Evaluation of the functionality and mobility of community-dwelling older adults in primary health care

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Abstract

Objective: To evaluate the functional capacity and mobility of older adults treated in primary health care and the association between adverse outcomes (functional dependence and reduced mobility) and sociodemographic and health conditions. *Method:* A cross-sectional and analytical epidemiological study was carried out in the municipal region of Caicó, Rio Grande do Norte, Brazil. Sociodemographic variables, presence of comorbidities, practice of physical activity, functional capacity (Lawton Scale) and mobility (Timed Up and Go Test) were investigated. Data analysis was performed using descriptive statistics, followed by bivariate analysis to investigate association variables and multivariate analysis (logistic regression). *Results:* Among the 109 elderly people evaluated, 29.4% were dependent in instrumental activities of daily living (IADL) and 67.9% had reduced mobility. The present study found a significant association between dependence in IADL and age equal to or greater than 75 years; while not practicing physical activity remained a factor of association with reduced mobility, regardless of sex, age and presence of co-morbidities. *Conclusion:* The findings emphasize the importance of the practice of physical activity, which was associated with better mobility, the construction of spaces of health promotion and disease prevention to encourage active aging for older adults, as well as a multi and interprofessional approach to comprehensive health care for older adults, with the use of functionality assessment tools.

Keywords: Aging. Primary Health Care. Mobility Limitation. Activities of Daily Living. Functionality. Disability.

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Research Funding: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Código de Financiamento 001.

The authors declare there are no conflicts of interest involved in this study

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Received: May 01, 2019
Approved: October 08, 2019

http://dx.doi.org/10.1590/1981-22562019022.190086

INTRODUCTION

Population aging in Brazil is accelerating, resulting in repercussions for the public health system, with the increased prevalence of chronic non-communicable and/or disabling diseases[1]. This scenario challenges professionals and researchers to optimize care services to provide comprehensive and resolutive care for the growing older population[2].

The National Health Policy for Older Adults (or PNSPI) describes older adults as a group of greater vulnerability and therefore suggests the incorporation, in primary care, of tools that improve the quality and resolutive capacity of care. To this end, the policy advocates a multidimensional approach to older adults, encouraging the use of technical instruments for functional and psychosocial assessment, which enable the early detection of risk factors for adverse events, as well as the implementation of preventive and curative actions in a timely manner[3].

In older populations, functional capacity is an important evaluation and intervention parameter in the quest for active aging[4,5]. This is because functional disability of a physical and/or mental nature has great impacts on the life of older adults in terms of increased morbidity and mortality and the risk of hospitalization and permanence in long-term care facilities, resulting in social and economic burden for the older adults themselves, their families and the health system[6]. In this sense, the decline of mobility in older adults is an important predictor of health in old age, allowing the early detection of sarcopenia and functional limitations, and operationalizing the health care of older adults to prevent adverse events, such as functional disability and falls[7].

In Brazil, primary care should function as an organizer of care in the public health system, with a fundamental role in the comprehensive care of older adults[8]. In this scenario, comprehensive geriatric assessment (CGA) represents an instrument for the multidimensional diagnosis of older adults, contributing to the improvement and maintenance of functional capacity and mobility[9]. However, it is necessary to establish strategies to encourage the greater implementation of and adherence to this instrument in primary care.

The importance of the present study is based on aspects related to health planning in accordance with the current reality, health surveillance and comprehensive care of older adults, and it is committed to encouraging the use of validated and reliable instruments for the evaluation of such individuals by members of primary health care teams.

The objective of the present study was therefore to evaluate the functional capacity and mobility of older adults treated by primary health care, and the association between adverse outcomes (functional dependence and reduced mobility) and sociodemographic aspects and health conditions.

METHOD

A cross-sectional and analytical epidemiological study was conducted from September to November 2018.

The present study was carried out in Caicó, a municipal district in the state of Rio Grande do Norte (RN), Brazil, 282 km from the state capital, Natal. According to 2010 census data, Caicó has an HDI of 0.71, the fourth best in the state. In addition, it has an increasing human longevity levels, with a life expectancy of around 74.4 years, higher than the Brazilian average and one of the highest in municipal districts in the north and north east of Brazil. Caicó has 5,980 people aged 65 and over, considering both the urban and rural population[10]. In all, it has 18 basic health units (BHU) with a population coverage of around 95%.

The sample of the present study was obtained by convenience, based on the work of the students of the Multiprofessional Residency Program in Primary Care of the Multicampi School of Medical Sciences of Rio Grande do Norte (UFRN). A convenience sample was chosen as the BHU registration records were not up to date and did not distinguish between the rural and urban population, nor between institutionalized older adults and those living in the community.

Thus, older adults aged 65 years and above, of both sexes and treated at five BHU were included. Exclusion criteria were: not being located for evaluation after

three attempts during recruitment and being unable to complete all stages of data collection.

The information collected was related to sociodemographic characteristics, the presence of comorbidities, physical activity, functional capacity and mobility. The data were collected by a team of three basic care (BC) residents, who were duly trained to apply the collection instruments. The participants were invited to participate in the research and sign a Informed Consent.

The following information was collected: sex, age, marital status, color/ethnicity, education and family income. The presence of comorbidities was based on self-reported information, considering the medical diagnosis in the last year of the following most frequent chronic diseases among older adults.[11]: heart diseases; arterial hypertension; diabetes *mellitus*; malignant tumors; arthritis or rheumatism; lung diseases; depression; osteoporosis and strokes. Presence of comorbidities was considered the self-reporting of two or more diseases.

The practice of physical activity was investigated by asking the participants if they practiced or had practiced any kind of physical exercise and/or sport in the previous three months, and how often.

Data on functional capacity were obtained using the Lawton Scale, a validated instrument to assess instrumental activities of daily living (IADL). In this scale, the questions investigate the ability of the individual to perform tasks such as preparing meals and performing housework, asking whether or not they perform such tasks and whether or not they do so with the help of others. The maximum score is 27 points and the minimum nine points. Independence in performing such activities is directly related to the capability to live independently in the community[12].

Mobility was evaluated using the Timed Up and Go (TUG) test. This test is used to assess the functional mobility of the individual through the analysis of sitting balance, seated to standing transfers, gait stability and change in gait direction, without the use of compensatory strategies[13,14]. Older adults who completed the TUG within 10 seconds were considered to have good mobility; those who completed the TUG within 11 seconds or more were considered to have reduced mobility, following the Edmonton Frail Scale (EFS) classification for risk of frailty.[15.]

Data were stored and processed. Descriptive statistics (frequency, measures of central tendency and dispersion) were used to characterize the sample, followed by bivariate analysis (X^2) to investigate the variables of association, while multivariate analysis (logistic regression) was used to adjust for possible confounding variables. A 95% CI and significance level of α=5% were adopted.

The present study was approved by the Research Ethics Committee of the Trairi Faculty of Health Sciences (or FACISA) of the Universidade Federal do Rio Grande do Norte (protocol No. 2.452.346), as determined by National Health Council Resolution No. 466/2012, which defines the guidelines and regulatory standards governing research involving human beings.

RESULTS

A total of 113 older adults were interviewed, of whom four were excluded because they did not complete all the steps of the study. Thus, 109 older adults were included in the data analysis, with a mean age of 71.5 (±5.51) years (minimum age 65 and maximum 88).

Table 1 characterizes the sample according to sociodemographic variables and health conditions. Most were female (77.1%); aged 65 to 69 years (45.9%); married (47.7%); white (46.8%) or brown-skinned (33.0%); with an educational level below primary school (73.4%) and an income lower than twice the minimum wage (51.4%). In terms of clinical conditions, 57.8% said they had two or more comorbidities and only 39.4% said they performed some type of physical activity.

Table 1. Distribution of sociodemographic characteristics and health conditions of older adults (N=109). Caicó, RN, 2019.

Sociodemographic variables	n (%)
Sex	
Female	84 (77.1)
Male	25 (22.9)
Age range (years)	
65 to 69	50 (45.9)
70 to 74	27 (24.8)
75 or more	32 (29.4)
Marital status	
Single	12 (11.0)
Married	52 (47.7)
Divorced/Separated	12 (11.0)
Widowed	33 (30.3)
Ethnicity	
"Yellow" (Asian-Brazilian)	6 (5.5)
White	51 (46.8)
Indigenous	1 (0.9)
Black	15 (13.8)
"Brown" (Mixed-race)	36 (33.0)
Schooling	
Illiterate	10 (9.2)
Incomplete primary	70 (64.2)
Complete primary	22 (20.2)
Complete secondary	6 (5.5)
Higher	1 (0.9)
Income (minimum wage)	
Less than minimum wage	10 (9.2)
Min. wage to twice min. wage	46 (42.2)
Twice minimum wage or more	53 (48.6)
Clinical variables	
Presence of comorbidities	
Yes	63 (57.8)
No	46 (42.2)
Practice physical activity	
Yes	43 (39.4)
No	66 (60.6)
Frequency of physical activity	
None	66 (60.6)
1 to 2 days per week	14 (12.8)
3 to 4 days per week	7 (64.4)
5 to 6 days per week	18 (16.5)
Every day	4 (3.7)

Table 2 presents the result of the bivariate analysis of the association between functional capacity and sociodemographic variables and health conditions. Among the 109 older adults evaluated, 29.4% (n=32) were dependent in the performance of IADL. The chi-squared test showed a significant association between dependence in the performance of IADL and the age group 75 years or older (p<0.001).

A total of 67.9% (n=73) of the sample had reduced mobility in the TUG test. Table 3 describes the association between TUG and the sociodemographic variables and health conditions, with a significant association observed between reduced mobility and the presence of comorbidities (p=0.04) and non-physical activity (p<0.01).

Table 2. Bivariate analysis of the relationship between functional capacity and sociodemographic variables and health conditions (N= 109). Caicó, RN, 2019.

Variables	Functional Capacity		*p*-value
	Dependent - IADL n (%)	Independent – IADL n (%)	
Gender			
Male	9 (36.0)	16 (64.0)	0.40
Feminine	23 (27.4)	61 (72.6)	
Age range (years)			
65 to 74	13 (16.9)	64 (83.1)	<0.001
75 or more	19 (59.4)	13 (40.6)	
Presence of comorbidities			
Yes	22 (34.9)	41 (65.1)	0.13
Not	10 (21.7)	36 (78.3)	
Practice of physical activity			
Yes	15 (34.9)	28 (65.1)	0.30
No	17 (25.8)	49 (64.2)	

IADL= instrumental activities of daily living.

Table 3. Bivariate analysis of Timed Up and Go (TUG) mobility with sociodemographic variables and health conditions (N=109). Caicó, RN, 2019.

Variables	TUG Mobility		*p*-valuer
	Good Mobility (TUG ≤10 s) n (%)	Reduced Mobility (TUG ≥11 s) n (%)	
Sex			
Male	9 (36.0)	16 (64.0)	0.81
Feminine	27 (32.1)	57 (67.9)	
Age range (years)			
65 to 74	29 (37.7)	48 (62.3)	0.12
75 or more	7 (21.9)	25 (78.1)	
Presence of comorbidities			
Yes	16 (25.4)	47 (74.6)	0.04
Not	20 (43.5)	26 (56.5)	
Practice of physical activity			
Yes	21 (48.8)	22 (51.2)	<0.01
Not	15 (22.7)	51 (77.3)	

Following bivariate analysis, binary logistic regression analysis was performed to control for possible confounding variables, and to evaluate factors associated with the functional capacity and mobility of community-dwelling older adults (Tables 4 and 5). Thus, advanced age was confirmed as a factor of association for dependence in the performance of IADL, and the non-practicing of physical activity remained as a factor of association for reduced mobility, regardless of gender, age and the presence of comorbidities.

Table 4. Binary logistic regression model to assess factors associated with functional capacity (IADL) among community-dwelling older adults. Caicó, RN, 2019.

Model for dependence in the performance of Instrumental Activities of Daily Living (IADL)		
Variables	*Odds Ratio* (CI95%)	*p*-value
Model 1: Sociodemographic characteristics		
Gender		
Male	1.00	0.44
Female	0.65[0.21-1.96]	
Age range (years)		
65 to 74	1.00	0.001
75 or more	7.31 [2.83-18.91]	
Model 2: Health conditions		
Presence of comorbidities		
No	1.00	0.15
Yes	2.01 [0.76-5.31]	
Practice of physical activity		
Yes	1.00	
No	0.58 [0.22-1.49]	0.26

Table 5. Binary logistic regression model for assessing factors associated with the mobility (TUG) of community-dwelling older adults. Caicó, RN, 2019.

Model for reduced mobility (TUG ≥11s)		
Variables	*Odds Ratio* (IC 95%)	*p*-value
Model 1: Sociodemographic characteristics		
Sex		
Male	1.00	0.78
Female	1.14 [0.41-3.16]	
Age range (years)		
65 to 74	1.00	0.10
75 or more	2.33 [0.84-6.45]	
Model 2: Health conditions		
Presence of comorbidities		
No	1.00	
Yes	2.26 [0.95-5.37]	0.06
Practice of physical activity		
Yes	1.00	0.005
No	3.49 [1.46-8.31]	

DISCUSSION

The profile of the sample of the present study was consistent with other studies in Brazil, with a predominance of women (77.1%)[1,16]. Gerontology researchers characterize this process as the feminization of old age, and as a phenomenon that especially occurs at the most advanced ages[17].

In terms of age group, the predominant age of older adults in the present study was 65 to 69 years. There was a significant association between dependence in IADL and age (p<0,001), a finding that reaffirms the fact that advancing age may be related to a higher degree of dependence among older adults, corroborating other studies[18,19]. It is known that advanced age generates greater impairment of physical and functional aspects[20]. Moreover, in people over 75, there is a higher risk of developing chronic and degenerative diseases, reducing the ability of older adults to live independently and enjoy active aging.[21]

No significant associations were observed in the present study between functional capacity and gender, the presence of comorbidities and physical activity, although another study found significant associations between functional limitation and the female gender[19]. However, it is worth noting that the setting of the present study was basic health units, meaning a selection bias can be assumed, with men more prone to previously installed adverse events.

The study by Paiva et al.[22] found no significant association between the presence of morbidity and functional capacity in older adults, corroborating the findings of the present study. In the same context, the present study also agrees with the statements of the study by Paiva et al.[22] that this finding may be justified by the fact that the older adults approached receive regular medical follow-up monitoring, and thus have their comorbidities controlled and do not therefore suffer functional impairment.

There was no association between physical activity and functional capacity. Moraes et al.[23], in a study conducted in Fortaleza, did not find a direct relationship between these two variables. In contrast, the present study highlighted the relationship between reduced mobility and the absence of physical activity, regardless of sex, age and presence of comorbidities. The results of the study by Moraes et al.[23] were similar, and the authors concluded that regular physical activity may be related to better functional mobility. Fernandes et al.[24] indicated in their results the importance of the practice of physical exercise for older adults and its positive impact on functional mobility. Thus, it can be stated that physical activity can act as a preventive health strategy, representing a protective factor for the loss of mobility, despite advancing age.[25]

In this context, primary health care should commit to providing comprehensive care for older adults and their families, as well as being at the forefront of the assessment of functional decline, seeking to develop promotion, prevention and rehabilitation strategies[26]; favoring health care with the aim of delaying the deleterious effects of the aging process, and preserving the independence and autonomy of older adults[27]. Primary care should therefore foster strategies that include care beyond medicalization and health care, with professionals and spaces that stimulate and favor the practice of physical activity and better physical performance in older adults, to prevent adverse events and stimulate healthy and active aging[28].

However, given the importance of the theme, further studies with wider samples and cohort studies are suggested to allow a more accurate assessment of functional capacity and mobility in older adults, and which incorporate the training of primary care professionals, as part of the continuing education process and as a strategy to strengthen the scope of care offered to older users.

The main limitation of the present study was its sample, which is considered relatively small for an epidemiological study; and which was collected for convenience in only five of the 18 basic health units in the municipal region, due to the operational possibilities of the time and human resources available for the performance of data collection.

However, it is important to emphasize that this study was conducted with methodological rigor and the necessary care was taken in the sampling process,

so that even if the sample was expanded, there would be little variation in the study parameters.

CONCLUSION

The present study found a significant association between functional capacity and age equal to or greater than 75 years; while the non-practicing of physical activity remained as a factor of association with reduced mobility, regardless of sex, age and the presence of comorbidities.

Based on these findings, the use of instruments for the assessment of functional capacity and mobility is of great importance for the development of specific actions aimed at the autonomy and independence of older adults, in view of the current population aging in Brazil. The results also emphasize the importance of practicing physical activity, the construction of spaces of health promotion and illness prevention to encourage active aging, and of a multi- and interprofessional approach to the integral health care of older adults.

Edited by: Ana Carolina Lima Cavaletti

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