

ORIGINAL REPORT

RELIGIOUSNESS AFFECTS MENTAL HEALTH, PAIN AND QUALITY OF LIFE IN OLDER PEOPLE IN AN OUTPATIENT REHABILITATION SETTING

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Objectives: To evaluate the relationship between religiousness and mental health, hospitalization, pain, disability and quality of life in older adults from an outpatient rehabilitation setting in Sao Paulo, Brazil.

Design: Cross-sectional study.

Subjects/patients: A total of 110 patients aged 60 years or older were interviewed during attendance at an outpatient rehabilitation service.

Methods: Researchers administered a standardized questionnaire that assessed socio-demographic data, religiousness, self-reported quality of life, anxiety, physical activity limitation, depression, pain and cognition. Predictors were included in each model analysis, and a backward conditional method was used for variable selection using logistic regression (categorical outcomes) or linear regression (continuous outcomes).

Results: Thirty-one patients (28.2%) fulfilled criteria for significant depressive symptoms, 27 (24.5%) for anxiety, and 10 (9.6%) for cognitive impairment. Pain was present in 89 (80.7%) patients. Limited depressive symptoms (as assessed by the Geriatric Depression Scale), and greater self-reported quality of life were related to greater self-reported religiousness, as were scores on the Mini-Mental State Examination (less cognitive impairment), and lower ratings of pain.

Conclusion: Religiousness is related to significantly less depressive symptoms, better quality of life, less cognitive impairment, and less perceived pain. Clinicians should consider taking a spiritual history and ensuring that spiritual needs are addressed among older patients in rehabilitation settings.

Key words: rehabilitation; religion and medicine; spirituality; depression; quality of life.

J Rehabil Med 2011; 43: 316–322

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Submitted April 19, 2010; accepted December 21, 2010

INTRODUCTION

According to the 2000 census, there are 24.6 million patients with disabilities in Brazil, approximately 1.5 million with some kind of activity limitation (1). Older patients may have more difficulties coping during rehabilitation from medical illness due to structural and physiological changes that occur with aging.

Older adults with chronic disabling diseases have more mood dysfunction. Studies show they have more depression (2), more persistent depressive symptoms (3), and often find themselves in a vicious cycle where depression worsens disability and vice versa (4). The same is true for anxiety, where excessive preoccupation with chronic conditions often triggers anxiety symptoms (5).

Religious involvement may play a protective role in health, preventing health problems or aiding in recovery or adjustment to health problems, and may be a factor in coping with chronic conditions and the disability they cause. In other cases, religion may play a more consoling role and can be mobilized to cope with illness or stress, leading to associations between measures of religion and health (6).

The majority of the Brazilian population (95%) indicate a religious affiliation, 90% attend churches or religious temples, 83% consider religion very important in their lives, and 37% attend religious services at least once a week. The most frequent religious affiliations in Brazil are Catholicism (68%), Protestant/Evangelicals (23%) and Kardecist Spiritism (2.5%). Older age is independently associated with religious attendance and importance of religion (7).

Spirituality and religiousness have been associated with fewer mental health problems in older adults, particularly less depression (8) and better quality of life (9). However, results regarding pain and hospitalization are controversial (10) and studies of physical rehabilitation patients are few.

This study aims to evaluate the relationship between religiousness and mental disorders, hospitalization, pain, disability

and quality of life in older adults in an outpatient rehabilitation setting in Sao Paulo, Brazil.

PATIENTS AND METHODS

The study was carried out from 10 March to 30 April 2008. The sampling frame consisted of all 484 patients who were waiting for medical consultation with the rehabilitation service at Santa Casa Hospital in São Paulo, Brazil during this period. Of those, 118 (24.3%) were older patients (60 years old or more) who were enrolled consecutively. Eight were excluded due to difficulties in completing the questionnaire (due to low education), leaving a total of 110 patients for the analysis.

A standardized questionnaire was administered, covering the following aspects:

- Socio-demographic characteristics (sex, age, race, marital status, education).
- Physical activity limitation (using Katz Index) (11). The index ranks adequacy of performance in the 6 physical activities of bathing, dressing, toileting, transferring, continence, and feeding. Clients are scored yes/no for independence in each of the 6 activities. A score of 6 indicates no limitation, 4 indicates moderate activity limitation, and 2 or less indicates severe activity limitation.
- Religiosity (using the Private and Social Religious Practice Scale translated into Portuguese) (12). The scale assessed the frequency of prayer, religious attendance (i.e. attending a church or temple, or religious meetings), reading religious literature, watching religious programmes on television, religiosity in the last decade, along with other questions (such as: Have you ever been asked about your religion by a doctor? Do you think your doctor should ask about the patient's religion? How important is your faith or religion for your life and rehabilitation?).
- Quality of life (using the self-reported impression of health and quality of life scale), questions 1 (How would you rate your quality of life?) and 2 (How satisfied are you with your health?) from the brief World Health Organization Quality of Life (WHOQOL) scale translated into Portuguese (13).
- Anxiety was assessed by a geriatrician (with experience in psychiatric conditions) using the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) criteria (14):
 - at least 6 months of "excessive anxiety and worry" about a variety of events and situations;
 - significant difficulty in controlling the anxiety and worry;
 - presence for most days over the previous 6 months of 3 or more of the following symptoms: feeling wound-up, tense, or restless; easily becoming fatigued or worn-out; concentration problems; irritability; significant tension in muscles and; difficulty with sleep;
 - The symptoms cause "clinically significant distress" or problems functioning in daily life;
 - The condition is not due to a substance or medical issue.
- Depressive symptoms (using the 15-item Geriatric Depression Scale; GDS-15) (15). GDS-15 is a 15-item inventory with a yes/no format. Depressive symptomatology was screened using a cut-off value > 5 to indicate clinically important depressive symptoms (16).
- Pain (using a visual analogue scale for pain), where 0 = no pain and 1–10 = presence of pain (17).
- Cognitive functioning (using the Mini-Mental State Examination; MMSE) (18). This is a 30-point questionnaire test that is used to screen for cognitive impairment. A cut-off point of 19/20 on the MMSE was used among those with no formal education and a cut-off of 23/24 for participants with previous school history, according to a previous Brazilian study (19).
- Hospitalization: we considered the self-report of hospitalization in previous year (yes/no).
- Medical follow-up: calculated from the beginning of patient's treatment in our rehabilitation service through to the end of the study (in months).

Student's *t*-test, Pearson's correlation, and χ^2 analyses were used to compare continuous and dichotomous variables in bivariate analyses. In multivariate analyses, for categorical outcomes, logistic regression was used with variable selection determined by backward stepwise process (with $p=0.10$ in a univariate analysis set as the criteria for variable selection). Outcome variables in separate regression models were depressive symptoms (yes/no), quality of life (good or very good vs other), education (years of education), hospitalization in previous year (yes/no), and anxiety (yes/no). Independent variables are displayed in Table II. Goodness of fit was evaluated by the Hosmer-Lemeshow test and Omnibus Tests of Models Coefficients.

For the continuous outcomes the independent variables were included in linear regression models, and a stepwise backward method ($p=0.10$) used for variable selection. Outcome variables were the depressive symptoms (Geriatric Depression Scale), cognitive functioning (MMSE), pain (visual analogue scale), and physical activity limitation (Katz Index). Independent variables are displayed in Table III.

A *p*-value of 0.05 is used to define statistical significance. Odds ratios (OR) are presented with 95% confidence intervals (95% CI). All statistical analyses were performed with SPSS version 17.0 software (SPSS Inc., Chicago, USA).

All participants gave written informed consent and the study was approved by the ethics committee of Santa Casa of São Paulo Hospital (number 257/08).

RESULTS

The sample was predominantly female (73.6%) with a mean age of 68.9 years (age range 60–92 years). Table I shows the patients' baseline characteristics.

Table I. Baseline characteristics of participants

Characteristics	
Age years, mean (SD)	68.9 (6.7)
Female sex, <i>n</i> (%)	81 (73.6)
Race, <i>n</i> (%)	
Caucasian	29 (27.1)
Mixed	29 (27.1)
Black	11 (10.3)
Yellow	2 (1.9)
Education, <i>n</i> (%)	
0–4 years	68 (61.8)
5–8 years	23 (20.9)
> 8 years	19 (17.2)
ADL status, <i>n</i> (%)	
Severe activity limitation	8 (7.3)
Moderate activity limitation	20 (18.2)
No activity limitation	82 (74.5)
Time under treatment, months, mean (SD)	40.6 (20.5)
Mini-Mental State Examination, mean (SD)	24.5 (0.436)
Religion, <i>n</i> (%)	
Roman Catholics	61 (55.5)
Evangelical Protestants	33 (30.0)
Spiritists	4 (3.6)
Other	12 (10.9)
Marital status, <i>n</i> (%)	
Single	14 (12.7)
Married	58 (52.7)
Widow	28 (25.5)
Divorced	10 (9.1)

SD: standard deviation; ADL: activities of daily living.

Table II. Correlation coefficients between variables (Pearson's correlation coefficients)

	Sex	Age	Ed	ADL	REL	RI	HO	QoL	Anx	RA	MS	Dep
Sex	1.00	-0.089	-0.049	-0.404	0.283	0.301	-0.116	0.194	0.197	-0.130	-0.383	-0.176
Age		1.00	-0.119	0.227	-0.283	-0.225	0.049	-0.202	-0.039	0.081	-0.112	0.146
Ed			1.00	-0.025	0.012	0.007	0.039	0.017	-0.050	0.276	-0.020	0.086
FS				1.00	-0.239	-0.170	0.264	-0.158	-0.093	0.127	0.072	0.238
REL					1.00	0.267	-0.179	0.195	-0.073	-0.062	-0.145	-0.240
RI						1.00	0.010	0.286	-0.049	-0.092	-0.061	-0.266
HO							1.00	-0.032	0.100	0.49	0.039	0.088
QoL								1.00	-0.107	0.065	-0.166	-0.402
Anx									1.00	-0.125	0.155	0.253
RA										1.00	0.061	0.033
MS											1.00	0.084
Dep												1.00

Values in bold mean that the association is statistically significant at the 0.01 level.

Ed: education; ADL: activities of daily living; MS: marital status; RA: race; REL: religious attendance; HO: hospitalization; RI: religious importance in life; QoL: quality of life; Dep: depression; Anx: anxiety.

Reasons for being rehabilitation service patients were: advanced osteoarthritis ($n=31$), stroke ($n=11$), motor vehicle accident ($n=10$), amputation ($n=9$), brainstem injury ($n=7$), and miscellaneous conditions ($n=42$) including low back pain, fibromyalgia, tendinitis, carpal tunnel syndrome and others. No other information regarding these diseases was obtained. The physical activity limitation evaluated by the Katz Index indicated that 7.3% of patients had severe activity limitation, 18.2% moderate activity limitation, and 74.5% had no limita-

tion to perform physical activities of daily living. In the year previous to the study, 29.1% of patients had been hospitalized at least once.

Fifty-six percent of patients considered their quality of life good or very good and 43.3% considered their health good or very good. Pain was present in 80.7% of patients and the mean pain score was 6.96 (standard deviation (SD) 2.3) on a 0–10 scale. Significant depressive symptoms were present in 28.2% of patients, anxiety in 24.5%, and cognitive dysfunction in 9.6%.

Table III. Multivariate (backward conditional selection) logistic regression analyses for dependent variables: depressive symptoms, quality of life, hospitalization and anxiety^a

Health variable	Beta	SE	OR	95% CI	<i>p</i>
Logistic regression 1: Presence of depressive symptoms ^b					
Low importance of religion in life	1.277	0.629	3.587	1.045–12.312	0.042
Bad or very bad quality of life	2.666	0.761	14.379	3.234–63.939	0.000
No anxiety	-2.123	0.700	0.120	0.030–0.472	0.002
Constant	-2.014	0.706	0.134		0.004
Independent variables 1: Sex, Age, Ed, ADL, MS, RA, REL, HO, RI, QoL, Anx					
Logistic regression 2: Good or very good quality of life ^c					
Presence of depressive symptoms	-1.716	0.510	0.180	0.066–0.488	0.001
Low importance of Religion in life	-0.987	0.468	0.373	0.149–0.933	0.035
Constant	2.005	0.653	7.428		0.002
Independent variables 2: Sex, Age, Ed, ADL, MS, RA, REL, HO, QoL, RI, Dep, Anx					
Logistic regression 3: Hospitalization in previous year ^d					
Moderate and severe activity limitation	1.117	0.455	3.056	1.252–7.455	0.014
Constant	-2.416	0.679	0.089		0.000
Independent variables 3: Sex, Age, Ed, ADL, MS, RA, REL, HO, QoL, RI, Dep, Anx					
Logistic regression 4: Presence of anxiety ^e					
Sex (male)	-2.401	0.858	0.091	0.017–0.487	0.005
Marital status (married)	-1.141	0.543	0.320	0.110–0.926	0.036
Presence of depressive symptoms	1.831	0.576	6.238	2.015–19.307	0.001
Constant	1.104	0.579	3.016		0.057
Independent variables 4: Sex, Age, Ed, ADL, MS, RA, REL, QoL, RI, Dep, HO					

^aAll independent variables were included in the multivariate analysis, and only those identified by the backward conditional logistic regression model as independently associated with the dependent variable were included in the table. Ed: education; ADL: activities of daily living; MS: marital status;

^bOmnibus Tests of Models Coefficients: χ^2 : 35.407; $p=0.000$. Hosmer-Lemeshow test: χ^2 : 3.673; $p=0.597$.

^cOmnibus Tests of Models Coefficients: χ^2 : 21.332; $p=0.000$. Hosmer-Lemeshow test: χ^2 : 0.478; $p=0.787$.

^dOmnibus Tests of Models Coefficients: χ^2 : 7.384; $p=0.014$. Hosmer-Lemeshow test: χ^2 : 0.366; $p=0.833$.

^eOmnibus Tests of Models Coefficients: χ^2 : 7.384; $p=0.014$. Hosmer-Lemeshow test: χ^2 : 0.366; $p=0.833$.

SE: standard error; OR: odds ratio; RA: race; REL: religious attendance; HO: hospitalization; RI: religious importance in life; QoL: quality of life; Dep: depressive symptoms; Anx: anxiety; 95% CI: 95% confidence interval.

Religious characteristics of patients were 55% Roman Catholics, 30% Protestant, 4% Spiritists, and 5% affiliated with other religious groups. Only 6% indicated no religious affiliation. Regarding religious practices, 97.3% prayed and 85% prayed at least once a day. The majority of patients (68.2%) indicated that their religiousness had increased in the last 10 years.

More than 57% of patients stated that they usually attended church or religious temples at least once a week and 40% said they watched some kind of religious television programmes at least once a week. When questioned about the influence of their faith and religion in their lives overall and in their rehabilitation process, 66.4% and 69.5%, respectively, indicated that it was very important.

Only 8.2% of patients stated that they had ever been asked about their religion by their doctors, whereas 87.3% indicated that they would like their doctors to ask them about their faith and religion as part of their medical care.

Table II presents the Pearson's correlation coefficients between variables, Table III presents the results of backward logistic regression analyses, and Table IV shows the results of backward stepwise linear regression analyses. Logistic

regression analyses (Table III) indicated that: (i) presence of depressive symptoms were associated with: low importance of religion in life, bad or very bad quality of life and presence of anxiety; (ii) good or very good quality of life was associated with high importance of religion in life and no significant depressive symptoms; (iii) hospitalization in previous year was associated with lower category in the Katz Index; and (iv) presence of anxiety was associated with female sex, unmarried persons and presence of depressive symptoms. No association was found between hospitalization, anxiety and religiousness.

Linear regression analyses (Table IV) indicated that: (i) Geriatric Depression Scale points (more depressive symptoms) were related to higher level of dependency, presence of anxiety, low importance of religion in life and lower quality of life; (ii) MMSE score (better cognitive status) was related to lower level of dependency, higher education and higher importance of religion in life; (iii) pain rating was associated with lower education, and lower importance of religion in life, and (iv) Katz Index was associated with male sex. Religious attendance was not associated with any dependent variables in the models.

Table IV. Multivariate (backward selection) linear regression analyses for dependent variables: Geriatric Depression Scale, Mini-Mental State Examination, Pain Rating and Katz Index^a

Health variable	Unstandardized coefficients		Standardized coefficients		
	B	SE	Beta	t	p
Linear regression 1: Geriatric Depression Scale points ^a					
Constant	4.211	1.130		3.725	0.000
Higher level of dependency	1.166	0.476	0.203	2.447	0.016
Good and very good quality of life	-1.678	0.460	-0.309	-3.648	0.000
Presence of anxiety	2.253	0.513	0.361	4.390	0.000
Religion very important for life	-1.088	0.489	-0.189	-2.226	0.028
Independent variables 1: QoL, HO, Anx, Sex, Age, Ed, ADL, MS, RA, REL, RI					
Linear regression 2: Mini-Mental State Examination points ^b					
Constant					
Higher level of dependency	-2.150	0.833	-0.253	-2.581	0.012
Years of education	0.346	0.101	0.340	3.419	0.001
Race (white)	1.614	0.827	0.197	1.953	0.055
Religion very important for life	2.029	0.839	0.239	2.417	0.018
Independent variables 2: QoL, HO, Anx, Dep, Sex, Age, Ed, ADL, MS, RA, REL, RI					
Linear regression 3: Pain rating ^c					
Constant	8.027	1.514		5.301	0.000
Sex (female)	1.102	0.650	0.175	1.694	0.094
Years of education	-0.142	0.061	-0.247	-2.326	0.023
Race (white)	-0.0981	0.505	-0.208	-1.943	0.056
Religion very important for life	-1.065	0.523	-0.208	-2.037	0.045
Independent variables 3: QoL, HO, Anx, Dep, Sex, Age, Ed, ADL, MS, RA, REL, RI					
Linear regression 4: Katz points ^d					
Constant	5.285	1.322		3.996	0.000
Sex (female)	-2.085	0.731	-0.273	-2.851	0.005
Independent variables 4: QoL, HO, Anx, Dep, Sex, Age, Ed, MS, RA, REL, RI					

^aAll independent variables were included in the multivariate analysis, and only those identified by the backward linear regression model as independently associated with the dependent variable were included in the table.

^bAnalysis of variance (ANOVA): F: 13.880; p=0.000; R-square: 0.366.

^cANOVA: F: 9.00713.880; p=0.000; R-square: 0.327.

^dANOVA: F: 4.989; p=0.001; R-square: 0.206.

^eANOVA: F: 8.131; p=0.005; R-square: 0.273.

SE: standard error; Ed: education; ADL: activities of daily living; MS: marital status; RA: race; REL: religious attendance; HO: hospitalization; RI: religious importance in life; QoL: quality of life; Dep: depressive symptoms and Anx: anxiety.

DISCUSSION

After controlling for confounding variables, religiousness was inversely correlated with depressive symptoms and pain rating, and was positively correlated with quality of life and cognitive functioning. The relationship between religiousness and depression has been examined in many studies (3, 20), including one in a rehabilitation setting (21). Giaquinto et al (21) found in 132 consecutive inpatients who were hospitalized for stroke rehabilitation that the strength of religious beliefs influenced the ability to cope after a stroke event, with stronger religious beliefs acting as a possible protective factor against emotional distress.

Quality of life also showed a relationship with religiousness; greater religiousness was correlated with better quality of life, a finding with considerable support in the literature (22). A possible explanation is that patients who are more religious have greater social support, hope, optimism, sense of meaning of life and self-control (9).

When comparing scores on the MMSE, significantly higher scores were seen in patients who considered their religiousness very important in their lives. Religiousness may play a protective role in cognitive function in older people in rehabilitation (as other studies have found for older Latino populations) (23, 24). Since depressive symptoms are significantly related to religiousness, the effect of religion in cognition might be secondary to religion's effects on mood. Some studies also found that higher religious attendance predicts a slower decline in memory among those with Alzheimer's disease (25). Due to the cross-sectional nature of our study, however, no conclusions in this regard can be drawn.

With regard to pain, importance of religion in life was significantly associated with lower pain rating. This result is important in the rehabilitation context, where the focus is on decreasing pain and improving activity limitations. This seems to be especially important if we consider that almost 80% of the sample stated that they have pain. However, the results regarding this issue are controversial. Harrison et al. (26) found that church attendance was associated with lower pain scores in sickle cell patients (26). Nevertheless, Rippentrop et al. (10) evaluating patients with chronic musculoskeletal pain found that religion/spirituality was unrelated to pain intensity and life interference due to pain.

In the present study, religious importance in life and religious attendance were not associated with anxiety. These results are similar to other studies (27), but also differ from other reports (28). According to Koenig et al. (9), "religious involvement may be especially important in protecting persons with serious medical illness from experiencing anxiety related to dependency, loss of control and end-of-life issues". Our results might be explained by the small sample evaluated in the study.

Hospitalization was also not associated with religiousness measures in the present study. Some studies showed that religiosity (especially organizational religiosity) is negatively associated with length of hospital stay and use of other health services (29). These findings seem to be strongly related to long-term care (days spent in nursing homes) instead of acute care hospitaliza-

tion (ACH) (29). In the present study we examined ACH and this may be the reason we did not find any correlations.

Our sample consisted of a predominance of women, compared with other studies in this age group (30). The main reason for participants being in a rehabilitation setting was osteoarthritis, which is a common disease in this age group and very disabling, as found in other studies conducted in rehabilitation settings (31).

Psychiatric disorders have been shown to affect the rehabilitation process adversely (2). The present study found that 28% of patients had significant depressive symptoms and 25% had significant levels of anxiety, which is higher than in the general population, where approximately 15% have significant levels of depression (32) and 11% significant levels of anxiety (33). However, the prevalence of anxiety and/or depression in a large lower income sample of older people living in São Paulo was 27% (34). Our sample also had higher levels of pain than community-based samples, probably because of the high prevalence of osteoarthritis. Over 80% of participants had pain and the mean rate for pain was 6.96 (SD: 2.3), which is higher than found in a geriatric study in Hong Kong in which 61.5% had pain and the mean rate for pain was 5.87 (35).

Regarding religiousness, the majority of participants were Roman Catholic, followed by Protestants and Spiritists. This data is consistent with the last Brazilian Demographic Census conducted in 2000 (1). Only 6% of patients reported not having a religion, which is lower than some studies conducted in the general population (38), but similar to a recent Brazilian National Survey (7). More than 97% reported that they pray. The majority stated that they pray more than once a day, showing the importance of religious involvement in their daily activities. When asked about changes in religiousness during the last decade, 70% of participants indicated that there was an increase, with the main reason being significant life-changing events often related to their chronic medical conditions and increasing disability.

Concerning their religious practices, 57% attended churches or religious temples at least once a week, in agreement with other studies (36), and more than 66% considered religiousness very important for their lives and for the rehabilitation process, higher than 40% found in a previous study of older medical patients (36), but in line with the Brazilian general population (7).

In Brazil, as well as in the USA, religion seems to be a very important aspect of people's lives, and is related mainly to Christian denominations. It is possible that in other countries these results would be different. Some clear examples for this assumption are the lower level of religiosity in some countries and the different religious affiliations in other cultures. Nevertheless, recent studies show that even in different cultures, such as Australia (37) or Muslim countries (38), the results are similar.

When asked if doctors should enquire about the patient's faith and religion in a consultation, more than 87% answered "yes"; however, only 9 patients (8.7%) had been asked about religion by their doctors. Similar findings have been reported in other studies, but this is the first report from a study in Brazil

(and South America, for that matter) (39), showing a clear difference of opinion between patients and doctors in this matter, which can be explained partly by lack of training by doctors on how to address these matters in patient care.

In the present study, religious importance in life (intrinsic religiosity) seemed to play a more significant role than religious attendance (extrinsic religiosity) in older rehabilitation patients. This finding could be explained by the fact that the disability imposes a barrier to attending the church, temple or religious meetings.

Some study limitations must be considered when evaluating these results. First, the sample is small, which may explain some lack of associations (e.g. anxiety). Secondly, the study is cross-sectional, not allowing cause-effect conclusions to be drawn, and patients were enrolled consecutively from only one centre, which could not represent all aspects of the entire population. Thirdly, the impact of religiosity on these patients was evaluated, and not the rehabilitation process (follow-up).

In conclusion, the present study in rehabilitation patients with activity limitations indicates that self-reported religiosity (importance of religion in life) may play an important role in older people from an outpatient rehabilitation setting. The results show that religious involvement is inversely related to depressive symptoms, and positively related to higher scores on the MMSE (less cognitive impairment), better quality of life and lower pain rating.

Despite the possible positive role that religion plays in the mental and physical health of patients in this setting, there appears to be a divide between patients' desires to have religion integrated into their medical care and the practices of medical professionals, which may be, at least partly, related to doctors' personal discomfort over addressing such issues, since they were not included as part of their training in medical school or residency (40). Taking a spiritual history and addressing spirituality and religion in patients' medical care may be an important factor in the rehabilitation process of older patients in Brazil.

ACKNOWLEDGEMENTS

We thank the NUPAME (research group from the São Paulo Medical Spiritist Association – Brazil) who made this study possible.

REFERENCES

- Demográfico C. [Demographic Census. Characteristics of the population and households]. Rio de Janeiro: IBGE; 2000. (in Portuguese).
- Berkman LF, Berkman CS, Kasl S, Freeman DH, Jr, Leo L, Ostfeld AM, et al. Depressive symptoms in relation to physical health and functioning in the elderly. *Am J Epidemiol* 1986; 124: 372–388.
- Kennedy GJ, Kelman HR, Thomas C. The emergence of depressive symptoms in late life: the importance of declining health and increasing disability. *J Comm Health* 1990; 15: 93–104.
- Murray CJL, Lopez AD. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020, volume 1. Boston: Harvard University Press; 1996.
- Journals JaA. Anxiety disorders linked to physical conditions. 2006 [cited 2009 Aug 9]. Available from: <http://www.sciencedaily.com/releases/2006/10/061024010331.htm>.
- Fitchett G, Rybarczyk BD, DeMarco GA, Nicholas JJ. The role of religion in medical rehabilitation outcomes: a longitudinal study. *Rehab Psychol* 1999; 44: 333–353.
- Moreira-Almeida A PI, Zaleski MJB. Religious involvement and sociodemographic factors: a Brazilian national survey. *Rev Psiq Clin* 2010; 37: 12–15.
- Smith TB, McCullough ME, Poll J. Religiosity and depression: evidence for a main effect and the moderating influence of stressful life events. *Psychol Bull* 2003; 129: 614–636.
- Koenig HG, McCullough ME, Larson DB. *Handbook of religion and health*. USA: Oxford University Press; 2001.
- Rippentrop EA, Altmaier EM, Chen JJ, Found EM, Keffala VJ. The relationship between religion/spirituality and physical health, mental health, and pain in a chronic pain population. *Pain* 2005; 116: 311–321.
- Katz S. Assessing self-maintenance: activities of daily living, mobility, and instrumental activities of daily living. *J Am Geriatr Soc* 1983; 31: 721–727.
- Drucker C, Dalgalarrodo P, Neri AL, Menon M, Tamai S, Giglio JS. [Beliefs and attitudes in depression elderly: of mental health service in Sao Paulo, Brazil]. 2005 (in Portuguese).
- Fleck MP, Louzada S, Xavier M, Chachamovich E, Vieira G, Santos L, et al. [Application of the Portuguese version of the abbreviated instrument of quality life WHOQOL-bref]. *Rev Saude Publica* 2000; 34: 178–183 (in Portuguese).
- American Psychiatric Association. Task Force on D-I. *DSM-IV: diagnostic and statistical manual of mental disorders*. Washington: American Psychiatric Association; 1994.
- Paradela EMP, Lourenço RA, Veras RP. [Validation of geriatric depression scale in a general outpatient clinic.] *Revista de Saúde Pública* 2005; 39: 918–923 (in Portuguese).
- D'Ath P, Katona P, Mullan E, Evans S, Katona C. Screening, detection and management of depression in elderly primary care attenders. I: the acceptability and performance of the 15 item Geriatric Depression Scale (GDS15) and the development of short versions. *Fam Pract* 1994; 11: 260–266.
- Bijur PE, Silver W, Gallagher EJ. Reliability of the visual analog scale for measurement of acute pain. *Acad Emerg Med* 2001; 8: 1153.
- Brucki SMD, Nitrini R, Caramelli P, Bertolucci PHF, Okamoto IH. [Suggestions for utilization of the mini-mental state examination in Brazil]. *Arq Neuropsiquiatr* 2003; 61: 777–781 (in Portuguese).
- Almeida O. [Mini mental state examination and the diagnosis of dementia in Brazil]. *Arq Neuropsiquiatr* 1998; 56: 605–612.
- Koenig HG, George LK, Peterson BL. Religiosity and remission of depression in medically ill older patients. *Am J Psychiatry* 1998; 155: 536–542.
- Giaquinto S, Spiridigliozzi C, Caracciolo B. Can faith protect from emotional distress after stroke? *Stroke* 2007; 38: 993–997.
- Panzini RG, Rocha NS, Bandeira DR, Fleck MPA. [Quality of life and spirituality]. *Rev Psiq Clin* 2007; 34: 105–111 (in Portuguese).
- Reyes-Ortiz CA, Berges IM, Raji MA, Koenig HG, Kuo YF, Markides KS. Church attendance mediates the association between depressive symptoms and cognitive functioning among older Mexican Americans. *J Gerontol Series A: Biol Med Sci* 2008; 63: 480.
- Van Ness PH, Kasl SV. Religion and cognitive dysfunction in an elderly cohort. *J Gerontol Series B: Psychol Sci Soc Sci* 2003; 58: 21.
- Kaufman Y, Anaki D, Binns M, Freedman M. Cognitive decline in Alzheimer disease: impact of spirituality, religiosity, and QOL. *Neurology* 2007; 68: 1509.
- Harrison MO, Edwards CL, Koenig HG, Bosworth HB, Decastro L, Wood M. Religiosity/spirituality and pain in patients with sickle cell disease. *J Nerv Ment Dis* 2005; 193: 250–257.

27. Baker M, Gorsuch R. Trait anxiety and intrinsic-extrinsic religiousness. *J Sci Study Relig* 1982; 21: 119–122.
28. Rosmarin DH, Krumrei EJ, Andersson G. Religion as a predictor of psychological distress in two religious communities. *Cognit Behav Ther* 2009; 38: 54–64.
29. Koenig HG, George LK, Titus P, Meador KG. Religion, spirituality, and acute care hospitalization and long-term care use by older patients. *Arch Intern Med* 2004; 164: 1579–1585.
30. Oman D, Reed D, Ferrara A. Do elderly women have more physical disability than men do? *Am J Epidemiol* 1999; 150: 834.
31. Ettinger Jr WH, Fried LP, Harris T, Shemanski L, Schulz R, Robbins J. Self-reported causes of physical disability in older people: the Cardiovascular Health Study. CHS Collaborative Research Group. *J Am Geriatr Soc* 1994; 42: 1035.
32. Kaplan HI, Sadock BJ, Grebb JA. [Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences Clinical Psychiatry] Porto Alegre: Artmed; 1997, p. 439–466 (in Portuguese).
33. Xavier FMF, Ferraz MPT, Trenti CM, Argimon I, Bertollucci PH, Poyares D, et al. Generalized anxiety disorder in a population aged 80 years and older. *Revista de Saúde Pública* 2001; 35: 294–302.
34. Scazufca M, Menezes PR, Vallada H, Araya R. Validity of the self reporting questionnaire-20 in epidemiological studies with older adults. *Soc Psychiatr Psychiatric Epidemiol* 2009; 44: 247–254.
35. Chan MH. Pain and disability in a group of Chinese elderly outpatients in Hong Kong. *Hong Kong Med J* 2004; 10: 160–165.
36. Koenig HG. Religious attitudes and practices of hospitalized medically ill older adults. *Int J Geriatr Psychiatr* 1998; 13: 213.
37. Williams DR, Sternthal MJ. Spirituality, religion and health: evidence and research directions. *Med J Aust* 2007; 186: S47–50.
38. Burazeri G, Goda A, Kark JD. Religious observance and acute coronary syndrome in predominantly Muslim Albania: a population-based case-control study in Tirana. *Ann Epidemiol* 2008; 18: 937–945.
39. Ehman JW, Ott BB, Short TH, Ciampa RC, Hansen-Flaschen J. Do patients want physicians to inquire about their spiritual or religious beliefs if they become gravely ill? *Arch Int Med* 1999; 159: 1803.
40. Koenig HG. Spirituality in patient care: why, how, when, and what? 2nd ed. Philadelphia: Templeton Foundation Pr; 2007.