FALLS, BODY COMPOSITION, AND MUSCLE STRENGTH OF OLDER ADULTS PARTICIPATING IN THE OPEN UNIVERSITY FOR SENIORS

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ABSTRACT

The article highlights the growing elderly population in Brazil and the challenges associated with aging, such as sarcopenia and falls, which are significant concerns due to their serious consequences, including fractures, functional decline, and risk of institutionalization. The objective of the study is to identify the history of falls, body composition, and muscle strength of the participants. This is a cross-sectional and descriptive study involving 120 elderly participants in the Open University for the Elderly Project – UniAPI, at UniEVANGÉLICA, Anápolis-GO. The sample was predominantly female (91.7%) with a mean age of 71.1 years. Participants answered questionnaires about falls and underwent physical examinations to assess Body Mass Index (BMI), handgrip strength, and performance on the sit-to-stand test. The results showed that 40% of the elderly reported falls in the last 12 months. BMI analysis revealed that 18.3% were underweight, 45% were eutrophic (normal weight), 12.5% were overweight, and 24.2% were obese. Handgrip strength was reduced in 54.2% of participants, and 52.5% performed poorly on the sit-to-stand test. Among the 48 elderly individuals who fell, 45.8% had a normal BMI, 50% had reduced handgrip strength, and 52.1% performed poorly on the sit-to-stand test. Therefore, the high prevalence of muscle strength and endurance deficiencies is highlighted, reinforcing the need for interventions to prevent falls and improve the quality of life of older adults.

Keywords: Sarcopenia; Muscle strength; Falls; Body composition.

INTRODUCTION

According to the Brazilian Institute of Geography and Statistics (IBGE, 2023), the Brazilian population is undergoing changes in its demographic profile and population size. The number of people aged 65 or over has grown by 57.4% in the last 12 years, reaching 10.4 million. It is estimated that by 2070, around 37.8% of the country's inhabitants will be elderly.

Aging is a dynamic, progressive, and irreversible phenomenon linked to biological, psychological, and social factors, that affects all human beings (LITVOC; BRITO, 2004). These changes associated with aging are crucial factors that exacerbate these risks, affecting the mobility and autonomy of older individuals (FITZGERALD; EDWARDS, 2021).

Falls in older adults represent a public health problem due to their consequences, such as fractures, physical and psychological sequelae, risk of death, restriction of activities, decline in health, and possible institutionalization (MAZZEO *et al.*, 1998; PERRACINI; RAMOS, 2002). They have multifactorial causes, involving extrinsic and intrinsic factors (CHEHUEN NETO *et al.*, 2018). In addition, nutritional status may be a risk factor for falls, especially in relation to the natural morphophysiological changes of aging (FERREIRA *et al.*, 2022).

Sarcopenia is a muscle disorder related to nutritional status that reduces muscle strength, mass, and performance, contributing to frailty in older adults and affecting their daily functions and activities (GARCIA *et al.,* 2022). Thus, the objective of this study is to identify the history of falls, body composition, and muscle strength of elderly participants at the Open University for the Elderly (UniAPI).

MATERIALS AND METHODS

This is a cross-sectional, descriptive field study. It was conducted on the premises of UNIEVANGÉLICA, where the workshops of the Open University for the Elderly Project (UniAPI) are held. The study focused on elderly people registered and participating in the project's activities, and data collection was carried out in February 2024.

The elderly were asked the following question: "Have you had any falls in the last 12 months?" The falls were recorded, regardless of the severity of the injury. To assess body composition, weight and height were used to calculate Body Mass Index (BMI). The BMI classification for older adults followed the guidelines of the Brazilian Society of Geriatrics and Gerontology (2015), with categories of underweight (BMI ≤ 23), normal weight (eutrophic: BMI between 23 and 28), overweight (BMI ≥ 28 and < 30), and obesity (BMI ≥ 30) (PAHO, 2002).

The handgrip test was performed to assess muscle strength using a hand dynamometer, with values considered low below 27 kg for men or 16 kg for women (SBGG, 2023). The chair sit-to-stand test was also applied, measuring the time required to perform five repetitions without the aid of the arms, with impaired performance when the time exceeds 15 seconds (SBGG, 2023). Both tests help predict the functionality and muscle endurance of older adults.

The study was approved by the Ethics and Research Committee of UniEVANGÉLICA, in accordance with Resolution 466/12 of the National Health Council, through opinion no. 1,583,515.

RESULTS

Of the 120 elderly participants in the study, 110 were female, representing 91.7% of the group. The average age of the participants was 71.1 years. When asked if they had suffered any falls in the last 12 months, 48 elderly people (40%) reported having had at least one fall.

Regarding Body Mass Index (BMI) classification, 22 elderly individuals, corresponding to 18.3% of the total, were classified as underweight. On the other hand, 54 elderly individuals, or 45% of the sample, were included in the eutrophic range, indicating adequate nutritional status. Regarding overweight, 15 elderly individuals (12.5%) presented this condition. In addition, 29 elderly individuals, equivalent to 24.2% of the study population, were identified as obese.

The hand dynamometer test showed that 65 of the 120 elderly individuals evaluated, equivalent to 54.2% of the sample, had reduced handgrip strength. In the sit-to-stand test, 63 elderly individuals, or 52.5% of the participants, demonstrated performance below expectations, indicating significant impairment in the test.

Among the 48 elderly individuals who fell in the last 12 months, only 1 was male. Of these, 22 (45.8%) had a BMI classified as normal, 24 (50%) had impaired handgrip strength, and 25 (52.1%) had poor performance in the sit-to-stand test.

CONCLUSION

This study provided parameters on the relationship between muscle strength, body composition, and history of falls in the elderly participants. The analysis revealed that most participants had reduced handgrip strength and unsatisfactory performance in the sit-to-stand test, evidencing deficits in muscle strength and endurance, which are essential factors for functional independence and fall prevention (AUBERTIN-LEHEU, 2020; RIBEIRO et al., 2021).

Finally, the high prevalence of reported falls highlights the vulnerability of this population (CAMPOS et al., 2019), thus reinforcing the need for targeted

interventions, such as muscle strengthening programs and nutritional status assessments and monitoring, to prevent falls and improve the quality of life of older adults (KIRK-SANCHES *et al.*, 2022; NUNES *et al.*, 2021).

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