

Fear and Risk of Falling in Older Hypertensive Individuals Undergoing Medication Treatment

Miedo y riesgo de caída en personas mayores hipertensas
en tratamiento farmacológico

Medo e risco de queda em idosos hipertensos
em tratamento medicamentoso

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Abstract: Introduction: Falls are a major concern among hypertensive older adults, as they can lead to severe injuries and reduced quality of life. Understanding the impact of antihypertensive medication use on fall risk and fear of falling is essential for improving patient care and fall prevention strategies. Objective: To investigate the associations between antihypertensive medication use and the risk and fear of falling in hypertensive older adults. Methods: A quantitative and cross-sectional study was conducted with 70 hypertensive older adults from a medical specialty center in the municipality of Sapezal, Brazil. The Timed Up and Go test and the Falls Efficacy Scale were applied. Data were analyzed using the Chi-square test, binary logistic regression, and the Hosmer-Lemeshow test. A significance level of $p < 0.05$ was considered. Results: Older adults using two or more antihypertensive medications have significantly higher chances of fall risk (48.167 times) and fear of falling (15.007 times) compared to those using only one medication. Additionally, those taking medications for one to four years and over four years have 6.679 and 13.444 times greater chances of experiencing fear of falling with recurrent falls compared to those using them for less than one year. Conclusion: There is an association between the quantity and duration of medication use with a higher risk and fear of falling in hypertensive older adults.

Keywords: aging; antihypertensive therapy; falls; fear of falling; fall risk.

Resumen: Introducción: Las caídas son una preocupación importante entre los adultos mayores hipertensos, ya que pueden provocar lesiones graves y una reducción en la calidad de vida. Comprender el impacto del uso de medicamentos antihipertensivos en el riesgo de

caída y el miedo a caer es fundamental para mejorar la atención al paciente y las estrategias de prevención de caídas. **Objetivo:** Investigar las asociaciones entre el uso de medicamentos antihipertensivos y el riesgo y miedo a caer en adultos mayores hipertensos. **Métodos:** Estudio cuantitativo y transversal, realizado con 70 personas mayores hipertensas de un centro de especialidades médicas del municipio de Sapezal, Brasil. Se aplicaron la prueba Timed Up and Go y la Escala de Eficacia de Caídas. Los datos se analizaron mediante la prueba de chi-cuadrado, regresión logística binaria y la prueba de Hosmer-Lemeshow. Se consideró un nivel de significancia de $p < 0.05$. **Resultados:** Las personas mayores que utilizan dos o más medicamentos antihipertensivos tienen significativamente mayores probabilidades de riesgo de caída (48,167 veces) y miedo de caer (15,007 veces) en comparación con aquellas que utilizan solo un medicamento. Además, aquellas que usan medicamentos durante uno a cuatro años y más de cuatro años tienen 6,679 y 13,444 veces más probabilidades de experimentar miedo de caer con caídas recurrentes, en comparación con aquellas que los usan por menos de un año. **Conclusión:** Existe una asociación entre la cantidad y la duración del uso de medicamentos con un mayor riesgo y miedo de caer en personas mayores hipertensas.

Palabras clave: envejecimiento; terapia antihipertensiva; caídas; miedo a caer; riesgo de caídas.

Resumo: Introdução: As quedas são uma preocupação importante entre os idosos hipertensos, pois podem causar lesões graves e reduzir a qualidade de vida. Compreender o impacto do uso de medicamentos anti-hipertensivos no risco de queda e no medo de cair é fundamental para melhorar o cuidado ao paciente e as estratégias de prevenção de quedas. **Objetivo:** Analisar os fatores associados ao risco e medo de cair em idosos hipertensos em tratamento medicamentoso. **Métodos:** Estudo quantitativo e transversal, realizado com 70 idosos hipertensos de um centro de especialidades médicas do município de Sapezal, Brasil. Foram aplicados o teste Timed Up and Go e a Escala de Eficácia de Quedas. Os dados foram analisados pelo teste qui-quadrado, regressão logística binária e teste de Hosmer-Lemeshow. Um nível de significância de $p < 0,05$ foi considerado. **Resultados:** Idosos que utilizam dois ou mais medicamentos anti-hipertensivos apresentam chances significativamente maiores de risco de queda (48,167 vezes) e medo de cair (15,007 vezes) em comparação com aqueles que utilizam apenas um medicamento. Além disso, aqueles que fazem uso de medicamentos por um a quatro anos e por mais de quatro anos têm 6,679 e 13,444 vezes mais chances de experimentar medo de cair com quedas recorrentes, em comparação com aqueles que os utilizam por menos de um ano. **Conclusão:** Há uma associação entre a quantidade e a duração do uso de medicamentos com maior risco e medo de cair em idosos hipertensos.

Palavras-chave: envelhecimento; terapia anti-hipertensiva; quedas; medo de cair; risco de quedas.

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Introduction

Systemic arterial hypertension (SAH) is a chronic, multifactorial, non-communicable disease considered the leading risk factor for other cardiovascular diseases and one of the leading causes of death worldwide. ⁽¹⁻³⁾ In older adults, SAH is particularly prevalent due to various factors, including the natural aging of the cardiovascular system, such as arterial stiffness and the accumulation of atheromatous plaques over time. ^(4, 5) Adequate control is essential to prevent complications, so it is important to follow medical advice regarding the proper use of medications. ^(5, 6)

It is important to consider drug interactions, especially in older adults who often use multiple medications for various health conditions, to avoid harmful interactions³. Older adults are more susceptible to medication side effects, such as falls, dizziness, and balance disturbances. Some patients report feeling dizzy or fearful of falling when using antihypertensive drugs, especially when getting up quickly. ⁽⁷⁻⁹⁾

Understanding specific risk factors for falls in older hypertensive individuals can help identify areas where preventive interventions may be most effective. This is important for developing targeted and personalized fall prevention strategies for this vulnerable population. Thus, this study aimed to investigate the associations between antihypertensive medication use and the risk and fear of falling in hypertensive older adults.

Methods

This study employed a quantitative, observational, and cross-sectional design, adhering to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. It was approved by the Research Ethics Committee of Cesumar University (UniCesumar) under protocol No. 6.301.362.

Participants

A non-probabilistic, intentional, and convenience-based sampling approach was used to select 70 independent community-dwelling older adults (aged 60 years or older) of both genders, all diagnosed with systemic arterial hypertension (SAH) and undergoing treatment at a Medical Specialties Center in the municipality of Sapezal, Mato Grosso, Brazil. The diagnosis of SAH and antihypertensive medication use were confirmed through electronic health records at the healthcare facility.

Participants were excluded if they:

- Used benzodiazepines, due to their mild nervous system inhibition, which includes anticonvulsant, sedative, muscle relaxant, and tranquilizing effects.

- Had osteoarticular diseases or injuries that prevented them from performing the required physical tests.
- Presented cognitive impairments that hindered accurate completion of the questionnaires.
- Had clinical evidence of pre-renal or post-renal hepatic or thyroid dysfunction.

Instruments

The authors developed a semi-structured questionnaire to assess the sociodemographic and health profiles of the older participants. The questionnaire included items on age, age group, sex, income in minimum wages, occupational status, retirement, education level, marital status, use of antihypertensive medication, use of medications in general, presence of comorbidities, history of falls and history of near falls.

Fall risk was assessed using the Timed Up and Go (TUG) test, a widely used tool to evaluate functional mobility and fall risk in older adults. In this test, participants rose from a chair, walked three meters, turned around, and returned to the chair. Individuals underwent assessment only after familiarization with the task. A predictive value of ≥ 12.47 seconds indicated high fall risk, while ≤ 12.47 seconds indicated low fall risk. ⁽¹⁰⁾

Fear of falling was evaluated using the Falls Efficacy Scale-International (FES-I), a validated questionnaire designed to assess fear of falling in daily activities. It consists of 16 items covering different daily tasks, with responses ranging from 1 (not at all concerned) to 4 (extremely concerned). The total score ranges from 16 to 64, with higher scores indicating greater fear of falling. Cutoff points were used to categorize participants: < 23 – no fear of falling; ≥ 23 – occasional fear of falling; ≥ 31 – recurrent fear of falling. ⁽¹¹⁾

Procedures

Permission for the study was obtained from the Municipal Health Regulation Center of Sapezal-MT. The center arranged appointments for specialized consultations in Cardiology and Orthopedics, allowing patients to be referred to the Medical Specialties Center for consultations scheduled in advance. This facilitated contact with older individuals diagnosed with (or without) SAH and access to their medical records.

Eligible participants were identified through their scheduled consultations and invited to participate in the study. Those who met the inclusion criteria and agreed to participate signed an informed consent form (ICF), after which data collection was conducted by the researcher between September and November 2023.

Data analysis

Data analysis was performed using SPSS software version 25.0. Descriptive and inferential statistics were applied. Frequency and percentage were used as descriptive measures for categorical variables. The Chi-square test compared proportions of fall risk and fear of falling with time since SAH diagnosis, duration of antihypertensive use, and number of antihypertensive drugs used. Binary Logistic Regression (both crude and adjusted analyses) examined associations of SAH diagnosis, duration of antihypertensive use, and number of antihypertensive medications used (independent variables) with presence of fall risk and fear of falling associated with recurrent falls (dependent variables). Only variables showing significance levels of $p \leq 0.05$ in the Chi-square test for association with fall risk

and fear of falling were included in the regression analysis. Model fit was assessed using the Hosmer-Lemeshow test. A significance level of $p < 0.05$ was considered.

Results

Among the 70 older hypertensive individuals, a predominance of women was observed (67.1 %), aged between 60 and 70 years (64.3 %), without a partner (58.6 %), with a monthly income ranging from more than one to two minimum wages (64.3 %), retired (77.1 %), and inactive in occupational status (85.7 %). A majority reported regular health perception (67.1 %), regularly used three to four medications (71.4 %), and had no history of falls in the last six months (61.4 %). Most older individuals use two or more antihypertensive medications regularly (72.9 %), were diagnosed with SAH within the last five years (65.7 %) and have been using antihypertensive medications for at least one year (70.0 %).

The majority of older hypertensive individuals showed a presence of fall risk (71.4 %) and fear of falling associated with recurrent falls (60.0 %). A significant difference was found between groups regarding the number of antihypertensive medications ($p < 0.001$) and duration of antihypertensive use ($p = 0.012$), highlighting a higher proportion of older individuals using two or more antihypertensive medications and having had SAH diagnosed for more than four years, who also showed fall risk.

A significant difference was found between groups regarding the number of antihypertensive medications ($p < 0.001$), duration of antihypertensive use ($p = 0.012$), and time since SAH diagnosis ($p = 0.004$), indicating a higher proportion of older individuals using two or more antihypertensive medications, diagnosed with SAH for more than five years, and using antihypertensive medications for more than four years, who also reported fear of falling associated with recurrent falls.

For logistic regression analysis modeling, only variables with a significance level < 0.20 in the Chi-square test for the presence of fall risk and fear of falling (Tables 1 and 2) were considered. Table 1 presents the factors associated with fall risk. In the crude analysis, the following factors individually showed significant association with the presence of fall risk: number of antihypertensive medications ($p < 0.001$) and duration of antihypertensive use ($p = 0.047$). When the analysis was adjusted for all variables in the model, only the number of antihypertensive medications remained significantly associated ($p < 0.05$) with the presence of fall risk. It is noteworthy that older individuals using two or more antihypertensive medications have a 48.167 [95 % CI = 5.361-432.771] times higher chance of experiencing fall risk compared to those using only one antihypertensive medication.

Table 1 – Factors associated with the presence of risk of falls in older individuals. Sapezal, Brazil, 2023.

Variables	OR _{raw}	OR _{adjusted} [CI 95 %]
Number of antihypertensive medications used		
1 medication (reference category)	1	1
2 or more medication	21.000 [5.555-79.384]*	48.167 [5.361-432.771]*
Diagnosis time		
1 to 5 years (reference category)	1	1
More than 5 years	2.667 [0.777-9.152]	0.684 [0,081-5.762]
Antihypertensive medication usage time		
Less than 1 year (reference category)	1	1
1 to 4 years	1.417 [0.434-4.625]	9.263 [0.934-91.871]
More than 4 years	7.875 [1.455-42.609]*	8.069 [0.604-107.811]

*Significant association - $p < 0.05$: binary logistic regression. Alternatively, adjusted for all variables of the model. OR: Odds Ratio; CI: Confidence Interval.

Table 2 presents the factors associated with fear of falling and recurrent falls. In the crude analysis, all variables individually showed significant association with the presence of fear of falling associated with recurrent falls ($p < 0.05$). When the analysis was adjusted for all variables in the model, only the number of antihypertensive medications and duration of antihypertensive use remained significantly associated ($p < 0.05$) with fear of falling associated with recurrent falls. It is noteworthy that older individuals using two or more medications have a 15.007 [95 % CI = 2.920-77.115] times higher chance of experiencing fear of falling associated with recurrent falls compared to those using only one antihypertensive medication. Additionally, older individuals using antihypertensive medications for between one to four years and more than four years have, respectively, 6.679 [95 % CI = 1.374-33.357] and 13.444 [95 % CI = 1.387-130.305] times higher chances of experiencing fear of falling associated with recurrent falls compared to those using antihypertensive medications for less than one year.

Table 2 – Factors associated with the fear of falling in older individuals. Sapezal, Brazil, 2023.

Variables	OR _{raw}	OR _{adjusted} [CI 95 %]
Number of antihypertensive medications used		
1 medication (reference category)	1	1
2 or more medication	10.962 [3.078-39.035]*	15.007 [2.920-77.115]*
Diagnosis time		
1 to 5 years (reference category)	1	1
More than 5 years	5.455 [1.611-18.466]*	1.584 [0.229-10.955]
Antihypertensive medication usage time		
Less than 1 year (reference category)	1	1
1 to 4 years	2.333 [0.709-7.675]	6.679 [1.374-33.357]*
More than 4 years	21.000 [3.795-116.201]*	13.444 [1.387-130.305]*

*Significant association – $p < 0.05$: binary logistic regression. Alternatively, adjusted for all variables. OR: Odds Ratio; CI: Confidence Interval.

Discussion

We found that older hypertensive individuals using two or more antihypertensive medications have a higher likelihood of experiencing fall risk and greater fear of falling compared to those using only one antihypertensive. Gomes et al. ⁽¹²⁾ emphasize that the use of multiple medications is associated with a higher risk of side effects and drug interactions. Antihypertensive medications, in particular, can cause symptoms such as dizziness, weakness, blurred vision, and fainting, especially when used in combination. ⁽¹³⁾ Moreover, the use of multiple antihypertensive medications can result in excessive blood pressure reduction, leading to orthostatic hypotension. ⁽¹⁴⁾ Orthostatic hypotension is associated with an increased risk of falls, as it can cause dizziness and fainting in older adults. ⁽¹⁵⁾

We also found that older hypertensive individuals who have been using antihypertensives for more than a year are more likely to experience fear of falling associated with recurrent falls compared to those using antihypertensives for less than a year. This likelihood is even higher for those who have been using antihypertensives for more than four years. This may be because prolonged use of antihypertensive medications is associated with a greater risk of developing side effects and complications from the treatment. These side effects can include dizziness, muscle weakness, imbalance, and orthostatic hypotension, which increase the risk of falls. ⁽¹⁶⁾ Older individuals who have been using antihypertensives for a longer period may have an increased perception of vulnerability due to these cognitive and sensory changes, contributing to a greater fear of falling. ⁽¹⁷⁾

A higher proportion of older individuals with a longer duration of SAH diagnosis was found to have a risk of falls and fear of falling associated with recurrent falls. First, according to Fuchs and Whelton, ⁽¹⁾ SAH is a chronic condition that can cause progressive

damage to blood vessels, the heart, the brain, and other organs over time. This damage can result in health complications affecting cardiovascular function, brain health, and balance and motor coordination, thus increasing the risk of falls. ^(18, 19)

Another aspect is the psychological impact of living with SAH for an extended period. Older individuals who have had chronic conditions for years may develop persistent concerns about their health and well-being, particularly if they have experienced complications related to SAH in the past, such as severe cardiovascular events. ⁽²⁰⁾ Additionally, the prolonged time since the diagnosis of SAH may be associated with a gradual deterioration in overall health and physical functionality. Older individuals may experience progressive declines in muscle strength, balance, and coordination, heightening their vulnerability to falls and, consequently, their fear of falling. ⁽²¹⁾

The study's limitations include selection bias from a non-probabilistic sample, restricting generalizability, and potential information bias from self-reported fall risk and fear data. Unmeasured variables, like health conditions and physical activity, may confound results. The cross-sectional design prevents causal analysis, and findings might be context specific. Another important limitation of this study was the small sample size ($N = 70$), which may have affected the precision of the statistical estimates. Smaller samples tend to produce wider confidence intervals, indicating greater uncertainty in the odds ratio estimates. This occurs because the limited number of observations reduces the stability of statistical calculations, increasing the variability of the results. Moreover, with a reduced number of participants, detecting statistically significant associations becomes more challenging, particularly when the effects under investigation are subtle or moderate. Expanding the sample size in future studies could provide more robust and precise estimates, reducing uncertainty and improving the generalizability of the findings.

Conclusion

Our findings indicate a significant link between the use of multiple antihypertensive medications and a higher risk of falls, as well as increased fear of falling in older hypertensive adults. Specifically, those using two or more medications are more likely to experience these risks compared to those using a single medication. Additionally, the duration of medication use is associated with fear of falling, as older adults on these drugs for over a year tend to have more recurrent falls, underscoring the need to consider both the quantity and duration of medication.

These findings have important clinical implications, as they highlight the necessity for comprehensive medication reviews in older hypertensive adults to balance blood pressure management with fall prevention strategies. Healthcare providers should assess medication regimens regularly, consider deprescribing strategies when appropriate, and incorporate fall risk assessments into routine care.

Future research should explore longitudinal studies to establish causal relationships and investigate alternative treatment approaches that minimize fall risk while maintaining effective blood pressure control. Additionally, intervention studies focusing on fall prevention programs tailored for hypertensive older adults could provide valuable insights into mitigating these risks.

Bibliographical references

1. Fuchs FD, Whelton PK. High blood pressure and cardiovascular disease. *Hypertension*. 2020;75(2):285-92. doi: 10.1161/HYPERTENSIONAHA.119.14240
2. Barbosa TA, Souza AMF, Leme FCO, Grassi LDV, Cintra FB, Lima RME, et al. Perioperative complications and mortality in elderly patients following surgery for femoral fracture: a prospective observational study. *Braz J Anesthesiol*. 2019;68(6):569-79. doi: 10.1016/j.bjan.2019.09.004
3. Menezes ST. Hypertension, Prehypertension, and Hypertension Control Association With Decline in Cognitive Performance in the ELSA-Brasil Cohort. *Hypertension*. 2021;77(2):672-81. doi: 10.1161/HYPERTENSIONAHA.120.16080
4. Diaconu CC, Cozma MA, Dobrica EC, Gheorghe G, Jichitu A, Ionescu VA, et al. Polypharmacy in the Management of Arterial Hypertension-Friend or Foe? *Medicina (Kaunas)*. 2021;57(12). doi: 10.3390/medicina57121288
5. Chirinos JA, Segers P, Hughes T, Townsend R. Large-Artery Stiffness in Health and Disease: JACC State-of-the-Art Review. *J Am Coll Cardiol*. 2019;74(9):1237-63. doi: 10.1016/j.jacc.2019.07.012
6. Khouri C, Jouve T, Blaise S, Carpentier P, Cracowski JL, Roustit M. Peripheral vasoconstriction induced by β -adrenoceptor blockers: a systematic review and a network meta-analysis. *Br J Clin Pharmacol*. 2016;82(2):549-60. doi: 10.1111/bcp.12980
7. Nacamura PAB, Cardoso LCB, Rêgo AS, Sanches RCS, Rodovanovic CAT, Paiano M. Use of psychotropic drugs by older adults with hypertension: prevalence and associated factors. *Rev Bras Geriatr Gerontol*. 2021;24(2). doi: 10.1590/1981-22562021024.200287
8. Velten APC, Bensenor I, Lotufo P, Mill JG. A Prevalência da Hipotensão Ortostática e a Distribuição da Variação Pressórica no Estudo Longitudinal da Saúde do Adulto. *Arq Bras Cardiol*. 2020;114 (6):1040-8. doi: 10.36660/abc.20180354
9. Oliveira SMR. Principais causas da queda em idosos: um despertar para a prevenção. *Rev Eletr Acervo Saúde*. 2023;23(2). doi: 10.25248/reas.e11458.2023
10. Alexandre TS, Meira DM, Rico NC, Mizuta SK. Accuracy of Timed Up and Go Test for screening risk of falls among community-dwelling elderly. *Braz J Phys Ther*. 2012;16(5). doi: 10.1590/S1413-35552012005000041
11. Camargos FFO, Dias RC, Dias JMD, Freire MTF. Adaptação transcultural e avaliação das propriedades psicométricas da Falls Efficacy Scale - International em idosos Brasileiros (FES-I-BRASIL). *Braz J Phys Ther*. 2010;14(3). doi: 10.1590/S1413-35552010000300010

12. Gomes DM, Araújo PM, Sá MLF, Freitas AV, Carvalho MGFM, Silva HR. Risco de ocorrência de quedas relacionado ao uso de medicamentos. *Res Soc.* 2022;11(11). doi: 10.33448/rsd-v11i11.33510/
13. Tinetti ME, Han L, Lee DSH, McAvay GJ, Peduzzi P, Gross CP, et al. Antihypertensive medications and serious fall injuries in a nationally representative sample of older adults. *JAMA Intern Med.* 2014;174(4):588-95. doi: 10.1001/jamainternmed.2013.14764
14. Raber I, Belanger MJ, Farahmand R, Aggarwal R, Chiu N, Rifai MA, et al. Orthostatic Hypotension in Hypertensive Adults: Harry Goldblatt Award for Early Career Investigators 2021. *Hypertension.* 2022;79(11):2388-96. doi: 10.1161/HYPERTENSIONAHA.122.18557
15. Juraschek SP, Hu JR, Cluett JL, Ishak A, Mita C, Lipsitz LA, et al. Effects of intensive blood pressure treatment on orthostatic hypotension: a systematic review and individual participant-based meta-analysis. *Ann Intern Med.* 2021;174(1):58-68. doi: 10.7326/M20-4298
16. Santos MA, Sousa MT, Pereira IP, Fonseca HAT, Pereira ML, Virgens CMB, et al. Efeitos adversos decorrentes do uso de anti-hipertensivos em pacientes de um ambulatório de atenção primária na cidade de Salvador- Bahia. *Brazilian Journal of Development.* 2021;7(1):88-104. doi: 10.34117/bjdv7n1-008
17. Jongstra S, Harrison JK, Quinn TJ, Richard E. Antihypertensive withdrawal for the prevention of cognitive decline. *CDSR.* 2016;11(11). doi: 10.1002/14651858.CD011971
18. Fogari R, Zoppi A. Effect of antihypertensive agents on quality of life in the elderly. *Drugs Aging.* 2004;21(6):377-93. doi: 10.2165/00002512-200421060-00003
19. Lee ES, Kim B. The impact of fear of falling on health-related quality of life in community-dwelling older adults: mediating effects of depression and moderated mediation effects of physical activity. *BMC Public Health.* 2024;24. doi: 10.1186/s12889-024-19802-1
20. Abu Bakar AA, Kadir AA, Idris NS, Nawi SNM. Older Adults with Hypertension: Prevalence of Falls and Their Associated Factors. *Int J Environ Res Public Health.* 2021;18(16). doi: 10.3390/ijerph18168257
21. Gebreyohannes EA, Bhagavathula AS, Abebe TB, Tefera YG, Abegaz TM. Adverse effects and non-adherence to antihypertensive medications in University of Gondar Comprehensive Specialized Hospital. *Clinical Hypertension.* 2019;25(1). doi: 10.1186/s40885-018-0104-6

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