Social and clinical factors causing mobility limitations in the elderly

Fatores sociais e clínicos que causam limitação da mobilidade de idosos

Jorge Wilker Bezerra Clares[1]
Maria Célia de Freitas[1]
Cíntia Lira Borges[1]

Keywords
Aged; Mobility limitation; Geriatric nursing; Nursing in community health; Primary care nursing

Descritores
Idoso; Limitação da mobilidade; Enfermagem geriátrica; Enfermagem em saúde comunitária; Enfermagem de atenção primária

Submitted
December 20, 2013

Accepted
May 5, 2014

Abstract

Objective: To investigate the association between physical mobility demands and social and clinical variables of the elderly living in the community.

Methods: This was a cross-sectional study including 52 elderly community residents. The research instrument was constructed based on the theory of Virginia Henderson. Data were analyzed using descriptive statistics and the chi-square or Fisher exact test, with a significance level of 0.05.

Results: The mean age was 72.6 (± 8.6) years, 69.2% were female. There was a prevalence of physical mobility demands, with significant statistical associations with significant statistical associations with social and clinical variables.

Conclusion: Physical mobility was influenced by social and clinical characteristics of the elderly in the community.

Resumo

Objetivo: Investigar a associação entre demandas na mobilidade física e variáveis sociais e clínicas de idosos que vivem em comunidade.

Métodos: Estudo transversal com a inclusão de 52 idosos residentes em comunidade. O instrumento de pesquisa foi construído com base na teooria de *Virginia Henderson*. Os dados foram analisados através da estatística descritiva e do teste do Qui-Quadrado ou exato de *Fisher*, com nível de significância 0,05.

Resultados: A média de idade foi de 72,6 (±8,6) anos, 69,2% eram do sexo feminino. Houve prevalência de demandas da mobilidade física, com associações estatísticas significativas com as variáveis sociais e clínicas.

Conclusão: A mobilidade física sofre influência das características sociais e clínicas em idosos da comunidade.

Corresponding author
Jorge Wilker Bezerra Clares
Paranjana Avenue, 1700, *Campus* do Itaperi, Fortaleza, CE, Brazil.
Zip Code: 60740000
jorgewilker_clares@yahoo.com.br

DOI
http://dx.doi.org/10.1590/1982-0194201400040

[1]Universidade Estadual do Ceará, Fortaleza, CE, Brazil.

Conflicts of interest: no conflicts of interest to declare.

Introduction

The aging of the population has drawn attention to the health conditions of the elderly, since this phenomenon is accompanied by higher rates of morbidity.[1] These changes, and their consequent functional limitations and disabilities, lead to an increased risk for disorders of physical mobility that can compromise the autonomy and independence of these subjects.[2]

During the process of physiological aging, changes such as loss of muscle mass and reduction in strength and muscle function, joint stiffness and reduced range of motion, alterations in gait and in balance may significantly compromise the physical mobility of the elderly, predisposing them to falls, pain and functional disability.[3]

It is noteworthy that several risk factors may be associated with mobility limitations in the elderly, and these can be individual, social, environmental and organizational.[4] In the United States, prevalence estimates suggest that physical mobility limitation is a significant problem for many elderly and is associated with several potentially modifiable characteristics, such as social situation, health conditions, and lifestyle.[5] In India, about 10% of the elderly population suffers with mobility limitations, and lives in a situation of great social vulnerability.[6]

With the aging of the population worldwide, the production of evidence-based knowledge becomes of fundamental importance, in order to guarantee the sustainability of societies and quality of life of elderly people.[7] However, there is a shortage of studies in the Brazilian literature about the relationship between living conditions and health and the physical mobility of the elderly, demonstrating that these aspects have received little attention in the country.

Knowing the different factors that affect physical mobility in this population will help to identify approaches for the planning of impactful actions, focusing on local needs, and the implementation of existing public policies, supporting the prevention of disability and dependence, and the promotion of active aging. This fact has raised questions that elucidated the conduct of this research, which aimed to investigate the association between physical mobility demands and social and clinical variables in community-dwelling elderly.

Methods

This was a cross-sectional study conducted within a territory that covered two micro-areas of a Family Health Center in Fortaleza, in the northeastern region of Brazil, where the health courses of a public university developed teaching, research and extension activities.

Participants in the research included people 60 years of age or older, of both sexes, who resided in the previously selected micro-areas, and who were in physical and mental condition to respond to the questions. Elderly people who were not found to be at home after three attempts to visit were excluded. Of the total of 61 elderly residents in these micro-areas, identified from the registration completed by community health workers, 52 met the requirements, composing the final sample.

A questionnaire containing closed-ended questions, with its organization and structure based on the nursing theory of Virginia Henderson, was developed for data collection.[8] In this study, questions related to the need to move and maintain proper posture were analyzed, according to that theory, whose issues addressed items relating to the presence of difficulties in moving, joint stiffness, pain with movement, engaging in regular physical activity, risk for falls, and the need for help in order to move. Social and clinical characteristics studied were: age, sex, marital status, education, retirement, family income, presence of comorbidities, medication use, smoking, alcohol consumption and engagement in physical activity.

In relationship to marital status, all those who reported being single, divorced or widowed were considered to be without a partner, and those who mentioned being married or living in a consensual union, were considered as having a partner. The age category was divided into three age ranges. With regard to education, those who could only sign their names were considered illiterate, and those who

could read and write as literate. The income category had two divisions (up to three times the minimum wage. and more than three times the minimum wage).

Data collection took place at the homes of the elderly, in the months of May and June of 2011. Results were processed and tabulated using the Statistical Package for the Social Sciences, version 17.0. For data processing, descriptive statistics, absolute frequency and percentage tables were used. Either the chi-square test or Fisher's exact test was used for associations between categorical variables on the occurrence of values expected below five, in two by two tables. A significance level of 0.05 was adopted.

The study followed the national and international standards of ethics in research involving human beings.

Results

There were 52 elderly included; their mean age was 72.6 (±8.6) years, ranging between 60 to 92 years. In table 1, it can be seen that the female gender(69.2%), elderly without a partner (51.9%), illiterate (88.5%), retired (69.2%) and those with income up to three times the minimum wage (96.2%) predominated.

The main demands related to the need to move and maintain proper posture identified in the elderly were: difficulties in moving, 22 (42.3%); joint stiffness, 31 (59.6%); pain with movement, 30 (57.7%); no physical activity, 37 (71.1%); risk for falls, 35 (67.3%). Despite these problems, only three individuals (5.8%) were using locomotion aids - cane, and nine (17.3%) recognized the need for help to move and maintain proper posture.

Regarding clinical characteristics, the most frequent comorbidities were: arterial hypertension, 25 (48.1%); osteoporosis, 18 (34.2%); diabetes, 10 (19.2%); gastritis, 8 (15.4%); and, urinary incontinence, 8 (15.3%). Other diseases were cited with lower frequencies: rheumatism, arthritis, arthrosis, depression, heart failure, chronic renal failure, Parkinson's disease and Alzheimer's disease.

Associations between physical mobility demands and social and clinical variables of the participants in this study are shown in table 1.

Table 1. Social and clinical variables and demands for the need to move and to maintain proper posture

Variables	n(%)	p-value*					
		Difficulties in moving	Joint stiffness	Pain with movement	Risk for falls	Help with locomotion	Help to move
Gender							
Male	16(30.8)	0.018	0.261	0.198	0.030	<0.001	0.046
Female	36(69.2)						
Age							
60-69	20(38.5)	0.103	0.007	0.021	0.273	0.112	0.298
70-79	19(36.5)						
>80	13(25.0)						
Marital status							
With partner	25(48.1)	0.122	0.183	0.002	0.037	0.283	0.326
Without partner	27(51.9)						
Education							
Illiterate	46(88.5)	0.183	0.021	0.028	0.059	<0.001	0.118
Literate	06(11.5)						
Retired							
Yes	36(69.2)	0.018	0.261	0.198	0.030	<0.001	0.046
No	16(30.8)						
Income (in MW**)							
Until 3	50(96.2)	0.099	0.236	0.099	<0.001	0.092	0.288
> 3	02(3.8)						
Morbidity							
Yes	37(71.2)	0.032	<0.001	0.307	0.069	0.230	0.164
No	15(28.8)						
Medication							
Yes	37(71.2)	0.064	<0.001	0.307	<0.001	0.056	0.465
No	15(28.8)						

Continue...

Continuation

Variables	n(%)	Difficulties in moving	Joint stiffness	p-value*		Help with locomotion	Help to move
				Pain with movement	Risk for falls		
Smoking							
Yes	33(63.5)	0.108	0.012	0.136	<0.001	<0.001	0.318
No	19(36.5)						
Alcoholism							
Yes	11(21.2)	0.058	0.079	0.108	0.253	0.038	0.029
No	41(78.8)						
Physical Activity							
Yes	15(28.8)	0.032	<0.001	<0.001	0.034	0.020	<0.001
No	37(71.2)						

* p-value refers to the chi-square test or Fisher's exact test; ** The minimum wage (MW) of R$ 545.00 was used, considering the base year, 2011; n = 52

Discussion

The limits of the results of this study refer to its cross-sectional design, which does not permit the establishment of relationships of cause and effect. On the other hand, the implication for nursing refers to the minimizing of risks to which the elderly are exposed, through the knowledge of the factors associated with their limitations in physical mobility.

The predominance of females in the population investigated, as expected in relationship to the demographic composition of the elderly, due to the greater longevity of women, was similar to results found in other studies.[1,3,9]

The feminization of old age is consistent, in part, with the prevalence of disorders of mobility among the elderly. The imbalance of calcium reabsorption, the constant demineralization of bone mass and density, which results in higher porosity and fragility of bone tissue, which can cause pain and allow the occurrence of fractures, with increased risk for limitations in physical mobility, is observed during the aging process in women with menopausal estrogen suppression.[10,11]

The females also showed a statistically significant difference in the risk for falls (p=0.030). Studies indicate that being female is one of the major factors associated with increased risk for falls.[12] This may be related to greater loss of bone and muscle mass, in addition to the multiple tasks that women perform at home, leading them to a greater tendency of falling.[13]

Age was associated with mobility problems among the elderly, with statistically significant differences in joint stiffness (p=0.007) and pain with movement (p=0.021), with a prevalence of changes in the age group above 70 years old. Studies reveal that mobility limitations are, in part, related to the normal aging process, due to loss of muscle mass and bone density and to the articular wear, accentuated beginning at 70 years of age.[5]

Marital status also seemed to have an influence on mobility limitations. A study conducted in five European countries (Finland, Netherlands, Germany, Hungary and Italy) found that elderly people without a partner are more likely to report greater difficulties related to the need to move.[14]

Relating to education, the illiterate elderly had higher physical mobility demands. Those with lower instructional levels, associated with unfavorable socioeconomic and cultural factors, may have difficulty acquiring information and having awareness about the importance of health care throughout life, the need for adherence to treatment, and maintenance of healthy lifestyles, indirectly contributing to the occurrence of mobility disorders.[15]

In this context, family health teams need to develop health promotion actions and prevention of complications, considering the low economic and educational levels of the elderly population. Such actions will need to be appropriate to the socio-cultural universe of this group, increasing the incentive for self-care.

Retirement was also related to impaired physical mobility in this study. One possible justification for this relationship corroborated the results of a population-based study conducted in England with 1,693 workers, aged 50 years or more, which found that mobility limitations and musculoskeletal pain

were predictors of early retirement.[16] On the other hand, the losses resulting from the withdrawal from work activities, with a reduction in work income, may be determinants of functional impairment, manifested by the adoption of sedentary attitudes, making the person vulnerable to diseases due to an unhealthy lifestyle,[17] such as mobility problems. However, the cross-sectional design used in this study did not allow the establishment of what was a cause and what was a consequence, between impaired physical mobility and retirement.

The presence of comorbidities may be a risk factor associated with mobility limitations in the elderly, resulting in loss of functional capacity.[5] Thus, it may explain the high number of elderly people who have physical mobility demands associated with health problems.

A majority of the elderly (71.2%) used medications, and this variable was significantly associated with joint stiffness (p = 0.000) and the risk for falls (p = 0.000). It is noteworthy that, although not verifying other statistically significant relationships, physical mobility demands among the elderly who were using continuous medications prevailed.

The increase in the use of medications among the elderly was due to the higher prevalence of chronic diseases and the sequelae that accompanied advancing age.[18] The more medications the elderly ingest, the greater the risk of interaction between the medications, in addition to potentiation of their side effects. Therefore, the medical prescriptions for the elderly should be made carefully,[19] as well as the observation of the occurrence of their effects on mobility.

Lifestyle and health behaviors were important risk factors for mobility limitations. Corroborating data from this research, studies show that a sedentary lifestyle, smoking and alcohol consumption were significantly associated with mobility limitations.[4,5]

In the promotion of health, professionals should develop strategies to encourage the population to adopt a healthy lifestyle, particularly physical activity. This practice provides increased endurance and muscle strength, improves balance, prevents the loss of bone mass, as well as leading to improvements in self-efficacy, cognitive performance, recent memory, decrease in depressive symptoms, and an increase in social networks, contributing, therefore, significantly to the improvement of the quality of life.[20]

Nevertheless, a challenge to incorporate regular physical activity into the daily lives of the elderly was demonstrated. National and international studies demonstrate that the proportion of elderly who practice physical activity remains low, despite recognizing the benefits of this practice and considering it to be a desirable behavior for the maintenance of good health.[9,21]

Corroborating these data, it is emphasized that 71.2% of the elderly did not perform regular physical activity, which was statistically associated with all the demands of the need to move and maintain proper posture, according to the adopted theoretical approach.

The reduction in activities is an indicator of frailty, contributing to the decline in functional capacity. Thus, the practice of physical activities by the elderly is of fundamental importance for the preservation of mobility and, consequently, for the maintenance of independence and autonomy.

Changes in mobility must be taken into account during the assessment of health of the elderly, constituting important markers that could subsidize preventive actions of disability and dependency in old age.

Conclusion

The results showed that the physical mobility demands in community-dwelling elderly suffered a significant influence of social and clinical characteristics.

Collaborations

Clares JWB; Borges CL and Freitas MC contributed to the design and development of the research, data interpretation, writing, critical review of the relevant intellectual content, and final approval of the version to be published.

References

1. Rodrigues RA, Scudeller PG, Pedrazzi EC, Schiavetto FV, Lange C. Morbidity and interference in seniors' functional ability. Acta Paul Enferm. 2008;21(4):643-8.

2. Cleaver S, Hunter D, Ouellette-Kuntz H. Physical mobility limitations in adults with intellectual disabilities: a systematic review. J Intellect Disabil Res. 2009;53(2):93-105.

3. Silva TM, Nakatani AY, Souza AC, Lima MC. [The vulnerability of the aged for the falls: analysis of the critical incidentes]. Rev Eletr Enf [Internet] 2007 [cited 2013 Oct 23];9(1):64-78. Available from: http://www.fen.ufg.br/revista/v9/n1/v9n1a05.htm. Portuguese.

4. Yeom H, Fleury J, Keller C. Risk factors for mobility limitation in community-dwelling older adults: a social ecological perspective. Geriatr Nurs. 2008;29(2):133-40.

5. Shumway-Cook A, Ciol MA, Yorkston KM, Hoffman JM, Chan L. Mobility limitations in the Medicare population: prevalence and sociodemographic and clinical correlates. J Am Geriatr Soc. 2005;53(7):1217-21.

6. Ingle GK, Nath A. Geriatric health in India: concerns and solutions. Indian J Community Med. 2008;33(4) 214-18.

7. Rantanen T. Promoting mobility in older people. J Prev Med Public Health [Internet]. 2013;46:S50-S54.

8. Henderson V. The concept of nursing. J Adv Nurs. 2006;53(1):21-34.

9. Tannure MC, Alves M, Sena RR, Chianca TC. [Epidemiological profile of the elderly population in Belo Horizonte, MG, Brazil]. Rev Bras Enferm. 2010;63(5):817-22. Portuguese.

10. Kanis JA, Burlet N, Cooper C, Delmas PD, Reginster JY, Borgstrom F, Rizzoli R. European guidance for the diagnosis and management of osteoporosis in postmenopausa women. Osteoporos Int. 2008;19(4):399-428.

11. Freitas LV, Lima TM, Moraes ML, Dias ML, Aquino PS, Pinheiro AK. Prevalence of post-menopausal symptoms in aged women who are staying at homes for old people: a descriptive study. Online Braz J Nurs [Internet]. 2009 [cited 2013 Oct 25];8(1). Available from: http://www.objnursing.uff.br/index.php/nursing/article/view/1920.

12. Gama ZA, Gómez-Conesa A. [Risk factors for falls in the elderly: systematic review]. Rev Saúde Pública. 2008; 42(5):946-56. Spanish.

13. Fhon JR, Fabrício-Wehbe SC, Vendruscolo TR, Stackfleth R, Marques S, Rodrigues RA. Accidental falls in the elderly and their relation with functional capacity. Rev Latinoam Enfermagem. 2012;20(5):927-34.

14. Mollenkopf H, Marcellini F, Ruoppila I, Szeman Z, Tacken M, Wahl H. Social and behavioural science perspectives on out-of-home mobility in later life: findings from the European project MOBILATE. Eur J Ageing. 2004;1(1):45-53.

15. Meireles VC, Matsuda LM, Coimbra JHA, Mathias TAF. [Characteristics of elderly people in an area assisted by the Family Health Program in the northwest of Paraná: contributions to nursing care management]. Saúde Soc. 2007;16(1):69-80. Portuguese.

16. Rice NE, Lang IA, Henley W, Melzer D. Common health predictors of early retirement: findings from the English Longitudinal Study of Ageing. Age Ageing. 2011;40(1):54-61.

17. Canizares JC, Jacob Filho W. [Senility risk factors upon retirement transition]. Rev Bras Geriatr Gerontol. 2011;14(3):425-32. Portuguese.

18. Secoli SR. [Polypharmacy: interaction and adverse reactions in the use of drugs by elderly people]. Rev Bras Enferm. 2010;63(1):136-40. Portuguese.

19. Borges CL, Silva MJ, Clares JW, Bessa ME, Freitas MC. Frailty assessment of institutionalized elderly. Acta Paul Enferm. 2013; 26(4):318-22.

20. Hillman CH, Erickson KI, Kramer AF. Be smart, exercise your heart: exercise effects on brain and cognition. Nat Rev Neurosci. 2008;9(1):58-65.

21. Hughes JP, McDowell MA, Brody DJ. Leisure-time physical activity among US adults 60 or more years of age: results from NHANES 1999-2004. J Phys Act Health. 2008;5(3):347-58.