



Association between self reports of osteo-articular pain, and functional and clinical indicators on elderly residents in riparian Maués-AM

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ABSTRACT. In Brazil, a large part of the population of elderly people living in rural areas have difficult access to specialized health services. The objective of this study was to evaluate the association between self-reported of osteo-articular pain with functional and clinical indicators on elderly residents in riparian Maués-AM. Was conducted a cross-sectional study, observational who initially estimated the prevalence of osteo-articular pain through self-reporting of the elderly. The elderly the study were selected from families registered in the family health strategy. The questions were applied in the form of a structured interview. Most of the sample was constituted by men, with a prevalence of 64.2% (n = 1159) of seniors who reported some form of osteo-articular pain, being similar among elderly residents in urban region and in Riverside-rural region. Older women were more involved and the elderly over 75 years of age. The elderly with osteo-articular pain showed a significantly higher prevalence of morbidities and considered bad to your health and life. It is necessary to promote public policies for the implementation of programs that target the prevention and control of musculoskeletal diseases. To be able to promote a better functional ability and quality of life for this population.

Keywords: aging; morbidity; quality of life; arthritis.

Associação entre o autorrelato de dor osteoarticular e indicadores funcionais e clínicos em idosos ribeirinhos, residentes em Maués-AM

RESUMO. No Brasil, grande parte da população de idosos que vive em áreas rurais tem difícil acesso aos serviços especializados de saúde. O objetivo do estudo foi avaliar a associação entre o autorrelato de dor osteoarticular com indicadores funcionais e clínicos em idosos ribeirinhos residentes em Maués-AM. Foi conduzido um estudo transversal, observacional que inicialmente estimou a prevalência de dor osteoarticular por meio do autorrelato dos idosos ribeirinhos. Os idosos do estudo foram selecionados a partir de famílias cadastradas na Estratégia Saúde da Família (ESF). As questões foram aplicadas sob a forma de uma entrevista estruturada. A maioria da amostra foi constituída por homens, com a prevalência de 64,2% (n=1159) de idosos que relataram algum tipo de dor osteoarticular, sendo, similar entre idosos residentes na região urbana e na região ribeirinho-rural. As idosas foram mais acometidas e os idosos maiores de 75 anos de idade. Os idosos com dor osteoarticular apresentaram prevalência significativamente maior de morbididades e consideraram ruim a sua saúde e vida. É necessário o incentivo às políticas públicas para a implementação de programas que almejam a prevenção e o controle das doenças osteoarticulares, para assim poder promover melhor capacidade funcional e qualidade de vida para essa população.

Palavras-chave: envelhecimento; morbidade; qualidade de vida; artrite.

Introduction

In Brazil, great part of the elderly population that live in rural areas have difficult access to the specialized services of health (Aquino et al., 2012). This is the case of elderly that live in riparian communities located 'in the margins' of rivers and streams in the countryside of Amazonas state (Whitmore, 1998).

The riparian elderly, in the majority of times, are accompanied by teams of Health Strategy of Family from Single Health System (Estratégia Saúde da Família do Sistema Único de Saúde – ESF-SUS).

Although this possible unfavorable situation, some municipalities of Amazonas present percentage of people with advanced age (> 80 years old) much higher than other places in the same

state. This is the case of the municipality of Maués-AM. Because of this reason, this place was chosen to implementation of studies about aging in the Amazon Forest that have been previously published (Maia-Ribeiro et al., 2013; Ribeiro et al., 2013; Antonini et al., 2016). Although the greatest exposure to external accidents, infectious parasitic diseases, and difficult conditions to survival, a study that compared 3.318 elderly (1.805 residents of the municipality of Maués and 1.509 in Manaus), all registered in ESF-SUS suggested lower prevalence of some non-communicable chronic diseases as cardiovascular diseases, obesity, dyslipidemia and diabetes mellitus, type 2, in the riparian elderly when compared with the residents in Manaus, which is an area highly urbanized and with greater condition of access to the health services (Ribeiro et al., 2013).

Nevertheless, because the prevalence of fall was greater in the riparian elderly, in the complementary study conducted by Maia-Ribeiro et al. (2013), who verified that although the high prevalence of falls in the elderly of Maués, these ones presented satisfactory indication of functional aptitude and balance. In the case, these indicators were similar to the ones of elderly that live in developed countries, as the United States (Rikli & Jones, 2000). A complementary investigation, performed by Antonini et al. (2016), showed also the significant association between the time for performance of this 'Time Up and Go' (TUG) with greater risk of mortality after five years of following of this population.

The symptoms of osteo-articular pain (OA) are highly prevalent in elderly. This condition can be accentuated in individuals that have a historical of laborious activities in agriculture and also in fishing, which occurs with riparian elderly. For this reason, this condition could be a factor that would contribute to the prevalence of falls in this population. In a way that the OA pain and the functionality are associated to the health of elderly and, therefore, inducing the way of interaction with the environment that surrounds them (Mata, Costa, Souza, Mata, & Pontes, 2011).

According to Santos, Bersani and Moraes (2013), the pathogenesis of osteoarthritis is due to the interaction of multiple factors, including the articular integrity, genetics, local inflammation, mechanical forces and cell processes and biochemical. In the physical exam of the patients with OA pain we can observe crackling during the movement of the articulation affected. And its diagnosis is based in the clinical history, physical exam and in radiological findings.

Based on this context, the study here presented aimed to evaluate the association between the self-

report of OA pain that indicates the diagnosis of osteo-arthritis with functional and clinical indicators in riparian elderly residents in Maués-AM. This because the OA pain is considered the most prevalent articular disease in elderly being directly associated to labour incapacity and in the execution of daily activities affecting mainly the knees, hip, hands and vertebral column (Litwic, Edwards, Dennison, & Cooper, 2013).

Material and methods

Study type, population and sample

It was conducted a transversal study, observational that initially estimates the prevalence of OA pain by self-report of the riparian elderly of Maués-AM. The project was approved by the Ethics Committee of the Universidade do Estado do Amazonas (process number: 807/04).

This study was performed with secondary data coming from the project Elderly of the Forest (Idoso da Floresta), whose methodological details related to its implantation were previously described by Ribeiro and Neri (2012) and Maia-Ribeiro et al. **Erro! Indicador não definido.** (2013). Briefly, we can comment that the municipality of Maués (Latitude: -3.38361; Longitude: -57.71861) is of difficult access (by air transport or pluvial), being located 356 km of distance from Manaus. In the occasion of the research there were a total of 45. 284 inhabitants and, from these, 2.939 were elderly (\geq 60 years old). From these, 21.094 inhabitants lived in the urban region of Maués and the others were distributed in 170 riparian communities along 40 thousand km² that make up the municipality. The local climate is humid tropical with average temperature of 26.9°C (Average minimum = 22.6°C; Average maximum = 31.3°C) and humidity of 81%. The main economy of Maués is the agriculture, mainly focused to the guaraná cultivation (*Paullinia cupana*) (Cruz & Ribeiro, 2010). Both the geographic conditions (relief) and the climatic and functional (agriculture) can contribute to the early occurrence of OA pain in the riparian elderly.

Because the municipality of Maués presents a relief relatively low, with great extension of humid tropical forest, and hot climate with a lot of rain, the elderly need to move through the forests (needing to adapt themselves to the conditions of the trees, branches, wood spread in the terrain), as well as, in the rivers through boats (many times in precarious conditions, with overweight and with heavy rain) which predispose falls. In a way that the falls can

cause osteo-articular dysfunctions, fractures and complications providing the OA pain.

The elderly participants of the study were selected from families registered in ESF that in the municipality included about 92.0% of the population. The selection was conducted in two stages. In the first, the data was obtained from structured interview performed by Health Agents of family (Agentes de Saúde da família – ASF) previously trained. This methodological approach allowed the inclusion of 1805 riparian elderly (937 men and 869 women) which represented 61.0% of the total of elderly residents in Maués. The ASF performed the inclusion and the interview in the house of the elderly. The time for the collection of information was of two consecutive months. After this time, the ASG handed in the forms and the Informed Consent Form (TCLE) in the head office of the Municipal Head Office of Maués, which were collected by the researchers. The second stage of the study consisted on a structured interview, clinical and functional exam. The collection of the results was conducted by a multi-professional team. All the elderly that accepted to participate of the first stage were included in the present study.

The present study is part of a project previously approved by the Research Ethics Committee, from Universidade do Estado do Amazonas (opinion number 807/08). Once that the majority of the elderly of Maués was illiterate or only knew how to sign the name, the TCLE was read to them, in the presence of the caregivers and the consent was obtained by the fingerprint in the term, once that > 85% of the volunteers or were illiterate or had studied until three years of studies (formal or informal).

Evaluation of the osteo-articular pain in riparian elderly

Although there are instruments previously validated for the Portuguese Language for the diagnosis of osteo-arthritis as the 'Western Ontario and McMaster Universities Osteoarthritis Index' (WOMAC) and the questionnaire by Lesquene (Fernandes, Ferraz, & Ciconelli, 2003; Marx, Oliveira, Bellini, & Ribeiro, 2006), none of them showed realistically applicable for the riparian elderly once that they point questions related to aspects of urban daily life as 'wear socks', 'get in and out of the car', 'get in and out of the bath', 'sit and stand up from the toiled', among others. As described by Maia-Ribeiro et al. (2013), the riparian elderly generally live in a house of beaten floor, they sleep in hammocks, they have their kitchens at open sky, they take bath and do their physiological necessities on the riverbanks, they use as main transportation the canoes (motorized and non-

motorized). Even the elderly that live today in the urban region do not incorporate in their daily practice the urban costumes as the use of closed shoes with socks, even because Maués is inserted in the Amazon Forest. From this, the questions were reformulated for the reality of the population: (1) 'had daily pain in the bones and articulations when carried on activities as stand up, sit, walk, walk up and walk down the ravines or stairs, work in the harvest or in domestic activities'; (2) it was made an open question to the elderly asking what kind of diseases they had. Subsequently, it was identified the elderly that report problems in column, rheumatism, pain in the articulations and bones; (3) the third question asked if any doctor, nurse or professional of health said to him that he had diagnosis of 'rheumatism or arthritis'. Considering that the riparian elderly had none or very low schooling, the questions were applied under the form of structured interview.

Statistical analysis

The data were typed in Excel spreadsheet, checked in relation to accuracy of the typed information and, afterwards, transferred to the statistical program SPSS (version 19.0), in order to perform statistical analysis. The descriptive results were presented under the form of average \pm standard deviation (DP) and the categorical under the form of relative frequency (%) and absolute (n). The prevalence of AO pain, diagnosis of rheumatism was compared among men and women, different age groups of elderly, elderly with and without non-communicable chronic morbidities, prevalent with the age and other socio-economical, cultural and style of life variables using the Student test. Subsequently, it was conducted an analysis of potential variables intervening by means of logistical regression (method Backward wald). All the tests in which $p \leq 0,05$ were considered significant.

Results

The sample was constituted by 51.9% (n = 937) of elderly of the male sex and 48.1% (n = 869) of the female sex. With a prevalence estimated of 64.2% (n = 1159) of elderly that reported occurrence of some type of OA pain. Nevertheless, only 6.6% (n = 120) reported pain in the vertebral column. When they were questioned, 25.7% (n = 464) reported previous diagnosis of rheumatism provided by some professional of the health area. The prevalence of OA pain was similar among the elderly residents in the urban region (64.4%, n = 724) and in the riparian-rural region (63.9%, n = 435) of Maués (p = 0.808).

The elderly women presented greater prevalence of OA pain than men, while that the prevalence of pain in the column and rheumatism was similar between both sexes (Figure 1A). In the study, it was also observed greater prevalence of OA pain in elderly with age > 75 years old (Figure 1B). And the average age of men was of 72.6 years old and of the women 71.7 years old.

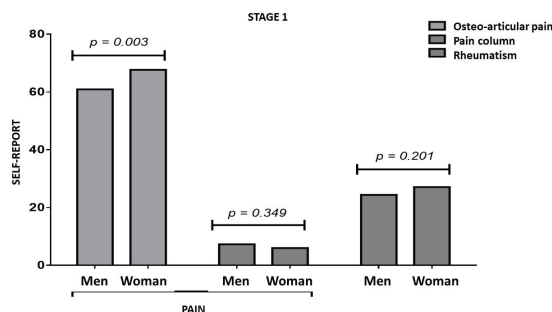


Figure 1A. Osteo-articular pain and its association between men and women.

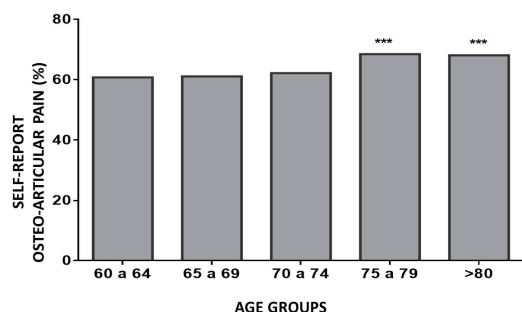


Figure 1B. Osteo-articular pain and its association with age range.

Association between OA pain and indicators of health was determined (Figure 2A) and the results showed that elderly that self-reported OA pain presented a prevalence significantly higher of systemic arterial hypertension (hipertensão arterial sistêmica – HAS), diabetes mellitus, type 2, previous historic of tropical infectious parasitic diseases as malaria, dengue, leishmaniasis and other morbidities of lower prevalence. Besides that, elderly with OA pain also reported significant occurrence of fall and fracture in the last six months. These elderly also presented greater frequency of daily ingestion of medicine. The obesity and previous diseases as cerebral vascular accident (acidente vascular encefálico - AVE), coronary artery disease (doença arterial coronariana - DAC), as well as hospital admission in the last year, were not significantly associated with OA pain.

It was also requested that the elderly reported about the quality of their lives, health and memory. The majority considered that these three aspects were from regular to good or great. However, a significant frequency with OA pain reported to consider bad both in relation to health and life (Figure 2B).

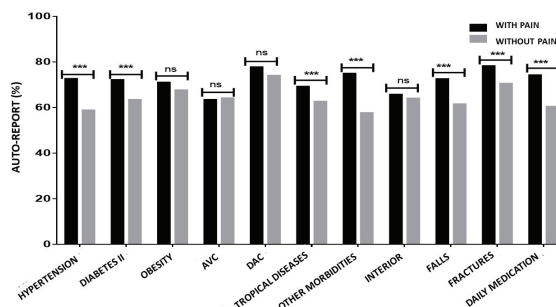


Figure 2A. Osteo-articular pain and its association with morbidities.

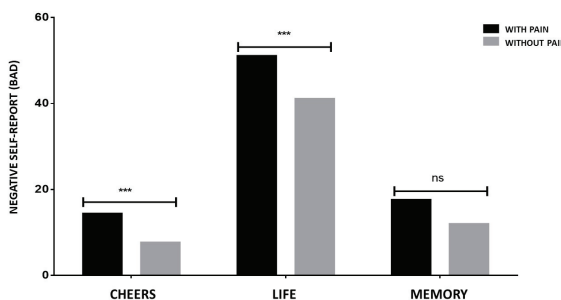


Figure 2B. Osteo-articular pain and its association with health, life and memory.

A multi-varied analysis was conducted in order to identify which variables were independently associated with OA pain in the riparian elderly. The result showed that the only variable independent was the self-report of health. In this case, independent of the presence or not of other punctual morbidities, elderly that self-reported to feel OA pain considered their lives bad ($p = 0.046$).

Discussion

The OA pain is common and incapacitating among the elderly patients all over the world. The prevalence and the factors of risk for the OA pain are of utmost importance in the establishment of health policies (Cho, Morey, Kang, Kim, & Kim, 2015). In a way that the OA pain and the functionality are elements linked to the health of the individuals and, therefore, influence the way of interaction among themselves and among them and

the environment that surrounds them (Mata et al., 2011).

In the present study, the prevalence of OA pain self-referred in the riparian elderly cared by ESF-SUS was of 64.2%. In the West, the OA disorders are common in elderly by the aging increasingly of the population (Andre, Ribbens, Kaye, & Malaise, 1997) and represent more than 50.0% of the causes of pain in elderly (Ersek, 1999). According to the data of the Exam of Health and Nutrition, in the year of 2011, the incidence of OA diseases in the United States occupied the third place (50.0%) in people with more than 65 years old (Centers for Disease Control and Prevention [CDC], 2001). Mendel, Luchihina, and Mendel (2015) affirm that are considered as factors of endogenous risk of OA diseases: the age, sex, ethnicity and hereditary predisposition. As factors of exogenous risk include: the injuries of articulations, the obesity and the excessive mechanical load. And the factors of biochemical risk can be both the deviations acquired and the inherited in the activity of cells and in the articular tissues (for example, the production of IL 1 by synoviocytes), as well as in other tissues (in particular, the excess of adipocytes in the adipose tissue in obese individuals).

The study by Ribeiro et al., (2013), carried out with riparian elderly, indicated strong association between the self-report of information and the medical diagnosis, suggesting that the use of the approach is valid to investigate the riparian population. This data responds to a longitudinal study that observed the predictive capacity of the status of health self-perceived in the population of elderly (Quesnel-Vallée, 2007).

The pain in the vertebral column and the rheumatism were present, respectively, in 6.6 and 25.7% of the riparian elderly. The pain in the column of elderly in relation to the osseous point of view can be justified by the installation of osteoporosis, which provides change in the form and composition of the bones, especially of the vertebra (Gallagher et al., 2000). We highlight, also, that the aging of the intervertebral disk probably contributes to the OA pain in the vertebral column (Loeser, 2013). In relation to rheumatism, the rheumatologic diseases are more commonly related to OA disorders (Coelho et al., 2009). It is also considered as frequent cause of incapacity, and the main responsible for the costs with health, whether they are direct, as appointments, medicine, or indirect as the rehabilitation (Mata et al., 2011).

The similarity of OA pain detected among resident elderly, in the urban region and riparian-rural, responds to the observed by Minicuci et al. (2014) in the city of Gana in Africa where the

prevalence was greater in the urban area. The authors believe that this can be explained by the peculiarities of each region.

The results found in this research collaborate with what was found by Srikanth, Fryer, Zhai, Winzenberg, Hosmer and Jones (2005) who considered greater prevalence of OA pain in the elderly women than in the men. The increase of prevalence and incidence of OA pain during the menopause, by the reduction of estrogen, takes to greater sensibility to pain (Ribeiro & Neri, 2012).

In the current research, the OA pain was more present in elderly from 75 years old, agreeing with studies that reported that the prevalence of OA pain increased with the age (Zhang, Niu, Kelly-Hayes, Chaisson, Aliabadi, & Felson, 2002; Minicuci et al., 2014). A promotion measure of health to delay the functional deficits resulting of the OA diseases would be the practice of physical exercises (Mazo, Sacomori, Krug, Cardoso, Tânia, & Benedetti, 2012), which contributes to a healthy aging, modifying or attenuating the processes of losses, among them, the ones caused by OA diseases (Cosme, Okuma, & Mochizuki, 2008).

Rossi (2008), discussing the aging of the osteo-articular system, highlights that aerobic exercises maintained over the years prevent the muscular deficiencies related to age that can lead to OA diseases. He argues, also, that resisted exercises increase the muscle mass in the elderly of both sexes, minimizing, and even reversing, the physical fragility present in the longest lived.

The riparian elderly, who referred OA pain, obtained prevalence significantly greater of HAS, diabetes mellitus, type 2, and previous historic of tropical infectious parasitic diseases. Puenpatom and Victor (2009) collaborated with what was found with significant associations between OA pain and cardiovascular risk. As well as Frey, Barrett-Connor, Sledge, Schneider and Weisman (1996) who noted an association between diabetes and the OA pain which can be explained by the high concentration of glucose which produces reactive species of oxygen and advanced products of glycation resulting in the degeneration of the cartilage (Litwic et al., 2013).

Recent investigations also quote a relation between the diabetes, type 2, and osseous diseases that can result in falls and fractures, suggesting that the diabetes and the complications associated can be harmful to the bone health (Fraser et al., 2011; Kurra & Siris, 2011). Besides that, epidemiological evidences point that, independently of age, the continued practice of physical activities throughout life can prevent the appearance of HA, diabetes mellitus, type 2 and dyslipidemia in the adult age (Fernandes & Zanesco, 2010).

Nevertheless, it was not found studies that reported association of OA pain with tropical infectious parasitic diseases. The authors of the present studies believe that it is because of the lack of studies that evinces this data with the studied population. The literature quotes that the geographic and economical difficulties related to the access to the services of health of the riparian communities of Amazon contributed for that great part of the elderly population obtained high risk of developing highly commutable diseases as malaria and leishmaniasis, as well as problems of health associated with the environmental contamination as the exposure to mercury during their lives (Cardoso, Navarro, Costa Neto, & Moreira, 2010).

In relation to the elderly with OA pain, in the current research, we observed significant occurrence of fall and fracture in the last six months. According to Cameron (2012), this can be explained by the fact that during the aging, degenerative alterations can occur in the body, mainly of the skeletal muscle system co-exist with chronic diseases. Therefore, the control of these morbidities represents an additional factor that can accelerate or decelerate the reduction in the physical capacity increasing the risk of fall and their consequences (Cameron, 2012). Besides that, the riparian people live in environments that encourage the falls, as the irregular terrain surrounding the house, gullies that make it difficult the access to the river, the habitual use of boats for the fishing and transport, and the use of shoes that predisposes the falls (Ribeiro & Neri, 2012).

The elderly of the present study with OA pain also presented greater frequency of daily ingestion of medicine. In Brazil, the use of great number of medicine is largely observed among the elderly (Ribeiro, Acurcio, & Wick, 2009). According to Da Silva, Ribeiro, Klein and Acurcio (2012), besides the clinical factors that make that the elderly need pharmacotherapy, other factors can be associated with the excessive use of medicine, which contributes to the importance of improvement of pharmaceutical assistance targeted to elderly, who are more vulnerable to the risk of iatrogenesis.

In relation to obesity, it was not significantly associated to OA pain. According to McCarthy, Bigal, Katz, Derby, and Lipton (2009), the chronic pain is common in elderly, affects more the women than the men and presents strong association with the obesity. Some studies reveal positive associations between obesity and the presence of OA pain, mainly in articulations that sustain the corporal weight, as knees and ankles (Machado, Barreto, Passos, & Lima-Costa, 2004; Vasconcelos, Dias, & Dias, 2007).

In relation to AVC, DAC and hospital admission it was not associated with OA pain in riparian elderly either. In the study by Siqueira et al. (2009), it was found association among HA, DAC and AVC independent of gender, age and other variables.

In this study, the riparian elderly with OA pain considered bad both their health and their lives. Among the elderly, the chronic pain is the most common, generating innumerable severe consequences and potentially debilitating among them we can quote depression, anxiety, social isolation, sleep disturbance, difficulties of movement and ambulation, damage of self-evaluation of health and increase of the necessity of spending on health care (Karp, Shega, Morone, & Weiner, 2008).

Litwic et al. (2013), also, quote that the onus of OA pain is physical, psychological and socio-economical. It can be associated also with worse quality of life, coming from a reduction of mobility and in the activities of daily life. The psychological sequels include suffering and loneliness. Given the high frequency of OA pain in the population, its economic burden is big.

The results here described are limited to the universe of the elderly inserted in ESF-SUS of Manaus and of the municipality of Maués, as well as the delimitation of the transversal study that does not allow establishing an association between cause and effect. Nevertheless, because of the difficulties of geographical access to the populations of the Amazon forest, we believe that the study is relevant for the comprehension of the process of aging in native conditions observed in isolated or semi-isolated.

Conclusion

To estimate the prevalence of OA pain, morbidity and indicators of functional aptitude in riparian elderly, it is a question that can only be elucidated by means of a longitudinal study and complementary investigations related to the variables of genetics, nutrition, physical activity and psychological.

It is necessary an incentive to the public policies for the implementation of programs that seek the prevention and the control of OA chronic diseases. As the regular practice of physical exercises to prevent and soothe the OA pain and, consequently, the reduction of ingestion of medicaments. As well as the education about the body postures in the daily activities. Thus, to be able to promote a better functional capacity and quality of life for this population.

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