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## ORIGINAL ARTICLE

### NUTRITIONAL PROFILE OF ELDERLY AND ITS ASSOCIATION WITH COGNITIVE AND SOCIODEMOGRAPHIC FACTORS

#### PERFIL NUTRICIONAL DE IDOSOS E SUA ASSOCIAÇÃO COM FATORES COGNITIVOS E SOCIODEMOGRÁFICOS

#### PERFIL NUTRICIONAL DE LOS ANCIANOS Y SU ASOCIACIÓN CON FACTORES COGNITIVOS Y SOCIODEMOGRÁFICOS

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#### ABSTRACT

**Objective:** to verify associations of nutritional status with socio-demographic factors and cognitive status of a population of non-institutionalized elderly. **Method:** documentary, analytical and transversal study, with a quantitative approach, with 856 elderly. Socio-demographic data, and nutritional and cognitive assessment were obtained from clinical records. Data were tabulated and analyzed using Statistical Package for Social Sciences (SPSS) v.18.0 for Windows® and presented in tables. **Results:** the nutritional profile of the elderly was characterized by the high prevalence of overweight. Women were more frequently overweight. Literacy was associated with overweight, and its absence, with low weight. Older individuals with older age presented a higher prevalence of underweight, and lesser than overweight. **Conclusion:** elderly people with cognitive problems presented a higher prevalence of low weight while overweight was related to the absence of cognitive impairment. **Descriptors:** Aging; Body Mass Index; Mental Health.

#### RESUMO

**Objetivo:** verificar associações do estado nutricional com fatores sociodemográficos e estado cognitivo de uma população de idosos não institucionalizados. **Método:** estudo documental, analítico e transversal, de abordagem quantitativa, com 856 idosos. Os dados sociodemográficos, e da avaliação nutricional e cognitiva foram obtidos de prontuários clínicos. Os dados foram tabulados e analisados por meio do software *Statistical Package for Social Sciences* (SPSS) v.18.0 para Windows® e apresentados em tabelas. **Resultados:** o perfil nutricional dos idosos foi caracterizado pela alta prevalência de sobrepeso. Mulheres apresentaram maior frequência de sobrepeso. A alfabetização associou-se ao sobrepeso, e sua ausência, ao baixo peso. Idosos com idade mais avançada apresentaram maior prevalência de baixo peso, e menor de sobrepeso. **Conclusão:** idosos com problemas cognitivos apresentaram maior prevalência de baixo peso, enquanto o sobrepeso esteve relacionado com a ausência de prejuízo cognitivo. **Descritores:** Envelhecimento; Índice de Massa Corporal; Saúde Mental.

#### RESUMEN

**Objetivo:** verificar asociaciones del estado nutricional con factores sociodemográficos y estado cognitivo de una población de ancianos no institucionalizados. **Método:** estudio documental, analítico y transversal, de abordaje cuantitativo, con 856 ancianos. Los datos sociodemográficos y la evaluación nutricional y cognitiva fueron obtenidos de los registros médicos. Los datos se tabularon y fueron analizados mediante el software *Statistical Package for Social Sciences* (SPSS) v.18.0 para Windows® y presentados en tablas. **Resultados:** el perfil nutricional de los ancianos se caracterizó por una alta prevalencia de sobrepeso. Las mujeres mostraron una mayor frecuencia de sobrepeso. La alfabetización se unió al sobrepeso y su ausencia al bajo peso. Ancianos con edad más avanzada mostraron mayor prevalencia de bajo peso y menos sobrepeso. **Conclusión:** ancianos con problemas cognitivos han presentado mayor prevalencia de bajo peso, mientras el sobrepeso estuvo relacionado con la ausencia de perjuicio cognitivo. **Descriptores:** Envejecimiento; Índice de Masa Corporal; Salud Mental.

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## INTRODUCTION

Aging is a natural process that causes gradual, inevitable and irreversible changes. This progressive phenomenon, in addition to triggering organic wear, causes changes in the cultural, social and emotional aspects<sup>1</sup>, and determines a change in the epidemiological profile of the diseases. In less than 40 years Brazil has undergone a morbidity and mortality profile of infectious diseases for the epidemiological profile with chronic diseases characteristic of the more advanced age groups.<sup>2</sup> In Brazil, as in most countries, the process of population aging happens in a growing way, generating consequences for the family (re) organization in the care of the elderly individual. These facts can interfere in the lifestyle, compromising the quality of life in the family and in the individual, as well as in the social well-being of those involved.<sup>3</sup> This scenario causes a great social, political and economic challenge, implying higher medical and social costs and expenses, needing family and community support.<sup>4</sup>

The nutritional status of the elderly is the result of a complex interaction between individual and environmental factors. Diseases influence and are influenced by the nutritional status of the individual. The aging process is characterized by several changes and physiological needs, which leads the elderly to be more susceptible to nutritional disorders.<sup>5</sup> Knowledge of the nutritional profile is an important aspect, since the elderly present peculiar conditions that compromise their condition. These conditions are due to the changes that individuals undergo with the advancement of the age, being able to be physiological or socioeconomic, as well as the factors related to health that result from the lifestyle that assumes a relevant role in the care of the elderly.

Other health conditions that affect the health of the elderly are those related to the cognitive process.<sup>7-8</sup> The cognitive decline in aging is characterized by loss of memory, lack of concentration and other psychological compromises that lead to functional decline, generating a difficulty to perform the Daily activities and, consequently, the need for a caregiver.<sup>9</sup> It is estimated that, by the year 2020, the elderly will represent 30 million people. About 13% of the total population of Brazil will be composed of individuals who will be 60 years old or older, generating a growing concern with maintaining the cognitive capacity of this population.<sup>2</sup>

It is important to know the nutritional and cognitive profile of the elderly population, as well as some characteristics related to such conditions to verify possible risk groups for preventive interventions. Thus, the objective of this study is:

- To verify associations of nutritional status with socio-demographic factors and cognitive status of a non-institutionalized elderly population.

## METHOD

This study was extracted from the Final Report of the Scientific Initiation Research Project / FIPMoc << *Evaluation of the nutritional profile of the elderly attended by the Reference Center for Health Care of the Elderly Eny Faria de Oliveira in Montes Claros, Minas Gerais* >>, current From May 2013 to April 2014.

A quantitative, analytical, cross-sectional, documentary study with data on 856 elderly individuals aged 60 years and older who were attended at the Nutrition Service of the Center for Reference to Assistance to the Health of the Elderly (CRASI) Eny Faria de Oliveira, in the city of Montes Claros / MG (total population estimated at 400,000 inhabitants), between February 2008 and January 2011. Data on the nutritional status, cognitive and socio-demographic profile were obtained directly from the individuals' medical records, referring to current information of admission. Incomplete records were not considered for analysis in this study.

This research was approved by the Research Ethics Committee (opinion: 152.340 / 2012, number CAAE: 07585812.2.0000.5146) and CRASI authorization for its accomplishment.

Regarding socio-demographic factors, the individuals were analyzed according to age, sex (male and female), schooling (illiterate and literate) and marital status (married and unmarried). The nutritional assessment considered the Body Mass Index (BMI) data, expressed by the relationship between body mass in kg and height in m<sup>2</sup> [(weight) / (height)<sup>2</sup>], a good index for assessing nutritional status due to its ease Its low cost and small intra or intermediate variation. To characterize the nutritional status of the elderly, the BMI values proposed by the World Health Organization were followed : Low weight = BMI <22.0; and eutrophic = BMI between 22.0 and 27.0; and overweight = BMI > 27.<sup>10, 11</sup>

The cognitive functions of the patients were evaluated with the Mental State Mini-Exam (Minimental).<sup>12</sup> Time and space

orientation skills, registration, language, motor coordination, immediate and late recall, attention and calculation of the patients were analyzed in 11 questions . The Minimental scores considered years of education to detect cognitive impairment: following the cutoff point of 24 for the elderly with more than nine years of education and 17 for those with less schooling.<sup>13</sup>

All data were tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) v.18.0 software for Windows®. The relationship of sociodemographic and cognitive variables of the elderly with BMI data was analyzed using the chi-square test (x2). By the Kolmogorov-Smirnov test, it was

verified that the data of age reached non-parametric distribution and were therefore compared, in relation to BMI, by the Kruskal-Wallis test. The level of significance to be considered in the statistical tests was set at 95% (p <0.05).

RESULTS

Table 1 shows the frequency distribution of the study variables in relation to the elderly. The mean age was 74.7 ± 8.5 years. There was a predominance of female, literate and unmarried individuals. The studied population had a higher prevalence of overweight, as well as absence of cognitive decline identified by the Minimental.

Table 1. Distribution of frequencies of the elderly attended at CRASI between February 2008 and January 2011 regarding sociodemographic, nutritional and cognitive factors. Montes Claros (MG), Brazil, 2013/4.

| Variables          | n   | %    |
|--------------------|-----|------|
| Sex                |     |      |
| Female             | 637 | 74.4 |
| Male               | 219 | 25.6 |
| Education          |     |      |
| Illiterate         | 283 | 33.1 |
| Literate           | 573 | 66.9 |
| marital status     |     |      |
| Not married        | 485 | 56.7 |
| Married            | 371 | 43.3 |
| nutritional status |     |      |
| Low weight         | 208 | 24.3 |
| Eutrophic          | 289 | 33.8 |
| Overweight         | 359 | 41.9 |
| Cognitive problem  |     |      |
| No                 | 596 | 69.6 |
| Yes                | 260 | 30.4 |

The analysis of the body mass index with socio-demographic data and cognitive status is shown in table 2. Only the marital status showed no association with the BMI. A significant relation of the greater frequency of

overweight in women (p <0.001), literate elderly (p <0.001) and those without cognitive problems (p <0.001) was identified. In addition, it was observed that the overweight elderly had a lower mean age (p <0.001).

Table 2. Bivariate analysis of body mass index in relation to sociodemographic factors and cognitive status of the elderly attended at CRASI between February 2008 and January 2011. Montes Claros (MG), Brazil, 2013/4.

| Variables         | BMI          |              |             | Value of p |
|-------------------|--------------|--------------|-------------|------------|
|                   | Low weight   | Eutrophic    | Overweight  |            |
| Age**             | 78.0 (±10.4) | 74.3 (±12.5) | 71.5 (±9.2) | <0.001*    |
| Sex               |              |              |             |            |
| Female            | 130 (62.5%)  | 204 (70.6%)  | 303 (84.4%) | <0.001*    |
| Male              | 78 (37.5%)   | 85 (29.4%)   | 56 (15.6%)  |            |
| Education         |              |              |             |            |
| Illiterate        | 85 (40.9%)   | 106 (36.7%)  | 92 (25.6%)  | <0.001*    |
| Literate          | 123 (59.1%)  | 183 (63.3%)  | 267 (74.4%) |            |
| marital status    |              |              |             |            |
| Not married       | 124 (59.6%)  | 175 (60.6%)  | 185 (51.8%) | 0.051      |
| Married           | 84 (40.4%)   | 114 (39.4%)  | 173 (48.2%) |            |
| Cognitive problem |              |              |             |            |
| No                | 107 (51.4%)  | 207 (71.6%)  | 282 (78.6%) | <0.001*    |
| Yes               | 101 (48.6%)  | 82 (28.4%)   | 77 (21.4%)  |            |

\* Statistically significant p value (p <0.05).

\*\* Mean ± standard deviation

DISCUSSION

The aging of the population has led to demographic and epidemiological changes, and it is necessary to seek various means to improve the quality of life of the elderly,<sup>14</sup> becoming the nutritional aspect that is important for the improvement of health conditions and for the prevention of diseases at their various levels, from the primary to the tertiary. The maintenance of an adequate nutritional status is very important, since, on the one hand, it is the low weight, which can lead to malnutrition, increasing the risk of infections and mortality, and on the other, the overweight, which Increases the risk of chronic non-communicable diseases, such as hypertension, type 2 diabetes mellitus and hyperlipidemias, which has increased its prevalence.<sup>6</sup>

The nutritional status of the elderly in this study was characterized by a high prevalence of overweight, as found in other studies developed in Brazil.<sup>6,9,15</sup> The high prevalence of overweight is a cause for concern, since it is associated with non-chronic diseases and increased mortality and also public spending on health. When comparing the age of the elderly with the BMI groups, an inverse correlation was observed in which a decrease in BMI, was detected with increasing age. Similar to the study of elderly people, in two Brazilian regions, which revealed that low weight is associated with older elders.<sup>16</sup> This data deserves attention because it is associated with higher mortality. During the aging process, factors that affect body composition, gastrointestinal function and sensory organs may compromise nutrient absorption, adversely affecting eating habits and also changing body mass.<sup>17-8</sup>

This study also verified that overweight was more prevalent in the elderly women, corroborating with other authors, regardless of the cutoff point used for BMI classification.<sup>19-21</sup> One possible explanation for the higher frequency of overweight women is the changes menopausal women and the fact that women live longer and accumulate more subcutaneous fat than men and lose them at later ages.<sup>19</sup>

In this study, the elderly with literacy showed a higher prevalence of overweight compared to illiterate elderly, also reported in other studies.<sup>19,22</sup> In another study, the elderly with nine to 11 years of schooling presented a 2.36 times greater chance of being overweight when compared to the elderly with four or less years of schooling, showing influence of the socioeconomic level on the nutritional status. In addition, the elderly group with household income up to two minimum wages as standard presented a lower incidence of low weight, since, the increase in the chance of being overweight is proportional to the increase in household income: 2.55, 2.77 and 3.57, respectively, for the groups with a household income between two and five, five to ten and greater than ten minimum wages.<sup>20</sup>

Comparison of adult data from the three Brazilian nutritional surveys shows that the association between income and overweight and obesity remained positive in all age groups, regions and income groups, with the exception of adult women in the Southeast.<sup>19</sup> In this group of women, the positive association between income and obesity in 1975 was reversed in 1997 for a significant negative association. One of the factors responsible for the decline in obesity among these women was the promotion of physical



activity and healthy eating habits, mainly transmitted by Brazilian mass communication vehicles. Adherence to healthy lifestyle promotion programs may have influenced the control of overweight. The same strategy can be used in the elderly.<sup>20</sup>

Malnutrition has been associated with reduced cognitive function.<sup>23-4</sup> This study showed that elderly people, with cognitive impairment, presented a high prevalence of low weight, as well as those without cognitive decline had a higher frequency of overweight. Individuals with adequate Minimental score were described with higher food activity than those with poor scores in this study.<sup>25</sup> Nutritional disturbance may also be related to changes in eating habits such as lack of appetite, memory loss or even disorientation, caused by dementia and other cognitive dysfunctions.<sup>26</sup> In addition, these patients may have difficulty expressing their desires as well as eating on their own, or may even suffer from agnosia (difficulties in interpreting sensory data related to vision, taste, smell, or touch) and apraxia (inability to open the mouth due to motor disturbance), which may interfere with food intake.<sup>27</sup> This fact does not rule out the hypothesis that malnutrition contributes to impaired cognitive function due to lack of nutrients in this clinical condition.

## CONCLUSION

The nutritional profile of the elderly was characterized by the high prevalence of overweight and low prevalence of low weight. The female sex presented a higher frequency of overweight. Literacy was associated with overweight and was absent in the elderly of low weight. Older people with older age present a higher prevalence of low weight and lower frequency of overweight. Older people with cognitive problems had a higher prevalence of low weight, while overweight was related to the absence of cognitive impairment.

Some limitations should be mentioned, such as the cross-sectional design and the fact that the study population refers to the elderly referred to care at the reference center where they were evaluated by the nutritional team, not representing the general population. On the other hand, this study contributes to the understanding of the nutritional profile of the elderly population and some of these results were similar to the findings of other epidemiological studies that show a high index of nutritional disorders. It is evidenced the existence of groups of greater risk for such disorders, which should be the target of public health promotion policies.

Thus, it is believed that the results of this research can guide and trigger more interest by managers and public agencies regarding social demands on the nutritional health of the elderly.

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