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Functional disability and associated factors in older adults seen at a primary health care unit

Incapacidade funcional e fatores associados em idosos atendidos na atenção primária

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Abstract

Objectives: To assess functional disability and associated factors in older patients cared for at a large Brazilian urban area.

Methods: This is a cross-sectional study performed at a primary health care unit in the city of São Paulo, Brazil. Participants were selected via probabilistic sampling of 400 older individuals. We used a sociodemographic and health questionnaire along with instruments for assessing fear of falling (FES-I), cognitive function (MMSE), and depression symptoms (GDS-15). For dependent variables, we used instruments for assessing basic activities (BADL; Katz) and instrumental activities of daily living (IADL; Lawton). Factors associated with functional disability were analyzed via logistic regression models.

Results: The mean age of participants was 75.23 (SD = 8.53); 63.20% were female, 27.00% were dependent in BADL and 39.25%, in IADL. Older individuals with better cognitive function and who had not been hospitalized in the previous year were less prone to functional disabilities. Factors such as older age, more depression symptoms, and greater fear of falling were more linked to disabilities in BADL. Factors such as older age, female sex, and greater fear of falling were more linked to disabilities in IADL.

Conclusions: The prevalence of disability in BADL and IADL in the studied sample was high. Modifiable and non-modifiable factors were associated with functional disability. These results may help primary health care professionals understand the risk factors for functional disability in the older population.

Keywords: older adults; geriatrics; primary health care; disability evaluation.

Resumo

Objetivos: Avaliar a incapacidade funcional e fatores associados em pacientes idosos atendidos em um grande centro urbano brasileiro.

Metodologia: Estudo transversal realizado em uma Unidade Básica de Saúde na cidade de São Paulo, Brasil. A seleção dos participantes foi por meio de amostragem probabilística de 400 indivíduos idosos. Foi utilizado um questionário sociodemográfico, de saúde e instrumentos para avaliar medo de queda (FES-I), status cognitivo (MEEM) e sintomas depressivos (GDS-15). Para as variáveis dependentes, utilizou-se os instrumentos para avaliar as atividades básicas (ABVD; Katz) e atividades instrumentais de vida diária (Lawton; AIVD). Os fatores associados à incapacidade funcional foram analisados por meio de modelos de regressão logística.

Resultados: A média de idade dos participantes foi de 75,23 (DP = 8,53), 63,20% eram do sexo feminino, 27,00% eram dependentes para ABVD e 39,25% para as AIVD. Indivíduos idosos com melhor status cognitivo e que não estiveram internados no último ano eram menos propensos às incapacidades funcionais. Fatores como ter mais idade, mais sintomas depressivos e mais medo de queda eram mais propensos às incapacidades das ABVD. Fatores como ter mais idade, ser do sexo feminino e mais medo de queda foram mais propensos às incapacidades das AIVD.

Conclusões: A prevalência de incapacidade para ABVD e AIVD na amostra estudada foi alta. Fatores modificáveis e não modificáveis foram associados à incapacidade funcional. Esses resultados podem ajudar os profissionais da atenção primária à saúde a entenderem os fatores de risco de incapacidade funcional na população mais velha.

Palavras-chave: idosos; geriatria; atenção primária à saúde; avaliação da deficiência.



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INTRODUCTION

The growth of the older population is a global reality.¹ This happened first in developed countries and then in developing countries such as Brazil.² Due to the aging process itself, this population presents a higher probability of being affected by noncommunicable diseases (NCDs), functional disability, and compromised quality of life.^{3,4}

In this context, functional disability and its consequences are a problem for this population and consequently a great challenge to family members, health professionals, and the health care system.^{5,6} In 2016, a meta-analysis including 44 714 people aged 60 years or older identified a mean frequency of 42.80% for functional disability among women and 39.60% for men.⁷

Functional capacity can be understood as the capability of people to decide and act independently in their lives, encompassing 2 types of activities: basic activities of daily living (BADL) and instrumental activities of daily living (IADL).⁸ Factors associated with higher chances of functional disability are: older age; female sex; not having a partner; and NCDs such as stroke, cardiac disease, diabetes, and depression.^{3,9}

Comprehensive geriatric assessment (CGA) is important in this population, as various factors are associated with functional disability.¹⁰ Despite evidence on associated factors of functional disability in geriatric patients, few studies that used CGA were found for older persons seen at primary health care (PHC) units, especially in large Brazilian urban areas. Most evidence focuses on hospital environments or long-term care facilities, leaving an important gap when considering older adults seen in a PHC context. Functional disability is caused by various factors, hence its associated factors need to be explored, such as sociodemographic and health aspects, falls, fear of falling, cognitive function, and depression symptoms.¹¹ This way, the aim of the present study was to assess the prevalence of functional disability in BADL and IADL and its associated factors among older adults seen at a PHC unit in a large Brazilian urban area. Investigating the prevalence and associated factors of functional disability through CGA will provide a better understanding of the mechanisms that, in older adults, may mitigate or put them at risk of functional disability, which may help in the development of preventive strategies and more effective interventions in PHC.¹⁰

METHODS

This is a cross-sectional study with probabilistic sampling of older adults seen at a PHCU in São Paulo-SP, Brazil. This study was approved by the Research Ethics Committee of the São

Paulo Municipal Health Secretariat, Protocol No. 2,364,869. All participants signed an informed consent form. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations.¹²

Data were collected from older individuals seen at PHCU Marcus Wolosker (Belenzinho), located in the East Side of the municipality of São Paulo. PHCU Belenzinho had records of approximately 40,000 people, of which 5,000 (12.50%) were 60 years old or older. G*Power 3.1.9.7 software was used for calculating sample size and constructing adjusted logistic regression models between the dependent variable — functional disability (prevalence of 30.30%) — and the independent variables.¹³ A post-hoc analysis showed that, with an alpha of 5% ($\alpha = 0.05$) significance, the statistical power of our analysis was 82.50%.

Data collection was performed between November 2017 and August 2018, with a mean duration of 40 minutes per patient. The questions were read and were not interpreted. Participants were selected by drawing random numbers of medical records at the PHCU. People aged 60 years or older with a medical record at PHCU Belenzinho participated in the study. People with severe physical impairment or a medical diagnosis of cognitive deficit or Alzheimer's disease did not participate in the study.

BADL — Katz Index: The assessment instrument was developed by Sidney Katz (Index of Activities of Daily Living) in the United States of America.¹⁴ In Brazil, this instrument was translated in 2008 by Lino et al.¹⁵ The assessment using this instrument consists in identifying an individual's capacity for bathing, dressing, toileting, transferring, continence, and feeding; it can be classified into 6 types of independence and 2 types of dependence in its original version. In its most current version, it generates a classification into independent, moderately dependent, and very dependent.¹⁶ Scores range from 0 to 6 points, where 1 point is attributed to each affirmative response. Based on this score, older adults are classified as independent (6 to 5 points), partially dependent (4 to 3 points), or completely dependent (less than 3 points). In this study, patients with scores ≤ 5 were considered dependent in BADL. In the Brazilian validation of the scale, it presented excellent reliability with a Cronbach's alpha of 0.91.¹⁵

Instrumental activities of daily living — Lawton Scale: This scale was developed by Lawton e Brody¹⁷ in 1969 and validated in the Brazilian culture in 2008 by Araújo et al.¹⁸ It is a generic measure that assesses the level of independence for performing IADL, which comprise tasks such as using the telephone, shopping, preparing food, house-keeping, doing laundry, using transportation, and handling

medications and finances.¹⁸ Scores range from 7 to 21 points, varying between 1 to 3 points for each question. Based on this score, the population is classified as dependent (≤ 20 points) or independent (21 points). In the Brazilian validation of the scale, it presented excellent reliability with a Cronbach's alpha of 0.94.¹⁸

Sociodemographic and health characteristics: In order to understand the social, economic, demographic, and health profile of the health care users, we applied a questionnaire with the following variables: age (60 – 69, 70 – 79, and ≥ 80 years), sex (male or female), education (no schooling or schooled), marital status (with or without a partner), family arrangement (alone or living with someone), family income (< 1 minimum monthly salary or > 1 minimum monthly salary), retirement pension (yes or no), life satisfaction (unsatisfied or satisfied), health perception (regular, good, or very good), chronic disease (yes or no), daily use of medications (yes or no), polypharmacy (yes or no), smoking habit (yes or no), hospitalization in the previous year (yes or no), history of falls (yes or no), time since last fall (< 12 months, > 12 months, or never fell), cardiovascular comorbidities (yes or no), malignant neoplasms (yes or no), lung diseases (yes or no), musculoskeletal diseases (yes or no), neurological or mental health comorbidities (yes or no), and metabolic diseases (yes or no).

Cognitive function — Mini-Mental State Examination (MMSE): The MMSE was validated by Folstein in 1975, being validated in Portuguese by Bertolucci et al. in 1994.^{19,20} The MMSE is used for assessing cognitive function or screening for cognitive impairment. The score ranges from 0 to 30 points; the cutoff points used in Brazil vary according to education level in years of schooling, as follows: 13 points for illiterate individuals, 18 points for lower and intermediate education (up to 8 years of schooling), and 26 points for high education (more than 8 years of schooling).²⁰

Depression symptoms — Geriatric Depression Scale, 15-item short form [GDS-15]: The GDS-15 was validated by Yesavage et al.²¹ in 1983, being further validated in Portuguese by Paradela et al.²² in 2005. GDS-15 is a scale that presents 2 answer options (yes or no). Scores range from 0 to 15 and classify patients as without depression (≤ 5) or with depression (≥ 6).²²

Fear of falling — Falls Efficacy Scale (FES-I): The FES-I was published by Yardley et al.²³ in 2005, being validated in Portuguese by Camargos et al. in 2010.²⁴ FES-I assesses concerns about falling in 16 activities of daily living. The FES-I ranges from 16 (no concern) to 64 (extreme concern). Cutoff points indicate low concern (16 to 22 points) or high concern (23 to 64 points).²⁵

Data were analyzed using SPSS software version 25. A descriptive analysis used means, standard deviations, confidence intervals, as well as absolute and relative values for sociodemographic and health variables, the Katz index, and the Lawton scale. Unadjusted logistic regression models were constructed between BADL (0 = preserved and 1 = compromised), IADL (0 = preserved and 1 = compromised), and the sociodemographic and health characteristics, cognitive function, depression symptoms, and fear of falling variables. The hierarchical logistic regression models were manually constructed as follows. Model 1: sociodemographic characteristics; model 2: model 1 + health status, cognitive function, and depression symptoms; and model 3: model 2 + fear of falling. Only variables with $p \leq 0.10$ in the unadjusted logistic regression models were included in the hierarchical models. $p < 0.05$ was adopted as significant, as well as a 95% CI.

RESULTS

In total, 488 individuals were invited to participate in the study; of these, 400 (81.97%) completed all stages of data collection. The mean age of participants was 75.23 (SD = 8.53) years. Table 1 shows their sociodemographic and clinical profile. Most participants were female ($n = 253$; 63.20%), living with someone ($n = 274$; 68.50%), unsatisfied with life ($n = 217$; 54.25%), and had history of falls (63.00%; $n = 252$); of these, 20.60% had suffered falls in the previous year. Regarding functional capacity, 27.00% were dependent in BADL and 39.25% in IADL.

Table 2 shows the prevalence of the main NCDs grouped by system. The most prevalent NCDs were cardiovascular (73.70%), metabolic (51.50%), and neurological and mental health diseases (49.80%).

Table 3 shows the factors associated with BADL and IADL. The older age (OR: 1.21; 95%CI 1.16 – 1.26), more depression symptoms (GDS-15; OR: 1.12; 95%CI 1.04 – 1.21), and greater fear of falling (FES-I; OR: 1.09; 95%CI 1.07 – 1.12) variables were associated with a higher chance of dependence in BADL. On the other hand, individuals with schooling (OR: 0.23; 95%CI 0.15 – 0.36) and no hospitalization in the previous 12 months (OR: 0.16; 95%CI 0.10 – 0.26) presented lower rates of dependence in BADL. Moreover, worse cognitive function (MMSE; OR: 1.50; 95%CI 1.33 – 1.67) was associated with a stronger trend. Regarding IADL, older age (OR: 1.13; 95%CI 1.10 – 1.17), smoking (OR: 2.38; 95%CI 1.46 – 3.87), worse cognitive function (MMSE; OR: 1.48; 95%CI 1.33 – 1.64), and greater fear of falling (FES-I; OR: 1.06; 95%CI 1.05 – 1.08) were associated with higher dependence in IADL. Schooling

TABLE 1. Sociodemographic and health characteristics of participants (n = 400).

Characteristics	n (%)
Age (years)	
60 – 69	104 (26.00)
70 – 79	159 (39.70)
≥ 80	137 (34.30)
Sex	
Male	147 (36.80)
Female	253 (63.20)
Education	
No schooling	158 (39.50)
Schooled	242 (60.50)
Marital status	
Has a partner	132 (33.00)
No partner	268 (67.00)
Family arrangement	
Alone	126 (31.50)
With someone	274 (68.50)
Family income (times the minimum monthly salary)	
< 1	51 (12.75)
> 1	349 (87.25)
Retirement pension	
No	100 (25.00)
Yes	300 (75.00)
Life satisfaction	
Unsatisfied	217 (54.25)
Satisfied	183 (45.75)
Health perception	
Regular	89 (22.25)
Good	281 (70.25)
Very good	30 (7.50)
Chronic disease	
Yes	369 (92.25)
No	31 (7.75)
Use of medications*	
Yes	363 (90.75)
No	37 (9.25)
Polypharmacy [†]	
Yes	148 (37.00)
No	252 (63.00)
Smoking habit	
Yes	110 (27.50)
No	290 (72.50)
Hospitalization [‡]	
Yes	152 (38.00)
No	248 (62.00)
History of falls	
Yes	252 (63.00)
No	148 (37.00)
Time since last fall (months)	
< 12	52 (13.00)
> 12	200 (50.0)
Never fell	148 (37.0)
Basic activities of daily living	
Dependent	108 (27.00)
Independent	292 (73.00)
Instrumental activities of daily living	
Dependent	157 (39.25)
Independent	243 (60.75)

*Daily use of medications; [†]5 or more medications a day; [‡]24-hour hospitalization in the last 12 months.

(OR: 0.23; 95%CI 0.15 – 0.36), being married (OR: 0.64; 95%CI 0.42 – 1.00), and no hospitalization in the previous 12 months (OR: 0.24; 95%CI 0.15 – 0.36) were associated with less dependence in IADL.

Table 4 presents 3 hierarchical logistic regression models between sociodemographic and clinical variables, fear of falling, and BADL. In the last model, no hospitalization in the previous year (OR: 0.29; 95%CI 0.16 – 0.54) and better cognitive function (MMSE; OR: 0.81; 95%CI 0.70 – 0.94) were associated with lower rates of dependence in BADL. On the other hand, older age (OR: 1.14; 95%CI 1.09 – 1.20), depression symptoms (GDS-15; OR: 1.12; 95%CI 1.01 – 1.24), and greater fear of falling (FES-I; OR: 1.05; 95%CI 1.02 – 1.08) were associated with higher chances of dependence in BADL.

Table 5 presents 3 models between sociodemographic and clinical variables, fear of falling, and IADL. In the last model, no hospitalization in the previous year (OR: 0.45; 95%CI 0.26 – 0.76) and better cognitive function (MMSE; OR: 0.75; 95%CI 0.66 – 0.85) were associated with less dependence in IADL. However, older age (OR: 1.06; 95%CI 1.02 – 1.10), being female (OR: 3.04; 95%CI 1.44 – 6.40), and greater fear of falling (FES-I; OR: 1.06; 95%CI 1.03 – 1.09) were associated with a greater risk of dependence in IADL.

TABLE 2. Prevalence of noncommunicable diseases (n = 400).

Comorbidities*	n (%)
Chronic disease	
Yes	369 (92.30)
No	31 (7.70)
Cardiovascular disease	
Yes	295 (73.70)
No	105 (26.30)
Malignant neoplasm	
Yes	19 (4.70)
No	381 (95.30)
Lung disease	
Yes	26 (6.50)
No	374 (93.50)
Musculoskeletal disease	
Yes	118 (29.50)
No	282 (70.50)
Neurological/mental health disease	
Yes	199 (49.80)
No	201 (50.20)
Metabolic disease	
Yes	206 (51.50)
No	194 (48.50)

*Noncommunicable diseases were grouped by system according to Prince et al.²⁶

TABLE 3. Unadjusted logistic regression between independent variables and basic and instrumental capacities of daily living (n = 400).

Variables ^a	BADL (Katz)	IADL (Lawton)
	OR (95%CI)	OR (95%CI)
Age (mean)	1.21 (1.16 – 1.26)***	1.13 (1.10 – 1.17)***
Schooling (yes)	0.19 (0.12 – 0.30)***	0.23 (0.15 – 0.36)***
Family arrangement (alone)	0.89 (0.56 – 1.43)	-
Income (> 1 minimum monthly salary)	0.46 (0.21 – 1.02)	-
Sex (female)	-	1.38 (0.91 – 2.10)
Marital status (yes)	-	0.64 (0.42 – 1.00)*
Smoking (yes)	-	2.38 (1.46 – 3.87)***
Hospitalization (no)	0.16 (0.10 – 0.26)***	0.24 (0.15 – 0.36)***
Polypharmacy (yes)	0.90 (0.57 – 1.41)	-
MMSE (mean)	1.50 (1.33 – 1.67)***	1.48 (1.33 – 1.64)***
GDS-15 (mean)	1.12 (1.04 – 1.21)**	1.07 (0.10 – 1.15)
FES-I (mean)	1.09 (1.07 – 1.12)***	1.06 (1.05 – 1.08)***

BADL: basic activities of daily living; IADL: instrumental activities of daily living; OR: odds ratio; CI: confidence interval; MMSE: Mini-Mental State Examination; GDS-15: Geriatric Depression Scale; FES-I: Falls Efficacy Scale. ^aVariables: Age, Schooling, Family arrangement (alone), Income (>1 minimum monthly salary), Sex (female), Marital status (married), Hospitalization (previous 12 months), Polypharmacy (5 or more medications a day), MMSE (mean), GDS-15 (mean), and FES-I (mean); *p<0.05; **p<0.01; ***p<0.001.

TABLE 4. Hierarchical logistic regression between independent variables and basic capacities of daily living (n = 400).

	BADL	
	Adjusted OR (95%CI)	Beta (standard error)
Models		
First model ^a		
Age (mean)	1.19 (1.14 – 1.25)***	0.176 (0.023)
Schooling (yes)	0.42 (0.24 – 0.74)**	-0.866 (0.286)
Family arrangement (alone)	1.18 (0.65 – 2.11)	0.162 (0.299)
Income (> 1 minimum monthly salary)	0.58 (0.22 – 1.54)	-0.547 (0.498)
Second model ^b		
Hospitalization (no)	0.28 (0.16 – 0.51)***	-1.264 (0.302)
Polypharmacy (yes)	0.96 (0.52 – 1.78)	-0.041 (0.314)
MMSE (mean)	0.73 (0.68 – 0.91)**	0.241 (0.072)
GDS-15 (mean)	1.16 (1.05 – 1.28)**	0.147 (0.051)
Third model ^c		
Age (mean)	1.14 (1.09 – 1.20)***	0.132 (0.025)
Schooling (yes)	0.63 (0.32 – 1.23)	-0.459 (0.341)
Family arrangement (alone)	1.24 (0.65 – 2.37)	0.217 (0.330)
Income (> 1 minimum monthly salary)	0.77 (0.26 – 2.26)	-0.264 (0.550)
Hospitalization (no)	0.29 (0.16 – 0.54)***	-1.233 (0.311)
Polypharmacy (yes)	1.02 (0.54 – 1.92)	0.020 (0.322)
MMSE (mean)	0.81 (0.70 – 0.94)	0.214 (0.075)
GDS-15 (mean)	1.12 (1.01 – 1.24)	0.114 (0.052)
FES-I (mean)	1.05 (1.02 – 1.08)	0.049 (0.014)

BADL: basic activities of daily living; OR: odds ratio; CI: confidence interval; MMSE: Mini-Mental State Examination; GDS-15: Geriatric Depression Scale; FES-I: Falls Efficacy Scale. ^asociodemographic: age, education, family arrangement, and income; ^bsociodemographic + clinical: age, education, family arrangement, income, hospitalization (previous 12 months), polypharmacy, MMSE, and GDS-15; ^csociodemographic + clinical + falls: age, education, family arrangement, income, hospitalization (previous 12 months), polypharmacy (5 or more medications a day), MMSE, GDS-15, and FES-I; *p<0.05; **p<0.01; ***p<0.001.

DISCUSSION

This study investigated the prevalence of functional disability and its associated factors in older patients seen at a PHCU in a large Brazilian urban area. When comparing this study with results of Brazilian and international

studies, we identified a higher prevalence of functional disability both in BADL and IADL.^{13,27-31} Adults aged 65 years or older with depression symptoms and greater fear of falling were more prone to functional disabilities in BADL. Older adults who had not been hospitalized for

TABLE 5. Hierarchical logistic regression between independent variables and instrumental capacities of daily living (n = 400).

	IADL	
	Adjusted OR (95%CI)	Beta (standard error)
Models		
First model ^a		
Age (mean)	1.12 (1.08 – 1.15)***	0.109 (0.016)
Sex (female)	1.06 (0.64 – 1.74)	0.054 (0.254)
Marital status (yes)	0.89 (0.53 – 1.48)	-0.122 (0.263)
Schooling (yes)	0.41 (0.25 – 0.67)***	-0.889 (0.248)
Second model ^b		
Smoking (yes)	1.09 (0.57 – 2.08)	0.086 (0.330)
Hospitalization (no)	0.40 (0.24 – 0.67)***	-0.914 (0.261)
MMSE (mean)	0.75 (0.66 – 0.84)***	0.295 (0.062)
GDS-15 (mean)	1.08 (0.99 – 1.18)	0.078 (0.045)
Third model ^c		
Age (mean)	1.06 (1.02 – 1.10)**	0.059 (0.020)
Sex (female)	3.04 (1.44 – 6.40)**	1.111 (0.380)
Marital status (yes)	1.17 (0.65 – 2.08)	0.154 (0.296)
Schooling (yes)	0.64 (0.36 – 1.12)	-0.454 (0.288)
Smoking (yes)	1.01 (0.52 – 1.97)	0.012 (0.341)
Hospitalization (no)	0.45 (0.26 – 0.76)**	-0.804 (0.268)
MMSE (mean)	0.75 (0.66 – 0.85)***	0.295 (0.064)
GDS-15 (mean)	1.05 (0.96 – 1.15)	0.052 (0.046)
FES-I (mean)	1.06 (1.03 – 1.09)***	0.060 (0.015)

IADL: instrumental activities of daily living; OR: odds ratio; CI: confidence interval; MMSE: Mini-Mental State Examination; GDS-15: Geriatric Depression Scale; FES-I: Falls Efficacy Scale. ^asociodemographic: age, female sex, marital status (no partner), and education; ^bsociodemographic + clinical: age, female sex, marital status (married), education, smoking habit, hospitalization (previous 12 months), MMSE, and GDS-15; ^csociodemographic + clinical + falls: age, female sex, marital status (no partner), education, smoking habit, hospitalization (previous 12 months), MMSE, GDS-15, and FES-I; **p<0.01; ***p<0.001.

24 hours in the previous 12 months and demonstrating better cognitive function were less related with dependence in BADL. Regarding IADL, older patients, women, and those with greater fear of falling presented a higher association with dependence. From a different standpoint, adults with better cognitive function who had not been hospitalized in the previous 12 months presented lower chances of disabilities in IADL. These findings are important for the multidimensional assessment of factors associated with compromised functional capacity, and they may help health professionals care for older adults in PHC.³² When compared to other studies, our participants presented worse functional capacity outcomes. National studies show smaller prevalence rates for functional disability in BADL (25.0% to 30.3%) and IADL (6.00% to 27.80%).^{13,27-29} In Asia, much lower rates of functional disability (6.60%) were reported for BADL.³⁰ In Europe, France had the highest rate of functional disability in BADL (28.00%), whereas Ireland recorded the lowest rate (8.00%) among those over 65 years old.³¹ These differences are probably due to different socioeconomic and cultural realities, as well as the methodology used in each study.^{30,31}

People over 65 years old who had not been hospitalized in the previous year and with better cognitive function had a lower association with functional disabilities in BADL. A longitudinal study with 6 years' follow-up and 259 individuals showed a positive relationship between hospitalization, compromised cognitive function, and greater risk of functional disability in BADL.³¹ A Brazilian longitudinal study identified compromised cognitive function as predictive of functional disability.²⁹

Older age was associated with higher dependence in BADL. As age advances, the prevalence rates of NCDs, physical impairment, and hospitalizations increase, and consequently there is greater risk of functional disabilities in BADL.²⁵ Greater fear of falling and depression symptoms were also associated with higher chance of dependence in BADL. A longitudinal study that followed up 673 geriatric patients for 6 years identified that fear of falling could culminate in severe movement restriction, compromising cardiac and lung capacity; it is, thus, a strong precursor of increased functional disability in BADL.^{16,17} Having more depression symptoms was also related with dependence in BADL.

A longitudinal study with 2 years' follow-up ($n = 399$) identified that increased depression symptoms were predictors of decreased physical capacity and functional disability. A randomized controlled trial with older women identified the absence of depression as significantly related with greater functional capacity in IADL, but not in BADL.⁸ The functional capacity of older patients is associated with a network of multidimensional factors, contributing to the practice of Family Health Strategy professionals (Estratégia Saúde da Família [ESF]) as it indicates the main factors that may steer their actions towards promoting and preventing the decline of functional capacity.¹⁹ Regarding IADL, the older population that had not been hospitalized in the previous year presented lower instrumental functional disability. No hospitalization in the previous 12 months was associated with lower chances of disability in IADL in Brazil.²⁰ Greater cognitive function was related with a lower risk for disability in IADL. A study with 2 years' follow-up ($n = 3635$) reinforced the relationship between better cognitive function and better functional capacity in this population. Another Brazilian study demonstrated statistical significance in the association of hearing and cognitive impairment, urinary incontinence, and lower and upper limb impairment with disabilities in activities of daily living.¹² Another collaboration showed a reduction of functional capacity in IADL and physical performance. Determinant factors were age group, occupational activity, and physical activity. Schooling was a specific factor only for IADL, and sex and number of medications used were relevant for physical performance.²⁵

Our study shows some limitations, which should be considered. Its cross-sectional design, sample size, and the fact that data collection took place at an PHCU limit the assessment of cause-and-effect relationships and data generalizations. The fact that data were collected through appointments at the PHCU could represent bias towards worse functional disability outcomes. A recent study with older adults seen at a PHCU identified a lower prevalence than that observed here; however, the mean age was 2.91 years younger. Odds ratios may not be the best way to examine results where the prevalence rate is high (as in functional disability), possibly leading to an overestimation of the results. In this case, the calculation of prevalence ratios may have been a more precise way of capturing associations. Finally, with a multidimensional approach, some variables of importance to functional capacity such as physical activity and clinical information were not assessed, leading to a residual increase in analyses. Even with limitations, the results of this study contribute to the clinical practice of health professionals who care for those over 65 years old. Identifying factors associated with functional

disability in older adults also helps professionals in geriatrics when performing CGA.³³ Health care should be planned in a multidimensional perspective, be people-centered, and seek not only to increase longevity but also to improve functional capacity such as BADL, IADL, and quality of life.²⁵ Studies show the importance of ESF teams for promoting health and preventing diseases, in addition to therapeutic interventions that minimize factors interfering with functional capacity.³ We recommend the conduction of longitudinal studies with larger samples in different contexts such as with individuals in long-term care facilities, those seen at PHCUs, and those seen in their own residence in order to identify the beginnings of functional capacity in the geriatric population.

CONCLUSION

This study identified the associated factors of disabilities in BADL and IADL among older adults seen at a PHCU in a large Brazilian urban area. The prevalence of disability in BADL and IADL in the studied sample was high. Our results suggest that older individuals with better cognitive function and who had not been hospitalized in the previous year were less prone to disabilities in BADL and IADL. Factors such as older age, being female, having more depression symptoms, and greater fear of falling had increased association with disabilities in BADL and IADL.

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Conflicts of interest:

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Author contributions

PJC: validation, visualization, writing – original draft, writing – review & editing. PES: methodology, formal analysis, validation, visualization, writing – original draft, writing – review & editing. BC: validation, visualization, writing – original draft, writing – review & editing. JVA: methodology, formal analysis, validation, visualization, writing – original draft, writing – review & editing. YL: validation, visualization, writing – original draft, writing – review & editing. GS: methodology, data curation, writing – review & editing. LMV: project administration, methodology, data curation, formal analysis, supervision, validation, writing – original draft, writing – review & editing.

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