

## FUNCTIONAL INDEPENDENCE OF LONG-LIVING ELDERLY AT HOSPITAL ADMISSION<sup>1</sup>

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**ABSTRACT:** The aim of this quantitative cross-sectional study was to assess the functional independence of long-living elderly at the time of hospitalization. The study was conducted in two teaching hospitals, in the period between January and June of 2011, with 116 long-living elderly. The Functional Independence Measure Scale was applied for data collection and data analyses were performed using descriptive statistics. The score of the total Functional Independence Measure varied from 48 to 126, with a mean of 105.9% ( $\pm 17.9$ ), which represents functional independence. The motor Functional Independence Measurement of 30 to 91 (77.3%;  $\pm 14.5$ ) and the social/cognitive Functional Independence Measurement of 18 to 35 (28.6%;  $\pm 4.9$ ). At the hospital admission, the long-living elderly appeared to be independent in all of the Functional Independence Measurement domains. Knowing the functional capacity is essential to plan care throughout the entire hospitalization process.

**DESCRIPTORS:** Aged 80 and over. Longevity. Hospitalization. Geriatric nursing.

## INDEPENDÊNCIA FUNCIONAL EM IDOSOS LONGEVOS NA ADMISSÃO HOSPITALAR

**RESUMO:** Trata-se de estudo quantitativo de corte transversal, cujo objetivo foi avaliar a independência funcional do longo vivo no momento da internação hospitalar. O estudo foi realizado em dois hospitais de ensino, no período amostral entre janeiro a junho de 2011, com 116 longevos. Para a coleta de dados foi aplicada a Escala de Medida de Independência Funcional, e as análises foram realizadas por meio de estatísticas descritivas. A pontuação da Medida de Independência Funcional total variou de 48 a 126, com a média de 105,9% ( $\pm 17,9$ ), o que representa independência funcional. A Medida de Independência Funcional motora, de 30 a 91 (77,3%;  $\pm 14,5$ ) e a Medida de Independência Funcional cognitiva/social, de 18 a 35 (28,6%;  $\pm 4,9$ ). Na admissão hospitalar, os longevos se mostraram independentes para todos os domínios da Medida de Independência Funcional. Conhecer a capacidade funcional é essencial para o planejamento do cuidado durante todo o processo de hospitalização.

**DESCRIPTORIOS:** Idoso de 80 anos ou mais. Longevidade. Hospitalização. Enfermagem geriátrica.

## INDEPENDENCIA FUNCIONAL DE ANCIANOS LONGEVOS EN LA ADMISIÓN HOSPITALARIA

**RESUMEN:** Se trata de un estudio cuantitativo de carácter transversal, cuyo objetivo fue evaluar la independencia funcional del anciano longevo en el momento del ingreso hospitalario. El estudio ha sido realizado en dos hospitales universitarios, en el periodo de prueba entre enero y junio de 2011, con 116 longevos. Para la recolección de los datos se aplicó la Escala de Medida de Independencia Funcional, y los análisis fueron realizados mediante estadísticas descriptivas. La puntuación de la Medida de Independencia Funcional total osciló entre 48 y 126, con un promedio de 105,9% ( $\pm 17,9$ ), lo que representa independencia funcional. En la Medida de Independencia Funcional motriz los valores oscilaron entre 30 y 91 (77,3%;  $\pm 14,5$ ) y en la Medida de Independencia Funcional cognitiva/social los valores oscilaron entre 18 y 35 (28,6%;  $\pm 4,9$ ). Al ingreso, los más antiguos eran independientes para todos los dominios de la Medida de Independencia Funcional. Conocer la capacidad funcional es esencial para la planificación de la atención a lo largo de proceso de hospitalización.

**DESCRIPTORIOS:** Anciano de 80 o más años. Longevidad. Hospitalización. Enfermería geriátrica.

## INTRODUCTION

The increasing number of elderly individuals over 80 years old, also known as seniors and long-living elderly, present in healthcare settings, mainly in hospitalization units, demands greater attention from professionals as for the risks of declined independence prevalent in this age group. This professional guideline is outlined by the National Health Policy for the Elderly,<sup>1</sup> which provides the model of promotion and maintenance of the autonomy and independence of the elderly individual, focusing on functional capacity.

Functional capacity<sup>2</sup> is understood as a multidimensional interaction between physical and mental health, independence in daily life, social support, family support and economic independence. It is a new indicator of health for the assessment of elderly individuals.

As empirically observed, some elderly individuals, at the moment of admission, have demonstrated independence while performing basic activities of daily living (ADL), i.e., they are functionally independent and, during hospitalization, they progress to the decline in the execution of some of these activities.

This perception is explained, in part, by the physical conditions resulting from the worsening of a disease, but also by the hospitalization itself. Removing the long-living elderly from their family environment, their daily routine, and placing them in a place with rules given by unknown people, may be a stressing, complex, singular and potentially dangerous event for these individuals. These events can lead to the decline or loss of functional capacity.<sup>3-6</sup>

Authors<sup>7-8</sup> alert to the possibility of this functional decline of the elderly prior to the admission, which can happen two weeks before the need for hospitalization. There is also the possibility of the long-living elderly being caught on a vicious cycle of loss of functional capacity, hospitalization and loss of functional capacity. Thus, effective assessments are needed, in other words, assessments that seek fast and effective resolutions at the admission and during the hospitalization process, since they may provide parameters for the planning of actions aiming at the prevention, recovery and promotion of the functional capacity of the elderly.

The absence of an initial assessment can result in finding out about the dependence later and, in turn, recovery can be harder or even irreparable. In this sense, the objective of this study was to as-

sess the functional independence of long-living elderly at the moment of hospitalization.

## METHODOLOGY

A quantitative, descriptive, cross-sectional study was developed in hospitalization units of two large teaching hospitals of a Brazilian capital. Both serve users of the Unified Health System (SUS, as per its acronym in Portuguese), with the first being public and the second, philanthropic and private.

The study population was composed of elderly individuals aged 80 years or older, of both sexes, admitted to surgical or medical treatment and presenting higher score to the cut-off in the Mini-Mental State Examination (MMSE).<sup>9</sup> The cut-off score considered was: 13 points for illiterate individuals, 18 for those with low and medium educational level and 26 points for individuals with higher education.<sup>10</sup> Data were collected between January and June of 2011 and the long-living elderly were selected through consultation in the computer hospitalization system of the hospitals. In total, 310 long-living elderly were approached. From these, 179 did not meet the inclusion criteria, 12 required more than one hospitalization during the study period and only three did not accept to participate in this research. The final sample consisted of 116 elderly individuals aged 80 years or older.

The data collection occurred in the first 48 hours of the admission and two instruments were used: the MMSE for cognitive screening,<sup>9</sup> and the Functional Independence Measurement scale (FIM) for the assessment of functional capacity. This scale was translated to Portuguese and validated in Brazil, containing a set of 18 activities divided into two sub-scales: motor FIM (M-FIM) and cognitive FIM (C-FIM). The first evaluates activities such as self-care, sphincter control, transfers and movement. The second is subdivided into communication and social interaction. A score between one and seven can be assigned to each item, seven being the score for an independent activity and one for an activity with complete dependence. The final score is the sum of all scores, the maximum variation being a score of 126 (complete independence) and 18 the minimum (total dependence).<sup>11</sup>

The database was organized in the Excel software and the data were analyzed using the Epinfo software (version 6.04). The data were submitted

to descriptive statistics, through a distribution of percentage and absolute frequency, mean and standard deviation.

The development of this study complied with the ethical criteria established by resolution n. 196/96 of the National Health Council,<sup>12</sup> being approved by the Research Ethics Committee of the Health Sciences Sector, under protocol no. CEP/SD 1062.187.10.12.

## RESULTS

There was a predominance of long-living elderly aged between 80-84 years (n=92, 79.3%). The mean age was 82.5 years (SD=2.8), female individuals prevailed (n=65; 56%), as well as those

with an education level between the 1<sup>st</sup> and 4<sup>th</sup> grade (n=61, 52.6%). The most common diagnoses were gastrointestinal (n=37; 31.7%), heart (n=21; 18.1%), urological (n=14; 12.1%) and gynecological problems (n=9; 7.6%).

Table 1 reflects the observed variation in the score of the FIM items corresponding to the possible score range. The total FIM score ranged from 48 to 126, with a mean of 105.9% ( $\pm 17.9$ ), which represents functional independence. Among the domains, motor FIM ranged from 30 to 91, with a mean of 77.3% ( $\pm 14.5$ ), and for the social/cognitive FIM, the score varies from 18 to 35, with a mean of 28.6% and ( $\pm 4.9$ ). These means represented independence for both the cognitive and motor FIM domains.

**Table 1 - Total FIM values and variables, and its domains on long-living elderly admitted in the hospital units. Curitiba-Paraná, 2011**

FIM	n	Possible variation	Observed variation	Minimum	Maximum	Mean (SD)
Motor FIM	116	13-91	30-91	30	91	77.3% (14.5)
Cognitive FIM	116	5-35	18-35	18	35	28.6% (4.9)
Total FIM	116	18-126	48-126	48	126	105.9% (17.9)

Table 2 shows the results found for the FIM categories. In the self-care category, there is a higher concentration of long-living elderly classified as complete/modified independent, in other words, the ones who perform activities safely or require more time to perform them.

A significant part presents minimum dependence or a need for supervision, demonstrated by 26 (22.6%) long-living elderly who needed help to get dressed below the waist, 22 (19%) above the waist, 20 (17.2%) to use the toilet, 18 (15.5%) to eat, 14 (12.1%) to take a bath and 10 (8.7%) for personal hygiene. For these activities, they needed help from others, which characterizes them as elderly individuals with need for supervision or minimum dependence.

The 33 elderly individuals with maximum or moderate dependence presented a greater need of help to perform activities such as: feeding (n=4; 3.4%), personal hygiene (n=3; 2.6%), get dressed above the waist (n=8; 6.9%), below the waist (n=6; 5.2%), use the toilet (n=6; 5.2%) and bath (n=6; 5.2%). Four elderly individuals, namely one (0.9%) with complete dependence for taking a bath and three (2.6%) to use the toilet,

needed support from others to perform these tasks (Table 2).

In sphincter control tasks, the number of elderly individuals with functional independence for urinary control was 75 (64.7%), in need of supervision or with minimum dependence was 31 (15.5%), maximum or moderate dependence, nine (7.8%) and one (0.9%) had complete dependence for this task. In terms of feces control, 93 (80.2%) elderly individuals had functional independence, 19 (16.4%) required supervision or had minimum dependence and four (3.4%) had moderate or maximum dependence (Table 2).

In all activities where mobility is assessed via the transfers required for certain tasks, the elderly individuals presented functional independence in the three types of transfers proposed by the FIM. In total, 84 (72.4%) elderly individuals were independent in terms of bed/chair/wheelchair transfers, 83 (71.6%) to use the toilet and 94 (81%) to use the shower/bathtub. In this context, six individuals showed complete dependence during the transfer: one (0.9%) individual to wheelchair/bed/chair transfer, three (2.6%) for transfers to the toilet and two (1.7%) to the shower/bathtub (Table 2).

**Table 2 - Functional independence distribution of long-living elderly as for the dimensions and categories of the cognitive and motor FIM scale. Curitiba-Paraná, 2011**

FIM n=116	Modified/complete independence n (%)	Minimum dependence supervision n (%)	Maximum and moderate depen- dence n(%)	Complete depen- dence n (%)
<b>Self-Care</b>				
Feeding	94 (81.0)	18 (15.5)	4 (3.4)	0 (0.0)
Personal hygiene	103(88.7)	10 (8.7)	3 (2.6)	0 (0.0)
Bath	95 (81.9)	14 (12.1)	6 (5.2)	1 (0.9)
Getting dressed above the waist	86 (74.1)	22 (19.0)	8 (6.9)	0 (0.0)
Getting dressed below the waist	84 (72.4)	26 (22.4)	6 (5.2)	0 (0.0)
Using the toilet	87 (75.0)	20 (17.2)	6 (5.2)	3 (2.6)
<b>Sphincter control</b>				
Urine control	75 (64.7)	31 (26.7)	9 (7.8)	1 (0.9)
Feces control	93 (80.2)	19 (16.4)	4 (3.4)	0 (0.0)
<b>Transfers</b>				
Wheelchair, chair and bed transfer	84 (72.4)	27 (23.3)	4 (3.4)	1 (0.9)
Toilet transfer	83 (71.6)	23 (19.8)	7 (6.0)	3 (2.6)
Bath/shower transfer	94 (81.0)	14 (12.1)	6 (5.2)	2 (1.7)
<b>Locomotion</b>				
Gait/wheelchair	75 (64.7)	31 (26.7)	9 (7.8)	1 (0.9)
Stairs	55 (47.4)	40 (34.5)	14 (12.1)	7 (6.0)
<b>Communication</b>				
Verbal and visual comprehension	84 (72.4)	32 (27.6)	0 (0.0)	0 (0.0)
Verbal/non-verbal expression	84 (72.4)	31 (26.7)	1 (0.9)	0 (0.0)
<b>Social cognition</b>				
Social interaction	76 (65.5)	35 (30.2)	5 (4.3)	0 (0.0)
Problem resolution	63 (54.3)	42 (36.2)	9 (7.8)	2 (1.7)
Memory	60 (51.7)	49 (42.2)	7 (6.0)	0 (0.0)

In terms of movement, the number of long-living elderly who manifested having modified or complete independence was of 75 (64.7%) in terms of gait/wheelchair, and 55 (47.4%) to go up or down stairs. Seven (6%) showed complete dependence to go up or down stairs and one (0.9%) to walk or use a wheelchair (Table 2). It is important to mention that, among the long-living elderly who needed help to go up and down stairs, 40 (34.5%) had minimum dependence and 14 (12.1%) moderate and maximum, forming a group in need of help, despite partially.

In the social interaction and communication areas of the cognitive domain, 84 (72.4%) elderly individuals had modified or complete independence for both expression and communication areas. None of the elderly individuals showed complete dependence for these tasks. As for activities related to social interaction, 76 (65.5%) showed modified or complete independence, 35 (30.2%) needed supervision or had minimum dependence and five (4.3%) had moderate or maximum dependence (Table 2).

In terms of solving problems, as shown in Table 2, 63 (54.3%) showed complete or modified independence, 42 (36.2%) showed minimum dependence or needed supervision and two (1.7%) were completely dependent to perform this task. Regarding memory activity, 60 (51.7%) showed modified or complete independence and 42 (42.2%) showed minimum dependence or needed supervision for memory activity.

## DISCUSSION

Few studies in literature address hospitalized long-living elderly with the use of the FIM scale. To support the discussions, the authors analyzed studies that involved elderly individuals within this age group and which had similar characteristics to this study.

The demographic data of this study were similar to those found in other national studies,<sup>13-15</sup> whose samples were equivalent. The long-living elderly predominantly had gastrointestinal,

cardiac and urological problems, which can be explained by the aging process itself, related the inadequate lifestyle and/or delayed demand for medical care, adverse working conditions and/or in unhealthy places and difficulties to understand the prescription, therefore, triggering and intensifying health hazards in this stage of life.

The long-living elderly had good functional performance for everyday activities, mainly for those related to activities of daily living. Similar scores for the cognitive, motor and total FIM were found in studies with similar samples, but with different objectives.<sup>3,14</sup>

Within the motor domain, most of the long-living elderly showed good functional capacity at the moment of hospitalization. However, in self-care tasks related to ADL, in which there is a need for greater dexterity with hands, such as unbuttoning a shirt and removing shoes, the difficulty was more evident, and sometimes, there was a need for help of others.

In terms of sphincter control, a significant part showed some degree of dependence, mainly for urinary control, due to difficulty of movement, sometimes, to the use of medication as diuretics and/or anti-hypertensive, and decreased auditory/visual acuity. For some, the difficulty in controlling urine caused involuntary losses, generating unpleasant situations, which led to a decrease of interaction with friends and family.

In the transfer (bathtub/shower) and movement dimensions, most of the long-living elderly showed complete independence. The greatest difficulties were observed in the execution of activities that require movement for the execution of certain basic needs.

In terms of going up and down stairs, most of the individuals presented some type of dependence for the execution of this activity. A study<sup>16</sup> conducted with 388 individuals aged 60 years or older, assessed by the professionals of a family health team in the city of Goiânia, state of Goiás, showed that elderly individuals with over 80 years old, presented an association for dependence on the variable of going up or down stairs. The data of longitudinal studies show that the muscle strength of an individual decreases about 15% per decade, until they reach the 6<sup>th</sup> or 7<sup>th</sup> life decade. After this age, muscle strength decreases about 30%.<sup>17</sup> It was verified that, in an inverse relationship between age and muscle strength, with the long-living elderly being those with less muscle due to disuse, incidence of disease, malnutrition and cumulative effects of age.<sup>17</sup>

Sarcopenia, or loss of muscle mass, is a common phenomenon in aging, resulting in changes of mobility and balance, leading to falls and fractures. It is one of the biggest challenges in geronto-geriatrics, as it presents itself as a vicious circle: sarcopenia leads to fractures, which generates immobilization, followed by malnutrition, complicating protein synthesis and worsening sarcopenia again.<sup>18-19</sup>

Within the cognitive domain, this includes the social interaction and communication dimensions, even long-living elderly with low educational levels found it easy to communicate. Similar results were found in another cross-sectional study, with a sample of 272 elderly individuals, and whose objective was to identify the demographic and socioeconomic characteristics related to the health state of the long-living elderly residing in two cities in Brazil.<sup>20</sup> In this study, only one (0.9%) elderly individual over 80 years old showed difficulties to respond to the questions, which can be explained by the loss of auditory acuity, by shyness or due to the difficulty in understanding the questions.

Most long-living elderly showed autonomy and independence for social interaction, however a small part (n=5; 4.3%) already showed loss of this function, attributing many of the instrumental activities of daily living to others, depending on the difficulty for walking, decrease of vision or difficulty of urban locomotion.

Within the category that assesses the memory, more than half of the long-living elderly was able to remember to take their medication, to pay their bills, among other activities. A minority had difficulty to memorize the medication schedule, which may be a problem for those who live alone.

In the category of problem resolution, most of the long-living elderly could solve their problems or give directives to their families, but the results also show the presence of those who already have loss of the function and need help from others to solve some activities. These results agree with the data of a study<sup>14</sup> conducted with elderly individuals from Ribeirão Preto, whose participants were independent to execute communication and expression activities, with great social interaction and good memory, but in need of supervision/guidance for solving problems.

The data found in this study show that long-living elderly, in general, have good functional capacity at the moment of hospitalization, but it is essential that the healthcare team, especially

nurses, monitor them carefully in terms of the activities that require more motor skills, such as getting dressed or going down stairs. These activities may go unnoticed by the healthcare team, since the elderly individual is independent for the other ADL, and may bring complications to their health at the moment of hospitalization.

The ability to control the sphincters can also disable the long-living elderly for the maintenance of a social life and the outcome may be the strike of diseases such as depression, which, in its turn, enhances functional disability.

## CONCLUSION

This study allowed to assess the functional independence of long-living elderly admitted in hospital units. At the moment of the hospitalization, the long-living elderly present significant independence in the motor domain, but show dependence on activities related to social interaction, memory and problem solving in the cognitive domain.

Although the mean values found represent functional independence for the FIM total and the cognitive and motor FIM, it is noticeable that in some categories, such as sphincter control, transfers to the bed/chair/wheelchair, toilet or shower/bathtub and locomotion specifically on stairs, part of the elderly individuals show difficulty in carrying out these tasks. The nursing team needs, therefore, to focus more on these elderly individuals, with interventions targeted to meet the needs of each one of them.

The increase of long-living elderly, within the most diverse areas of health care, makes the functional capacity assessment an important variable to be known by professionals at the moment of admission of these individuals into the hospital setting. The training of health professionals working in these hospital care areas must be encouraged, in order to have instruments to identify the functional needs of each elderly individual and to provide the parameters for healthcare planning. The use of the FIM scale in hospitalization units is effective, mainly when applied to long-living elderly, as it is a fast and easy scale to be handled and that provides a detailed mapping of the functional capacity of individuals, supporting the nursing care plan. The development of a specific care plan allows to track and control the evolution of functional capacity, prevent injuries and anticipate the decline over the admission process. The authors

emphasize the importance of developing studies with the age group of 80 years or more, due to the observed deficit in the current literature.

Similarly, the theme of functional independence of long-living elderly requires more research and, therefore, longitudinal studies are suggested, as they provide significant data about the monitoring of long-living elderly, with data collection at several moments in the researched period.

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