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ASSOCIATION BETWEEN SOCIODEMOGRAPHIC AND ANTHROPOMETRIC FACTORS AND ASPECTS OF SPIRITUALITY/RELIGIOSITY IN ELDERLY WOMEN WITH CHRONIC PAIN

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ABSTRACT

This study aimed to investigate the association between sociodemographic and anthropometric factors and aspects of spirituality/religiosity in elderly women with chronic pain. Quantitative cross-sectional research carried out with 80 elderly women, diagnosed with chronic pain, from a multidisciplinary program in inland Minas Gerais. A sociodemographic and the Brief Multidimensional Measure of Religiosity/Spirituality forms were applied. Statistical analysis was descriptive for numerical variables, while absolute and relative frequencies were used for categorical variables. Multiple linear regression and analysis of variance were used for association between the Religiosity/Spirituality scores and the multidimensional aspects of pain, socioeconomic aspects and general health status perception. The mean age of the sample was 69.6 ± 5.8 years, low education (5 ± 3.5 years) and high number of comorbidities, especially in the circulatory system. The average BMI was 29.8 (overweight). Most used continuous medications, especially analgesic when under serious pain. Positive associations were found between S/R levels and "With whom resides" (*p*=0.05), "Religious Affiliation" (*p*=0.05), "Use of Continuous Medication" (*p*=0.09), "Use of Medication for Continuous Pain" (*p*=0.09) domains. In general, elderly women who live with their spouses take comorbidity control and chronic pain drugs, have higher BMI, some religious affiliation, and higher S/R levels.

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INTRODUCTION

The world is undoubtedly aging. This dynamic process is marked by a series of physical and social changes that affect health conditions of the elderly population (Lini *et al*., 2016). The concern with non-communicable chronic-degenerative diseases (NCDs) has been the focus of many studies. In this context, chronic pain, largely unspecified, is seen as a serious public health problem, since it has high epidemiological indices that directly affect the quality of life and functionality of the individual, especially the elderly (Souza *et al*., 2017). Aging and chronic pain are complex multifactorial processes determined by social, cultural, environmental, physical and psychological factors with very peculiar characteristics among

the population. This has led to a focus shift regarding assessment and treatment of the elderly with chronic pain. In the last few decades, spiritual/religious dimension has been included in the concept of health, and of course, research evaluating its impact on certain elderly health conditions has grown, including cases of chronic pain (Luchetti *et al*., 2011). However, lack of work assessing specific conditions of this topic exist, including the perspective of gender difference. "Feminization of aging" has been occurring for a few decades, as predominance of elderly women is an important factor to be considered by health promotion policies, as men and women present different behaviors and health care. Age and gender are also rarely addressed in studies with chronic pain. In this context, elderly women with chronic pain represent a vulnerable public that use spiritual/religious practice as a

measure to cope with chronic diseases and conditions (Pudrovska, 2015). Thus, it is essential to understand the multifactorial interaction of the aging process and to investigate possible associations that translate into more or less elective measures in coping with chronic pain (Grol-Prokopczyk, 2017). Thus, the present study aims to investigate the association between sociodemographic and anthropometric factors and aspects of spirituality/religiosity in elderly women with chronic pain.

METHODS

A descriptive, quantitative and cross-sectional research was conducted at a Specialized Center for Women's Health in a city in the interior of Minas Gerais. The study included 80 elderly women that were part of the chronic pain project, between the months of May and August 2016. This convenience sample was composed of elderly women of low socioeconomic status, classified according to the methodology of Socioeconomic Stratification and Consumption in Brazil (Kamakura andMazzon, 2016), based on the Family Budget Survey of the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografía e Estatística, 2013), and according to the criteria established by the Brazilian Association of Research Companies (Associação Brasileira de Empresas de Pesquisa, 2016). Women aging above 60 years with clinical diagnosis of chronic pain were included in the study. Those with cognitive changes, who had psychiatric disorders and with a history of uncontrolled chronic-degenerative diseases such as hypertension, diabetes, heart disease, heart valve disease or carcinoma were excluded. The analysis of cognitive changes was performed using the Mini Mental State Examination (MMSE) instrument developed by Folstein *et al*. (1975) and validated for the Brazilian population by Almeida (1998). The MMSE consists of questions grouped into seven categories, each planned with the objective of evaluating specific cognitive "functions" such as temporal orientation (5 points), spatial orientation (5 points), three words registration (3 points), attention and calculation (5 points), three words remembrance (3 points), language (8 points) and visual constructive capacity (1 point). The score can vary from a minimum of zero points, which indicates a higher degree of cognitive impairment of individuals, up to a maximum of 30 points, which corresponds to better cognitive ability (Chaves, 2008).

For cognitive decline assessment, the cutoff point followed based on the respondent's level of education, with 13 points for illiterates, 18 points or less for those with one to 11 years of education and 26 points for those with more than 11 years of education (Bertolucci *et al*., 1994). The selected sample participated in a meeting held in the study center of a Higher Education Institution to clarify the research objectives. Those interested in participating signed the Free and Informed Consent Form, according to prerogatives of Resolution 466/12 of the National Health Council. A socio-demographic form structured in two parts based on the models used by Curcio *et al*. (2015) and by Silva (2015) was applied to the participants individually. These models were based on the instrument developed by researchers from the Research Group on Public Health at the Federal University of TriânguloMineiro (UFTM), Uberaba-MG. The first part addresses the survey of sociodemographic data, comorbidities and perception of their general health status, while the second relates to the investigation of spiritual/religious aspects. The "Brief

Multidimensional Measure of Religiosity/ Spirituality (BMMRS)" was used to evaluate the spirituality/religiosity levels of participants. This is a scale developed by the Fetzer Institute (National Institute on AgingWorking Group, 2003), translated and culturally adapted in Brazil by Miarelli and Silva (2011) and validated into the Brazilian version by Curcio *et al*. (2015). It consists of 38 items that measure 11 dimensions, namely: daily spiritual experiences, values and beliefs, forgiveness, religious practices, religious and spiritual overcoming, religious support, religious/spiritual history, commitment, organizational religiosity, religious preferences and global S/R self-assessment. The response options are arranged on a Likert scale and may vary from one to four, from one to six or from one to eight response options. The score for each dimension is specific and the lower the score, the greater the degree of the dimension in question – to facilitate the analysis, the items´ score were inverted when the data was entered so that the more religious/spiritualized, the higher the scores (Curcio *et al*., 2015). The statistical analysis was descriptive for the numerical variables through the number of observations (N), the mean, the standard deviation, the minimum and maximum values and the inference through 95% confidence interval. Absolute (N) and relative (%) frequencies were used for the categories. For association between the Religiosity/Spirituality scores with the multidimensional aspects of pain, socioeconomic aspects and general health status perception, multiple linear regression was used for the numerical predictors and analysis of variance for the categorical predictors, with aid of the R v.3.3.1 software. The study was approved by the Research Ethics Committee under protocol No. CAAE 64615916.1.0000.5495.

RESULTS

Distribution of elderly women according to clinical indicators: In this age group, some comorbidities related to non-transmissible chronic-degenerative diseases (NCDs) are commonly observed. The criteria of the International Code of Diseases-ICD-10 version 2016 (World Health Organization, 2016) was used to classify the diseases. This study intensely showed the presence of cardiovascular (Category IX = 44.8%) and musculoskeletal disorders (Category XII = 21.3%), followed by metabolic, nutritional and endocrine diseases (Category IV), as well as mental and behavioral diseases (Category V), presenting, respectively, 11.3% each. On average, the group presented 2.8 comorbidities, with continuous use of medications (98.8%), especially for their control (4.2 ± 2.2). The use of medication for chronic pain was relatively low (x = 0.9; ± 0.5), but for many (87.5%) the use of pain medication is a common practice in cases of acute pain. Although the participants reported that the prescription is usually made by doctors (56.3%), self-medication is still present in this scenario (25.0%). Related to general health status perception, the results showed that about 40% of elderly women considered their health as good or regular, 11.2% as bad and 6.3% as very bad. Only 2.5% considered their general health to be very good.

Sociodemographic and Anthropometric Profile and Aspects of Spirituality/Religiosity in elderly women with chronic pain: As for the sociodemographic profile, the average age of the participants in this study was 69.6 years (± 5.8), ranging from 61 to 83 years old (95% CI = 68.3 to 70.6). As for color/race, most self-reported themselves as brown (45.0%), followed by white (41.3%) and black (11.3%), while 2.5%

preferred not to declare. Marital status ranged between married (55.0%), widowed (26.3%), separated/divorced (12.5%) to never married or living with a partner (6.3%). The average schooling education was 5 years (± 3.5). The participants reported living in payed-off homes (91.3%), followed by given homes without rent (5.0%), with a stranger helping to pay the rent (2.5%) and paying their own house installments (1.3%). Most lived with their partners (37.5%), with other people (26.3%), alone (18.8%), with children (12.5%) or with grandchildren (5.0%), living a mean of 2.8 people per residence (± 1.6), ranging from one to eight people. Table 1, which presents the economic characteristics of the socio-demographic profile of these elderly women, shows that retirement or pensions are their main income source. The economic condition regularly meets their basic needs, but they describe it in an equal way when compared to other people of their same age.

profile, 97.5% of the elderly women claimed to have a religion, being the majority catholic (73.8%), followed by evangelicals (18.8%) and spiritists (1.3%). Some reported other religions (3.8%) or declared themselves without religion (2.5%). Still, 91% said they were practitioners and not interested in other religions (58.8%); however, among these, there was a greater interest in kardecist spiritism (24.4%).

Analysis of the Brief Multidimensional Measure of Religiosity/Spirituality (BMMRS) Scale: In the analysis of the BMMRS scale dimension, the highest average was observed in the dimension of daily spiritual experiences (31), while the lowest average was found regarding the global self-assessment dimension (6.5), as shown in Table 2. However, the minimum and maximum values of the BMMRS dimensions presented very different scores. For this reason, a percentage analysis regarding how much the average represented in relation to the

Table 1. Economic characteristics of the sociodemographic profile of elderly women with chronic pain. (N = 80). Araxá, MG, 2016

Variable	Categories	N(%)
Basic Income/Satisfaction Needs	Bad	10 (12.5)
	Regular	47 (58.8)
	Good	23 (28.8)
Individual income (number of minimum wages)	Without income	08 (10.0)
	≤1 minimum wage	03 (3.8)
	1 minimum wage	44 (55.0)
	Between 1 and 3 wages	21 (26.3)
	Between 3 and 5 wages	03 (3.8)
	More than 6 wages	01 (1.3)
Income source	Retired	45 (56.3)
	Pension	13 (16.3)
	Rent	01 (1.3)
	Donation (family)	01 (1.3)
	Continuous work (formal or not)	01 (1.3)
	Eventual work	02 (2.5)
	Without own return	08 (10.0)
	Other	08 (10.0)
	Ignored	01 (1.3)
Main Professional Activity	Housewife	68 (85.0)
	Rural worker	01 (1.3)
	Liberal worker	02 (2.5)
	Other	07 (8.8)
	Does not exercise	02 (2.5)
Retirement reason	Service time	13 (16.3)
	Age	19 (23.8)
	Health problem	22 (27.5)
	Not retired	26 (32.5)
Comparison of the Economic Situation of other people of your age	Worse	09 (11.3)
	Equal	45 (56.3)
	Better	25 (31.3)
	Ignored	01 (1.3)

Source: Research Data, 2016.

Table 2. Measures of central tendency and variability in the dimensions of Religiosity and Spirituality of elderly women with chronic pain (N = 80). Araxá, Minas Gerais, 2016

Dimension	Mean	±	Minimum – Maximum	CI 95%	% of Mean in relation to the maximum value
Daily Spiritual Experiences	31.0	5.2	11 – 36	29.4 ± 32.1	86.1
Values/beliefs	7.4	0.8	3 – 8	7.3 ± 7.5	92.5
Forgiveness	10.4	1.7	4 – 12	10.1 ± 10.7	86.6
Religious Practices	28.5	4.8	17 – 36	27.5 ± 29.5	79.1
Religious and Spiritual Overcoming	18.0	2.0	9 – 25	17.6 ± 18.4	72.0
Religious support	10.8	2.5	4 – 17	10.3 ± 11.3	63.5
Organizational Religiosity	7.0	2.7	2 – 12	6.4 ± 7.6	58.3
Global self-assessment	6.5	0.9	4 – 8	6.3 ± 6.7	81.2

Source: Research data, 2016. CI: Confidence Interval

As for the anthropometric profile, the average height was 153 centimeters (± 6.6; 137 - 167 cm; 95% CI = 141.6 - 154.4) with an average weight of 70.7 kilograms (± 13.5; 41.2 - 109.8 kg; 95% CI = 67.7 - 73.7). The Body Mass Index (BMI) indicated overweight among the elderly (x = 29.8; ± 4.9; 18.7- 45.7; 95% CI = 28.8 - 30.8). Regarding the spiritual/religious

maximum score was performed. From this perspective, the highest percentage values were attributed to the "Values/Beliefs" dimension (92.5%), relating to the premise that God exists and that it affects human experience in some way. Table 3 addresses the religious/spiritual history dimension of the elderly women with chronic pain.

Table 3. Descriptive analysis of the "G" dimension - Religious/Spiritual History - of the Brief Multidimensional Measure of Religiosity/Spirituality of elderly women with chronic pain (N = 80). Araxá, Minas Gerais, 2016

BMMRS DIMENSION	RELIGIOUS/SPIRITUAL HISTORY		
	YES (%)	NO (%)	Mean age when this experience happened
Have you had any religious or spiritual experiences that changed your life?	68 (85.0)	12 (15.0)	39.1 ± 24.6
Have you had any rewards for your faith?	78 (97.5)	02 (2.5)	49.7 ± 16.7
Have you had any significant loss of your faith?	12 (15.0)	68 (85.0)	39.8 ± 16.5

Source: Research Data, 2016.

Table 4. Analysis of the variance of the Brief Multidimensional Measure of Religiosity/Spirituality score with the categorical variables

Variable	*p-value*
Color	0.6738
Marital status	0.3789
Income	0.7422
Provenance of family income	0.6695
Professional activity	0.2045
Retirement reason	0.9262
Basic needs´ meeting	0.1431
Comparison of economic situation in relation to other elderly people	0.1627
House where you live	0.6618
With whom you live	0.057*
Religious affiliation	0.0547*
Practitioner	0.6462
Interest in another religion?	0.3668
What other religion?	0.4136
Continuous use of medications	0.0961*
Do you use pain medication?	0.9926
Number of pain medications used	0.0908*
Frequency	0.6152
Who indicated the use of pain medication	0.8959
General Health Status	0.1164

Source: Research Data, 2016. *$p < 0.1$. ANOVA Test

Table 5. Multiple linear regression of means of the Brief Multidimensional Measure of Religiosity/Spirituality scores with the numerical variables

Variable	Regression Coefficient (se)
Age	- 0.016 (0.033)
MMEE (Mini Mental State Examination)	0.056 (0.071)
Height	0.226** (0.0113)
Weight	-0.256** (0.121)
BMI (Body Mass Index)	0.494* (0.283)
Education	- 0.065 (0.053)
Number of people Family Income	- 0.109 (0.111)
Number of comorbidities	- 0.194 (0.152)
Number of daily medications	- 0.047 (0.095)
Number of pain medications	0.166 (0.364)

Source: Research data, 2016. *$p <$significant at 0.1; ANOVA test. **$p < 0.05$. se: standard error.

The religious/spiritual experiences that changed the participants' lifes occurred, on average, in their fourth decade of life, a period also related to those who claimed to have asked for their faith. Regarding the commitment dimension, most elderly women (63.7%) fully agreed to trying to carry their religious beliefs throughout their lifes, made a monthly financial contribution to the religious community or to religious causes (75.0%), and 57.5% devoted more than three hours a week to their church activities or religious or spiritual practices. There were associations between the BMMRS scale scores with some variables, as shown in Table 4. Among the sociodemographic variables, only the variable with whom they live presented association with the BMMRS scores; among those of S/R, religious affiliation and with regard to the variables of clinical indicators, the use of continuous medications and the amount of pain medications were associated. The association between BMMRS scores and numerical variables is shown in Table 5. In this assessment, associations were only found with anthropometric indicators; there was a positive and significant association with BMI.

S/R can positively or negatively influence health practices and behaviors (Koenig, 2015), especially when observed in the context of the elderly with chronic pain. The religious/spiritual domain had an important representation in this study since most participants have a religion and are practitioners. There has been a significant increase in the diversity of religious groups in Brazil (Hayar *et al.*, 2014) in the last decade, becoming a very strong characteristic in the Brazilian population (Instituto Brasileiro de Geografia e Estatística, 2010). The BMMRS scale shows the importance of S/R for this group, as the highest average was observed in the "Values/Beliefs" dimension, which deals with the premise that God exists and that it affects human experience in some way. The elderly use religion/spirituality to establish an approach with the sacred/transcendent, even through coping strategies (Dedelli and Kaptan, 2013), affecting the person's ability to deal with, tolerate and accept diseases and pain (Forti *et al.*, 2018). Different beliefs have used religious faith as an additional tool in the management of chronic pain among the elderly, with faith and prayers as means of protection and support in face of different situations (Edwards *et al.*, 2016).

In this survey, the vast majority claimed to have received rewards for their faith at some point in their life, making it a justification for faith to remain present throughout life. This fact can be confirmed by the financial contribution they demanded for their religions and by the weekly time involved with religious/spiritual activities. Having a specific religion may not define the positive or negative outcome of spirituality in the elderly with chronic pain but can define the type of relationship with the "superior being" of their belief, increasing and strengthening their resilience (Rocha and Ciosak, 2014). The lowest percentages in the "Organizational Religiosity" and "Religious Support" dimensions showed that these religious activities have an intrinsic origin for this group. The discreet participation in public religious activities, as well as the support given by their religious groups, are seen as weak points that can affect the social support network for the elderly with chronic pain. The participation of the elderly, especially the oldest, in activities of organizational religiosity, in general tends to decrease a lot due to age and number of diseases they present (Abdala et al., 2015). In these cases, the elderly use S/R to face chronic diseases, even stating that in these phases they use their non-organizational religiosity or spirituality, weakening the sense of group and social support for many elderly women. In this research, some associations were found between sociodemographic and anthropometric factors and the levels of religiosity/spirituality in elderly women with chronic pain.

The analysis of variance showed a positive association ($p=0.057$) between S/R levels and the variable "with whom you live". Studies have shown a positive association between marital status and S/R scores (Büssing et al., 2009), where those who live with their partners have higher confidence levels in a superior being, having a positive interpretation of the disease process. There is a positive association between S/R levels and "continuous use of medications" ($p=0.09$) and "use of pain medications" ($p=0.09$). In general, with the aging process, many chronic non-communicable diseases are treated, in part, with medications. The presence of comorbidities is common at this stage of life and may represent risk factors for chronic pain, such as Systemic Arterial Hypertension (SAH) and Diabetes Mellitus (DM), to appear. In this work, 98.8% of the participants make continuous use of medication; from this perspective, S/R can be analyzed as health care in face of these variables, modifying behaviors and establishing self-care procedures, among them, assiduity with medications. Still, the use of specific pain medications is common, intensified during periods of pain exacerbation. This fact can stimulate the search for other alternative therapeutic practices, including spiritual/religious activity. Despite S/R coping, clinical findings suggest pain acceptance and tolerance, and not exactly of decreasing intensity (Dezzutter et al., 2011). Religious affiliation was another variable that had a positive association with S/R levels ($p=0.05$). Although catholic religion predominated, the highest religiosity/spirituality averages were found among evangelicals and other religions. However, these data cannot be generalized due to statistical restriction on the number of participants who made up these affiliations when compared to the catholic. Different beliefs take on very different interpretations of the meaning and management of chronic pain, with each religious group having a social group with their own beliefs. In this sense, there may be a sense of "collective" as a social group with particular characteristics that influence how faith helps to live with pain, accept and direct therapeutic approaches, bringing a new perspective on the health promotion perspective of this group (Edwards et al., 2016). A risk factor for chronic pain much discussed in the literature is overweight, although the results are conflicting. The relationship between obesity and pain is not direct but seems to be mediated by numerous factors such as biomechanical changes, structural damage, inflammatory biochemical mediators, sleep disorders and mood disorders, as well as lifestyle (Okifuji and Hare, 2015).

The linear regression analysis in this study showed a positive association between S/R levels and BMI ($p=0.09$). S/R also had an impact on anthropometric factors related to chronic pain in the elderly, including overweight. Studies on religious affiliation as social risk factor for overweight have already been discussed in the literature, mainly related to higher body weight (Yeary et al., 2017). Authors found that Seventh-day Adventists had higher body weight than other religious affiliations in cross-sectional studies. High levels of religiosity were associated with overweight in both cross-sectional and longitudinal studies. In cases of bivariate analyses, this association was significant; in multivariate it was less significant. Even so, study results that investigate the association between affiliation and overweight are still contradictory, especially when applied to an elderly population with chronic pain. However, it cannot be denied that religious affiliations and religiosity levels can influence health behaviors either positively or negatively. There is a lack of studies involving elderly women with chronic pain from an S/R perspective. This study presents the limitation of a cross-sectional design and the associations found here may not allow thematic contextualization in general. These results can be interpreted only as associations, but no causal inference is allowed. Future research should address longitudinal designs with control groups.

Conclusions

This study presents evidence of associations between the spirituality/religiosity scores and sociodemographic factors such as living with their partners, having religious affiliation and using drug control for comorbidities and chronic pain. The association between scores with anthropometric factors was only observed in relation to the body mass index variable, with higher scores being associated with higher levels of spirituality/religiosity. This can be seen from two angles: one focuses on the fact that spirituality/religiosity is an important coping measure for overweight or obese people; the other is a measure of passive (negative) behavior as a coping strategy in this group of people. These people would "expect" divine intervention on this issue. However, it is emphasized that these results are only associations and not a delimitation of cause and effect conditions.

Conflict of Interest: We declare that there are no conflicts of interest.

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