Artigo Original

Recebido em: 21/112025 | Aceito em: 17/03/2026

# Medication use for chronic noncommunicable diseases in older adults with excess body mass: a cross-sectional study

## Perfil de consumo de medicamentos para doenças crônicas não transmissíveis em idosos com excesso de massa corporal: estudo transversal

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**Abstract**
Noncommunicable diseases (NCDs) represent one of the main public health problems, particularly among older adults. Low levels of physical activity and excess body mass are associated with the development of NCDs, compromising functional capacity and quality of life and increasing medication use. **Objective:** To evaluate the association between excess body mass and medication use in physically active older adults. **Methods:** A cross-sectional study was conducted with 50 older adults of both sexes aged 65 years or older (67.9 ± 2.3 years), participants in a regular water aerobics program in the municipality of Caieiras, São Paulo, Brazil. Anthropometric and body composition assessments were performed using multifrequency bioelectrical impedance analysis (InBody 120), and clinical profile data were obtained through a structured questionnaire, including information on continuous medication use. Participants were classified as eutrophic or overweight according to Lipschitz criteria. **Results:** Group comparison showed that eutrophic participants had a mean medication use of 2.57 ± 0.62 drugs, whereas the overweight group presented a mean of 3.43 ± 1.5 drugs (U = 146; n = 16; n = 34; p = 0.006). A positive correlation was observed between body fat percentage and medication use (r = 0.40; p = 0.001). **Conclusion:** Older adults with higher body fat accumulation showed greater medication use for NCDs, highlighting the importance of body composition control for health promotion in the older population.
**Keywords:** Physical activity; medications; chronic diseases; body mass

**Resumo**
As doenças crônicas não transmissíveis (DCNT) constituem um dos principais problemas de saúde pública, especialmente na população idosa. Baixos níveis de atividade física e o excesso de massa corporal estão associados ao desenvolvimento de DCNT, comprometendo a funcionalidade, a qualidade de vida e aumentando o consumo de medicamentos. **Objetivo:** Avaliar a associação entre o excesso de massa corporal e o consumo de medicamentos em idosos praticantes de atividade física regular. **Métodos:** Estudo transversal conduzido com 50 idosos de ambos os sexos, com idade mínima de 65 anos (67,9 ± 2,3 anos), participantes de um programa regular de hidroginástica no município de Caieiras/SP. Foram realizadas avaliações antropométricas, de composição corporal por bioimpedância multifrequencial (InBody 120) e do perfil clínico por meio de questionário semiestruturado, incluindo o consumo de medicamentos de uso contínuo. Os participantes foram classificados em eutróficos e sobrepeso de acordo com os critérios de Lipschitz. **Resultados:** A comparação entre os grupos demonstrou que o grupo eutrófico apresentou média de consumo de 2,57 ± 0,62 medicamentos, enquanto o grupo com sobrepeso apresentou média de 3,43 ± 1,5 medicamentos (U = 146; n = 16; n = 34; p = 0,006). Observou-se ainda correlação positiva entre percentual de gordura corporal e consumo de medicamentos (r = 0,40; p = 0,001). **Conclusão:** Idosos com maior acúmulo de gordura corporal apresentaram maior consumo de medicamentos para DCNT, evidenciando a importância do controle da composição corporal na promoção da saúde na população idosa.
**Palavras-chave:** Atividade física, medicamentos, doenças crônicas, massa corporal)

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## Introduction

The changes that characterize and influence the aging process are complex, manifesting gradually over time. These biopsychosocial transformations inevitably result in a decline in adaptability, functional capacity, and an increased risk of disease, ultimately culminating in death. The intensity and nature of these changes are neither linear nor consistent but are part of the senescence process, varying significantly among individuals[1].

Although population aging represents an achievement in terms of health and longevity, it is important to highlight that a considerable proportion of older adults live with chronic diseases or conditions. These conditions increase the use of continuous medications and may compromise social interaction, quality of life, and engagement in physical activity[2]. Non-communicable chronic diseases (NCDs) are among the greatest contemporary public health challenges. According to the World Health Organization (WHO), NCDs accounted for 71% of the 57 million deaths recorded globally in 2016[3]. Among older adults, the presence of NCDs is often associated with the need for multiple medications, increasing the risk of drug interactions, adverse effects, and a higher demand for healthcare services.

Physical inactivity is an important risk factor for the development of NCDs, including sarcopenia, metabolic disorders, cardiovascular diseases, type 2 diabetes, and obesity, among other conditions[4]. Excess body mass, frequently associated with physical inactivity, represents an additional risk factor for the worsening of these conditions and increased medication use in older populations. Conversely, regular physical exercise, combined with a balanced diet, is considered one of the main non-pharmacological strategies for the prevention and management of these conditions. The WHO recommends that older adults engage in 150 to 300 minutes per week of moderate-intensity physical activity or 75 to 150 minutes per week of vigorous-intensity physical activity[5]. However, a significant portion of the older population does not meet these recommended levels, contributing to an increased risk of NCDs and their complications[6].

Despite the well-established association between aging, excess body mass, and chronic diseases, further studies are needed to evaluate the relationship between excess body mass and medication use among older adults, especially in local contexts. Understanding this relationship may contribute to the planning of prevention and control strategies for NCDs, as well as to the promotion of healthier and more functional aging.

In this context, the aim of this study was to compare medication use for non-communicable chronic diseases between overweight and normal-weight older adults.

## Materials and Methods

After approval by the Research Ethics Committee of Universidade São Judas Tadeu (protocol no. 4,078,797/2020), older adults participating in a water aerobics program at the Municipal Sports Center João Odoni, in the city of Caieiras/SP, were invited to voluntarily participate in the study. The water aerobics program consisted of exercises performed in an outdoor pool, with weekly sessions held on non-consecutive days, each lasting 50 minutes. This cross-sectional study[8] was conducted through a single data collection session on March 8, 2022. On that occasion, a seminar was held to inform participants about the objectives, procedures, and importance of the research, after which participants signed the Informed Consent Form.

Inclusion criteria were: age ≥ 65 years and participation in the municipal water aerobics program for at least two years.



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Exclusion criteria included cognitive impairments that could compromise questionnaire completion. Participants who did not properly complete the questionnaire or did not sign the informed consent form were excluded.

Sociodemographic and clinical profiles were assessed using a semi-structured questionnaire containing information on sex, age, education, marital status, income, occupation, physical activity history, diseases, and medication use.

Anthropometric assessment and body composition were determined by measuring body weight using a Toledo scale (BL2097PP) and height using a standard Sanny stadiometer (ES2030). Body mass index (BMI) was calculated, applying the cut-off points proposed by Lipschitz[11]: values between 22 kg/m² and 27 kg/m² were classified as normal weight, and values above 27 kg/m² as overweight, thus defining two groups. Body composition was assessed using multifrequency bioelectrical impedance (InBody 120), considering muscle mass and fat mass variables.

BMI classification followed Lipschitz criteria[11], as they are specifically recommended for older adults and account for age-related changes in body composition, providing greater sensitivity in identifying excess body mass in this population.

Medication use assessment was included as an important indirect indicator of the presence and control of NCDs and is widely used in epidemiological studies involving older populations. This analysis is particularly relevant when considering individuals with obesity, as obesity is a significant risk factor for NCDs such as hypertension, type 2 diabetes mellitus, and cardiovascular diseases. Combined with aging, obesity exacerbates metabolic, inflammatory, and functional changes that favor the development and progression of these conditions, often reflected in increased medication use. Thus, investigating medication use contributes to a more comprehensive understanding of the health profile and clinical conditions of the studied individuals.

Medication use was self-reported through the semi-structured questionnaire, recording continuous-use medications for NCD treatment.

Body composition assessment was conducted to complement anthropometric analysis, allowing better characterization of participants' nutritional status. Multifrequency bioelectrical impedance was used due to its non-invasive nature, ease of application, and validation for estimating muscle and fat mass in older adults.

Sociodemographic variables were collected to characterize the sample and identify potential factors associated with medication use.

## Statistical Analysis

Statistical analysis was performed using JASP software version 0.18.1. A 95% confidence interval and a significance level of $p < 0.05$ were adopted. Initially, descriptive statistics were conducted, followed by frequency analysis[9]. Data distribution was assessed through skewness and kurtosis, the Shapiro–Wilk test, and the coefficient of variation. As normality assumptions were not met, non-parametric techniques were used. Associations between variables were analyzed using Spearman's correlation, followed by the Mann–Whitney U test to compare groups (normal weight vs. overweight) regarding medication use[10].

## Results

Table 1 presents the sociodemographic and clinical characteristics of the sample. There was a predominance of females (93.3%) compared to males (6.7%). Regarding marital status, 48.3% were married, 35% widowed, 10% divorced, and 6.7% single.



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**Table 1- Sociodemográfics Variables**

| Variables | | Total n= 50 |
|---|---|---|
| **Age** | | 67,9 ± 2,3 |
| **Gender** | Male | 6,7 % |
| | Female | 93,6, % |
| | Mariage | 48,3 % |
| **Marital Status** | Widower | 35,0 % |
| | Divorced | 10,0 % |
| | Single | 6,7 % |
| **Education** | Higher Education | 5 % |
| | High School | 33,3 % |
| | Elementary Education | 46,7 % |
| | Literate | 11,7% |
| | Iliterate | 3,3% |
| **Family income** | until 1 SM | 18,6 % |
| | Between 1 e 3 SM | 62,7 % |
| | Between 3 e 5 SM | 16,9% |
| | Above de 5 SM | 1,7 % |
| **Polypharmacy (3 or more medicines)** | Yes | 78,3 % |
| | No | 21,7 % |
| **Time spent on physycal activity per week** | Less 150 minutes | 73,4% |
| | More 150 minutes | 26,6% |

In terms of education, most participants had completed elementary education (46.7%), followed by high school (33.3%), while 11.7% were literate without completing elementary school, 3.3% were illiterate, and 5% had higher education. Monthly family income was predominantly between 1 and 3 minimum wages (62.7%), with only 1.7% earning more than 5 minimum wages.

Regarding medication use, 78.3% reported continuous use of three or more medications, while 21.7% used two or fewer. Concerning physical activity, 73.4% performed less than 150 minutes per week, whereas 26.6% met or exceeded this recommendation.

**Table 2 – Anthropometrics characteristics**

| | Eutróficos (16) | Sobrepeso (34) |
|---|---|---|
| Age | 67,6 ± 1,8 | 67,8± 1,6 |
| Height | 1,56 ± 0,06 | 1,59 ± 0,12 |
| Body mass (kg) | 54,6 ± 2,5 | 72,6 ± 9,6 |
| BMI | 22,7±1,7 | 29,9±7,61 |
| Muscle mass (kg) | 25,2 ± 13,6 | 23,5± 11,01 |
| Fat mass (kg) | 18,49 ± 3,7 | 29,8± 7,6 |

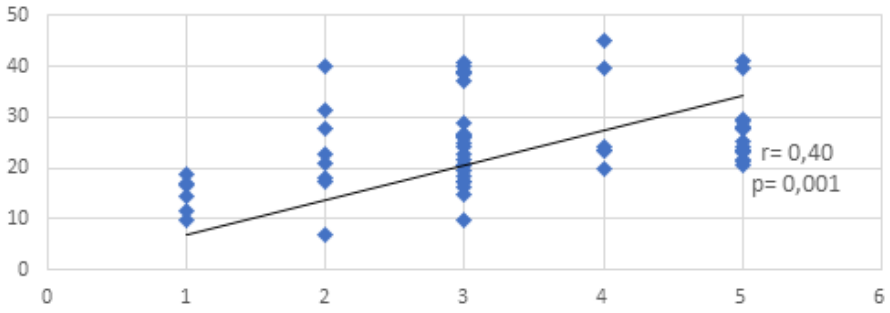
BMI = Body massa index



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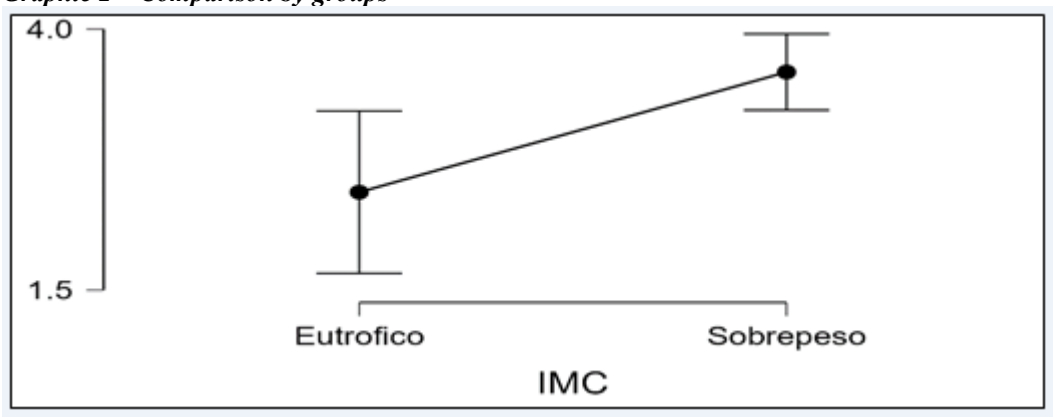
Table 2 shows anthropometric and body composition characteristics. The overweight group presented higher body mass, BMI, and fat mass compared to the normal-weight group. Fat mass was 18.49 ± 3.7 kg in the normal-weight group and 29.8 ± 7.6 kg in the overweight group.

**Grafhic 1 – Correlation body mass x Medicines**




Graph 1 shows a positive correlation between body fat and medication use, indicating that higher fat levels are associated with increased medication consumption.

***Graphic 2 – Comparison by groups***




Graph 2 shows that the normal-weight group had a mean of 2.57 ± 0.62 medications, whereas the overweight group had 3.43 ± 1.5 medications. A statistically significant difference was observed (Mann–Whitney U = 146; p = 0.006), indicating higher medication use in the overweight group.

## Discussion

Medication use among Brazilian older adults ranges from 2.1 to 4.7 drugs per day, consistent with findings in this study[12]. This pattern may be related to factors such as low adherence to non-pharmacological treatments, self-medication, inappropriate use, and multiple prescriptions[13].

Polypharmacy is a major concern, with prevalence between 40% and 50%. It refers to the concurrent use of multiple medications and is associated with increased healthcare costs, adverse effects, drug interactions, and reduced adherence[14].

This study found higher medication use among overweight older adults, reinforcing the association between excess body mass and increased NCD risk. Regular physical activity is associated with improved metabolic and cardiovascular



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parameters and may reduce medication dependence[15,16].

Exercise programs combining aerobic and resistance training may reduce medication use and support chronic disease management[17]. However, only 26.6% of participants met recommended activity levels, which may contribute to higher disease risk.

Body fat plays a metabolic role, secreting inflammatory substances that contribute to chronic diseases[18]. The association between fat mass and medication use highlights the importance of body composition management.

Excessive medication use may lead to adverse effects, including increased fall risk, particularly with sedatives and antidepressants[20]. Physical activity also contributes to reduced medication use and improved biopsychosocial outcomes[19].

## Conclusion

Overweight older adults demonstrated higher medication use compared to normal-weight individuals, even among those engaged in regular physical activity. A positive association was observed between body fat and medication consumption.

These findings emphasize the importance of body composition assessment and monitoring physical activity levels to improve health outcomes and reduce medication dependence.

## Limitations

Limitations include small sample size, use of bioimpedance, self-reported medication data, and cross-sectional design, which does not allow causal inference.

## Acknowledgments

The authors thank the Municipality of Caieiras (SP), the staff of the João Odoni Sports Center, and the older adults who participated. They also acknowledge FAPES and CNPq for financial support, with no influence on the study design or publication decision.

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**How to cite this article:**

Doro M, Bocalini DS, Doro JG, Oliveira AA, Falconi CA, Rica RL, João PT, Rego LB, Pontes Júnior FL. Medication use for chronic noncommunicable diseases in older adults with excess body mass: a cross-sectional study. Rev. Aten. Saúde. 2026; e202610240(24). doi https//doi.org/10.13037/ras.vol24.e202610240



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