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Original research article

# Sedentary behavior as a discriminator of functional disability among older adults: a cross-sectional study

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**Abstract**
*Objectives:* To investigate the association between sedentary behavior and functional disability in instrumental activities of daily living among older adults, and to determine the accuracy and optimal cutoff point of sedentary behavior for the discrimination of functional disability.
*Methods:* This is a population-based, cross-sectional epidemiological survey of 318 older adults (mean age: 74.6 ± 9.7 years old) from Northeastern Brazil. Functional disability in instrumental activities of daily living was assessed using the Lawton scale (presence or absence). Sedentary behavior time was quantified using the International Physical Activity Questionnaire.
*Results:* The prevalence of functional disability was 59.7% (women: 68.5%; men: 48.5%; $P = 0.001$). The median sedentary behavior time was 4.7 h/day. Each 1 h/day increase in sedentary behavior was associated with a 4% increase in the likelihood of functional disability in women (PR: 1.04; 95% CI: 1.01–1.07). Furthermore, in women, sedentary behavior demonstrated an accuracy of 0.61 (95% CI: 0.53–0.68), a sensitivity of 23%, and a specificity of 100% (optimal cutoff point: 7.5 h/day).
*Conclusion:* Sedentary behavior was positively associated with functional disability in instrumental activities of daily living in women but not in men. Additionally, sedentary behavior showed accuracy in discriminating functional disability in women, with the optimal cutoff point identified at 7.5 h/day.

**Keywords:** Activities of daily living; Aging; Epidemiology; Sedentary lifestyle

## Introduction

Aging is associated with an increased risk of morbidity (Santos et al., 2021, 2022a, b) and mortality (Santana et al., 2021). As a result of aging, detrimental structural changes occur in the neuromuscular system, such as reduction in the number of muscle fibers and, consequently in the cross-sectional area of skeletal muscle, as well as declines in excitatory impulses through supraspinal centers and in the recruitment capacity of motor units (Tieland et al., 2018). These changes significantly impact the ability of older adults to perform instrumental activities of daily living (IADL), leading to functional disability and compromising their quality of life (Tieland et al., 2018).

Functional disability among older adults represents a global public health challenge, albeit with substantial regional variation. In Europe, approximately 23.8% of adults aged 65 years and older have at least one IADL limitation (Portela et al., 2020), while in the Association of Southeast Asian Nations (ASEAN), pooled estimates indicate a considerably higher burden, with 46.8% of older adults experiencing IADL disability (Yau et al., 2022). In contrast, South Korea reports a lower prevalence of 15.5% for IADL limitations among adults aged 65 and older (Nguyen et al., 2022). In the United States, functional limitation is particularly pronounced among low-income working-age older adults, with IADL disability prevalence surpassing that of comparable European populations (Choi et al., 2024).

Concerning trends indicate that functional disability rates are increasing in several regions. In South Korea, a dramatic rise has been documented over a 12-year period, with IADL disability prevalence increasing from 10.7% in 2008 to 25.6% in 2020 (Nguyen and Hong, 2023). Similarly, Austria has experienced substantial increases between 2014 and 2019, with

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IADL limitations rising from 18.9% to 35.1% in men, and from 38.2% to 50.8% in women (Woldemariam et al., 2024). These upward trends contrast with historical improvements observed in earlier birth cohorts and suggest a stalling or reversal of disability decline in cohorts born after 1945 in both the United States and Europe (Gimeno et al., 2024).

Future projections underscore the urgency of addressing functional disability. Microsimulation models for China predict that by 2048, nearly 38% of late middle-aged and older adults will be IADL-dependent (Jiang and Li, 2024). As populations continue to age globally, functional disability prevalence is expected to rise proportionally across most regions (United Nations, 2023), placing increasing demands on healthcare systems and caregiving resources worldwide.

A systematic review and meta-analysis estimated that the prevalence of IADL disability among Brazilian older adults was 43%, with regional analysis revealing a prevalence of 57% among older adults in the Northeast region (Meneguci et al., 2019). These figures substantially exceed the pooled estimate of 23.8% for Europe (Portela et al., 2020) and are comparable to the rate of 46.8% reported for the ASEAN region (Yau et al., 2022). This positions Brazil among the countries with the highest functional disability burden, particularly in socioeconomically disadvantaged regions. These high prevalence rates reflect an extremely adverse epidemiological panorama that parallels or exceeds international standards, as low functionality among older individuals has been associated with negative health outcomes such as depression, frailty syndrome (Aguiar et al., 2019), non-communicable chronic diseases, the need for emergency home care, and hospitalizations (Zanesco et al., 2020).

In addition to socioeconomic disadvantages, lifestyle and sociocultural patterns can influence daily activity and functional outcomes among older adults in Northeastern Brazil. National survey data show that the prevalence of limitations in activities of daily living is higher in the Northeast than in other Brazilian regions, particularly among women, reflecting broader gender and income inequalities in functional health status (Lima et al., 2020).

In this context, sedentary behavior that encompasses all activities performed at low energy expenditure (i.e., ≤1.5 metabolic equivalents), mostly performed in sitting and reclining postures (Tremblay et al., 2017), seems to prompt functional disability later in life (Scher et al., 2019). International evidence consistently demonstrates the association between sedentary behavior and functional disability. A prospective Japanese cohort study using accelerometer measurements found that greater sedentary time was associated with an increased risk of incident functional disability over nine years, with hazard ratios ranging from 1.21 to 1.45 for higher total sedentary time quartiles compared to the lowest quartile (Chen et al., 2023). In Brazil, national survey data indicate that television sedentary time ≥3 h/day is associated with 38% higher odds of IADL disability (Freitas et al., 2024). However, our literature search revealed only two studies identifying the accuracy of sedentary behavior as a discriminator of IADL disability among older adults (Brandão et al., 2019; Virtuoso Júnior et al., 2018). Notably, these two Brazilian studies employed Receiver Operating Characteristic (ROC) curve analysis to identify optimal sedentary behavior cutoff points. Their findings suggest that sedentary times of ≥603 min/day (Virtuoso Júnior et al., 2018) and ≥360 min/day (Brandão et al., 2019) increase the odds of IADL disability, demonstrating the potential utility of this methodological approach for establishing screening thresholds.

These findings highlight the need for more evidence on the discriminative power of sedentary behavior for IADL disability. Given the low cost and applicability of assessing sedentary behavior, the results of this research could inform health surveillance actions, enabling the early identification of older adults with functional impairments. Therefore, this study aimed to: (1) investigate the association between sedentary behavior and functional disability in IADL among community-dwelling older adults; (2) determine whether this association differs by sex; and (3) establish the discriminative accuracy and optimal cutoff point for daily sedentary behavior time in screening for IADL disability. Specifically, we sought to answer the following research questions: (1) Is sedentary behavior independently associated with IADL disability in older adults after controlling for relevant covariates? (2) Does the relationship between sedentary behavior and IADL disability differ between older men and women? (3) What is the optimal sedentary behavior threshold (h/day) that best discriminates older adults with and without IADL disability?

## Material and methods

### *Study design, location, and population*

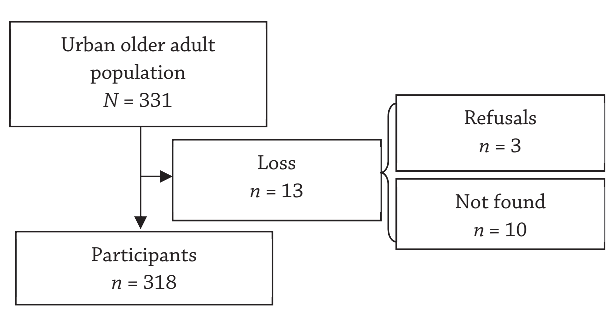
This study was based on data from an epidemiological, cross-sectional, population-based, household survey entitled "Nutritional status, risk behaviors, and health conditions of older adults in Lafaiete Coutinho, Bahia, Brazil". Details about the study site and population, as well as data collection methods, have been previously published (Queiroz et al., 2018). Briefly, a census was conducted in Lafaiete Coutinho to identify and include all older adults (≥60 years) residing in the urban area. Participants were recruited via the Family Health Strategy (FHS), which provides universal primary healthcare coverage across the municipality.

Individuals were included if they met the age (≥60 years) and residency (urban area) criteria. Exclusion criteria consisted of refusals to participate, individuals not located after three home visits on alternate days, and those with missing data for any of the variables of interest.

Of the 331 eligible older adults, 318 (96.1%) participated in the survey. There were 13 losses (3.9%), comprising three refusals (0.9%), and 10 individuals not found (3%) (Scheme 1).

### *Data collection*

Data collection occurred in two stages. The first stage was conducted at participants' homes and consisted of personal interviews, including sociodemographic information, health status, lifestyle factors, and motor performance tests. The second stage, which comprised anthropometry, was scheduled one to three days after the home interview and took place at the two




**Scheme 1.** Flowchart of the study participants

FHS units in the city. Before the interview, cognitive function was assessed using the modified Mini-Mental State Examination (MMSE). Older adults with scores <13 on the MMSE (Bertolucci et al., 1994) were asked to complete the Pfeffer scale; a score ≥6 indicated impaired cognitive function (Pfeffer et al., 1982). For participants with cognitive impairment, the help of a proxy respondent was requested for the interview.

### Ethical considerations

This study was conducted in accordance with the Helsinki Declaration of the World Medical Association. It was approved by the Research Ethics Committee of the State University of Southwest Bahia (opinion: 491.661). The purpose and procedures of the study were explained to participants, who signed a Free and Informed Consent prior to data collection.

### Functional disability in IADL (dependent variable)

Functional disability was assessed using Lawton's IADL scale (Lawton and Brody, 1969). Impairments were evaluated across six domains: preparing meals, managing money, going out, shopping, using the telephone, and taking medications. For each activity, participants were classified as independent (no help needed) or dependent (partial or total assistance needed). The IADL measure was then dichotomized as follows: 0 = independent (i.e., no limitations) and 1 = functional disability (i.e., difficulty performing at least one activity on the scale). This categorization is widely used in population-based studies to identify individuals at risk of losing autonomy (Aguiar et al., 2019; Brandão et al., 2019; Meneguci et al., 2019).

### Sedentary behavior (independent variable)

The fifth domain of the International Physical Activity Questionnaire (IPAQ), which relates to sedentary behavior, was used (Craig et al., 2003). The IPAQ has been validated for Brazilian older adults (Benedetti et al., 2004, 2007). This questionnaire quantifies the time (h/day) spent sitting in various locations, including at home, in social settings, and at the doctor's office. This includes time spent sitting while resting, watching TV, visiting friends and relatives, reading, making phone calls, and eating, but excludes travel-related sitting time (e.g., on a bus or in a car). Based on this information, the weighted average for daily sedentary behavior was calculated using the following formula (Virtuoso Júnior et al., 2018): Time spent in sedentary behavior (h/day) = [(time spent sitting during weekdays × 5) + (time spent sitting during weekend days × 2)] / 7.

### Confounders

The confounding variables included age group (60–69, 70–79, and ≥80 years); religion [yes = self-reported affiliation with any religion (e.g., Catholic, Protestant or Evangelical, Jewish, among others); no = no religious affiliation]; hospitalization in the last 12 months (yes and no); medication use (no use, 1 medication, and ≥2 medications); cognitive status (impaired and non-impaired); and nutritional status (low weight, adequate, and overweight). Cognitive status was assessed using the modified MMSE: <13 points = impaired; ≥13 points = not impaired (Bertolucci et al., 1994). Nutritional status was assessed as the body mass index [BMI: ratio of body mass to stature squared (BMI = $kg/m^2$)], and categorized as low weight (BMI < 22 $kg/m^2$), adequate (22 $kg/m^2$ ≤ BMI ≤ 27 $kg/m^2$), and overweight (BMI > 27 $kg/m^2$) (Gonçalves et al., 2019). Body mass and stature were measured as described by Pinheiro et al. (2020), using a portable digital scale (Zhongshan Camry Electronic, G-Tech Glass 6, China) and a portable compact stadiometer (Wiso, China), respectively. In 12 participants who could not remain standing, body mass and height could not be measured; therefore, these parameters were estimated using equations proposed by Chumlea et al. (1988).

### Statistical analysis

Descriptive analysis of population characteristics included absolute and relative frequencies, means, medians, standard deviations (SD), and interquartile ranges (IQR). The normality of continuous data was verified using the Kolmogorov–Smirnov test. The chi-square and Mann–Whitney tests were employed to compare sex differences in the prevalence of functional disability in IADL and sedentary behavior time, respectively.

The association between functional disability in IADL and sedentary behavior was evaluated through Poisson regression with robust variance. To account for potential confounding factors, models stratified by sex were constructed to estimate prevalence ratios (PR) with their respective 95% confidence intervals (95% CI). Multivariable models were built using the backward method, where all confounding variables were initially included and subsequently removed one by one based on the highest *P*-values, up to a critical level of 0.10. Variables with a *P*-value ≤ 0.10 were retained in the final model for adjustment purposes, ensuring that the association between sedentary behavior and IADL disability was independent of sociodemographic and health-related factors.

The discriminative capacity of sedentary behavior for IADL disability was evaluated using parameters provided by the ROC curve (Nahm, 2022). First, the accuracy of sedentary behavior was examined through the area under the curve (AUC). Following this, the optimal cutoff point and its respective sensitivity and specificity values were determined using the Youden index (Martínez-Camblor and Pardo-Fernández, 2019). The significance level adopted in all analyses was 5% ($P \leq 0.05$). Data were analyzed using IBM SPSS Statistics for Windows (IBM SPSS. 21.0, 2012, Armonk, NY: IBM Corp.) and MedCalc (version 14.8.1, 2014).

## Results

The study population consisted of 318 older adults (55.3% women), aged 60 to 108 years (mean and SD = 74.6 ± 9.7 years). Other characteristics of the population, by sex, are presented in Table 1. Men and women showed similarity regarding the distribution of age group, religion, and hospitalization. Women exhibited higher rates of using two or more medications, impaired cognitive status, and being overweight, while the proportions of non-use of medications and low weight were higher in men.

Overall, the prevalence of functional disability in IADL was 59.7%, and it was significantly higher in women compared to men (Chart 1).

The time (median and IQR) for sedentary behavior was 4.7 ± 4.4 hours, with no significant difference between sexes (Chart 2).

Functional disability in IADL was independently and positively associated with sedentary behavior in women but not in men. The results of the multiple regression model for women indicated that each one-unit (1 h/day) increment in sedentary behavior resulted in a 4% increase in the likelihood of functional disability in IADL, independently of age group, religion, hospitalization in the last 12 months, medication use, cognitive status, and nutritional status (Table 2).

| **Table 1. Characteristics of the study population by sex** | | | |
|---|---|---|---|
| Variables | % response | Sex | |
| | | Female (*n* = 176) | Male (*n* = 142) |
| Age group, *n* (%) | 100.0 | | |
| 60–69 years | | 57 (32.3%) | 48 (33.8%) |
| 70–79 years | | 61 (34.7%) | 60 (42.3%) |
| ≥80 years | | 58 (33.0%) | 34 (23.9%) |
| Religion, *n* (%) | 99.7 | | |
| Yes | | 173 (98.3%) | 134 (95.0%) |
| No | | 03 (1.7%) | 07 (5.0%) |
| Hospitalization in the last 12 months, *n* (%) | 99.7 | | |
| Yes | | 27 (15.3%) | 29 (20.6%) |
| No | | 149 (84.7%) | 112 (79.4%) |
| Use of medication, *n* (%) | 96.9 | | |
| Does not use | | 25 (14.5%) | 44 (32.6%) |
| 1 medication | | 26 (15.0%) | 24 (17.8%) |
| ≥2 medications | | 122 (70.5%) | 67 (49.6%) |
| Cognitive status, *n* (%) | 93.7 | | |
| Impaired | | 64 (38.6%) | 25 (18.9%) |
| Not impaired | | 102 (61.4%) | 107 (81.1%) |
| Nutritional status, *n* (%) | 95.3 | | |
| Low weight | | 37 (22.2%) | 47 (34.6%) |
| Adequate | | 69 (41.3%) | 62 (45.6%) |
| Overweight | | 61 (36.5%) | 27 (19.9%) |

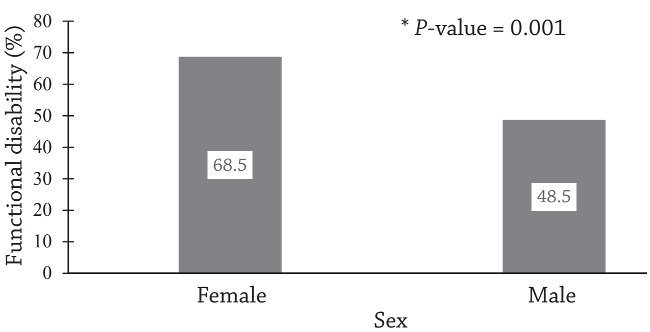



**Chart 1.** Prevalence of functional disability in instrumental activities of daily living in older adults, according to sex. * Chi-square test

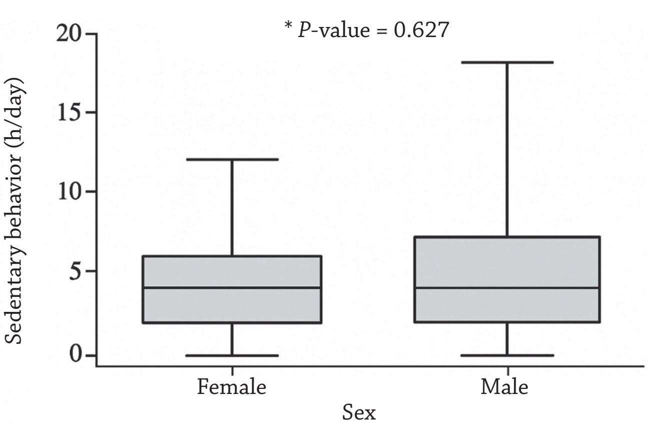



**Chart 2.** Time of sedentary behavior of the older adults, according to sex. The box limits represent the first and third quartiles, while the internal line represents the median; the whiskers extend from the quartiles to the minimum and maximum values.
* Mann–Whitney test

| **Table 2. Prevalence ratios for functional disability in instrumental activities of daily living with increasing sedentary behavior in older adults, according to sex** | | | |
|---|---|---|---|
| Model | *PR | 95% CI | *P*-value |
| Female | 1.04 | 1.01–1.07 | 0.034 |
| Male | 1.00 | 0.93–1.07 | 0.994 |

*Note:* PR – prevalence ratio; CI – confidence interval. * Adjusted for age group (female) and for age group, medication use and cognitive status (male). The remaining confounders variables were removed from the models following the model criteria used in the study (see statistical analysis topic).

Because the regression analysis indicated that sedentary behavior was a predictor of functional disability in IADL only in women, the ROC curve analysis was performed to identify the cutoff point that best discriminates functional disability for this sex.

The AUC value indicates that sedentary behavior was able to distinguish older women with functional disabilities in IADL with an accuracy of 61% (Chart 3). The cutoff point of 7.5 h/day of sedentary behavior was the best criterion to discriminate between older women with and without functional disabilities in IADL. Sensitivity was 23%, and specificity was 100%.

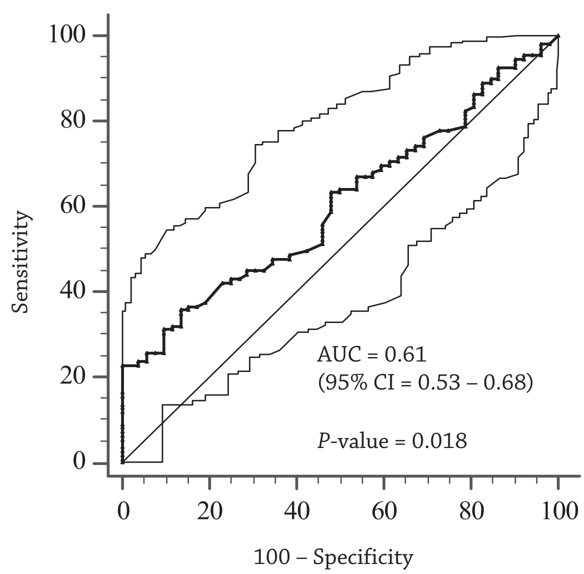



**Chart 3.** ROC curve of sedentary behavior as a discriminator of functional disability in IADL in older women. AUC – area under the curve. IC – confidence interval.

## Discussion

The results of the present study indicate that functional disability in IADL is independently and positively associated with sedentary behavior in older women, but not in older men. Additionally, the identified cutoff point of 7.5 h/day is the best criterion to discriminate functional disability in older women, presenting high specificity (100%) but low sensitivity (23%), which limits its utility for early screening purposes.

Some research conducted with populations from other countries has investigated the association between sedentary behavior and functional disability. For example, Chen et al. (2016) evaluated 1,634 older Japanese individuals using a triaxial accelerometer and showed that, regardless of sex, less sedentary time and a greater number of interruptions in sedentary time were related to a lower risk of IADL disability, even after adjusting for moderate to vigorous physical activity (MVPA). Dunlop et al. (2015) also used direct measurement (i.e., accelerometry) to examine the association between functional disability and sedentary time in a sample of 2,286 American older adults, concluding that, regardless of sex and time spent in MVPA, the presence of IADL disability was associated with daily sedentary hours and the percentage of daily sedentary waking hours.

These findings are partially in agreement with those of the present study, where sedentary behavior was positively associated with functional disability in older women but not in men. It is essential to highlight the methodological differences that may have influenced the results of the studies. The two aforementioned studies measured sedentary time directly (using motion sensors) (Chen et al., 2016; Dunlop et al., 2015), whereas we used an indirect measurement (questionnaire) that measures time spent in activities in the sitting position.

Furthermore, the inconsistent results across studies may have resulted from differences in analysis procedures. For example, in this research, the analyses were stratified by sex, whereas in the studies by Chen et al. (2016) and Dunlop et al. (2015), the analyses were adjusted for sex.

The sex-specific findings observed in our study – where sedentary behavior was significantly associated with IADL disability in women but not in men – warrant deeper interpretation considering both biological and sociocultural factors. From a biological perspective, older women experience more pronounced age-related declines in muscle mass and strength (sarcopenia) compared to men, particularly after menopause, due to declining estrogen levels. Estrogen exerts a protective effect on muscle tissues through estrogen receptors, and its deficiency accelerates muscle protein degradation and reduces muscle regenerative capacity (Santos et al., 2021; Tieland et al., 2018). Consequently, the deleterious effects of prolonged sedentary behavior on muscle metabolism and neuromuscular function may manifest more severely in women, making them more vulnerable to functional limitations. Additionally, women typically have lower baseline muscle mass and strength than men throughout the lifespan. This sexual dimorphism leaves them with less physiological reserve to withstand the adverse effects of sedentary behavior (Santana et al., 2021; Santos et al., 2022a). This lower threshold for functional impairment suggests that increased levels of sedentary behavior may trigger disability more rapidly in women than in men.

From a sociocultural perspective, gender differences in functional capacity and activity patterns among older adults have been consistently documented. Evidence from Brazilian population-based studies indicates that older women have a higher prevalence and earlier onset of functional limitations compared to men, which has been partly attributed to lifelong gendered roles and social inequalities (Barbosa et al., 2005). As functional limitations progress, reduced participation in domestic and social activities may contribute to greater sedentary behavior and social withdrawal, reinforcing sex-specific trajectories of disability in later life. Longitudinal evidence also suggests that women experience a faster transition to physical disability than men, highlighting the interaction between gender, functional decline, and activity patterns in aging populations (Mandal and Subaiya, 2025). These biological and sociocultural factors likely synergize to produce the observed sex-specific associations, although further research with longitudinal designs and mixed-methods approaches is needed to fully elucidate these mechanisms.

The relationship between sedentary behavior and functional disability in older individuals is based on the adverse effects of prolonged sitting time on body composition, such as low muscle mass (Gianoudis et al., 2015) and high adiposity (Reid et al., 2018), which influence functionality. Moreover, hypokinesia can exacerbate declines in the capacity of muscle groups to maintain dynamic balance (Le Roux et al., 2022) and produce strength and power (Ramsey et al., 2021).

Therefore, excessive time spent in sedentary activities affects functional capacity. Sardinha et al. (2015) found that fewer than seven interruptions per hour in sedentary behavior resulted in twice the chances of disability in performing IADL among 371 older Portuguese individuals, regardless of the time spent in MVPA. Such findings reinforce the need for constant interruptions in hypokinetic behavior to improve performance among older adults (Santos et al., 2023a, b).

This study identified a cutoff point of 7.5 h/day of sedentary behavior that discriminates functional disability in IADL with an accuracy of 61% in women. While this cutoff demonstrated high specificity (100%), its low sensitivity (23%) limits its clinical utility for screening purposes. High specificity indicates that the cutoff is effective at correctly identifying older women without functional disability (i.e., low false-positive rate), which may be useful in resource-limited settings to avoid unnecessary interventions among those at low clinical risk. Therefore, while this cutoff may have some value in specific clinical contexts, such as confirming low risk in apparently healthy older women or as part of a multi-component assessment, it should not be relied upon as a primary screening instrument. For effective early detection and intervention, sedentary behavior assessment should be combined with other more sensitive indicators of functional decline, such as objective physical performance tests (e.g., gait speed, chair stand test) or comprehensive geriatric assessment tools that capture multiple domains of functional capacity.

Two other Brazilian studies conducted with older populations investigated the accuracy of sedentary behavior in discriminating functional disability in IADL. In the Southeast region of Brazil, Virtuoso-Júnior et al. (2018) verified in 624 older adults that times >600 min/day (i.e., 10 h/day) and >614 min/day (i.e., 10.2 h/day) were the best cutoff points for men and women, respectively. On the other hand, in the Northeast region of Brazil, Brandão et al. (2019) determined in a population-based survey of 310 older adults that the best values of sedentary behavior to identify functional disability were >330 min/day (i.e., 5.5 h/day) for men and >270 min/day (i.e., 4.5 h/day) for women.

Such differences may be due to the disparities in the populations studied. Virtuoso Júnior et al. (2018) investigated a medium-sized municipality with higher socioeconomic indicators than the population of the present study. While the socioeconomic profile of the population studied by Brandão et al. (2019) is similar to that of Lafaiete Coutinho, the former location exhibits a larger population and higher demographic density. This reinforces the importance of further research across different regions and urban centers of the country, so that the cutoff points related to sedentary behavior are tailored to the characteristics of each population. The cutoff point may differ in various populations.

An important consideration in interpreting our findings is the potential for reverse causality, which is inherent to the cross-sectional design of this study. While we observed an association between higher sedentary behavior and increased likelihood of functional disability in older women, the temporal sequence and direction of this relationship cannot be established from our data. Longitudinal studies with repeated measurements of both sedentary behavior and functional status, ideally employing causal inference methods such as cross-lagged panel models or marginal structural models, are essential to disentangle these temporal relationships and establish whether reducing sedentary time can prevent or delay functional decline in older adults.

The use of indirect measurement to assess sedentary behavior can be considered another limitation of this study. Measurements performed using self-report instruments are subject to memory bias, especially among older adults. However, in cases where participants presented with cognitive impairment, the information was provided by a proxy respondent (caregiver or accompanying person), as described in the methodological procedures, to minimize recall bias and ensure data reliability. However, the use of proxy respondents introduces another potential source of measurement error, as proxies may have limited knowledge of the participants' habitual daily sedentary time and may interpret questions differently than the older adults themselves. Nevertheless, the IPAQ is a standard instrument that has been culturally adapted to measure the levels of physical activity and sedentary behavior of the Brazilian population (Benedetti et al., 2004, 2007). Moreover, the IPAQ demonstrates high reliability and moderate criterion validity compared to accelerometers (Craig et al., 2003).

Conversely, this study's strength lies in its census perspective, allowing for the evaluation of the population contingent of a small municipality in Northeast Brazil, which has low socioeconomic indicators and, therefore, lacks simple and low-cost measures for the identification of older adults in conditions of greater vulnerability within health surveillance. Furthermore, the study controlled for important confounders related to functional performance in IADL, such as cognitive status, nutritional status (BMI), polypharmacy, and religious affiliation. The inclusion of these variables strengthens the analysis, as they are factors that influence mobility and social engagement – particularly participation in religious rituals – which can contribute to reducing sitting time and preserving functional capacity.

## Conclusion

The present investigation found that sedentary behavior is positively associated with functional disability to perform IADL in older women, but not in men. Furthermore, sedentary behavior shows accuracy in discriminating functional disability in older women, with a cutoff point of 7.5 h/day being the best criterion.

### *Author contributions*

*DPS, JAOC, TAB, MHF, RSC* – Concept design; *DPS, LS, IESS, JAOC, TAB, MHF, RSC* – Collection, analysis, and interpretation of data; *DPS, LS, IESS, PGJ, JAOC, TAB, RP, MHF, LB, JM, RSC* – Preparing the draft of the study; *DPS, LS, IESS, PGJ, JAOC, TAB, RP, MHF, LB, JM, RSC* – Review and final approval.

### *Data availability*

The datasets analyzed in the current study are not publicly available due to ethical restrictions related to participant privacy, but are available from the corresponding author upon reasonable request.

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### *Conflict of interest*

The authors have no conflict of interest to declare.

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