Quality of life and anxiety and depression symptoms in elderly females with and without chronic musculoskeletal pain

Qualidade de vida e sintomas de ansiedade e depressão em idosas com e sem dor musculoesquelética crônica

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ABSTRACT

BACKGROUND AND OBJECTIVES: Several studies look for an isolated relationship between anxiety, depression and quality of life and musculoskeletal pain in the elderly population. However, there are few studies comparing such variables among individuals with and without chronic musculoskeletal pain. This study aimed at evaluating anxiety and depression symptoms levels and quality of life in elderly females with and without chronic musculoskeletal pain.

METHODS: This is a cross-sectional study carried out with females aged 60 years or above, participants of mothers' clubs of the city of Caxias do Sul/RS. Participants were divided in two groups; group G1 (with chronic musculoskeletal pain) and group G2 (without pain). Beck Anxiety Inventory was used to evaluate anxiety symptoms, Beck II Depression Inventory was used to evaluate depression symptoms and WHOQOL-bref was used to evaluate quality of life.

RESULTS: Participated in the study 178 elderly females and four were excluded for not meeting all inclusion criteria. From remaining 174, 95 were included in G1 and 79 in G2. G1 has presented higher anxiety ($p<0.001$) and depression ($p<0.001$) symptoms levels and worse quality of life ($p<0.05$) as compared to G2.

CONCLUSION: Chronic musculoskeletal pain is frequent in the elderly population and is associated to higher incidence of depressive and anxious symptoms, in addition to negatively affecting quality of life.

Keywords: Anxiety, Chronic pain, Depression, Musculoskeletal pain, Quality of life.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Diversos estudos buscam uma relação isolada entre ansiedade, depressão e qualidade de vida com a dor musculoesquelética em idosos. No entanto, há poucos que comparam essas variáveis entre indivíduos com e sem dores musculoesqueléticas crônicas. O objetivo deste estudo foi avaliar os níveis de sintomas de ansiedade e depressão e a qualidade de vida em idosas com dores musculoesqueléticas crônicas e idosas sem dores.

MÉTODOS: Trata-se de um estudo transversal, realizado com mulheres com 60 anos ou mais, participantes dos clubes de mães da cidade de Caxias do Sul/RS. As idosas foram divididas em dois grupos, grupo G1 (com dor musculoesquelética crônica) e grupo G2 (sem dor). Para avaliar os sintomas de ansiedade foi utilizado o Inventário de Ansiedade de Beck, para os sintomas depressivos o Inventário de Depressão de Beck II e para a qualidade de vida o WHOQOL-bref.

RESULTADOS: Participaram do estudo 178 idosas, sendo que 4 idosas foram excluídas por não se adequarem em todos os critérios de inclusão. Das 174 restantes, 95 foram incluídas do grupo G1 e 79 no grupo G2. O grupo G1 apresentou níveis mais elevados de sintomas de ansiedade ($p<0,001$) e sintomas depressivos ($p<0,001$) e pior qualidade de vida ($p<0,05$) que o grupo G2.

CONCLUSÃO: A dor musculoesquelética crônica é frequente na população idosa e está associada com maior incidência de sintomas depressivos e ansiosos, além de afetar negativamente a qualidade de vida dos indivíduos.

Descritores: Ansiedade, Depressão, Dor crônica, Dor musculoesquelética, Qualidade de vida.

INTRODUCTION

Population above 60 years of age is growing faster than all other age groups[1], favoring higher prevalence of functional limitations and chronic diseases typical of human aging. So, there is higher demand for health services due to the need for further health professional assistance, continuous use of drugs and periodic exams[2].

Musculoskeletal disorders are among the most frequent chronic diseases during aging[3], being characterized especially by pain and decreased joint function[4,5]. When associated to pain, they are related to worse quality of life (QL) and to high health costs, in spite of the low mortality rate[6]. So, musculoskeletal pain is common among the elderly[7,8] and is

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related to considerable psychological, functional and social limitations[8,9]. Anxiety and depression, for example, may be caused by biological, psychic, social and psychological risk factors[10].

In evaluating the impact of musculoskeletal disorders it is important to measure associated problems, which are pain, emotional factors and QL[11]. Several studies have looked for an isolated relationship between anxiety, depression and QL and musculoskeletal pain in the elderly[8,12-20]. However, there are few studies comparing these variables between individuals with and without chronic musculoskeletal pain, as well as those evaluating the influence of pain intensity on those variables.

So, this study is justified exactly for aiming at evaluating depressive and anxious symptoms and QL among elderly females with and without chronic musculoskeletal pain, and at checking the influence of pain intensity on those variables.

METHODS

This is a cross-sectional study carried out in the Pontifícia Universidade Católica, Rio Grande do Sul. Data were collected from February to June 2014.

To select elderly females performing a common social and leisure activity, we decided to apply the study to Mothers' Clubs of the city of Caxias do Sul, located in the state of Rio Grande do Sul/Brazil.

Chronic pain was defined as pain for more than three months[21]. Inclusion criteria were females aged 60 years or more, who were divided in two groups: G1 made up of elderly females with chronic musculoskeletal pain (pain for more than three months) and G2 made up of elderly females without chronic musculoskeletal pain (no pain for more than three months).

Exclusion criteria were elderly females with musculoskeletal pain for less than three months or lack of musculoskeletal pain for less than three months; with Mini Mental State Exam (MMSE) cognitive performance <19 (illiterate) and <25 (literate); submitted to surgical procedures in the last six months and with neurodegenerative or oncologic diseases.

The following tools were used:

- MMSE: evaluates cognitive function and screens for dementia. It was used to exclude elderly females with cognitive deficit. Cutoff point for the diagnosis of dementia for illiterate individuals is 18/19 and for literate 24/25[22].
- Socio-demographic questionnaire: developed by the researchers to collect personal, education level and pain complaint data, in addition to exclusive questions.
- Economic Classification Criteria Brazil 2013 (CCEB): is a tool developed by the Brazilian Association of Survey Companies to classify population as to socio-economic level, using a survey of home characteristics. By means of CCEB, population is divided in classes A1, A2, B1, B2, C1, C2, D and E[23].
- Visual analog scale (VAS): used to measure pain intensity. It is a 10cm line with descriptive markers on its edges (no pain and worst possible pain). Subjects should mark the line where their pain is located. Then, centimeters are translated into a scale from zero to 10, were ≤3.4 represent mild pain, from 3.5 to 7.4 moderate pain and from ≤7.5 severe pain[24].
- Beck Depression Inventory-II (BDI-II): used to evaluate depression symptoms intensity[25]. The Brazilian version was validated by Gomes-Oliveira et al.[26]. The questionnaire classifies depression symptoms in minimum/no depression (0-13), mild (14-19), moderate (20-28) and severe (29-63).
- Beck Anxiety Inventory (BAI): used to evaluate anxiety symptoms intensity. It is classified by means of a score obtained by respondents, being 0-7 minimum anxiety, 8-13 mild, 16-25 moderate and 26-3 severe anxiety[27]. Our study has used the translated version of the Beck scale validated for the Brazilian population[28].
- WHOQOL-bref: is a questionnaire used to measure QL, validated for Brazil by Fleck et al.[29]. It is made up of 26 questions, being two regarding general QL and remaining questions divided in four domains: physical, psychological, social relations and environment. Domains scores are translated into a 0-100 scale and the higher the score the better the QL[30].

Procedures

Selected elderly females who accepted to participate in the study have first answered MMSE and socio-demographic questionnaires. From them, those matching selection criteria have answered remaining questionnaires in the following order: CCEB, BAI, BDI-II and WHOQOL-bref. In addition, G1 elderly females were asked about regions where they had musculoskeletal pain and have classified each one according to VAS. Pain was divided in: low back pain, neck pain, chest pain, lower limbs pain and upper limbs pain. Criteria for musculoskeletal pain diagnosis were presence of pain or sensitivity in described regions, without oncologic or neurodegenerative diseases and fractures or surgeries less than six month ago.

Study variables were: socio-demographic (age, socio-economic level, marital status and education level), anxiety symptoms level, depression symptoms level, QL, pain and pain intensity.

The program WINPEPI version 11.28 was used for sample calculation with significance level of 5% and power of 80%. As found in the literature, a standard deviation was used in the WHOQOL-bref Environment domain of 9.8 for the group with pain and of 11.6 for the control group, with expected difference of 4.6 between groups in this same score, thus totaling a sample of 174 subjects[31], being 87 participants in each group[32].

Statistical analysis

Database was developed in the program Microsoft Office Excel 2007, and analyses were performed with the software SPSS version 17. Significance level was 5%. Qualitative variables were described as absolute frequency and quantitative variables as mean and standard deviation.

Student *t* test was used to compare age between groups. Mann-Whitney test was used to compare education level and social class between groups and Chi-square test was used to compare marital status between groups.

Student *t* test was used to compare mean total scores of BAI and BDI-II between groups and Mann-Whitney test was used to compare the same questionnaires by categories. Student *t* test was used to compare WHOQOL-bref domains and general index of the same questionnaire. In group G1, correlation between VAS and BAI, BDI-II and WHOQOL-bref tools was evaluated by Pearson Correlation Coefficient.

This study was approved by Pontifícia Universidade Católica, Rio Grande do Sul and by the Ethics and Research Committee under opinion 479.870.

RESULTS

Participated in the study 178 elderly females of whom 95 belonged to group 1 (G1) and 79 to group 2 (G2). One elderly was excluded due to cognitive deficit according to MMSE, another for being treated for breast cancer and two more for having musculoskeletal pain for less than three months.

G1 age has varied from 60 to 91 years with mean of 70.01±7.76 years. Age group for G2 was the same as G1, with mean of 70.34±8.66 years. There has been no significant difference in age between groups (p=0.791). In both groups, most participants were married, followed by widows (p=0.228). Elderly females of both groups were also not statistically different in social class (p=596) and education level (p=0.693), being that in both groups most elderly females had not completed basic education. Demographic data of both groups are shown in table 1.

Low back pain was the most prevalent complaint among respondents, being reported by 36 participants. Pain intensity by VAS has varied from 3 to 9 with mean of 5.25, characterizing moderate pain. Neck was the second most affected region with report of 27 participants. Pain intensity in the neck has varied from 1 to 10 according to VAS, with mean of 5.48.

The third most affected region was lower limbs, with report of 26 elderly females. Pain intensity in the region has varied from 2 to 8 with mean of 5. Upper limbs pain was reported by 21 individuals and has varied from 2 to 9 in VAS, with mean of 4.4. Least affected region was chest, with 5 reported cases, varying from 3 to 8 with mean of 3.3, characterizing mild pain.

Considering pain intensity alone, regardless of affected region, 22.6% (26 complaints) were mild pain, 65.2% (75 complaints) were moderate and 12.2% (14 complaints) were severe pain.

As to the number of affected regions, 83.16% (79 participants) have reported pain in just one region, 13.68% (13 participants) in two regions, 2.11% (2 participants) in three regions and 1.05% (1 participant) in four regions.

As shown in table 2, G1 elderly females had higher total BAI score as compared to G2, being that mean total score for G1 was 11.17±6.36 and for G2 it was 4.86±3.98 (p<0.001).

Table 1. Comparison of demographic data between groups

Variables	Groups		p value
	G1 (n=95)	G2 (n=79)	
Age (years) Mean + standard deviation	70.01 ± 7.76	70.34 ± 8.66	0.791€
Marital Status *			0.228¥
Single	7 (7.4)	2 (2.5)	
Married	58 (61.1)	42 (53.2)	
Widow	27 (28.4)	32 (40.5)	
Divorced	3 (3.2)	3 (3.8)	
Education level*			0.693£
Illiterate	3 (3.2)	4 (5.1)	
Incomplete basic	61 (64.2)	48 (60.8)	
Complete basic	9 (9.5)	13 (16.5)	
Incomplete high school	3 (3.2)	2 (2.5)	
Complete high school	6 (6.3)	8 (10.1)	
Complete college	13 (13.7)	4 (5.1)	
Social Class *			0.596£
A1	0 (0)	1 (1.3)	
A2	1 (1.1)	1 (1.3)	
B1	15 (15.8)	11 (13.9)	
B2	26 (27.4)	28 (35.4)	
C1	33 (34.7)	20 (25.3)	
C2	13 (13.7)	14 (17.7)	
D	7 (7.4)	4 (5.1)	
E	0 (0)	0 (0)	

* Values in n(%);€: Student *t* test for independent groups; ¥: Chi-square test; £: Mann-Whitney test.

Table 2. Comparison of anxiety and depression symptoms levels between groups

Variables	Groups		p value
	G1 (n=67)	G2 (n=51)	
Anxiety symptoms level (BAI – total score) (Mean±SD)	11.17±6.36	4.86±3.98	<0.001€
Anxiety symptoms level (BAI – levels)*			
Minimum	28(29.5)	58(73.4)	<0.001£
Mild	47(49.5)	20(25.3)	
Moderate	18(18.9)	1(1.3)	
Severe	2(2.1)	0(0)	
Depression symptoms level (BDI-II –total score) (Mean + standard deviation)	13.14 ± 7.26	5.86 ± 4.21	<0.001€
Depression symptoms level (BDI-II – levels)*	53(55.8)	75(94.9)	<0.001£
Minimum	22(23.2)	2(2.5)	
Mild	16(16.8)	2(2.5)	
Moderate	4(4.2)	0(0)	
Severe			

* Values in n(%); €: Student *t* test for independent groups; £: Mann-Whitney test. BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory II.

In analyzing anxiety symptoms divided in levels, it is observed that G1 had prevalence of minimum anxiety symptoms (73.4% of elderly females), followed by mild anxiety symptoms (25.3% of elderly females) and moderate anxiety in just one case. No G2 participant had severe anxiety symp-

toms level. In G1, most participants had mild anxiety symptoms level (49.5%), followed by minimum anxiety (29.5%). Moderate anxiety symptoms level was observed in 18 elderly females (18.9%) and two elderly females had severe anxiety symptoms level (p<0.001).

As to depression symptoms level, table 2 shows that minimum depression symptoms have prevailed in G1, with 55.8%, followed by mild with 23.2%, moderate with 16.8% and severe depression with 4.2%. In G2, most participants had minimum depression symptoms level (94.9%), being that just two participants had moderate depression symptoms level 2.5%) and two mild depression symptoms (2.5%). No G2 participant had severe depression symptoms level (p<0.001).

Notwithstanding the prevalence of minimum depression symptoms in both groups, when mean total BDI-II score was analyzed, it was observed that G1 participants had significantly higher score (higher level of depression symptoms) as compared to G2, being that in G1 mean was 13.14 ± 7.26 and in G2 it was 5.86 ± 4.21, (p<0.001).

As seen in table 3, G1 group had lower total WHOQOL-bref scores as compared to G2. Mean total score for G1 was 73.53 ± 9.35 and for G2 it was 82.30 ± 7.62 (p<0.001).

In analyzing WHOQOL-bref separately in domains, it was observed that G1 had lower means as compared to G2 (p<0.05) in all domains.

Table 3. Comparison of quality of life between groups

Variables	Groups		p value
	G1 (n=95)	G2 (n=79)	
Quality of life/total score * (Mean±SD)	73.53 ± 9.35	82.30 ± 7.62	<0.001€
Quality of life/domains* (Mean±SD)			
Physical	63.5 ± 11.37	80.02 ± 8.92	<0.001€
Psychological	84.43 ± 10.67	92.40 ± 8.27	<0.001€
Social Relations	73.07 ± 14.15	77.74 ± 12.92	0.025€
Environment	73.16 ± 11.65	79.03 ± 12.02	0.001€

*: WHOQOL-bref questionnaire; €: Student *t* test for independent groups.

Table 4 shows that pain intensity had positive correlation with anxiety symptoms levels, being that the more severe the pain, the higher the anxiety symptoms (p<0.001). However, it was not correlated with depression symptoms level (p>0.05).

There has also been statistical significance in pain intensity correlation with WHOQOL-bref questionnaire physical domain, being that correlation between variables was negative, that is, the higher the pain intensity, the worst the quality of life in the physical domain (p<0.001). Pain intensity was not significantly correlated with remaining questionnaire domains and with total score (p>0.05).

Table 4. Correlation between quality of life, anxiety symptoms and depression symptoms and pain intensity

Pain intensity	Pearson correlation	p value
Anxiety symptoms level (total score)	.360	<0.001α
Depression symptoms level (total score)	.115	0.267α
QL – Physical domain	-.338	0.001α
QL– Psychological domain	-.101	0.329α
QL– Social relations domain	-.009	0.934α
QL – Environment	-.126	0.224α
QL – General index	-.174	0.092α

α = Pearson correlation.

DISCUSSION

Musculoskeletal pain induced by musculoskeletal disorders are highly disabling and frequent in the elderly population, being among the most common chronic diseases of the human aging process[3,6]. Studies on the prevalence of musculoskeletal pain in the elderly have broadly different results[15,16,21,33,34]. In our study, musculoskeletal pain was very frequent, being that 54.6% of participants had musculoskeletal pain in one or more body regions for more than three months. This result was similar to that found by Dellaroza et al.[32].

It was observed that groups were not statistically different in age. These results are compatible with other studies which have also not found age as factor associated to chronic pain in the elderly[8,32]. Similarly, there has been no relationship between chronic musculoskeletal pain and education level[32], marital status[16,32,34] and socio-economic level[32,34], showing that the fact of having or not pain might not be related to variables, as well as the existence of sample homogeneity between groups.

Low back pain was the most prevalent musculoskeletal complain, being reported by 37.9% of elderly females with chronic musculoskeletal pain, which is compatible with the literature as the most frequent complaint among the elderly[7,33,35,36]. Neck pain was the second most affected region, followed by lower limbs, upper limbs and chest. Based in other studies, it is possible to observe a variation on pain prevalence in these regions[7,15,32,33].

With regard to pain intensity, it was possible to observe that most elderly females had moderate pain, followed by mild pain and severe pain. The scarcity of studies evaluating pain intensity, and different tools used to measure it, impair the comparison of results[15,32]. However, pain intensity may be investigated by VAS, used in this study, by the pain numerical scale and by the verbal evaluation scale. VAS and numerical scale have shown to be more sensitive as compared to verbal scales with less than four categories, thus justifying their choice[24].

Our study has shown direct relationship between chronic musculoskeletal pain and higher level of anxiety symptoms, being that G1 had higher anxiety symptoms level in BAI as compared to G2. This difference in anxiety symptoms be-

tween groups shows the relationship of musculoskeletal pain and anxiety, confirming previous studies[12,14,37].

In the longitudinal study by Arola et al.[12] the presence of pain in the beginning of the study was a risk factor for developing anxiety in the next three years, as well as the presence of anxious symptoms in the beginning of the study was a risk factor for developing pain in the next three years. In a different study, however, performed with institutionalized elderly, there has been direct relationship between pain and anxiety[14].

In evaluating the correlation between pain intensity, measured by the visual analog scale, and anxiety symptoms level, it was observed in the studied population a positive correlation between both variables, being that the stronger the pain, higher the anxiety symptoms. Similar result was found by Hanssen et al.[18] who have evaluated depressive elderly with chronic and acute pain. In these elderly, chronic pain was strongly associated to anxiety, but there has been no correlation with acute pain intensity[18].

Some studies have evaluated the relationship between anxiety and pain and have observed strong association between variables, suggesting that higher levels of anxiety are related to consequent increase of fear of pain. This fear may generate pain-related behaviors, such as non-use and incapacity[38,39].

The highest prevalence of elderly females with depression symptoms (mild, moderate and severe) in this study is in line with other studies which have also found similar relationship between depression and chronic musculoskeletal pain in the elderly[12,13,18,19,34]. In the study by Hanssen et al.[18], depressive elderly have reported chronic pain more frequently than non-depressive elderly. The same study points to increased levels of depression both in acute and chronic pain cases. Bonnewyn et al.[13] have evaluated the presence of physical painful symptoms (present at any time in the last 12 months) in elderly with and without major depressive disorder and have concluded that painful physical symptoms were strongly and independently associated to major depression.

On the other hand, the fact that most elderly females had minimum depressive symptoms may be explained by active participation in community groups[40-42] favoring improvements in personal, intellectual, affective and social areas[41]. But the higher prevalence of depression symptoms in painful elderly females confirms results of previous studies, thus stressing the existence of a relationship between chronic musculoskeletal pain and depression[12,13,18,19].

Our study has shown that elderly females with chronic musculoskeletal pain had worse quality of life in all WHOQOL-bref domains, as compared to painless elderly females. These results are in line with other studies[15,17,20].

A study by Wranker et al.[20] has shown that pain was the strongest determinant for elderly QL impairment. In a study by Falsarella et al.[17] evaluating the influence of rheumatic disorders and chronic joint symptoms in the quality of elderly above 60 years of age, it was observed that rheumatic diseases had stronger influence in physical capacity and pain, and that chronic joint symptoms had influenced all quality of life aspects.

In a study by Cavlak et al.[15], elderly with musculoskeletal pain had negative health self-perception, while painless elderly had a very good/excellent self-perception. Painful elderly also had more days with worse physical and mental health in a 30-day period as compared to asymptomatic elderly.

In addition to chronic pain having consequences on physical and psychological functioning of affected people, it may directly affect social relations of such individuals. The fact of having pain, added to other possible consequences, such as insomnia, fatigue, loss of physical capacity, locomotion difficulties and anxiety and depression symptoms may more easily lead chronic pain individuals to decrease their leisure activities and social contacts[9,11]. In our study, the impact of chronic musculoskeletal pain could be observed in the fact that painful elderly had worse QL in social relations and environment domains as compared to painless elderly, difference which existed although all of them had common social activity, which is the participation in mothers' clubs.

CONCLUSION

Our study has concluded that chronic musculoskeletal pain is frequent in the female elderly population and is associated to higher incidence of depressive and anxious symptoms, in addition to negatively affecting quality of life of these individuals. It is believed that further studies are needed with both female and male elderly people for further contribution to health and quality of life of this population.

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