

## Nutritional profile and status of elderly people in long-stay institutions in Brazil

Perfil alimentar e estado nutricional de idosos em instituições de longa permanência no Brasil

Perfil alimentar y estado nutricional de los ancianos en establecimientos de larga estadía en Brasil

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This study aims to investigate the nutritional profile and status of elderly people from long-term care facilities in Brazil. This is a systematic review of literature with data collection performed in the databases: SCIELO, LILACS and Google Scholar, considering the period between 2012-2015 and carried out in the first semester of 2016. 25 studies were selected, organized in two categories: *Evidence of the nutritional profile of institutionalized elderly in Brazil* and *Eating process and nutritional status of institutionalized elderly people*. The percentage of malnourished elderly people in long-term care facilities in Brazil is higher than those living in the community, and institutionalized elderly people consume levels of sodium and protein above recommendations, and calcium levels below the recommendations. Private institutions tend to have more resources for food organization. Malnourished elderly people have greater functional and cognitive deficits. There was a situation of frailty in institutionalized elderly people, reaffirming the need for public policies. Institutionalized elderly people are at increased risk of malnutrition.

**Descriptors:** Feeding; Aged; Homes for the aged.

O objetivo deste estudo foi investigar o perfil alimentar e estado nutricional de idosos de instituições de longa permanência no Brasil. Trata-se de uma revisão sistemática da literatura com a coleta de dados realizada nos bancos de dados: SCIELO, LILACS e Google Acadêmico considerando o período entre 2012-2015 e realizados no primeiro semestre de 2016. Foram selecionados 25 estudos, organizados a partir de duas categorias: *Evidências do perfil alimentar de idosos institucionalizados no Brasil e, Processo de alimentação e estado nutricional de idosos institucionalizados*. O percentual de idosos desnutridos em instituições de longa permanência no Brasil é maior do que os que vivem na comunidade, e idosos institucionalizados consomem sódio e proteína acima do recomendado, e cálcio abaixo das recomendações. As instituições privadas tendem a ter mais recursos para organização alimentar. Idosos desnutridos apresentam maiores déficits funcionais e cognitivos. Verificou-se um quadro de fragilidade do idoso institucionalizado, reafirmando a necessidade de políticas públicas. Os idosos institucionalizados apresentam risco maior de desnutrição.

**Descritores:** Alimentação; Idoso; Instituição de Longa Permanência para Idosos.

El objetivo de este estudio fue investigar el perfil alimentario y el estado nutricional de los ancianos en instituciones de larga estadía en Brasil. Se trata de una revisión sistemática de la literatura con la recogida de datos de las bases de datos: SCIELO, LILACS y Google Académico considerando el período de 2012-2015 y realizada en el primer semestre de 2016. Se seleccionaron 25 estudios, organizados en dos categorías: *Evidencias del perfil alimentario de los ancianos institucionalizados en el Brasil y, Proceso de alimentación y estado nutricional de los ancianos institucionalizados*. El porcentaje de ancianos desnutridos en instituciones de larga estadía en el Brasil es mayor que el de los que viven en la comunidad, y los ancianos institucionalizados consumen sodio y proteínas superiores a lo recomendado, y calcio inferior a las recomendaciones. Las instituciones privadas suelen disponer de más recursos para la organización de los alimentos. Los ancianos desnutridos tienen mayores déficits funcionales y cognitivos. Hubo un cuadro de fragilidad de los ancianos institucionalizados, que reafirmó la necesidad de políticas públicas. Los ancianos institucionalizados presentan un mayor riesgo de malnutrición.

**Descriptorios:** Alimentación; Anciano; Hogares para ancianos.

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## INTRODUCTION

**T**he elderly Brazilian population has grown rapidly and intensely. In 1950, Brazil had the 16<sup>th</sup> biggest elderly population in the world, with about 2.1 million elderly people. Currently, there are 18 million people over the age of 60, which represents 12% of the population. By the year 2025, it is estimated that Brazil will have reached the 6<sup>th</sup> place in the world ranking, with approximately 32 million elderly people<sup>1</sup>.

An elderly individual goes through a continuous process of physical, cognitive and social change, which make them more susceptible to environmental aggressions. At the same time, this degree of fragility requires greater commitment from family in the prevention and control of chronic diseases, fractures and adequate nutrition<sup>2</sup>.

With this knowledge, adequate and specialized care for elderly people is necessary, which is not always possible and feasible in a domestic environment. The transformation in the family structure, associated with financial factors and absence of social support has led to institutionalization of many elderly people in long-term institutions (LTIE). Such establishments aim to serve and care for people aged 60 years or over<sup>3</sup>.

The prevalence of elderly people in LTIE reaches 11% in developing countries. This data shows the importance of these institutions as places to promote, protect and rehabilitate the health of elderly people. This fact originated several studies regarding interventions and care of these individuals in clinical situations<sup>4</sup>.

This new reality has brought challenges to society, requiring implementation of public policies consistent with the reality of the LTIE, to ensure comprehensive health care for institutionalized elderly people. Among the factors that decisively interfere in the health promotion process in aging, food has a special emphasis, as it can delay or accelerate healthy aging<sup>5</sup>.

The eating practices and nutritional status of institutionalized elderly people are influenced by the environment, training of professionals involved and presence of attention and care for health problems. Thus, research that evaluates the pattern and dietary practices of different groups of institutionalized elderly is essential to stimulate health promotion policies. Thus, the aim of this study was to investigate the food profile and nutritional status of elderly people living in long-term care facilities in Brazil.

## METHOD

A systematic review of literature was carried out. The literature review consisted of studies related to food and nutritional profile of institutionalized elderly people (age  $\geq 60$  years) in Brazil. Researches with data collected in Brazil were sought in journals indexed in the databases Scientific Electronic Library Online (SCIELO), *Literatura Latino-Americana e do Caribe em Ciências da Saúde* (LILACS) and Google Scholar, published between 2012 and 2015. The descriptors used were: food, elderly, long-term care for the elderly and health promotion. The survey took place in January and February of 2016.

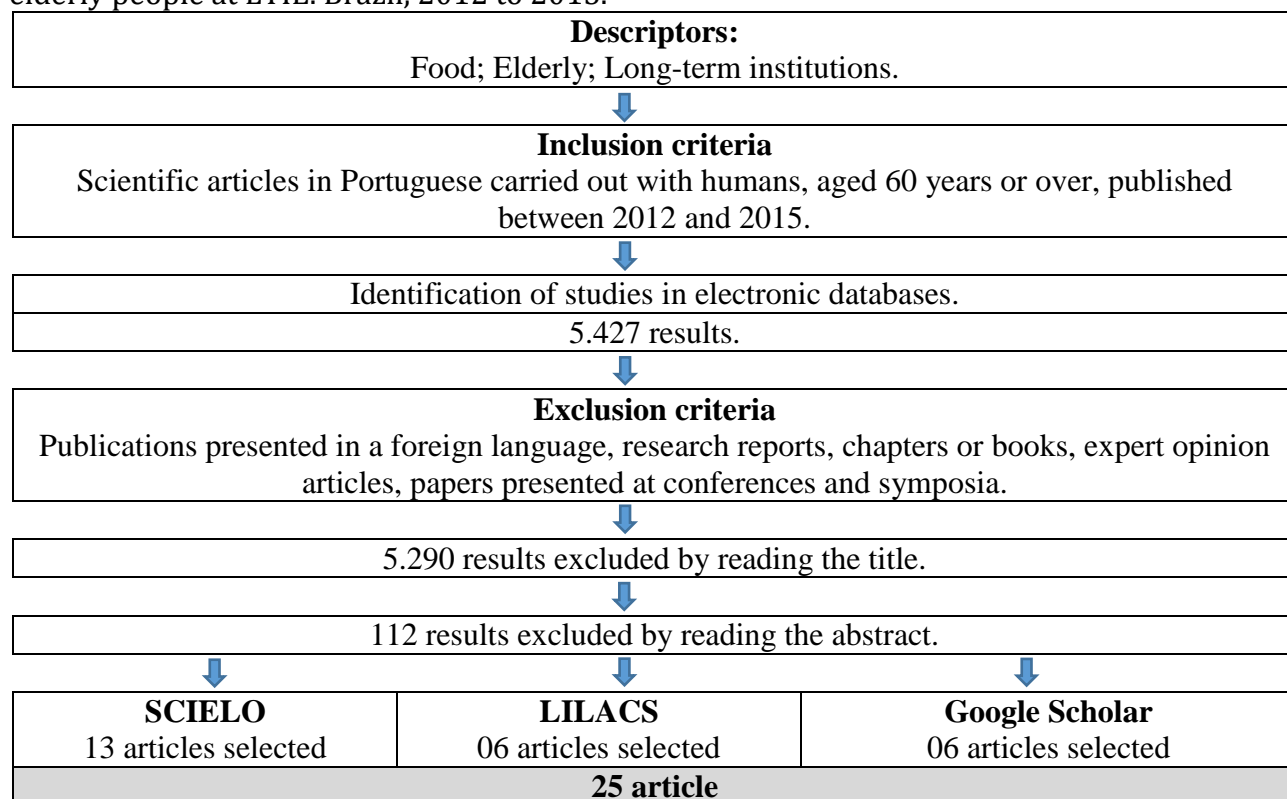
The selection of studies was carried out according to the following steps: I) reading the titles of articles; II) reading abstracts; III) full reading of articles selected from the abstracts. All steps were carried out by two independent reviewers and, in case of disagreements, a third reviewer was consulted. Publications presented in a foreign language, research reports, chapters or books, expert opinion articles and papers presented at conferences and symposia were excluded.

Then, the selected articles were arranged in a Microsoft Excel®2010 spreadsheet and categorized according to database, authors, year of publication, number of participants in the study and main result found.

## RESULTS

5,427 studies were found in databases and 5,290 were excluded by reading their title, and then 112 were excluded by reading their abstract, in which 25 scientific papers were selected, 32% (8) of the year 2013, 28% (7) of 2015, 20% (5) of 2014 and 20% (5) of 2012. For a better interpretation of results, a synthesis of the selected works was carried out that dealt with dietary profile of the elderly residents in long-term institutions. In Figure 01, the sequence for searching the articles is presented.

**Figure 1.** Steps in the process of reviewing studies on food profile and nutritional status in elderly people at LTIE. Brazil, 2012 to 2015.



## DISCUSSION

The studies in this review were separated into two categories, namely: *Evidence of the food profile of institutionalized elderly people in Brazil* and *Food process and nutritional status of institutionalized elderly people*.

### ***Evidence of the food profile of institutionalized elderly in Brazil***

Most of the analyzed studies evaluated the dietary profile of institutionalized elderly people, verified the amount of calories<sup>4,6</sup>, the lack of nutrients in the diet<sup>7,8</sup>; motivation and difficulties related to the process of eating<sup>3,9</sup> through qualitative and quantitative methods. Also, the observation of daily meals for a certain period of time and the Mini Nutritional Assessment (MNA) were the most used<sup>1,11,12</sup>.

Regarding nutrient intake in institutions, a study<sup>13</sup> found that the average protein intake was high in a survey of 28 institutionalized elderly men. The average intake of micronutrients was inadequate, with the exception of the average intake of zinc and iron. The micronutrient with the highest percentage of inadequacy was tocopherol, with a correlation between intake of tocopherol and lipids and negative correlations between average intake of vitamin C and age, between average intake of selenium and blood levels of leukocytes and between triglycerides. and zinc intake<sup>13</sup>.

A survey<sup>8</sup> showed that institutionalized elderly people consume sodium and protein above recommended level and calcium below the recommended level. Despite this, the pathologies were not related to the lack of calcium. The association between calciuria and the consumption of protein and sodium revealed the existence of positive, albeit weak, correlations<sup>8</sup>. It is necessary to adjust the consumption of sodium and protein to the recommended amounts, in order to minimize the loss of calcium in urine.

In an assessment of consumption and food security of families living in *favelas* in the city Maceió, in the state of Alagoas, and considering 204 families and 847 individuals (many of which were elderly) micronutrient intake was inadequate for calcium, vitamin E, magnesium, vitamin C, zinc, riboflavin, thiamine and fiber. The food insecurity scenario found was critical, as according to the authors, about 92% of all families showed some degree of food insecurity<sup>7</sup>.

The supply of all micronutrients in an LTIE long-term institution, however, showed values above the recommended, with high percentages of adequacy (Vitamin A, Vitamin C and Calcium), so that the supply of micronutrients was above the values recommended by the Dietary Reference Intakes (DRI's). This fact can have a negative impact, especially when associated with low levels of physical activity and use of continuous medications<sup>4</sup>.

Food intake of macro nutrients, micronutrients, total calories and nutritional status were evidenced through the anthropometry of 31 institutionalized elderly in the state of Rio Grande do Sul<sup>5</sup>. The consumption of macronutrients was adequate and those of micronutrients, except for calcium, were inadequate, highlighting the importance of nutritionists in these institutions, with a view to balancing elderly people with impaired nutritional status<sup>5</sup>.

Nutritional inadequacy in LTIE has been recognized as a priority research field worldwide. Cross-sectional study in 135 long-term institutions in the state of Minas Gerais found differences in significant proportions (greater than 10%) for the possibility of eating out of hours; the prior definition of the weekly and daily menu; presence of nutritionists; if fruit was served for breakfast; if any biscuits were served for breakfast; and if something else was served at lunch<sup>5</sup>. The findings suggested low fruit consumption and that philanthropic institutions are at a disadvantage compared to private ones.

In view of the positive impact that adequate food has on the health status of the elderly population, the data found in the Brazilian population of institutionalized elderly people are worrying. Thus, research that identifies problems and promotes public policies of support and inspection in the LTCF is essential.

### ***Food process and nutritional status of institutionalized elderly people***

In an evaluation with 233 elderly people in the city of Uberlândia, in the state of Minas Gerais, the nutritional status and the degree of dependence of elderly people were evaluated, low weight was observed by BMI, which was associated with functional dependence, and low weight had a prevalence of 1.2 times higher than in eutrophic elderly<sup>14</sup>. The results showed that low weight can be associated with functional disability. The data reinforce the need to monitor the nutritional status of institutionalized elderly.

Sarcopenia, defined as decreased muscle mass and function with age, is associated with low levels of vitamin D and physical inactivity. Institutionalized elderly people are more malnourished than those living in the community. A study showed that the adequate nutritional status measured by the mini-nutritional assessment and body mass index, involvement in daily leisure physical activities for an hour or more, vitamin D and protein supplementation, seem to prevent or treat the elderly people with sarcopenia<sup>11</sup>.

Sarcopenia and loss of muscle strength are disabilities resulting from the aging process. These losses cause greater physical inactivity, further reducing functional capacity of the elderly<sup>15</sup>. For elderly people to perform their daily activities, they need have good nutritional status<sup>2</sup>.

The feeding process of 30 institutionalized elderly people aged between 65 and 93 years in the town of Canoas, in the state of Rio Grande do Sul<sup>3</sup> pointed out difficulty of chewing some type of food and preference for soft foods. The main changes in stomatognathic structures and their functions were changes in mobility and tonicity and adaptation of chewing. The feeding process of elderly people must be monitored by an interdisciplinary team to minimize the impact of aging on stomatognathic functions<sup>3</sup>.

In association with elderly people with poor oral health, there were masticatory difficulties and lower results of the Mini Nutritional Assessment significantly associated with oral health problems, namely masticatory difficulties, difficulty in swallowing and mouth pain<sup>9</sup>.

Nutritional status can express the degree to which physiological nutrient needs are being met. A study with 174 elderly people showed that 82.7% did not diet, 64.4% prefer 2-4 daily meals and 50% predominantly consumed carbohydrates and lipids, considering that the elderly's nutritional habits are precarious and most of elderly women is overweight, a fact that makes it a risk factor for cardiovascular diseases and associated morbidities<sup>1</sup>.

An observational and cross-sectional investigation with 132 institutionalized elderly and 132 male and female non-institutionalized elderly people found that 62.1% of institutionalized elderly people were at risk of malnutrition and 45.5% of non-institutionalized elderly people showed normal nutritional status, indicating that nutritional status can influence different domains of quality of life<sup>12</sup>. Another study found that 42.8% of the elderly were below ideal weight and 14.3% were obese, in addition to those overweight and obese who had a higher perception of quality of life<sup>2</sup>.

An investigation with BMI, weight and fat mass variables of institutionalized elderly people found a decrease in three months with a significant difference, suggesting that nutritional indicators assessed early can avoid nutritional risks<sup>16</sup>.

A study outlined the nutritional profile of 172 elderly people of both sexes residing in an LTIE in Natal, in the state of Rio Grande do Norte, finding a high prevalence of risk for malnutrition and declared malnutrition among the elderly, reaching 32% through the Mini Nutritional Assessment and 53% by BMI<sup>10</sup>. The sodium intake demonstrated by an analysis of the menus was high, approximately 3.8 grams, exceeding the recommendation of the DRI's of 1.2 to 2.3 grams per day, for which 64% considered their health not very good when compared to other individuals of the same age, pointing out the need for specialized nutritional care for the assisted elderly to meet the nutritional, physiological and functional demands imposed by age<sup>10</sup>.

An assessment of the nutritional profile of elderly people with prostate cancer of 333 elderly people in the cities of Campo Grande, in the state of Mato Grosso do Sul, and Rio de Janeiro, in the state of Rio de Janeiro, the nutritional risk was assessed with the Mini Nutritional Assessment so that 73% of the elderly people showed adequate nutritional status, 23% had nutritional risk and 4% were malnourished<sup>17</sup>. The association between the nutritional status and the motor skills performance of 235 elderly people, registered in the Family Health Program, in Vitória de Santo Antão, in the state of Pernambuco, by which the nutritional status was evaluated with the BMI and the calf circumference showed an association between nutritional status and functional capacity among the elderly people regardless of gender, as well as obesity as nutritional condition limiting physical performance<sup>18</sup>.

Changes in orofacial motricity due to the action of aging can interfere in this pleasurable moment in humans: eating. Aspects of the feeding process deserve special attention, since they are directly related to quality of life<sup>19</sup>. A study with 59 elderly women from two LTIEs in the city of Fortaleza found that the elderly were independent, since they were able to perform activities such as eating, as well as commuting activities<sup>20</sup>. Other investigations have shown

that the elderly had a better ability to perform feeding activities when compared to other activities of daily living<sup>21,22</sup>.

Another study<sup>23</sup> verified the nutritional aspects associated with chronic infection by *Trypanosoma cruzi* among the elderly in Bambuí, in the state of Minas Gerais, noting that the infection was observed in 38.1% of the elderly population, and the anthropometric variables showed a significant association with the infection, pointing to concomitance of chronic Chagas disease and the worst nutritional status in this population, reinforcing the importance of nutritional assessment among institutionalized elderly.

Research with elderly people from Minas Gerais being given food similar to what they remembered before institutionalization showed that eating is not a biological aspect, but involves feelings, emotions, symbols and values associated with the act of eating and that certain foods bring positive and negative memories of life<sup>24</sup>.

The aging of the population is one of the greatest triumphs of humanity, at the same time, it configures one of the greatest modern challenges. The population has a longer life expectancy due to a number of factors and a large proportion of the elderly are living in LTIE. For the aging process to be adequate in these places, it is essential that multidisciplinary teams are attentive to the needs of the elderly. For this, multidisciplinary, regular and permanent evaluation is necessary to improve and maintain quality of life.

The data obtained through this review confirm the frailty that the institutionalized elderly present in Brazil, and shows the need of monitoring by a nutrition professional, as well as public policies that meet the real nutritional needs of this population, with a view to guaranteeing access, monitoring and better quality of life.

## CONCLUSION

As limitations of the present study, the chosen method (review), the time period, and the lack of international studies are highlighted. Therefore, it is suggested to carry out further studies in the area of nutrition in aging, cross-sectional, experimental and meta-analysis, which may contribute even more to the theme. Despite this, the study shows in Brazil studies about food and nutrition in the elderly, which can be a sensor for other research and health practices.

In this sense, it is concluded that institutionalized elderly are at greater risk of malnutrition. Public institutions seem to be at a disadvantage in terms of adequate nutritional care when compared to private institutions.

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#### CONTRIBUTIONS

**Eduardo Gauze Alexandrino** and **Danilo Francisco da Silva Marçal** contributed with the collection of data and writing. **Mateus Dias Antunes** and **Daniel Vicentini de Oliveira** participated in the analysis of data and revision. **Sonia Maria Marques Gomes Bertolini** and **Rose Mari Bennemann** worked on writing and revision.

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