general population.

Methods

This was a cross-sectional study carried out from August to October 2014 in a sample of the Brazilian population recruited by Qualtrics® panels.

This procedure has been used in previous studies (Huang et al. 2014; Huston 2013), and it consists of individuals who indicated willingness to take online surveys and who had provided basic information (e.g., age, gender, marital status, income) to Qualtrics® (Huang et al. 2014).

Aiming to obtain a more representative Brazilian population, we used "Survey Sampling International (SSI)" online sample, which was managed to allow the selection of samples to reflect the target population. The sample was selected from a universe including SSI's proprietary panels, as well as from partnerships with other panels and communities. Proprietary panel contact method included email invitation. Other respondents were directed to SSI via trusted partnerships. Once within the SSI's system, respondents were matched with an available survey using multiple points of randomization. Security checks and quality verifications were used on all sources before the respondent had begun the survey. At present, at least half of Brazil's population has access to the Internet. However, as in most countries, the older group is less represented online than in the general population (Medeiros et al. 2012).

Participants were included if they have online access to the Internet (email, social medias or visit online sites) and were excluded if their email was not valid anymore, if they did not answered or incompletely answered the questionnaire or if they did not accept the online consent term.

In order to further validate these data, we carried out two procedures. First, we conducted a pilot door-to-door study with 201 persons in the city of São Paulo (Brazil) in order to test the appropriateness of the questionnaire and to compare sociodemographics for both populations (door-to-door and online). We found no differences between groups in education ($p = 0.793$), income ($p = 0.078$), BMI ($p = 0.662$) and gender ($p = 0.313$), but a difference in age (39.78 years—door-to-door versus 34.53 years—online $p < 0.001$). Second, we compared those who did and did not answer the complete online questionnaire, finding same age ($p = 0.388$) and BMI (0.419), but different education (higher in the respondent group, $p < 0.001$), income (higher in the respondent group, $p < 0.001$) and gender (more females in the nonrespondent group, $p = 0.006$).

Instruments

The questionnaire took in average 35 min to be filled out and covered the following aspects:

- *Sociodemographics* Gender, age, family income, body mass index (self-reported weight and height), marital status and education.
- *Religiousness* Using the Duke Religion Index (Koenig et al. 1997) validated into Portuguese (Lucchetti et al. 2012). This is a 5-item measure of religious involvement, which yields three subscales: (1) Organizational religious behavior (public religious activities) (1 item), (2) Nonorganizational religious behavior (religious activities performed in private, such as prayer) (1 item) and (3) Intrinsic religious motivation (pursuing religion as an ultimate end in itself).
- *Faith, peace and meaning* Through the FACIT-Sp 12 (Peterman et al. 2002) validated into Portuguese (Lucchetti et al. 2015). It consists of 12 items and three sub-domains of "spiritual well-being": peace (considered an affective side of spirituality), meaning (considered a cognitive aspect of spirituality) and faith (related to the beliefs). Participants were instructed to indicate how true an item had been for them during the past 7 days, using a 5-item response format ranging from not at all (0) to very much (4). Some examples of statements include: "I feel peaceful" (Peace), "I have a reason to Live" (Meaning) and "I find comfort in my faith or spiritual beliefs" (Faith).
- *Optimism* Using the Life Orientation Test-Revised (Scheier et al. 1994), validated into Portuguese (Bandeira et al. 2002). This is a 10-item (5-point likert) questionnaire consisting of three items for optimism, three for pessimism and four filler items. The total sum score was calculated by adding the raw scores of the optimism subscale with the inverted pessimism raw scores (Zenger et al. 2013).
- *Life satisfaction* Using the "Satisfaction with Life Scale" (Diener et al. 1985) validated into Portuguese (Gouveia et al. 2009). This is a 5-item (7-point likert) scale, aiming to measure the concept of life satisfaction through individuals' global judgment of their lives.
- *Happiness* Using the "Subjective Happiness Scale" (Lyubomirsky and Lepper 1999) validated into Portuguese (Rodrigues et al. 2010). This is a 4-item (7-point likert) scale, measuring the subjective happiness.
- *Quality of life* Through the "WHOQOL-Bref" (WHOQOL-Group 1998) validated into Portuguese (Berlim et al. 2005). This is a 26-item (5-point likert) instrument that covers four domains of QOL (psychological, physical, social relationships and environmental).

- *Perceived stress* Through the "Perceived Stress Scale" (Cohen et al. 1983) validated into Portuguese (Reis et al. 2010). This is a 10-item (5-point likert) scale designed to deal with the degree to which situations in an individual's life are appraised as stressful (Reis et al. 2010).
- *Depression* Using the "Patient Health Questionnaire-9" (PHQ-9) (Kroenke et al. 2001) validated into Portuguese (Santos et al. 2013). This is a 9-item instrument investigating depression with all DSM-IV criteria as "0" (not at all) to "3" (nearly every day).
- *Anxiety* Using the "General Anxiety Disorder (GAD-7)" (Spitzer et al. 2006) validated into Portuguese (Bergerot et al. 2014). This is a 7-item instrument investigating anxiety with all DSM-IV criteria as "0" (not at all) to "3" (nearly every day).

Statistical Analysis

Our work hypothesis is that faith, peace and meaning were associated with mental health, quality of life and well-being in this online sample, probably mediated (totally or partially) by happiness, optimism and life satisfaction.

First, a descriptive statistic (mean, SD, frequency and percentage) was performed for each variable. Then, our analytical statistics were conducted in four different ways:

(a) An exploratory analysis was carried out using a Pearson correlation matrix between all variables.

(b) Linear regression models were employed to assess whether faith, peace and meaning were associated with each dependent variable (PHQ9, GAD7, Perceived stress, WHOQOL facets), controlling for 4 different models: Model 1: gender, age, education, income, BMI, marital status; Model 2: Model 1 + happiness, optimism, satisfaction of life; Model 3: Model 2 + anxiety or depression; and Model 4: Model 3 + Perceived stress or depression.

(c) In order to further explore our data, the sample was separated in 4 different groups according to their faith, peace and meaning:

- *Low intrinsic religiousness and low meaning* Those patients that scored below the mean score for FACIT-Meaning scale and Duke Religion Index (Intrinsic religiousness) scale.
- *High intrinsic religiousness and low meaning* Those patients that scored below the mean score for FACIT-Meaning scale and above the mean score for Duke Religion Index (Intrinsic religiousness) scale.
- *High meaning and low intrinsic religiousness* Those patients that scored above the mean score for FACIT-Meaning scale and below the mean score for Duke Religion Index (Intrinsic religiousness) scale.
- *High meaning and intrinsic religiousness* Those patients that scored above the mean score for FACIT-Meaning scale and Duke Religion Index (Intrinsic religiousness) scale.

The same procedures were applied to separate "religiousness versus peace" groups and "peace versus meaning" groups. Then, these groups were compared for well-being, quality of life and mental health variables using the ANOVA tests. When significant differences were detected by the ANOVA, the post hoc test (Tukey) was performed.

(d)   Finally, we carried out t tests to investigate whether participants with higher meaning and peace have higher levels of religiousness and ANOVA tests to investigate differences between religious affiliations.

A p value of 0.05 was considered statistically significant. Linear regression models were evaluated by R^2 test. All statistical analyses were performed with SPSS version 21.0 software (SPSS Inc.).

All participants gave online informed consent, and the study was approved by the Institutional Review Board of Albert Einstein Hospital (São Paulo, Brazil).

Results

From 967 participants reached, 782 (80.8%) completed the questionnaire. Most participants were female (51.0%), mean age of 34.38 years (SD 11.29), married (51.5%), with university level education—completed or in course (50.6%) and with an income of more than US$400.00 (65.8%).

Concerning religiousness characteristics, 45.3% of participants were Catholics, 21.7% were Protestants, 7.4% were Spiritists, 5.9% other affiliations, and 15.7% have no religious affiliation or were atheists/agnostics; 26.7% of participants attended to religious services at least once a week, and 35.4% practiced private religious activities daily. The mean values for religious instruments were: DUREL Intrinsic religiousness = 11.41 (SD 3.38), DUREL Organizational religiousness = 3.69 (SD 1.68), DUREL Nonorganizational religiousness = 3.51 (SD 1.74), FACIT-Faith = 10.24 (SD 4.36), FACIT-Meaning = 11.12 (SD 3.52) and FACIT-Peace = 9.96 (SD 3.24).

In general, participants have the following mean values of well-being and mental health scales: PHQ9 = 9.30 (SD 6.14); GAD7 = 8.24 (SD 5.38); Perceived stress = 20.01 (SD 5.86); Optimism TOV-R = 14.99 (SD 3.91); Satisfaction with life = 21.69 (SD 7.50); Happiness = 19.16 (SD 4.54); WHOQOL Physical = 65.12 (SD 16.76); WHOQOL Psychological = 63.49 (SD 18.52); WHOQOL Social = 63.17 (SD 22.32) and WHOQOL Environment = 57.38 (SD 18.77).

Tables 1 and 2 show the results of the linear regressions. Although in the unadjusted models, most variables were associated with mental health, perceived stress and quality of life, after controlling for potential cofounders, we found:

(a)   Meaning was associated with less depressive symptoms (PHQ9) and more physical, psychological, social and environmental quality of life (WHOQOL);
(b)   Peace was associated with less depressive symptoms (PHQ9), less perceived stress and more physical, psychological, social and environmental quality of life (WHOQOL);
(c)   Faith was associated with more psychological and social quality of life (WHOQOL);
(d)   Organizational religiousness, Nonorganizational religiousness and Intrinsic religiousness were associated with more psychological quality of life (WHOQOL); After separating groups (Table 3), we found meaning and peace were more strongly associated with quality of life, mental health and stress than religiousness. Those with high levels of intrinsic religiosity but low levels of meaning or peace have worse outcomes than those with low religiousness and high meaning or peace. Nevertheless, Table 4 shows that religiousness participants found great meaning and peace than nonreligious participants.

Table 1 Multivariate-adjusted linear regression models for religious beliefs, faith, meaning and peace on PHQ 9, GAD 7 and Perceived stress

	Unadjusted model	Model 1	Model 2	Model 3	Model 4
PHQ 9					
OR	−0.041	–	–	–	–
NOR	−0.076*	−0.063	–	–	–
IR	−0.123**	−0.108**	0.018	–	–
FACIT-Meaning[a]	−0.446***	−0.433***	−0.173***	−0.165***	−0.153***
FACIT-Peace[b]	−0.446***	−0.411***	−0.156***	−0.102**	−0.078*
FACIT-Faith	−0.111**	−0.092*	0.122**	0.006	–
GAD 7					
OR	0.014	–	–	–	–
NOR	0.003	–	–	–	–
IR	−0.033	–	–	–	–
FACIT-Meaning	−0.290***	−0.289***	−0.013	–	–
FACIT-Peace	−0.337***	−0.316***	−0.090	–	–
FACIT-Faith	−0.004	–	–	–	–
Perceived stress					
OR	−0.050	–	–	–	–
NOR	−0.074*	−0.084*	−0.008	–	–
IR	−0.107**	−0.143***	0.005	–	–
FACIT-Meaning	−0.411***	−0.420***	−0.057	–	–
FACIT-Peace[c]	−0.480***	−0.480***	−0.194***	−0.155***	−0.141***
FACIT-Faith	−0.141***	−0.167***	0.080*	0.015	–

Model 1: gender, age, education, income, IMC

Model 2: Model 1 + happiness, optimism, satisfaction of life

Model 3: Model 2 + anxiety or depression

Model 4: Model 3 + Perceived stress or depression

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

[a] $R = 0.783$, $R^2 = 0.614$, adjusted $R^2 = 0.607$

[b] $R = 0.778$, $R^2 = 0.606$, adjusted $R^2 = 0.599$

[c] $R = 0.693$, $R^2 = 0.480$, adjusted $R^2 = 0.472$

(e)   Finally, we compared the scores (mental health, quality of life and stress) between religious affiliations using ANOVA (Table 5) and found no remarkable differences.

Discussion

This article provides evidence for the role of meaning, peace and faith in quality of life, well-being and mental health. Based on our results, peace and meaning were more strongly associated with these outcomes than religious faith. These findings corroborate to other studies (Jafari et al. 2014; Whitford and Olver 2012) and highlight the need for further discussion regarding these concepts.

Table 2 Multivariate-adjusted linear regression models for religious beliefs, faith, meaning and peace on WHOQOL dimensions

	Unadjusted model	Model 1	Model 2	Model 3	Model 4
WHOQOL Physical					
OR	0.105**	0.127**	0.058	–	–
NOR	0.105**	0.119**	0.046	–	–
IR	0.131***	0.150***	0.016	–	–
FACIT-Meaning[a]	0.503***	0.493***	0.227***	0.224***	0.180***
FACIT-Peace[b]	0.514***	0.507***	0.250***	0.234***	0.209***
FACIT-Faith	0.251***	0.237***	0.014	–	–
WHOQOL Social					
OR	0.131***	0.135***	0.052	–	–
NOR	0.093*	0.106**	0.029	–	–
IR	0.143***	0.161***	0.026	–	–
FACIT-Meaning[c]	0.513***	0.515***	0.235***	0.235***	0.210***
FACIT-Peace[d]	0.511***	0.528***	0.247***	0.246***	0.230***
FACIT-Faith[e]	0.315***	0.315***	0.097**	0.106**	0.108**
WHOQOL Psychological					
OR[f]	0.156***	0.174***	0.083**	0.081**	0.083**
NOR[g]	0.156***	0.165***	0.071**	0.076**	0.069**
IR[h]	0.212***	0.225***	0.054*	0.061*	0.057*
FACIT-Meaning[i]	0.685***	0.674***	0.377***	0.376***	0.349***
FACIT-Peace[j]	0.661***	0.647***	0.310***	0.303***	0.284***
FACIT-Faith[k]	0.391***	0.379***	0.108***	0.130***	0.134***
WHOQOL Environmental					
OR	0.069	–	–	–	–
NOR	0.086*	0.102***	0.032	–	–
IR	0.061	–	–	–	–
FACIT-Meaning[l]	0.419***	0.405***	0.105*	0.105*	0.095*
FACIT-Peace[m]	0.469***	0.457***	0.188***	0.188***	0.182***
FACIT-Faith	0.280***	0.273***	0.059	–	–

Model 1: gender, age, education, income, IMC; Model 2: Model 1 + happiness, optimism, satisfaction of life; Model 3: Model 2 + anxiety; Model 4: Model 3 + depression

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

[a] $R = 0.648$, $R^2 = 0.420$, adjusted $R^2 = 0.410$

[b] $R = 0.653$, $R^2 = 0.426$, adjusted $R^2 = 0.417$

[c] $R = 0.637$, $R^2 = 0.406$, adjusted $R^2 = 0.397$

[d] $R = 0.642$, $R^2 = 0.412$, adjusted $R^2 = 0.403$

[e] $R = 0.628$, $R^2 = 0.395$, adjusted $R^2 = 0.385$

[f] $R = 0.764$, $R^2 = 0.584$, adjusted $R^2 = 0.577$

[g] $R = 0.763$, $R^2 = 0.582$, adjusted $R^2 = 0.575$

[h] $R = 0.762$, $R^2 = 0.580$, adjusted $R^2 = 0.574$

[i] $R = 0.796$, $R^2 = 0.634$, adjusted $R^2 = 0.628$

[j] $R = 0.786$, $R^2 = 0.618$, adjusted $R^2 = 0.612$

[k] $R = 0.769$, $R^2 = 0.591$, adjusted $R^2 = 0.585$

[l] $R = 0.657$, $R^2 = 0.432$, adjusted $R^2 = 0.423$

[m] $R = 0.667$, $R^2 = 0.445$, adjusted $R^2 = 0.436$

First, there is a lack of consensus on the term spirituality. According to some authors, spirituality is "the personal quest for understanding answers to ultimate questions about life, about meaning and about relationship to the sacred or transcendent" (Koenig et al. 2001). Others believe spirituality "is the aspect of humanity that refers to the way individuals seek and express meaning and purpose and the way they experience their connectedness to the moment, to self, to others, to nature, and to the significant or sacred" (Puchalski et al. 2014). Although these definitions could be more open or more restrictive, they share a common attitude, which is the "search for meaning." It seems that "meaning" may be one of the central mechanisms for the positive outcomes found in this association. In fact, studies have shown that meaning in life per se is associated with better physical and mental health outcomes (Brandstatter et al. 2012).

In our study, we found that even those without a religious faith could have better outcomes if they have meaning. However, there is a significant association between high religiousness and high meaning, highlighting the role of religion in the search for meaning and peace. According to Steger and Frazier (2005) "Meaning should be an important element of religion because religions almost universally address issues regarding what in life is important, what people's purposes for living are, and what the nature of the human experience is." Several studies have already shown a direct relationship between religiousness and meaning (Canada et al. 2015; Steger et al. 2006).

Another interesting concept is "peace." According to Whitford and Olver (2012), peace could be understood as reconciliation with one's circumstances, a kind of acceptance, but not fatalism." Studies have shown religion could have two different outcomes depending on its use and interpretation (Peres and Lucchetti 2010). Most persons use religion in a positive way, as a great source of coping. On the other hand, religious struggle has also been associated with negative outcomes, such as mortality and worse mental health (Fitchett et al. 2004). In our study, we have also found that highly religious persons feel more peaceful compared to less religious persons, pointing to the role of religion in achieving peace.

Concerning religious/faith measures, we found that the previous association found in almost all outcomes was totally or partially mediated by optimism, satisfaction with life and happiness, which is in accordance with other studies (Ciarrocchi et al. 2008; Salsman et al. 2005). According to the mechanisms of action of religious and spiritual beliefs, Koenig (2012) proposed religion provides resources for coping with stress that may increase the frequency of positive emotions. These resources provide strongly held beliefs that give meaning to difficult life circumstances and provide a sense of purpose. Religions provide an optimistic worldview that may involve the existence of a personal transcendental force that loves and cares about humans and is responsive to their needs.

Nevertheless, all religious affiliations, as well as the group "atheist, agnostic or no religion," were similar in mental health, well-being and quality of life scores. Therefore, positive and negative religious influences across different affiliations may result in the same overall health outcomes.

Finding meaning and peace seems to be very important to individual's life, helping in coping with adversities and promoting well-being and quality of life. Although several activities could result in positive emotions, we found a strong association of religious faith and meaning/peace, which highlights the role of these beliefs in clinical practice. A recent systematic review and meta-analysis (Goncalves et al. 2015) found religious/spiritual interventions (activities stimulating faith) were associated with better mental health outcomes, probably through the following different mechanisms: changing an individual's thoughts, promoting greater acceptance of illness and social support and a

Table 3 Differences between "religiousness versus peace," "religiousness versus meaning" and "meaning versus peace" groups using ANOVA

	Low IR and low meaning A	High IR and low meaning B	Low IR and high meaning C	High IR and high meaning D	F	p	Differences*
PHQ-9	11.92 (5.98)	11.25 (6.56)	7.43 (5.41)	7.25 (5.37)	35.35	<0.001	A × C; A × D; B × C; B × D
GAD-7	9.55 (5.20)	9.66 (5.61)	7.01 (5.19)	7.09 (5.09)	14.46	<0.001	A × C; A × D; B × C; B × D
Stress	22.15 (5.75)	22.17 (4.64)	18.56 (5.80)	18.10 (5.85)	31.60	<0.001	A × C; A × D; B × C; B × D
WHOQOL Physical	56.27 (16.22)	58.81 (15.62)	71.84 (13.82)	71.53 (15.14)	54.19	<0.001	A × C; A × D; B × C; B × D
WHOQOL Psychological	51.37 (18.17)	54.43 (18.15)	70.39 (13.82)	73.35 (13.32)	100.12	<0.001	A × C; A × D; B × C; B × D
WHOQOL Social	53.47 (23.0)	54.27 (23.22)	71.23 (18.79)	70.84 (18.59)	42.05	<0.001	A × C; A × D; B × C; B × D
WHOQOL Environment	52.19 (18.93)	48.97 (19.05)	63.52 (16.20)	62.78 (17.01)	30.27	<0.001	A × C; A × D; B × C; B × D
Optimism	12.38 (3.32)	13.43 (3.38)	16.35 (3.74)	16.91 (3.42)	84.43	<0.001	A × B; A × C; A × D; B × C; B × D
Life satisfaction	17.98 (7.19)	18.83 (7.28)	24.24 (6.36)	24.55 (6.66)	49.63	<0.001	A × C; A × D; B × C; B × D
Happiness	16.23 (4.68)	17.11 (4.01)	20.76 (3.63)	21.42 (3.58)	86.29	<0.001	A × C; A × D; B × C; B × D

	Low IR and low peace A	High IR and low peace B	Low IR and high peace C	High IR and high peace D	F	p	Differences*
PHQ-9	11.88 (5.64)	11.38 (6.20)	8.15 (5.98)	7.28 (5.59)	31.87	<0.001	A × C; A × D; B × C; B × D
GAD-7	9.69 (5.19)	10.03 (5.51)	7.19 (5.18)	6.96 (5.07)	18.21	<0.001	A × C; A × D; B × C; B × D
Stress	22.74 (5.90)	22.78 (4.62)	18.24 (5.12)	17.92 (5.63)	47.67	<0.001	A × C; A × D; B × C; B × D
WHOQOL Physical	54.82 (16.19)	57.80 (15.52)	71.63 (13.05)	71.69 (14.91)	66.08	<0.001	A × C; A × D; B × C; B × D

Table 3 continued

	Low IR and low peace A	High IR and low peace B	Low IR and high peace C	High IR and high peace D	F	p	Differences*
WHOQOL Psychological	49.47 (17.99)	53.13 (18.12)	70.32 (12.84)	73.49 (12.90)	123.02	<0.001	A × C; A × D; B × C; B × D
WHOQOL Social	51.75 (23.47)	51.61 (22.88)	71.10 (17.51)	71.72 (17.83)	59.06	<0.001	A × C; A × D; B × C; B × D
WHOQOL Environment	49.50 (17.99)	46.75 (17.12)	65.72 (15.56)	63.51 (17.24)	54.25	<0.001	A × C; A × D; B × C; B × D
Optimism	12.61 (3.71)	13.69 (3.59)	15.44 (3.69)	16.70 (3.47)	56.22	<0.001	A × B; A × C; A × D; B × C; B × D; C × D
Life satisfaction	17.09 (6.94)	18.10 (7.07)	24.60 (5.95)	24.78 (6.50)	72.65	<0.001	A × C; A × D; B × C; B × D
Happiness	15.93 (4.65)	16.84 (4.22)	20.53 (3.71)	21.45 (3.35)	97.264	<0.001	A × C; A × D; B × C; B × D

	Low peace and low meaning A	High peace and low meaning B	Low Peace and high meaning C	High peace and high meaning D	F	p	Differences*
PHQ-9	12.01 (5.94)	10.59 (6.64)	10.38 (5.64)	6.63 (5.08)	46.48	<0.001	A × D; B × D; C × D
GAD-7	9.79 (5.37)	9.10 (5.39)	10.06 (5.24)	6.42 (4.85)	25.37	<0.001	A × D; B × D; C × D
Stress	22.80 (5.44)	20.50 (4.39)	22.58 (4.97)	17.00 (3.48)	58.74	<0.001	A × B; A × D; B × D; C × D
WHOQOL Physical	53.89 (15.40)	66.54 (13.71)	64.33 (15.16)	73.20 (14.25)	83.20	<0.001	A × B; A × C; A × D; B × D; C × D
WHOQOL Psychological	47.60 (17.40)	66.07 (12.67)	63.71 (14.79)	74.53 (12.40)	165.42	<0.001	A × B; A × C; A × D; B × D; C × D
WHOQOL Social	48.29 (22.76)	68.19 (17.14)	63.65 (20.61)	72.54 (17.79)	74.44	<0.001	A × B; A × C; A × D; C × D
WHOQOL Environment	46.32 (18.14)	62.21 (16.37)	54.99 (13.77)	64.72 (16.90)	59.38	<0.001	A × B; A × C; A × D; B × C; B × D
Optimism	12.39 (3.43)	14.09 (2.95)	15.66 (3.45)	17.00 (3.48)	91.80	<0.001	A × B; A × C; A × D; B × C; B × D; C × D
Life satisfaction	16.47 (6.78)	23.34 (5.92)	21.40 (6.48)	25.14 (6.42)	88.13	<0.001	A × B; A × C; A × D; C × D
Happiness	15.58 (4.33)	19.39 (3.29)	19.08 (3.90)	21.72 (3.36)	128.54	<0.001	A × B; A × C; A × D; B × D; C × D

* Post hoc Tukey

Table 4 Comparison of the levels of religiousness between low and high meaning, peace and faith (*t* tests)

	FACIT-Meaning		FACIT-Peace		FACIT-Faith	
	Low	High	Low	High	Low	High
Intrinsic religiosity	9.71	11.97	8.70	10.69	7.34	12.06
	(3.62)	(3.21)***	(3.28)	(3.09)***	(4.10)	(3.44)***
Organizational religiosity	Low	High	Low	High	Low	High
	10.67	11.48	9.66	10.15	8.62	11.72
	(3.60)	(3.45)**	(3.33)	(3.28)*	(4.44)	(3.71)***
Nonorganizational religiosity	Low	High	Low	High	Low	High
	10.33	11.67	9.27	10.40	8.10	11.85
	(3.72)	(3.29)***	(3.26)	(3.27)***	(4.32)	(3.63)***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

deeper understanding of existence together with encouraging belief and faith. Same results were found by another meta-analysis carried out by Oh and Shin (2014), which showed that spiritual interventions had significant but moderate effects on spiritual well-being, meaning of life and depression. Medical care and public health providers should pay attention to these concepts, in order to provide preventive measures, identify possible struggles and enhance activities that promote meaning and peace.

Our study has some limitations, which should be highlighted. First, our sample filled out the questionnaires online, so caution must be made in generalizing our data to a general population, particularly for the low number of older persons using the Internet in Brazil. Second, there are several critics in the use of FACIT-Sp 12 as a measure of spirituality (i.e., some of the facets included in the instrument, e.g., "I have a reason for living," "I feel peaceful" and "My life has been productive" have been associated with religious involvement, but do not in themselves denote religiousness/spirituality) (Lucchetti et al. 2013). In order to deal with these critics, we decided to name the facets as meaning, peace and faith, not labeling them as spirituality. Likewise, due to the critics regarding an overlap of these measures with positive emotions, we decided to control them to optimism, life satisfaction and happiness. Third, although we could create other models in the regression analysis, we decided to include faith, meaning and peace as independent variables; positive emotions as cofounders; and hard outcomes (depression, stress, anxiety and quality of life) as dependent variables, in accordance with previous studies (Jafari et al. 2014; Whitford and Olver 2012). These models seemed appropriate with most R^2 measures above 0.500. Forth, due to the cross-sectional design of our study, causal inferences are difficult to make.

In conclusion, the present study found meaning and peace were the most important aspects of spirituality and religiosity related to better mental health, quality of life and well-being. However, most religious persons had more meaning and peace compared to less religious, pointing to the role of religion in searching for a meaningful and peaceful life. Our study supports the need for a reappraisal on the field of religiosity/spirituality and health. Strategies for improving mental health, quality of life and well-being should be based on interventions where meaning and peace could be addressed and achieved regardless of religion/spiritual beliefs, practices and experiences.

Table 5 Differences between religious affiliations using ANOVA

	Catholics	Evangelical protestants	Spiritists	Other	Atheists, agnostics, no religion	F	p
PHQ-9	9.11 (6.12)	9.26 (6.16)	8.81 (5.56)	9.62 (6.41)	10.16 (6.44)	0.684	0.603
GAD-7	8.22 (5.19)	7.85 (5.32)	7.88 (5.74)	8.77 (5.67)	9.14 (5.77)	1.080	0.365
Stress	20.11 (6.09)	19.90 (5.60)	18.83 (5.26)	20.21 (6.95)	21.23 (5.85)	1.691	0.150
WHOQOL Physical	66.79 (16.34)	66.25 (15.70)	62.59 (15.70)	65.47 (19.94)	61.72 (19.04)	2.240	0.063
WHOQOL Psychological	63.79 (18.06)	64.65 (18.63)	64.47 (16.89)	60.41 (19.95)	61.74 (20.24)	0.696	0.595
WHOQOL Social	64.73 (20.62)	63.95 (23.36)	56.87 (23.78)	56.48 (22.37)	62.62 (25.23)	2.367	0.052
WHOQOL Environment	58.00 (18.08)	58.49 (19.63)	56.46 (18.31)	56.42 (19.26)	55.33 (20.04)	0.577	0.680
Optimism	14.99 (3.91)	15.23 (4.08)	14.88 (3.45)	15.25 (4.71)	14.35 (4.14)	0.896	0.466
Life satisfaction	21.45 (7.47)	22.62 (7.38)	22.01 (7.58)	21.02 (7.36)	20.34 (8.33)	1.624	0.166
Happiness	19.33 (4.45)	19.54 (4.52)	18.37 (4.14)	17.72 (5.07)	18.71 (4.92)	2.103	0.079

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