

# Functional independence in elderly residents in long-term institutions

Flávia Ravany Carneiro<sup>1</sup>, Ismênia de Carvalho Brasileiro<sup>2</sup>, Thiago Brasileiro de Vasconcelos<sup>3</sup>, Vanessa da Ponte Arruda<sup>4</sup>, Raquel Sampaio Florêncio<sup>5</sup>, Thereza Maria Magalhães Moreira<sup>6</sup>

## ABSTRACT

**Objective:** To evaluate the Functional Independence Measure (FIM) for elderly women in a long-term institution in Fortaleza - CE. **Method:** This is an exploratory, descriptive study with a quantitative approach, performed with 59 elderly residents in two long-term institutions for the elderly (LTCF) in Fortaleza - CE, during the second half of 2010. The initial assessment instrument consisted of personal, socio-demographic, and clinical data. We then applied the Functional Independence Measure (FIM) to measure how much care they needed to perform motor and cognitive tasks. **Results:** The women had been institutionalized for 8.32 ( $\pm$  9.46) years. The average age of participants was 76.72 ( $\pm$  9.81) years. In relation to self-care most of the group eat, carry out personal hygiene, and bathe independently. In addition, it can be seen that 69.50% use the toilet independently. As for mobility, 50.85% of the women can manage without help, while 62.71% can only use the stairs with help. As for social cognition, they have good communication, because 49.15% did not need any help in understanding the words, 62.71% express themselves freely, while 50.85% have memory deficits. **Conclusion:** The participants in the study were independent under the general definition. They were able to perform virtually all activities in a satisfactory manner, such as feeding, personal hygiene, bathing, mobility, and sphincter control, being dependent on aid only with aspects related to memory and climbing stairs.

**Keywords:** aged, health evaluation, health of institutionalized elderly, housing for the elderly

<sup>1</sup> Physiotherapist and Scholarship Winner at NUTEP/ Universidade Federal do Ceará - UFC (Ceará Federal University - UFC).

<sup>2</sup> Physiotherapist and Professor in the Physiotherapy Course at the Faculdade Estácio - FIC (Estácio College - FIC).

<sup>3</sup> Physiotherapist, Masters Candidate in Pharmacology at the Ceará Federal University (UFC).

<sup>4</sup> Physiotherapist.

<sup>5</sup> Nurse in the Grupo de Pesquisa Epidemiologia, Cuidado em Cronicidades e Enfermagem - GRUPECCE (Epidemiology, Care in Chronicities and Nursing Research Group - GRUPECCE).

<sup>6</sup> PhD in Nursing, Professor at the Universidade Estadual do Ceará - UECE (Ceará State University - UECE), CNPq Researcher, Research leader at the Epidemiology, Care in Chronicities and Nursing Research Group (GRUPECCE).

### Mailing address:

Flávia Ravany Carneiro  
Rua Prof. Solon Farias, nº 2626 - Cambéba  
CEP 60833-510  
Fortaleza - CE  
E-mail: fravany@hotmail.com

Received on June 21, 2012.

Accepted on September 6, 2012.

DOI: 10.5935/0104-7795.20120024

## INTRODUCTION

The elderly population has increased in recent decades, and as a consequence, a larger number of long-term care facility (LTCF) for the elderly have taken the responsibility to care for them, for they many times lose their connection to social networks, so these institutions give them support or assist them in their needs to improve health and quality of life.<sup>1,2</sup>

The LTCF are establishments that offer full-time institutional care for people who are 60 years old or older, dependent or independent, who are unable to remain with their families or at their homes, and provide them with housing, food, health, and social interaction.<sup>3,4</sup>

One of the needs of the elderly regards functional ability. As age advances, there are physiological alterations such as functional incapacity, characterized by impairments in performing activities within the term considered normal for human life.<sup>5</sup>

In caring for the elderly, it is necessary to consider situations of risk, identify areas of dysfunction/need, and to detect and monitor their functional decline, so that it is possible to establish a care plan appropriate for whatever shortcomings may be identified. There is a series of scales available that promote the visualization of this information.<sup>6</sup>

The Functional Independence Measure (FIM), whose Brazilian version was adapted in 2000, quantitatively evaluates the degree of care demanded by a person for the performance of a series of motor and cognitive daily life tasks.<sup>7-10</sup>

In visits to and curriculum internships in LTCFs during the physiotherapy graduation course, we noticed that a good number of the institutionalized elderly have functional capacity, but tend to lose it the longer they remain in those institutions. Some measures adopted in their daily handling seem to limit their competences and abilities, making them increasingly dependent.

In view of this, the present study aimed to evaluate the functional independence measure of the elderly in two long-term institutions in the city of Fortaleza, in the state of Ceará.

## METHOD

This is an exploratory study, with a descriptive with quantitative approach, made in two long-term institutions for elderly women, in the city of Fortaleza, Ceará, during the second semester of 2010.

This sample was composed of only females because, of the two long-term institutions researched, one assists exclusively elderly women and the other assists both men and women; however, since women represent the majority, there was more interest in studying a group composed of them.

The population of the study was homogeneous; it was made up of 67 elderly females residing in an institution, however, only 59 subjects fulfilled the inclusion criteria. Females aged 60 years or older were included, to the exclusion of those who were not registered as residing in the institution, those who simply did not want to participate in the study, and those who showed debilitating neurological and/or psychological alterations.

The initial evaluation instrument was the collection of personal and socio-demographic data of the participants (marital status, number of children, profession, education, previous residence, and whether there was a care-giver) and clinical data (associated comorbidities, use of medication).

The Functional Independence Measure (FIM) scale was applied in three blocks: block I about self-care; block II about mobility; and block III about social cognition. In this way the researchers evaluated activities related to personal care, sphincter control, mobility/transference, locomotion, communication, and behavior. At the end of the collection, the scores were added to detect the degree of independence of the participants.

The data was collected directly from the subject, or, when they could not communicate, from her caregiver. The researching physiotherapist who applied the evaluation instrument was qualified in the use of FIM.

After that, the data was analyzed and interpreted by using the Statistical Package for the Social Sciences (SPSS), version 17.0. Graphs, tables, and charts presented the data after they were computed.

This study was approved by the Committee on Ethics in Research with Human Beings at the Estácio de Sá College, protocol number 077/10. The study followed the directives from resolution 196/96 from the National Health Council, Ministry of Health.<sup>11</sup>

## RESULTS

In the evaluation of the 59 elderly institutionalized females, the average age was 76.7 ( $\pm$  9.81) years, with the youngest being 62 and the eldest, 99 years, with a predominance of people from 70 to 79

years of age, corresponding to 37.7% (20) of the sample.

As for social and demographic characteristics (Table 1), in regards to the marital status of the subjects, a majority of 60.4% (32) were single, and 52.8% (28) had children ( $1.81 \pm 2.69$ ). It was found that 49% (26) of them had completed junior high school, and 35.8% (19) were illiterate.

Approximately 50% (27) of the subjects had worked as maids before residing in the institution, and 50% (27) are currently retired. We observed that 71.7% (38) had resided with their families before coming to the institution, but most of them 88.7% (47) did not have a direct caregiver at the institution.

The subjects had resided at the institution for an average time of  $8.32 \pm 9.46$  years, with a minimum of 2 months and a maximum time of 40 years, with a statistically significant difference ( $p < 0.05$ ; *Student t* test) in the time of residence (Table 1).

As for clinical characteristics, we observed that hypertension was the most frequent comorbidity 49% (26) (Figure 1). Approximately 86.8% (46) used some type of medication.

The FIM scale was applied in its three aspects: self-care, mobility, and social cognition. It was verified that most (84.7%) could feed themselves independently, and of those, 76.2% (45) did not need any help. In terms of personal hygiene, 77.9% (46) were independent. When asked about their capacity to bathe, 71.1% (42) subjects affirmed that they were independent.

Dressing the upper part of the body as much as the lower part was a competence observed in 69.5% (41) of the subjects. As for using the toilet, it was observed that 69.5% (41) did so independently. There was also urinary control in 57.6% (34) of them and fecal control in 76.2% (45) (Table 2).

As for mobility and locomotion (block II), we observed that the subjects transferred themselves independently, 61% (36) from their beds, chairs, wheelchairs; 59.3% (35) showed mobility to use the toilet, and 57.6% (34) bathed without any help. In terms of locomotion (gait/wheelchair), half of them 50.8% (30) were able to perform this task without any help. In relation to using stairs, 62.7% (37) could only do it with help (Table 3).

As for social cognition (block III), the subjects have good communication, 49.1% (29) do not need help to understand the words, 62.7% (37) expressed themselves freely, 49.1% (29) do not need any help to interact socially, 38.9% (23) are able to solve their problems without any help, and 50.8% (30) reported having some memory loss (Table 4).

**Table 1.** Social and demographic data of subjects residing at the institution in the city of Fortaleza, CE, 2010

Variables	f	%
<b>Education</b>		
Illiterate	19	35.8
Never completed Junior High School	12	22.6
Completed Junior High School	14	26.4
Never completed High School	4	7.5
Completed High School	4	7.5
<b>Marital status</b>		
Widowed	17	32.1
Single	32	60.4
Married	4	7.5
<b>Children</b>		
Yes	28	52.8
No	25	47.2
<b>Profession</b>		
Sales person	2	3.8
Maid	27	50.9
Secretary	7	13.2
Seamstress	4	7.5
Housewife	11	20.8
Teacher	2	3.8
<b>Retired</b>		
Yes	42	79.2
No	11	20.8
<b>Before, they lived with:</b>		
Friends	4	7.5
Family	38	71.7
Employers	7	13.2
Alone	4	7.5
<b>Is there a caregiver?</b>		
Yes	6	11.3
No	47	88.7
<b>Time at the institution</b>		
< 1 year	6	11.3
1-20 years	46	77.4
21-40 years	6	11.3

## DISCUSSION

The aging of the population occurs in a context of great social, cultural, economic, and institutional changes in the system of values and configuration of family arrangements. In the near future, a considerable growth of the very old population is expected, as a result of the high birth rates observed in the recent past and the continuous reduction of mortality for the elderly.<sup>12</sup>

The increase in the elderly population and the scarcity of caregivers, whether formal or

informal, results in a growing demand for the institutionalization of this age bracket.<sup>13</sup> In our study, the average age of the institutionalized subjects was 76.72 years.

Camarano & Kanso<sup>12</sup> affirm that, although the Brazilian legislation establishes that caring for dependent members must be the family's responsibility, this is becoming scarcer, making long-term care facilities for the elderly an alternative for non-family care, as shown in the results from our study, in which 71.7% of the subjects had resided with their families before moving to the institution.

Some situations that reduce the prospects of aging in a safe family environment are: new family arrangements, single people, single parents, couples without children, and sons and daughters who have moved away. These can exemplify the marginalization that exists towards the elderly person with no family; in addition, some older people many times prefer to isolate themselves from society, for seeing themselves as a bother to their families, and sometimes because the family considers the elder person a bother.<sup>3,14</sup>

According to Danilow et al.<sup>15</sup> the institutions for the elderly are considered low complexity health units that assist the elderly who have some degree of difficulty and/or functional incapacity to perform their daily life activities.

Functional incapacity is determined by many factors. The presence of the same risk factors for functional limitation in different individuals may generate diverse manifestations, with different repercussions on the daily activities. The social and physical environment, as well as emotional, economic, and health factors interact to sum up the overall functional potential of the elderly person.<sup>16,17</sup>

Fillenbaum et al.<sup>18</sup> after evaluating the daily life activities (DLAs), using the Western scale, indicated that older as well as young adults with less education and low cognitive functioning tend to show a low performance in their DLAs. In another study, Rosa et al.<sup>19</sup> added that the elderly with poor education are five times more likely to be moderately/severely dependent in their DLAs. In the present study this relationship was not observed, even among the illiterate subjects.

Increased limitations in the DLAs and alterations in the quality of life are directly associated with the increase of comorbidities among the elderly.<sup>20</sup> In our study, the elderly showed independence in their activities even with high blood pressure and other diseases such as diabetes and arthrosis. However, in the study by Montenegro<sup>21</sup> the worsening of some functional activities showed a correlation with the presence of associated diseases and the advanced age of the patient.

In addition to comorbidities, with aging there is a weakening of muscle tone and bone constitution, which can lead to changes in the trunk posture and legs, accentuating the pathological curves of the spine. The joints also become more rigid, reducing movements and producing alterations in balance and gait. There are also alterations in the protection reflexes and in the balance control, impairing body mobility and thereby predisposing the elderly

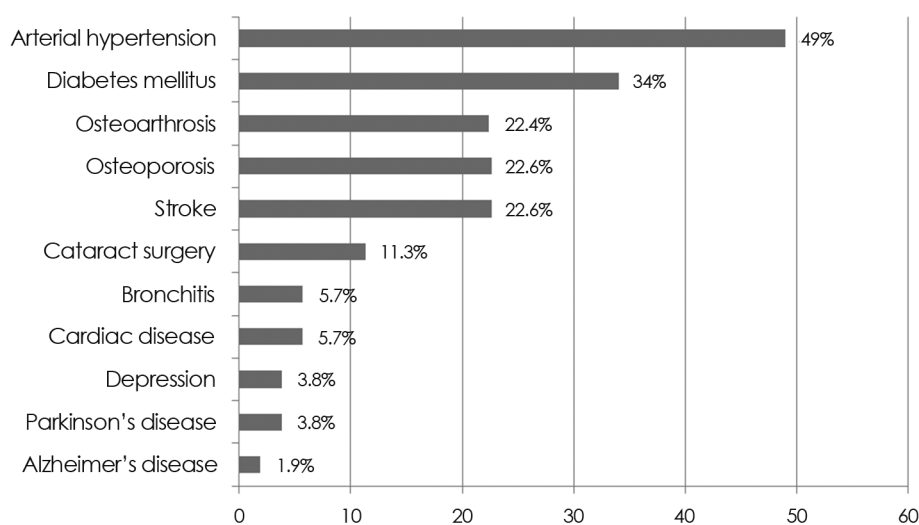


Figure 1. Percentages of comorbidities found among the elderly females residing at the institution in Fortaleza/CE, 2010

Table 2. FIM referring to the subjects' self-care, Fortaleza/CE, 2010

Block I - Self-care	Without help (Indices 7/6)	With help (Indices 1, 2, 3, 4, 5)
Feeding	76.2% (45)/8.4% (5)	15.2% (9)
Personal hygiene	77.9%(46)/3.3% (2)	18.6% (11)
Bathing (washing the body)	71.1%(42)/10.1% (6)	18.6% (11)
Dressing the upper and lower parts of the body	69.5% (41)/11.8% (7)	18.6% (11)
Using the toilet	69.5% (41)/11.8% (7)	18.6% (11)
Sphincters		
Urinary control	57.6% (34)/20.3% (12)	22.3%(13)
Fecal control	76.2%(45)/6.7% (4)	16.9% (10)

Table 3. FIM referring to the mobility and locomotion of the subjects. Fortaleza/CE, 2010

Block II - Mobility	Without help (Indices 7/6)	With help (Indices 4, 3, 2, 1)
Transferences		
Bed, chair, wheelchair	61.2% (36)/20.3% (12)	18.6% (11)
Toilet	59.3% (35)/22.3% (13)	18.6% (11)
Bathhtub, shower	57.6% (34)/20.3% (12)	22.3% (13)
Locomotion		
Gait/wheelchair	50.8% (30)/11.8% (7)	37.2% (22)
Stairs	23.7% (14)/13.5% (8)	62.7% (37)

Table 4. FIM referring to the subjects' social cognition, Fortaleza/CE, 2010

Block III - Social cognition	Without help (Indices 7/6)	With help (Indices 4, 3, 2, 1)
Communication		
Understanding	49.1% (29)/13.5% (8)	37.2% (22)
Expression	62.7% (37)/13.5% (8)	23.7% (14)
Social cognition		
Social Interaction	49.1% (29)/27.1% (16)	23.7% (14)
Solving problems	38.9% (23)/18.6% (11)	42.3% (25)
Memory	38.9% (23)/10.1% (6)	50.8% (30)

to falls and the risk of fractures, with serious consequences to functional performance.<sup>22,23</sup>

For Pereira et al.<sup>24</sup> mobility and locomotion in the environment are essential elements for the DLAs being done with independence. In our study, a majority of the subjects were able to perform their activities independently. There was a predominance of independent subjects for the DLAs regarding self-care.

As for incontinence, the subjects studied had urinary and fecal control, an action that, according to Maciel,<sup>25</sup> depends not only on the anatomical integrity and physiological mechanisms involved in storage and elimination, but also on the cognitive capacity, mobility, manual dexterity, and motivation to go to the toilet.

Mobility, the capacity to move in the environment, is an extremely important physical function component, being a pre-requisite for the performance of the DLAs and for maintaining independence; losing it can generate dependence and disabilities.

In the present study, it can be verified that most subjects can transfer to their beds and chairs independently, however, they can only climb stairs with help, since to do this it is necessary to have a certain degree of balance, dexterity to change positions, and stability.<sup>1</sup>

As for communication, the subjects in the sample expressed themselves freely, but they showed a memory deficit in relation to social cognition. Papalia & Olds<sup>26</sup> affirm that, in healthy elderly, the brain changes are usually modest and make little difference in its functioning. When there is a problem related to the central nervous system, this can affect cognition, worsening their performance in cognitive tests and hampering their capacity to learn and remember. The slow processing of information can make the elderly not understand when information is presented too quickly or without much clarity.<sup>26</sup>

## CONCLUSION

The functional independence of the elderly females observed in this study reflects a degree of independence for activities such as feeding, personal hygiene, bathing, mobility, and sphincter control. Locomotion climbing stairs and relative memory deficit suggest normal physiological alterations for their age.

Although having resided for an equivalent time at long-term senior care institutions as those in other studies, the subjects of this study seem to have preserved their expected degree of autonomy and independence.

## REFERENCES

1. Davim RMB, Torres GV, Dantas SMM, Lima VM. Estudo com idosos de instituições asilares no município de Natal/RN: características socioeconômicas e de saúde. *Rev Latino-am Enfermagem*. 2004;12(3):518-24.
2. Brasil. Presidência da República. Lei nº 10.741, de 1º de outubro de 2003. Dispõe sobre o estatuto do idoso e dá outras providências. *Diário Oficial da República Federativa do Brasil*. Brasília (DF); 2003 Out 3; Seção 1:1.
3. Born T. O que é uma instituição de longa permanência? [Internet]. 2005 [citado 2010 Ago 31]. Disponível em: <http://chagas.redefiocruz.fiocruz.br/~ensp/biblioteca/dados/tomiko.ppt>.
4. Brasil. Agência Nacional de Vigilância Sanitária. Resolução da Diretoria Colegiada RDC 283, de 26 de setembro de 2005. Aprova o regulamento técnico que define normas de funcionamento para as instituições de longa permanência para idosos. *Diário Oficial da República Federativa do Brasil*, Brasília (DF) 2005; 27 set. Seção 1:1.
5. 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.
6. Andrade MCR, Carneiro Junior N. Conspiração silenciosa: o visível e o invisível da realidade dos idosos dependentes, na região central da cidade de São Paulo. *Revés do Aveso*. 2005;14(10):61-64.
7. 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.
8. Ribeiro JEC, Freitas MM, Araújo GS, Rocha THR. Associação entre aspectos depressivos e déficit visual causado por catarata em pacientes idosos. *Arq Bras Oftalmol*. 2004;67(5):795-799.
9. Riberto M, Miyazaki MH, Jucá SSH, Sakamoto H, Potiguara P, Battistella LR. Validação da versão brasileira da Medida de Independência Funcional. *Acta Fisiatr*. 2004;11(2):72-6.
10. Kawasaki K, Cruz KCT, Diogo MJDE. A utilização da Medida de Independência Funcional (MIF) em idosos: uma revisão bibliográfica. *Med Reabil*. 2004;23(3):57-60.
11. Brasil. Resolução CNS n.º 196, de 10 de outubro de 1996. Aprova diretrizes e normas regulamentadoras de pesquisa envolvendo seres humanos. *Diário Oficial da União*, Brasília, DF, n. 201, Seção 1, p. 21 082; 1996.
12. Camarano AA, Kanso S. As instituições de longa permanência para idosos no Brasil. *R Bras Est Pop*. 2010;27(1):233-235.
13. Silva BT, Santos SSC, Silva MRS, Sousa LD. Percepção das pessoas idosas sobre a institucionalização: reflexão acerca do cuidado de enfermagem. *Rev Rene*. 2009;10(4):118-125.
14. Guedes JM, Silveira RCR. Análise da capacidade funcional da população geriátrica institucionalizada na cidade de Passo Fundo - RS. *RBCEH*. 2004;1(2):10-21.
15. Daniilow MZ, Moreira ACS, Villela CG, Barra BB, Novaes MRCG, Oliveira MPF. Perfil epidemiológico, sociodemográfico e psicossocial de idosos institucionalizados do Distrito Federal. *Com Ciências Saúde*. 2007;18(1):9-16.
16. Coelho Filho JM, Marcopito LF, Castelo A. Medication use patterns among elderly people in urban area in Northeastern Brazil. *Rev Saúde Pública*. 2004;38(4):557-564.
17. Silva AEC, Menezes EAG, Coelho TOA, Moraes EN. Aspectos bio-psico-sociais dos idosos institucionalizados na Casa do Ancião da cidade Ozanan, no ano de 2005, em Belo Horizonte. *Anais do 8º Encontro de Extensão da Universidade Federal de Minas Gerais*. [Internet]. 2005 [citado 2012 Abr 15]. Disponível em: [http://www.ufmg.br/proex/arquivos/8Encontro/Saude\\_7.pdf](http://www.ufmg.br/proex/arquivos/8Encontro/Saude_7.pdf).
18. Fillenbaum GG, Chandra V, Ganguli M, Pandav R, Gilby JE, Seaberg EC, et al. Development of an activities of daily living scale to screen for dementia in an illiterate rural older population in India. *Age Ageing*. 1999;28(2):161-8.
19. Rosa TEC, Benício MHD, Latorre MRDO, Ramos LR. Fatores determinantes da capacidade funcional entre idosos. *Rev Saúde Pública*. 2003;37(1):40-48.
20. Calasans PA, Alouche SR. Correlação entre o nível cognitivo e a independência funcional após AVE. *Rev Bras Fisioter*. 2004;8(2):105-109.
21. Montenegro SMRS. Efeitos de um programa de fisioterapia como promotor de saúde na capacidade funcional de mulheres idosas institucionalizadas [Dissertação]. Fortaleza: Universidade de Fortaleza; 2006.
22. Faria JC, Machala CC, Dias RC, Domingues Dias JM. Importância do treinamento de força na reabilitação da função muscular, equilíbrio e mobilidade de idosos. *Acta Fisiatr*. 2003;10(3):133-137.
23. Marchi Netto FL. Aspectos biológicos e fisiológicos do envelhecimento humano e suas implicações na saúde do idoso. *Pensar Prát*. 2004;7(1):75-84.
24. Pereira LSM, Dias RC, Dias JMD, Gomes GC. Fisioterapia. In: Freitas EV, Py L, Neri AL, Cançado FAX, Gorzoni ML, Rocha SM, editores. *Tratado de Geriatria e Gerontologia*. Rio de Janeiro: Guanabara Koogan; 2002. p. 846-856.
25. Maciel AC. Incontinência Urinária. In: Freitas EV, Py L, Neri AL, Cançado FAX, Gorzoni ML, Rocha SM, editores. *Tratado de geriatria e gerontologia*. Rio de Janeiro: Guanabara Koogan; 2002. p. 635-644.
26. Papalia DE, Olds SW. *Desenvolvimento humano*. 7 ed. Porto Alegre: Artes Médicas Sul; 2000.