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Comparison of functional autonomy with associated sociodemographic factors, lifestyle, chronic diseases (CD) and neuropsychiatric factors in elderly patients with or without the metabolic syndrome (MS)

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ABSTRACT

The objective of this study was to compare autonomy and its associated factors in the elderly with and without MS. This study was a cross-sectional evaluation comprised of 402 subjects aged 60 years or older, of both sexes, consulting at the Family Health program, in Viçosa/MG. Autonomy was classified according to the Group of Latin American Development to Maturity (GDLAM) protocol and MS according to classification of the International Diabetes Federation. The independent variables were socio-demographic gender, age, marital status, education, those related to lifestyle including levels of physical activity and sedentary behavior, neuropsychological aspects included depressive symptoms, level of cognition and the presence of CD. A multiple linear regression model was used to estimate associations of variables with autonomy in the elderly with or without the MS. In the elderly group without MS, autonomy was associated with increasing age, sedentary behavior and depressive symptoms. In the group of elderly patients with MS, in addition to these factors, autonomy was also associated with being illiterate, not being physically active and presenting chronic illness. It was concluded that the presence of MS worsened the functional autonomy of elderly persons.

1. Introduction:

The rapidly changing demographic and epidemiological profile of Brazil is driving the need for research on the health of the elderly population. With the growth of this percentage of the population, concerns regarding their autonomy and functional capacity are emerging (Alencar et al., 2010).

Increased life expectancy has increased linearly with the increase of CD and disabilities (Lechleitner, 2008). The elderly are the most susceptible to functional disability. Among the factors that define this situation, the prevalence of CD and reduced physical activity level are emphasized (Coelho & Burini, 2009). It is also observed that the increase in CD is associated with MS (Dalacorte, 2008; Misra & Khurana, 2008).

MS is a clinical disorder characterized by a set of cardiovascular risk factors, such as excess body fat, insulin resistance, hypertension, changes in triglyceride levels, and HDL-cholesterol is associated with cardiovascular disease and results in increasing mortality levels (Manna, 2006; Sociedade Brasileira de Cardiologia, 2005) and is currently a major global public health (Alberti, Zimmet, & Shaw, 2005)

MS affects the physical and emotional dimensions of life, and limits daily activities, independence and quality of life among the elderly (Öztürk et al., 2011). The presence of comorbidities as well as cognitive impairment and functional disability have emerged as predictors of depression, hospitalizations, premature death and loss of autonomy.

A healthy diet, regular practice of physical activity, abstinence from tobacco and alcohol, adequate control of risk factors and

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comorbidities can prevent CD and functional decline in the elderly, increasing not only longevity but also the autonomy and quality of life of individual (Rosa et al., 2003).

The successful aging that is desired by all must seek a balance between the various dimensions of functional capacity without necessarily meaning the absence of disease (Paixão & Reichenrein, 2005).

The fact that the MS is cardiovascular risk factor that increases overall morbidity makes the study of their relationships with functional autonomy extremely important. Clinical studies have been conducted to determine the influence of primary care counseling on the level of physical activity and the maintenance of changes in behavior regarding health. However, we have not found researches that correlate MS with functional autonomy of the elderly. The functional autonomy is influenced by sociodemographic factors, neuropsychiatric condition, lifestyle and health condition.

Given the scarcity of studies concerning autonomy of elderly patients with MS, this study aimed to compare autonomy and its associated factors in elderly patients with or without MS, in the city of Viçosa, Minas Gerais, Brazil. We believe that our conclusions will appeal to a broad audience because of the great lack of information about the impact that the MS has on the functional autonomy of the elderly.

2. Materials and methods

A cross-sectional study was conducted on a total of 402 elderly people, aged 60 years and older. Subjects were randomly selected from the general population that consulted in units of the Family Health Strategy (FHS) in Viçosa/MG, Brazil, from August 2011 to June 2012. In Viçosa there are 15 FHS units which attended 60.3% of elderly individuals in the municipality, accounting for 6298 individuals.

The sample size calculation considered a 95% confidence level, prevalence of 65% and 5% variability. Thus, the sample of 331 elderly people, which included 20% to cover potential losses, totaled 398 seniors to be studied. However, the final sample consisted of a total of 402 elderly. The sample size calculation was performed using the Stat Calc Epi-Info (version 3.5.1, August 2008 – Centers for Disease Control and Prevention, Atlanta, Estados Unidos).

Data collection took place at the FHS during two meetings. In the first meeting, the elderly received information about the study objectives and signed a consent form.

The study fully met all standards for conducting research on human subjects, Resolution 196/96 of the National Health Council on 10/10/1996, and the resolution of Helsinki (WMA, 2008). The research project was previously approved by the Ethics Committee on Human Research of the Federal University of Viçosa (protocol n°.: 039/2011).

Then, a questionnaire was applied to gather information on the date of birth, gender, marital status, education, CD, physical activity and sedentary behavior, as well as a questionnaire on mental status and depressive symptoms. At this time there was also an assessment of abdominal circumference, measured above the navel using an inelastic tape, brand Cardiomed®, Brazil. This procedure followed the guidelines proposed by the International Society for the Advancement of Kinanthropometry (Marfell-Jones et al., 2006).

Tests were then conducted to evaluate the functional autonomy of the elderly. Elderly were classified as having MS according to IDF criteria which recommends the following cutoffs: elevated waist circumference ($\geq$94 cm for men and $\geq$80 cm for women) and at least two of the five parameters used to define the syndrome including increased triglyceride levels ($>$150 mg/dL), low HDL cholesterol ($<$40 mg/dL for men and $<$50 mg/dL for women), high fasting glucose ($>$100 mg/dL) or presence of diabetes, and elevated blood pressure (systolic blood pressure $>$ 130 mmHg or diastolic blood pressure $>$ 85 mmHg, or use of antihypertensive drugs). Elderly people who did not fit the criteria of the IDF were classified as without of MS.

Levels of physical activity were classified as insufficiently active for those who performed less than 150 min of leisure-time activities, and active among those who presented more than 150 min of activities. Sedentary behavior was considered for the elderly who remained sitting or lying down for over two hours. Both were assessed using the long version of the International Physical Activity Questionnaire (IPAQ) (Matsudo et al., 2001).

The mental state was assessed by the Mini-Mental State Examination (MMSE). MMSE scores ranged from 0 to 30 points. There was a significant influence of age and education of the individual, suggesting the need to use different cutoff points. Ratings took into consideration the education, where the absence of cognitive impairment was given by the following cutoff values: 13 for illiterate; 18 for individuals with 1–7 years of schooling and 26 for 8 or more years of schooling (Bertolucci et al., 1994).

Depressive symptoms were assessed by the Geriatric Depression Scale (GDS-15) (Yesavage, 1988) and have been validated and assessed for Brazilian population (Almeida & Almeirda, 1999). This is a self-report in which the subject is required to answer a total of 23 yes/no questions relating to his/her state of mind. Normal behavior is considered for individual with score less than or equal to 5 points, scores between 5 and 11 are indicative of an individual with depressive symptomatology and severe depressive symptomatology are indicated by scores greater than or equal to 11 points.

The second meeting was held to collect blood, where all participants were forewarned of the need to be fasting for 12 h.

Categories	W10 Test	GSP Test	RPP Test	WSR Test	GCMH Test	GI (scores)
Low	+ 7,09	+ 11,19	+ 4,40	+ 13,14	+ 43,00	+ 27,42
Regular	7,09– 6,34	11,19 – 9,55	4,40 – 3,30	13,14 - 11,62	43 – 38,69	27,42 – 24,98
Good	6,33 – 5,71	9,54 – 7,89	3,29 – 2,63	11,61 - 10,14	38,68 – 34,78	24,97 – 22,66
Very good	- 5,71	- 7,89	- 2,63	- 10,14	- 34,78	- 22,66

Fig. 1. The results of GI, categorized as low, regular, good and very good as time in seconds for each test.