

COGNITIVE LOSS AND FUNCTIONAL DEPENDENCE IN LONG-LIVED ELDERLY IN HOMES FOR THE AGED*

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ABSTRACT: The objective was to assess the degree of functional dependence for the Basic Activities of Daily Living and the cognitive loss of long-lived elderly at two long-term care institutions for the elderly in the State of Bahia. Quantitative, cross-sectional research developed in 2016, involving 20 long-lived elderly. The interviewee's cognition was assessed by means of the Mini-Mental State Examination, the functional dependence for the Basic Activities of Daily Living by means of the Barthel Index and the Katz Scale, and the sociodemographic profile. The results appointed the prevalence of the age range between 80 and 85 years (90.0%). The female sex presented a higher percentage of cognitive loss (28.5%), followed by illiterate men and women, (37.3%). The study supports the discussion based on the impact of the cognitive loss and the functional dependence for the health of the long-lived elderly.

DESCRIPTORS: Cognition; Longevity; Aging; Homes for the Aged.

PERDA COGNITIVA E DEPENDÊNCIA FUNCIONAL EM IDOSOS LONGEVOS RESIDENTES EM INSTITUIÇÕES DE LONGA PERMANÊNCIA

RESUMO: O objetivo foi avaliar o grau de dependência funcional quanto às Atividades Básicas da Vida Diária e a perda cognitiva de idosos longevos residentes em duas instituições de longa permanência para idosos do interior do Estado da Bahia. Pesquisa do tipo quantitativa, transversal, realizada no ano de 2016, com 20 idosos longevos. Avaliada a cognição do entrevistado, por meio do Mini Exame do Estado Mental, a dependência funcional quanto às Atividades Básicas da Vida Diária por meio do Índice de Barthel e da Escala de Katz, e o perfil sociodemográfico. Os resultados apontaram a prevalência da faixa etária entre 80 a 85 anos (90,0%). O sexo feminino apresentou maior porcentagem de perda cognitiva (28,5%) seguido dos não alfabetizados, homens e mulheres, (37,3%). O estudo subsidia a discussão a partir do impacto que a perda cognitiva e a dependência funcional trazem para a saúde do idoso longo.

DESCRIPTORIOS: Cognição; Longevidade; Envelhecimento; Instituição de Longa Permanência para Idosos.

PÉRDIDA COGNITIVA Y DEPENDENCIA FUNCIONAL EN ANCIANOS LONGEVOS RESIDENTES EN HOGARES PARA ANCIANOS

RESUMEN: La finalidad fue evaluar el grado de dependencia funcional para las Actividades Básicas de la Vida Diaria y la pérdida cognitiva de ancianos longevos residentes en dos hogares para ancianos del interior del Estado de Bahia. Investigación cuantitativa, trasversal, desarrollada en 2016 con 20 ancianos longevos. Fue evaluada la cognición del entrevistado mediante el Mini Examen del Estado Mental, la dependencia funcional para las Actividades Básicas de la Vida Diaria mediante el Índice de Barthel y la Escala de Katz, y el perfil sociodemográfico. Los resultados apuntaron la prevalencia del rango de edad entre 80 a 85 años (90,0%). El sexo femenino presentó mayor porcentaje de pérdida cognitiva (28,5%), seguido de los no alfabetizados, hombres y mujeres, (37,3%). El estudio subsidia la discusión a partir del impacto de la pérdida cognitiva y la dependencia funcional para la salud del anciano longo.

DESCRIPTORIOS: Cognición; Longevidad; Envejecimiento; Hogares para Ancianos.

*Paper extracted from the thesis entitled: "Social Representations and Memories of long-lived elderly about the aging process and functional dependence". Universidade Estadual do Sudoeste da Bahia, 2017.

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Received: 16/09/2016

Finalized: 08/02/2017

● INTRODUCTION

In Brazil, among the more than 206 million inhabitants, almost 1.7% are long-lived elderly, aged 80 years or older. The projection for 2030 is that this figure will reach almost 3% of long-lived elderly all over the country⁽¹⁾. The aging process has been noticed in different regions of Brazil, mainly between 1970 and 2010⁽²⁾.

Thus, the changes in the age structure of the Brazilian population evidences a country that no longer has a merely young population, as the mean age increased from 18 to 7 years in the same period⁽³⁾.

Hence, aging means the certainty that different changes will take place. And one of the main changes the elderly experience relates to their functional capacity. That is considered as the person's ability to engage in a certain action or task independently⁽⁴⁾ and is an excellent indicator of functionality in the elderly⁽⁵⁾.

The decline of the elderly's functional capacity is related to the aging process itself, which is related to the commitment of the general functions and the emergence of illnesses that affect the functionality, contributing to functional dependence⁽⁶⁾, which means restriction or help in the participation of the activities of daily living.

In addition, it should be highlighted that, in the aging process, health changes can occur associated with the reduced cognitive function⁽⁷⁾. That is characterized by the difficulty to maintain the recent or evocative memory that goes far beyond what is related to normal aging, which may indicate, in more severe conditions, cases of dementia or Alzheimer's disease⁽⁸⁻⁹⁾.

Thus, even the changes considered normal are fundamental to understand the processes involved in the cognitive loss, because they can affect the elderly's daily activities and also contribute to the distinction between normal or pathological, based on disease conditions⁽⁷⁾. Therefore, the decline in the motor and cognitive functions influences both the Basic (BADL) and Instrumental Activities of Daily Living⁽¹⁰⁾.

It can also be highlighted that the assessment of the functional commitment in institutionalized elderly is an excellent marker of aging, being related to dependence and greater risk of falls⁽¹⁰⁾.

Therefore, we chose to investigate long-lived elderly living in Homes for the Aged (HA) as, due to their functional dependence, cognitive deficit, abandonment and/or other factors, some elderly are submitted to internment at HA or asylums as the only housing alternative.

The nature of the HA is dual. Although they provide comprehensive assistance and care, they also lead to isolation, physical and social inactivity and distancing from the family⁽¹¹⁾. They receive different names, such as asylums, geriatric homes, shelters, retirement homes, among others. Independently of the terminology, however, they serve to receive individuals aged 60 years or older as inpatients⁽¹²⁾.

The justification for this research rests on the scientific capacity to work with a theme that requires in-depth and systematic knowledge, as well as the possibility to discuss a theme of great social relevance which the family and society tend to ignore.

The early identification of functional dependence and cognitive loss can contribute to improve the elderly's quality of life and the aging process. Then, a panorama can be drawn of the long-lived elderly's functional and cognitive aspects, with a view to the implementation of rehabilitation and health promotion actions for these elderly. Hence, functional dependence and cognitive loss in the elderly are associated with a series/set of factors that determine the elderly's capacity to stay independent for the BADL.

In that perspective, the objective in this study is to assess the degree of functional dependence for the BADL and the cognition of long-lived elderly at two homes for the aged in the State of Bahia.

● METHOD

A quantitative and cross-sectional research was undertaken. The study was developed at two HA, located in Vitória da Conquista and Itapetinga, both cities in the Southwest of the State of Bahia. These cities were chosen based on the following criteria: having long-lived elderly and permitting authorization by the HA to collect the data. The institutions are philanthropic institutions maintained with the elderly dwellers' retirement benefits, in addition to donations from society, the city, companies and private organizations.

The participants were the long-lived elderly at the two HA, totaling 35. The following inclusion criteria were adopted: age 80 years or older as, the older, the greater the chances of functional dependence or reduced cognitive function⁽¹³⁾; Presenting some type of functional commitment according to the Barthel Index and the Katz Scale as, the higher the degree of functional dependence, the more care with BADL the elderly requires. Dependence associated with cognitive loss interferes in the elderly's quality of life inside the HA.

Elderly with some type of neurodegenerative pathology that affects the cognitive function were excluded, as verified through the medical diagnosis in the patient histories. Any non-dependent elderly were excluded as they lie beyond the research objectives.

The sample consisted of 20 long-lived elderly, being 10 men and 10 women, selected according to the eligibility criteria. Seven long-lived elderly suffered from Alzheimer's and eight had sequelae of a Cerebrovascular Accident (CVA) that affected their speech, making the interview impossible.

The data were collected between January 04th and 8th 2016 at the HA in Vitória da Conquista – BA and between January 11th and 15th 2016 at the HA in Itapetinga – BA, at mornings between 10h00min and 12h00min and in the afternoon between 15h00min and 17h00min. To achieve a cordial and trusting sphere, the interviews were held at the elderly's room and took the form of a conversation with the researchers. No third parties were present during the interview. The data collection procedures followed a series of steps:

Step 1 – Cognitive Assessment through the Mini-Mental State Examination (MMSE)⁽¹⁴⁾: rapid test, consisting of 11 easily applicable items that assess seven cognitive functions: Orientation to time (5 points), Orientation to place (5 points), Registration – three words (3 points), Attention and Calculation (5 points), Memory and Recall (3 points), and Language (9 points). The total MMSE score ranges from 0 to 30 points and the elderly's education should be taken into account. To add up the scores, the cut-off point was: "Results: Total score = 30 points. The suggested cut-off points are: Illiterates = 19. Between one and three years of education = 23. Between four and seven years of education = 24. > 7 years of education = 28"^(14:138).

Step 2 – Assessment of the sociodemographic profile: questions to establish the participants' profile, such as: age (80 to 85 years, over 85 years), sex (male and female), education (Literate – between 1 and 3 years of study, between 4 and 7 years of study and >7 years of study; illiterate), profession before retiring (answered without preset options), marital status (Single or Separated, Fixed partner, Widowed).

Step 3 – Functionality Assessment: two instruments were used in this phase: the Barthel Index⁽¹⁴⁾, which measures the degree of assistance an individual requires. It consists of 10 BADL items involving feeding, grooming, toileting, bathing, dressing, bladder and bowels, walking or wheelchair, transfer from the chair to the bed, climbing stairs. The score varies according to the number of points obtained, with 100 points indicating independence; between 99 and 76 points mild dependence; between 75 and 51 points moderate dependence; between 50 and 26 severe dependence; less than 25 points fully dependent. The other instrument was the Katz Scale⁽¹⁴⁾, which assesses six categories of BADL, such as bathing, toileting, dressing, bladder and bowels, transfer and feeding. The score of 5 to 6 points is considered as independent; 3 to 4 points moderate dependence; 2 or fewer points indicates that the elderly is highly dependent.

Based on the data, the results were processed using the software Statistical Package for Social Sciences (SPSS®), version 20.0 for descriptive statistical analysis, using means, standard deviation and absolute frequencies, with tables to better visualize the analyses.

Approval for the research was obtained under opinion 1.333.766 from the Research Ethics Committee at Universidade Estadual do Sudoeste da Bahia.

● RESULTS

Based on Table 1, the long-lived elderly's profile can be drawn. The prevalent age ranged between 80 and 85 years for 18 (90%) elderly. What the profession is concerned, before they retired, nine were farmers (45%), followed by domestic servants (35%). What education is concerned, 14 (70%) were illiterate, while ten possessed only one to three years of education (50%), representing a low education level, and single or separated individuals were predominant in 11 cases (55%). It can also be observed that their profession before they retired and their education determine these elderly's low socioeconomic origins.

Table 1 – Sociodemographic characteristics of elderly living at HA. Vitória da Conquista and Itapetinga, BA, Brazil, 2016

Research variables	Number	Percentage
Age range		
80 to 85 years	18	90
Over 85 years	2	10
Profession before retirement		
Domestic servant	7	35
Farmer	9	45
Truck driver	1	5
Painter	1	5
Bricklayer	1	5
Public servant	1	5
Education		
Illiterate	6	30
Literate	Between 1 and 3 years	10
	Between 4 and 7 years	3
	More than 7 years	1
Marital status		
Single / Separated	11	55
Fixed partner	1	5
Widowed	8	40
Total	20	100

Source: Research data.

Table 2 presents the percentage of long-lived elderly according to the classification for the BADL. All investigated elderly presented different degrees of functional dependence. In the BADL assessed according to the Barthel Index, however, mild dependence was predominant in eight (40%), followed by moderate dependence in five (25%). On the Katz Scale, 13 (65%) presented moderate dependence, while seven elderly were found highly dependent (35%).

Table 2 – Functional dependence of long-lived elderly living at HA. Vitória da Conquista and Itapetinga, BA, Brazil, 2016

Functional Dependence	Number	Percentage
Barthel Index		
(≤ 25) Fully Dependent	3	15
(26 till 50) Severe Dependence	4	20
(51 till 75) Moderate Dependence	5	25
(76 till 99) Mild Dependence	8	40
Katz Scale		
(≤ 2) Highly Dependent	7	35
(4) Moderate Dependence	13	65
Total	20	100

Source: Research data.

Table 3 presents the elderly's cognitive profile, based on the five domains of the MMSE. As verified, 20 (100%) reached the average score in the "registration" domain only, while 13 (65%) score below the average in "orientation", "attention and calculation. In "language", 14 (70%), the highest percentage, was unable to reach the average score while, in the "memory and recall" domain, 11 (55%) scored below average.

Table 3 – Cognitive profile of long-lived elderly living at HA. Vitória da Conquista and Itapetinga, BA, Brazil, 2016

MMSE domains	Total average (SD)	Above average (%)	Below average (%)	PMin.
Orientation (PM = 10)	7.05 (1.276)	25	65	5
Registration (PM = 3)	3.00 (0)	100	0	3
Attention and calculation (PM = 5)	2.20 (2.19)	25	65	0
Memory and Recall (PM = 3)	2.25 (0.851)	45	55	0
Language (PM = 9)	7.15 (1.30)	30	70	5

PM= Maximum. SD= Standard Deviation. PMin= Minimum.

Table 4 presents the male and female long-lived elderly's cognitive loss, considering each participant's final added score on the cognitive function of the MMSE, based on the education proposed by the Ministry of Education⁽¹⁴⁾.

Table 4 – Cognitive loss of long-lived elderly living at HA. Vitória da Conquista and Itapetinga, BA, Brazil, 2016

Variables	n	M	Min - Max	CL (%)	
Sex	Education				
Male	Literate*	7	23	19-28	23,3
	Illiterate	3	19,3	18-21	35,7
Female	Literate*	7	22,8	18-28	23,7
	Illiterate	3	18,6	18-20	37,8

n = Sample. M = Mean score. Min = Minimum. Max = Maximum. CL = Cognitive Loss.

*Between 1 and 3 years of education, between 4 and 7 years of education and >7 years of education.

Hence, a profile of the elderly's cognitive deficit can be outlined, showing that male and female literate elderly reached the highest averages, with 23 and 22.8 points, respectively. On the other hand, the cognitive loss was greater among the illiterate elderly, corresponding to 35.7% for the male sex and 37.8% for the female sex.

Thus, we can infer that the female sex presented a higher percentage of cognitive loss when compared to the male sex, with the same education level. This indicates that long-lived elderly with low education levels presented higher degrees of cognitive loss and lower general scores.

● DISCUSSION

The profile of the long-lived elderly permits knowing and understanding their social characteristics and draw parallels on how they became functionally dependent. It can also contribute to analyze the way they aged as their former professions revealed that they worked in laborious activities that demanded great energy and caused physical exhaustion.

In a recent study⁽¹⁵⁾ that investigated the consequences of work, across the lifetime, for the postural changes and back problems of elderly who participated in a community group in the city of Teutônia, State of Rio Grande do Sul, it was verified that the physical exhaustion the work causes can affect the elderly's quality of life.

For the same authors⁽¹⁵⁾, the elderly who participated in the study reported the postural changes of work over the years, as they worked in laborious activities in the rural area. Hence, it can be inferred that the long-lived elderly investigated in this study also performed laborious activities across the lifetime, which may have contributed to their functional dependence.

In addition, living at a HA may be considered a condition for the establishment of depression. When we observe the marital status and relate it with the solitude experienced at the HA, however, as only one (5%) participant had a fixed partner, we could say that the lack of a partner increases the changes of elderly to develop this condition. In that sense, a study⁽¹⁶⁾ on depression in elderly people appoints that solitude and social isolation are the main causes of admissions to HA.

What the functional dependence is concerned, we observe different degrees of functional commitment in the elderly for the BADL, demanding greater care from the team at the investigated HA. In that sense, in a study⁽¹³⁾ involving elderly living at HA in the state of Minas Gerais, it was verified that 73 (58.4%) presented some degree of dependence according to the Katz Scale, and that, when the age was compared with the degree of dependence, this study showed that dependence increased as age advances.

In that sense, another study⁽¹⁷⁾ supports these results and affirms that, with aging, the elderly get more vulnerable to the progressive action of the environment, with greater difficulty for daily tasks, which can contribute to a reduced functional capacity.

In that respect, a recent study⁽¹⁸⁾ observes that, besides the chronic conditions that can compromise the elderly's functional capacity, the aging process can also contribute to this commitment, being therefore called functional aging.

It is perceived, however, that "over the years, the arrival of old age evidences that the human body suffers a physiological decline, compromising its functional capacity"^(19:68) (authors' translation). Thus, not all elderly have their capacity compromised and, when they do, the degrees may differ.

Therefore, we can infer that old age is a construction through which individuals are constituted, in their different social networks, whether in the family, social or cultural context, among others. Hence, we should understand that aging can be something different for each individual.

In that context, when considering the functional dependence of elderly living at HA, it is important to take into account the actions that can minimize it, enhancing the elderly's autonomy and offering better intervention conditions to the care team at the HA.

It is therefore highlighted that, even if the elderly are independent, when they start to live at HA, “they can develop different levels of dependence, an event related to their difficulty to accept and adapt to the new living conditions, as well as to the lack of motivation and encouragement”^(20:616), which are common situations at the HA.

What the profile and cognitive loss are concerned, in a recent study⁽²¹⁾ of long-lived elderly in Fortaleza-CE, greater losses were found in “attention and calculation”, as well as in the domains related to the skills gained in the school context, such as “language”, for which requisites like reading, writing, attention and calculation are required. The study⁽²¹⁾ also demonstrated that the education level also influences the cognitive deficit, as greater losses were found among the elderly with lower education levels or who were illiterate.

It is also highlighted that some cognitive skills, such as vocabulary, resist better to the aging of the brain and can even improve with age. Nevertheless, other skills, such as conceptual reasoning, memory and processing speed, drop gradually over time⁽⁷⁾.

In that sense, in another study⁽²²⁾ involving elderly in the state of Maranhão who presented cognitive decline, it was demonstrated that 57 (45.83%) had a low education level, ratifying not only the results found in this study, but also the relation with cognitive screening scores proposed in the MMSE.

What the sex is concerned, a study⁽⁸⁾ about the cognitive profile of 60 elderly living at HA showed a greater life expectancy for the female elderly population, but also greater predisposition to the development of dementia, with Alzheimer’s showing the highest incidence levels. It was also verified that 18 (30%) elderly suffered from cognitive losses, based on the MMSE classification. This cognitive loss was higher in the female sex.

In another study⁽²³⁾ involving 503 elderly attended by Family Health Teams in Dourados-MS, a significant relation was also found between cognitive deficit and the female gender, affecting about 230 (45.8%) members of the study population.

The cognitive function is an important factor to assess the elderly’s quality of life, and its dysfunction is related with individual and social aspects⁽²²⁾. And it also “is one of the determinants of quality of life in old age, as losses in the cognitive functions can result in a loss in physical, social and emotional functioning of the elderly”^(24:157). Based on these references, it can be inferred that the changes in the cognitive function can interfere negatively in the elderly’s life, in daily activities as well as in their quality of life.

As a limitation in this study, the sample size could not be increased as, at the investigated HA, only a small number of long-lived elderly complied with the inclusion criteria. In addition, we faced difficulties to find recent studies in this perspective in which long-lived elderly are assessed.

● FINAL CONSIDERATIONS

This study permitted the assessment of functional dependence for BADL based on two instruments, which makes us infer that, in the context of the two investigated HA, the long-lived elderly present different degrees of dependence. This reality demands the HA’s greater care and concern with the maintenance of the BADL, as the ability to execute daily activities is an indicator of the elderly’s functionality. What the cognitive function is concerned, the long-lived elderly presented low averages on almost all items of the MMSE. The study also demonstrated greater cognitive loss in female and illiterate individuals.

The resulting knowledge can also arouse discussion at the HA and in society in general, based on the impact of functional dependence for the elderly’s health, arousing the debate on public policies for the elderly, mainly when living at HA. Thus, new intervention plans can be established to achieve improvements on the BADL and IADL, for functionally dependent as well as independent long-lived elderly.

● ACKNOWLEDGMENTS

To the long-lived elderly who allowed us to assess them, demonstrating their trust in our work. To the HA for their authorization and particularly to the elderly who participated in this study.

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