

# ANALYSIS OF FUNCTIONAL STATUS OF ELDERLY RESIDENTS IN LONG-TERM CARE INSTITUTIONS

*Análise do estado de funcionalidade de idosos residentes em unidades de longa permanência*

*Análisis del estado de funcionalidad de mayores residentes de unidades de larga permanencia*

Original Article

## ABSTRACT

**Objective:** To evaluate the functional status of elderly residents in long-term institutions. **Methods:** Exploratory-descriptive study, developed in two long-term care institutions for the elderly (LTC), in city of Fortaleza, Ceará. The instruments utilized were: 1) Socio-demographic form, 2) Functional Independence Measure (FIM), and 3) International Classification of Functioning (ICF). Data was descriptively analyzed through the calculation of frequency, mean and standard deviation. **Results:** There was a predominance of males (n=47; 59.49%), with mean age of 74.58 ( $\pm$  8.89) years, 68.35% (n=54) have been or are married, and 49.37% (n=39) are illiterate. In reference to the FIM, it was observed that the elderly perform the activities in a complete or modified mode and 18.99% (n=15) have difficulty climbing stairs. As to the association between the FIM and the ICF, in relation to self-care, it was seen that 96.20% (n=76) have no difficulty in performing tasks; 92.40% (n=73) move around without difficulty; and 98.73% (n=78) have preserved the cognition. In relation to the capacity of maintaining and controlling social interactions, all exhibit this domain preserved. **Conclusion:** The surveyed elderly presented good cognitive status and little dependence in activities regarding personal care, mobility and communication. The use of the ICF allows the visualization of the functionality scenario among the elderly, what can facilitate more effective health promotion strategies for this population.

**Descriptors:** Elderly; Health of Institutionalized Elderly; Physiotherapy.

## RESUMO

**Objetivo:** Analisar o estado de funcionalidade de idosos residentes em unidades de longa permanência. **Métodos:** Estudo descritivo-exploratório desenvolvido em duas instituições de longa permanência para idosos (ILPI) no município de Fortaleza-CE, no período de novembro de 2012 a julho de 2013. Os instrumentos utilizados foram: 1) formulário sociodemográfico, 2) Medida de Independência Funcional (MIF) e 3) Classificação Internacional de Funcionalidade (CIF). Os dados foram analisados de maneira descritiva a partir do cálculo de frequência, média e desvio padrão. **Resultados:** Houve predomínio do sexo masculino (n=47; 59,49%), com média de idade de 74,58 ( $\pm$  8,89) anos, 68,35% (n=54) foram ou são casados e 49,37% (n=39) são analfabetos. Com relação à MIF, observou-se que os idosos realizam as atividades de modo completo ou modificado, e 18,99% (n=15) possuem dificuldade para subir escadas. Na ligação da MIF com a CIF, viu-se, quanto ao autocuidado, que 96,20% (n=76) não apresentam dificuldades para executar tarefas, 92,40% (n=73) locomovem-se sem dificuldades e 98,73% (n=78) têm cognição preservada. Quanto à capacidade de manter e controlar interações sociais, todos apresentam esse domínio preservado. **Conclusão:** Os idosos pesquisados apresentaram bom estado cognitivo, sendo possível constatar pouca dependência nas atividades relacionadas a cuidados pessoais, mobilidade e comunicação. O uso da CIF permite visualizar o cenário de funcionalidade dos idosos, o que pode facilitar estratégias de promoção de saúde mais efetivas para essa população.

**Descritores:** Idoso; Saúde do Idoso Institucionalizado; Fisioterapia.

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## RESUMEN

**Objetivo:** Analizar el estado de funcionalidad de mayores residentes de unidades de larga permanencia. **Métodos:** Estudio descriptivo-exploratorio desarrollado en dos instituciones de larga permanencia para mayores (ILPM) del municipio de Fortaleza-CE en el periodo entre noviembre de 2012 y julio de 2013. Los instrumentos utilizados fueron: 1) formulario socio demográfico, 2) Medida de Independencia Funcional (MIF) y 3) Clasificación Internacional de Funcionalidad (CIF). Los datos fueron analizados de manera descriptiva a partir del cálculo de la frecuencia, media y desviación típica. **Resultados:** Hubo el predominio del sexo masculino ( $n=47$ ; 59,49%) con media de edad de 74,58 ( $\pm 8,89$ ) años, el 68,35% ( $n=54$ ) fueron o estaban casados y el 49,37% ( $n=39$ ) eran analfabetos. Respecto la MIF se observó que los mayores realizan las actividades de manera completa o modificada y el 18,99% ( $n=15$ ) tienen dificultad para subir escaleras. En la relación de la MIF y la CIF respecto el auto cuidado, se encontró que el 96,20% ( $n=76$ ) no presentan dificultades de ejecución de las tareas, el 92,40% ( $n=73$ ) se mueve sin dificultades y el 98,73% ( $n=78$ ) tiene la cognición preservada. Sobre la capacidad de mantener y controlar las interacciones sociales todos presentan ese dominio preservado. **Conclusión:** Los mayores investigados presentaron buen estado cognitivo verificándose poca dependencia para las actividades relacionadas con los cuidados personales, la movilidad y la comunicación. El uso de la CIF permite visualizar el escenario de la funcionalidad de los mayores lo que puede facilitar estrategias para la promoción de la salud más efectivas para esa población.

**Descriptor:** Anciano; Salud de Anciano Institucionalizado; Fisioterapia.

## INTRODUCTION

Disease chronicity in elderly of longer lifespan, and its complications likewise, can cause impaired functional capacity, leading to dependence and social isolation. In Brazil, every year, 650,000 aged individuals are incorporated into this population, increasing the possibility of developing age-related disabilities, which impair the independence of the elderly, preventing self-care and, consequently, increasing the burden of care for the family and/or healthcare system<sup>(1)</sup>.

Given the fact that some do not have adequate family support, they choose or are sent to long-term care facilities for the elderly (LTCF)<sup>(2)</sup>. And it is noticeable in this population that the functional capacity or its preservation to perform basic activities of daily living (BADL) and

instrumental activities of daily living (IADL) is often compromised<sup>(3)</sup>.

In this context, health promotion programs geared towards the elderly are increasingly required<sup>(4)</sup>. They converge in actions that favor active aging, with focus on longevity that preserves the functional capacity and the encouragement of autonomy<sup>(5)</sup>.

Nevertheless, it is necessary to evaluate the impact of the proposed activities, and the assessment of the functional capacity of the elderly is a good strategy. There are a few ways to evaluate the functional capacity and, among them, stands the functional independence measure (FIM), a scale that extends the assessment to the motor, cognitive and social dimensions, parameters with recognized importance in assessing the elderly<sup>(6)</sup>.

The measure is divided between motor domains (which include the dimensions of self-care, sphincter control, mobility, and locomotion) and cognitive domains (communication and social cognition dimensions), respectively known as motor FIM and cognitive FIM<sup>(7)</sup>.

In order to organize the data collected through assessments and functionality scales, among other objectives, the International Classification of Functioning, Disability and Health (ICF)<sup>(8)</sup> was developed, which has improved the communication between health teams, the working up of functional diagnoses, and guidance for more effective intervention programs<sup>(9)</sup>.

Faced with this reality of appropriate and easy-to-use tools, the study aimed at analyzing the functional status of the elderly living in long-term care institutions.

## METHODS

This is an exploratory-descriptive study, of quantitative nature, developed in two LTCF in Fortaleza, CE from November 2012 to July 2013.

The population of elderly people living in these institutions is 98 individuals. By applying the sample calculation for finite populations, the number of 79 participants was attributed (sampling error of 5% and 95% confidence interval).

The following inclusion criteria were adopted: age of 60 years or over, preserved cognition and absence of incapacitating motor dysfunction that could render them unable to answer the questions. Those who were in health conditions that hindered their participation at the time of data collection were excluded from the study.

The evaluation instrument consisted of a questionnaire on personal and social data of the participants (age, sex, marital status, occupation, education level, presence of caregiver) and clinical data (comorbidities).

After that step, the FIM was applied in relation to the following dimensions: I - self-care, II - mobility and III - social cognition. Each dimension comprises several items, which are evaluated according to the degree of dependence, and this degree is analyzed by the sum of points: 19 to 60 points - modified dependence, with assistance from 1% to 50% in the task; 61 to 103 points - modified dependence, needing assistance up to 25% in the task; 104 to 126 points - complete or modified independence<sup>(6,10)</sup>.

Thus were evaluated areas such as self-care, which corresponds to eating, personal hygiene, bathing/showering, dressing upper body, dressing lower body, and toileting; sphincter control, which checks the control of urine and feces; mobility, which analyzes the transfer from bed to chair/wheelchair, transfer to the toilet, and transfer to the bathtub/shower; as well as locomotion, which includes gait and use or nonuse of wheelchair, and performance on stairs<sup>(6)</sup>.

The dimension communication checks degrees of comprehension and expression, and the social cognition analyzes social interaction, problem solving and memory, constituting criteria for analysis. At the end of data collection, the scores were totaled to detect the degree of independence of the participants<sup>(6)</sup>.

After this stage, the data was organized and classified according to the ICF, developed by the World Health Organization (WHO) in order to, among other things, describe situations related to human functions and their restrictions, serving as a framework to organize such information in a meaningful way, integrated and easily accessible<sup>(8)</sup>.

To organize the data expressed in the FIM and classify them according to the ICF, a binding rule between those measures was applied, combining the domains specifically to the components activity and participation, which extend from basic learning and watching to more complex areas, such as the ones related to social tasks: 18 points - complete dependence, requiring full assistance.

Almost all the items expressed in the FIM correlate with the ICF set of activities and participation (personal care, mobility, communication, relationships and interpersonal interactions, learning and application of knowledge). Social cognition, however, is represented in the ICF in the topic regarding the body's functions, where

cognition codes are expressed, identified as b140, 1165 and b144, respectively corresponding to the attention, higher-level cognitive functions, and memory functions<sup>(8)</sup>.

Given such correlation, the ICF generic qualifier, called *performance*, which describes what the individual does in their usual environment, could then be attributed to the codes. As the environment implies a social context, the registered performance can be understood as "involvement in a life situation" or "the lived experience" of the elderly in the usual context in which they live<sup>(8)</sup>.

The qualifiers 0, 1, 2, 3 or 4 were thus assigned, corresponding respectively to: no difficulty; slight, moderate, severe, or complete difficulty in the performance of the analyzed activity. After the assignment, inferences were drawn from the FIM and ICF results and presented in the results section, as follows<sup>(8)</sup>.

For analysis of descriptive data (absolute and percentage frequency distributions, average, minimum and maximum value, and standard deviation), the SigmaPlot software, version 11.0, was employed. The study began after approval by the Research Ethics Committee of the Estácio University Center of Ceará (Approval no. 57/2012), and was in compliance with Resolution 466/12.

## RESULTS

The sample was composed of 59.49% (n=47) of elderly male and 40.51% (n=32) of female, with mean age of 74.58 ( $\pm 8.89$ ) years, minimum of 60 and maximum of 94. In the sample, 68.35% (n=54) were or are married and nearly half (49.37%, n=39) were illiterate.

The professions most often cited by the participants were farmer (21.52%, n=17) and housekeeper (16.46%, n=13). The length of time residing in LTCF varies, with 26.58% (n=21) living in these facilities for periods greater than or equal to 10 years (Table I).

With regard to the clinical aspects of the participants, it was observed that the majority do not exhibit tremor or rigidity signs: 79.75% (n=63) and 74.68% (n=59), respectively. As for the history of falls, 59.49% (n=47) reported never having suffered an incident fall (Table II).

When asked about comorbidities, 56.96% (n=45) of the elderly presented hypertension, 30.38% (n=24) had diabetes, and 16.46% (n=13) reported being smokers.

As regards the functionality, it was observed that the majority performs self-care activities and controls the sphincters independently, in a complete or modified way, without need for assistance, as expressed in Table III.

Table I - Socio-demographic profile of the elderly sample surveyed. Fortaleza, CE, 2012-2013.

Variables	Values	
	Mean ± SD	n (%)
<b>Age range</b>		
60 – 75 anos	68.26 ± 4.80	46; 58.23
76 – 90 anos	82.53 ± 4.07	30; 37.97
91 – 105 anos	92.00 ± 1.73	3; 3.80
<b>Profession</b>	<b>n</b>	<b>%</b>
Farmer	17	21.52
Housekeeper	13	16.46
Salesperson	10	12.66
Storekeeper	8	10.13
Driver	5	6.33
Mason	5	6.33
Painter	4	5.06
Seamstress	3	3.80
Mechanic	3	3.80
Shoemaker	2	2.53
Lawyer	2	2.53
Others	7	11.28
<b>Retired</b>		
Yes	68	86.08
<b>Civil status</b>		
Widow/widower	29	36.71
Single	25	31.65
Divorced	18	22.78
Married	7	8.86
<b>Education</b>		
Illiterate	39	49.37
10th-12th grade	20	25.32
1st-9th grade	17	21.52
Higher education	3	3.8
<b>Length of stay in the LTCI</b>		
≥ 10 years	21	26.58
≤ 5 years	33	41.77
≥ 6 years	10	12.66
Months	15	18.99
<b>Receives visitors</b>		
Yes	45	56.96
<b>Caregiver</b>		
Professional	67	84.81
Family member	4	5.06
Combined	8	10.13
<b>Presence of eschars</b>		
No	71	89.87
<b>Physical activity</b>		
Yes	34	43.04
Walking	27	79.41
Gymnastics	7	20.59
<b>Sleep</b>		
Good	51	64.56
Regular	21	26.58
Bad	7	8.86

\*SD = standard deviation; n = number of participants; % = percentage of subjects.

Table II - Limitations and falls in the elderly surveyed. Fortaleza, CE, 2012-2013.

Questions	n	%
<b>Tremor</b>		
No	63	79.75
<b>Rigidity</b>		
No	59	74.68
<b>Any incident fall?</b>		
Yes	32	40.51
<b>How many times?</b>		
Once	16	50.00
Many times	8	25.00
Sometimes	8	25.00
<b>Place of the incident fall</b>		
Many places	9	28.13
Courtyard	8	25.00
Bedroom	8	25.00
Bathroom	5	15.63
Bedroom and bathroom	2	6.25
<b>Fracture</b>		
Yes	5	15.63

\* n = number of subjects; % = percentage of subjects.

Regarding the mobility aspect (transference and locomotion), the assessed elderly feature some difficulty levels, which prevent them from performing this function independently. When asked about the ability to move using stairs, it was seen that 18.99% (n=15) of them need help for the accomplishment of this function.

As for the relationship between ICF components and the FIM scale, with regard to self-care domain (d5) activities and participation, it can be seen that 96.20% (n=76) of the participants did not have difficulties in their implementation. For the mobility domain (d4), it was seen that 92.40% (n=73) perform this activity without difficulty.

On the social cognition addressed in the FIM, analyzed in light of the ICF (b1), it was observed that almost all the elderly persons evaluated (98.73%, n=78) evidence preserved levels of cognition.

The FIM aspect related to the interaction and interpersonal relationships in the ICF (d7), which concerns the ability to maintain and control the interactions with other persons, in a contextual and socially appropriate manner, and the ability to act independently in these interactions were evaluated. It was evident that all participants have this domain preserved (Chart I).

Chart I - Relationship between Functional Independence Measure (FIM) and International Classification of Functioning, Disability and Health (ICF) in elderly residents in long-term care facilities for the elderly (LTCF). Fortaleza, CE, 2012-2013.

Functional Independence Measure (FIM)	International Classification of Functioning, Disability and Health (ICF)				
<b>Block I – Self-care</b>	<b>Activity and Participation</b>				
	<b>Self-care (d5)</b>				
Eating	d550 - Eating	79			
	d560 - Drinking	79			
Personal hygiene	d5100 - Washing body parts	75	2	1	1
Bathing/showering (washing the body)	d5101 - Washing the whole body	75	1	2	1
	d5400 - Dressing	75	1	2	1
Dressing upper and lower body	d5401 - Undressing	75	2		2
	d5402 - Putting socks and shoes on	75	2		2
	d5403 - Pulling shoes off	75	2		2
Toilet use	d530 - Use of the toilet				
Sphincters					
Urine control	d5300 - Urine regulation	76	1		2
Feces control	d5301 - Defecation regulation	77			2
<b>Block II – Mobility</b>	<b>Mobility (d4)</b>				
<b>Transferences</b>					
Bed, chair, wheelchair	d4104 - Standing	77			2
Toilet (sitting and rising)		77			2
Bathtub/shower (getting in and out)	d4200 - Transferring while sitting	76	1		2
<b>Locomotion</b>					
Gait	d450 - Gait	72	4	1	2
	d465 - Locomotion using some kind of equipment	72	4	1	2
Stairs	d4551 - Going upstairs and downstairs	64	7		1 7
<b>Block III - Social Cognition</b>	<b>Communication (d3) Mental Functions (b1)</b>				
<b>Communication</b>					
Understanding (auditory or visual)	d310 - Receiving verbal message	78	1		
Expression (vocal or non-vocal)	d330 - Speaking	77	2		
	d335 - Producing non-verbal message	77	2		
	d350 - Conversation	77	2		
Social Cognition	*b140 - Attention	79			
	*b164 - Higher-level cognitive functions	79			
<b>Relationships and interpersonal interactions (d7)</b>					
Social Interaction	d729 - Personal and general interactions	79			
<b>Learning and application of knowledge (d1)</b>					
<b>Mental functions (b1)</b>					
Problem-solving	d175 - Problem-solving	77	2		
Memory	*b144 - Memory functions	77	2		

\* b140, b164 e b144 – ICF codes relating to the body functions. 0 = no difficulty, 1 = slight difficulty, 2 = moderate difficulty, 3 = severe difficulty, 4 = complete difficulty.

To analyze the elderly’s degree of dependence, taking into account the FIM, the scores per participant and the mean were totaled, being observed that the analyzed elderly

have high levels of independence for both the motor (87.16 ± 10.67) and the cognitive functions (34.52 ± 1.68) (Table III).

Table III - Results of the total, motor and cognitive Functional Independence Measure (FIM) of the elderly surveyed. Fortaleza, CE, 2012-2013.

FIM*	Score range	Value		Mean	Standard Deviation
		Minimum	Maximum		
Motor	1 – 91	26	91	87.16	10.67
Cognitive	1 – 35	24	35	34.52	1.68
Total	18 – 126	53	126	121.68	11.60

\*FIM = Functional Independence Measure

## DISCUSSION

The elderly residents in the LTCF surveyed are mostly male, active, with preserved good cognitive status and mean age around 80 years.

The aged population has been growing in different regions of the world. Significant variations in the speed of this growth are noticed, though. Population aging, the result of achievements in scientific, technological and social domains, has become a major challenge for public policies and the social sectors<sup>(4)</sup>.

People are becoming older, including ages over 80 years. Projections of the United Nations (UN) indicate that this number is increasing by 4% a year. In 2009, for every seven aged persons, one was 80 years old or over<sup>(11)</sup>.

Indeed, it highlights the need for the development of intervention strategies directed at the elderly population, with focus on functionality, regardless of age or education<sup>(12,13)</sup>.

It is noticeable among the study participants a prevalence of illiteracy and low education level, considering the past reality of discrimination as for educational opportunities, especially for women, who are now 80 years old or over. The illiteracy rate is high among residents in nursing homes<sup>(14)</sup>, even though there is no influence on the functional status<sup>(13)</sup>.

Farmer and housekeeper were the most prevalent professions, possibly because of the profile of the Northeastern population, still marked by subsistence activities<sup>(15)</sup>.

In this study, there was a large number of singles and widowers having the LTCF as a foster home because, before their self-supporting inability and lack of family, they have resorted to institutional protection. In this sense, knowing the functional capacity is essential as a quality of life indicator for the institutionalized elderly, identifying institutional demands of care provision, self-care ability, and levels of dependence to the basic daily needs<sup>(10,16-18)</sup>.

Among the participants, there was a history of falls, and this finding was consistent with studies carried out in Catanduva, SP<sup>(19)</sup> and Pelotas, RS<sup>(20)</sup>, which reported a

frequency of falls ranging from 40% to 33.5%, respectively, among institutionalized elderly. In the international literature, this rate ranges from 10.6% to 49% of cases<sup>(21,22)</sup>. There is a higher incidence of falls with advancing age, requiring a multidisciplinary approach focused on prevention and awareness of the risks of falls<sup>(23-26)</sup>.

The occurrence of falls is one of the main health concerns facing the institutionalized elderly population<sup>(27)</sup>. Aging causes physiological changes that promote this event, given the decline in muscle strength as well as changes in bone mass, balance, coordination and flexibility, in addition to vision, proprioception, vibration and vestibular system impairments<sup>(23-25)</sup>.

The aged participants had difficulty referring morbidities and the medications used, and such information was underreported in the institutional medical records. The data obtained, however, showed the prevalence of comorbidities such as systemic arterial hypertension and diabetes, in accordance with studies<sup>(10,28-30)</sup> that show similar aspects.

Over half of the participants use associated medicines, as described in a study with the elderly in Brazil, which warns of the importance of examining the association between drugs and risk of falls, and the rational use of those<sup>(31)</sup>.

During the analysis of daily activities, it was evidenced that most elderly is able to eat independently, and shower and dress by themselves. Besides, they have good sphincter control, showing little dependence to perform these activities.

Maintenance and preservation of the capacity and performance of the basic activities of daily living are fundamental points to extend independence for as long as possible; with this, the elderly maintain their functional status and quality of life<sup>(32)</sup>.

The practice of physical and leisure activities is related to the level of independence of the elderly<sup>(33)</sup>. Aged with higher functional independence seek forms of entertainment and new friendships, aspects that may be associated with the

escape from loneliness and the possibility to get pleasure from their free time and enjoy life - the active aging<sup>(34)</sup>. In the LTCF whose elderly were evaluated, there are leisure and entertainment programs, such as dance, gymnastics and crafts classes.

Other studies carried out on the same theme also report groups of elderly residents in LTCF with high levels of independence<sup>(10,13,35)</sup>. There is empirical evidence that the results of the adaptation of institutionalized elderly are influenced by the quality of the environment<sup>(36)</sup>. The length of stay of the study participants in the LTCF visited may have positively influenced the independence observed in relation to personal care, mobility and communication.

In this sense, LTCF need to feature physical infrastructure, equipment and adequate staff to meet the elderly's needs and reduce the risk of falls, which includes removing barriers of any kind, and making available accessibility devices for the elderly, as well as a physical space that enables individuality and safe maintenance<sup>(37)</sup>.

In light of the ICF, it can be inferred that the evaluated elderly have, in most cases, significant degrees of functional performance for the activities analyzed. The prospect of aligning the functional status with the classification allows health professionals, family and caregivers to have a broader understanding of the functional scenario performed, thus contributing to the development of strategies for promotion, prevention and more specific interventions.

FIM and ICF are complementary and transmit a broader view with respect to functionality, adding the identification of possible restraints or facilitators to the maintenance of function<sup>(38,39)</sup>. Given the scope of the ICF, further training for the evaluators is a necessity, which may hamper its usefulness<sup>(40)</sup>.

The use of instruments like the ICF, which classify functionality, allows the planning of rehabilitation interventions and goals, as well as the possibility of proposing prevention strategies. Moreover, they can provide feedback on the adopted therapy<sup>(28,40)</sup>.

This study has some limitations, such as limited sample representativeness, the cut-off point for age, and its cross-sectional approach. Nevertheless, studying the application of the FIM together with the ICF inserts new perspectives in the context of public health. In this scenario, it is understood that the proposed aims have been achieved, since the results obtained are consistent with the literature.

## CONCLUSION

The elderly participants present good cognitive status, and little dependence in activities related to personal care, mobility, and communication can be evidenced, despite the occurrence of chronic diseases such as hypertension and diabetes. There are limitations on the act of climbing stairs,

an aspect that demands a more critical eye regarding the internal environment and mobility.

Using the ICF allows a wide and clear view about the functional status of the elderly, which can facilitate more effective health promotion strategies for this population.

## REFERENCES

1. Veras R. Envelhecimento populacional contemporâneo: Demandas, desafios e inovações. *Rev Saúde Pública*. 2009;43(3):548-54.
2. Born T, Boechat NS. A qualidade dos cuidados ao idoso institucionalizado. In: Freitas EV, Py L. *Tratado de geriatria e gerontologia*. 3ª ed. Rio de Janeiro: Guanabara Koogan; 2011.
3. Duca GFD, Silva MC, Hallal PC. Incapacidade funcional para atividades básicas e instrumentais da vida diária em idosos. *Rev Saúde Pública*. 2009;43(5):796-805.
4. Araújo LF, Coelho CG, Mendonça ET, Vaz AVM, Siqueira-Batista R, Cotta RMM. Evidências da contribuição dos programas de assistência ao idoso na promoção do envelhecimento saudável no Brasil. *Rev Panam Salud Pública*. 2011;30(1):80-6.
5. Assis M, Hartz ZM, Valla VV. Programas de promoção da saúde do idoso: uma revisão da literatura científica no período de 1990 a 2002. *Ciênc Saúde Coletiva*. 2004;9(3):557-81.
6. Riberto M, Miyazaki MH, Jorge Filho D, Sakamoto H, Battistella LR. Reprodutibilidade da versão brasileira da Medida de Independência Funcional. *Acta Fisiatr*. 2001;8(1):45-52.
7. Riberto M, Miyazaki MH, Sakamoto H, Jorge-Filho D, Battistella LR. Independência funcional em pessoas com lesões encefálicas adquiridas sob reabilitação ambulatorial. *Acta Fisiátrica*. 2007;14(2):87-94.
8. Organização Mundial de Saúde. *Classificação Internacional de Funcionalidade, Incapacidade e Saúde*. São Paulo: Centro Colaborador da Organização Mundial de Saúde para a Família das Classificações Internacionais; 2003.
9. Brasileiro IC, Moreira TMM, Jorge MSB, Queiroz MVO, Mont'Alverne DGB. Atividades e participação de crianças com Paralisia Cerebral conforme a Classificação Internacional de Funcionalidade, Incapacidade e Saúde. *Rev Bras Enferm*. 2009;62(4):503-11.
10. Carneiro FR, Brasileiro IC, Vasconcelos TB, Arruda VP, Florêncio RS, Moreira TMM. Independência

- funcional de idosas residentes em instituições de longa permanência. *Acta Fisiátrica*. 2012;19(3):156-60.
11. United Nations. *World Population Ageing 2009*. New York: UN; 2010.
  12. Sposito G, Diogo MJD, Cintra FA, Neri AL, Guariento ME, Sousa MLR. Relações entre o bem-estar subjetivo e a funcionalidade em idosos em seguimento ambulatorial. *Rev Bras Fisioter*. 2010;14(1):81-9.
  13. Braga DKAP, Domiciano BR, Santos MPA, Vasconcelos TB, Macena RHM. Relação entre idade e capacidade funcional de idosas residentes em instituições de longa permanência na cidade de Fortaleza/CE. *J Health Biol Sci*. 2014;2(4):197-201.
  14. Domiciano BR, Braga DKAP, Silva PN, Vasconcelos TB, Macena RHM. Education, age, and cognitive impairment of elderly residents in long-term institutions. *Rev Neurociênc*. 2014;22(3):330-6.
  15. Oliveira BLAA, Silva AM, Baima VJD, Barros MMB. Situação social e de saúde da população idosa da uma comunidade de São Luís- MA. *Rev Pesq Saúde*. 2010;11(3):25-9.
  16. Feliciano AB, Moraes SA, Freitas ICM. O perfil do idoso de baixa renda no município de São Carlos, SP: um estudo epidemiológico. *Cad Saúde Pública*. 2004;20(6):1575-85.
  17. Lucchetti G, Granero AL, Pires SL, Gorzoni ML. Fatores associados à polifarmácia em idosos institucionalizados. *Rev Bras Geriatr Gerontol*. 2010;13(1):51-8.
  18. Marchon RM, Cordeiro RC, Nakano MM. Capacidade funcional: estudo prospectivo em idosos residentes em uma instituição de longa permanência. *Rev Bras Geriatr Gerontol*. 2010;13(2):203-14.
  19. Lojudice DC. *Quedas de idosos institucionalizados: ocorrência e fatores associados [dissertação]*. Ribeirão Preto: Universidade de São Paulo; 2005.
  20. Carvalho, MP, Luckow ELT, Siqueira FV. Quedas e fatores associados em idosos institucionalizados no município de Pelotas (RS, Brasil). *Ciênc Saúde Coletiva*. 2011;16(6):2945-52.
  21. Hill-Westmoreland EE, Gruber-Baldini AL. Falls documentation in nursing homes: agreement between the minimum data set and chart abstractions of medical and nursing documentation. *J Am Geriatr Soc*. 2005;53(2):268-73.
  22. Hien le TT, Cumming RG, Cameron ID, Chen JS, Lord SR, March LM, et al. Atypical antipsychotic medications and risk of falls in residents of aged care facilities. *J Am Geriatr Soc*. 2005;53(8):1290-5.
  23. Siqueira FV, Facchini LA, Piccini RX, Tomasi E, Thumé E, Silveira DS, et al. Prevalência de quedas em idosos e fatores associados. *Rev Saúde Pública*. 2007;41(5):749-56.
  24. Ricci NA, Gonçalves DFF, Coimbra IB, Coimbra AMV. Fatores associados ao histórico de quedas de idosos assistidos pelo programa de saúde da família. *Saúde Soc*. 2010;19(4):898-909.
  25. Couto FBD'E, Perracini MR. Análise multifatorial do perfil de idosos ativos com história de quedas. *Rev Bras Geriatr Gerontol*. 2012;15(4):693-706.
  26. Gomes GAO, Cintra FA, Diogo MJD, Neri AL, Guariento ME, Sousa MLR. Comparação entre idosos que sofreram quedas segundo desempenho físico e número de ocorrências. *Rev Bras Fisioter*. 2009;13(5):430-7.
  27. Costa AGS, Oliveira ARS, Moreira RP, Cavalcante TF, Araujo TL. Identificação do risco de quedas em idosos após Acidente vascular encefálico. *Esc Anna Nery Rev Enferm*. 2010;14(4):684-9.
  28. Oliveira DLC, Goretti LC, Pereira LSM. O desempenho de idosos institucionalizados com alterações cognitivas em atividades da vida diária e mobilidade: estudo piloto. *Rev Bras Fisioter*. 2006;10(1):91-6.
  29. Lima-Costa MF, Peixoto SV, Matos DL, Firmo JOA, Uchôa E. A influência de respondente substituto na percepção da saúde de idosos: um estudo baseado na Pesquisa Nacional por Amostra de Domicílios (1998, 2003) e na coorte de Bambuí, Minas Gerais, Brasil. *Cad Saúde Pública*. 2007;23(8):1893-902.
  30. Alves LC, Leimann BCQ, Vasconcelos MEL, Carvalho MS, Vasconcelos AGG, Fonseca TCO, et al. A influência das doenças crônicas na capacidade funcional dos idosos do Município de São Paulo, Brasil. *Cad Saúde Pública*. 2007;23(8):1924-30.
  31. Rozenfeld RA, Singer HK, Repetz NK. Medication as a risk factor for falls in older women in Brazil. *Pan Am J Public Health*. 2003;13(6):369-75.
  32. Reis LA, Mascarenhas CHM, Torres GV. Evaluation of functional capacity on institutionalized elderly in the City of Jequié/BA. *Fiep Bulletin*. 2008;78(1):89-92.
  33. Maciel MG. Atividade física e funcionalidade do idoso. *Motriz Rev Educ Fis*. 2010;16(4):1024-32.
  34. Ferreira OGL, Maciel SC, Costa SMG, Silva AO, Moreira MASP. Envelhecimento ativo e sua relação

- com a independência funcional. *Texto & Contexto Enferm.* 2012;21(3):513-8.
35. Ricci NA, Kubota MT, Cordeiro RC. Concordância de observações sobre a capacidade funcional de idosos em assistência domiciliar. *Rev Saúde Pública.* 2005;39(4):655-62.
36. Bianchi SA. Qualidade do lugar nas instituições de longa permanência para idosos -Contribuições projetuais para edificações na Cidade do Rio de Janeiro [tese]. Rio de Janeiro: Universidade Federal do Rio de Janeiro; 2013.
37. Felician AM, Santos SSC, Pelzer MT, Oliveira AMN, Pinho LB. Construção de ferramenta avaliativa direcionada às instituições de longa permanência para idosos: relato de experiência. *Rev Eletrônica Enferm.* 2011;13(3):474-82.
38. Grill E, Stucki G, Scheuringer M, Melvin J. Validation of International Classification of Functioning, Disability and Health (ICF) Core Sets for early postacute rehabilitation facilities: comparisons with three other functional measures. *Am J Phys Med Rehabil.* 2006;85(8):640-9.
39. Schepers VP, Ketelaar M, Van de Port IG, Visser-Meily JM, Lindeman E. Comparing contents of functional outcome measures in stroke rehabilitation using the International Classification of Functioning, Disability and Health. *Disabil Rehabil.* 2007;29(3):221-30.
40. Goljar N, Burger H, Vidmar G, Leonardi M, Marincek C. Measuring patterns of disability using the International Classification of Functioning, Disability and Health in the post-acute stroke rehabilitation setting. *J Rehabil Med.* 2011;43(7):590-601.

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