



Functional assessment of elderly with cognitive deficit

Avaliação funcional de idosos com déficit cognitivo

Evaluación funcional de ancianos con déficit cognitivo

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ABSTRACT

Objective: To describe the social profile and functional capacity of elderly with cognitive deficit. **Methods:** A quantitative, descriptive, transversal study with 503 elderly of 60 years and older with *cognitive deficit*, living in Dourados, (MS), Brazil, and assisted by the Family Health Strategy (FHS). Data collection was performed by means of home interviews, with a structured questionnaire for sociodemographic variables and health conditions, the *Mini Mental State Examination* and the *Functional Independence Measure*. **Results:** We identified 215 elderly patients with cognitive deficit, of whom 32 (14.9%) presented some level of dependency. There was a greater level of dependence in the male gender and those aged 80 years and more. The dimensions of movement and cognition presented the lowest values. **Conclusion:** The cognitive and functional diagnoses are fundamental for planning actions that favor the promotion and maintenance of functional capacity of the elderly.

Keywords: Primary health care; Health of the elderly; Cognition; Geriatric assessment

RESUMO

Objetivo: Descrever o perfil social e a capacidade funcional de idosos com déficit cognitivo. **Métodos:** Estudo de abordagem quantitativa, descritivo, transversal, com 503 idosos de 60 anos e mais com *deficit* cognitivo, residentes em Dourados, (MS) e assistidos pela Estratégia Saúde da Família (ESF). A coleta de dados foi realizada por meio de entrevistas domiciliares, com um questionário estruturado para variáveis sociodemográficas e condições de saúde, o *Miniexame do Estado Mental* e a *Medida de Independência Funcional*. **Resultados:** Foram identificados 215 idosos com *deficit* cognitivo, dos quais 32 (14,9%) apresentavam algum grau de dependência. Houve maior grau de dependência no sexo masculino e na faixa etária de 80 anos e mais. As dimensões locomoção e cognição apresentaram os menores valores. **Conclusão:** Os diagnósticos cognitivos e funcionais são fundamentais para o planejamento de ações que favoreçam a promoção e manutenção da capacidade funcional do idoso.

Descritores: Atenção primária à saúde; Saúde do idoso; Cognição; Avaliação geriátrica

RESUMEN

Objetivo: Describir el perfil social y la capacidad funcional de ancianos con déficit cognitivo. **Métodos:** Estudio de abordaje cuantitativo, descriptivo, transversal, realizado con 503 ancianos de 60 años y más con déficit cognitivo, residentes en Dourados, (MS) y asistidos por la Estrategia Salud de la Familia (ESF). La recolección de los datos se realizó por medio de entrevistas domiciliarias, con un cuestionario estructurado para variables sociodemográficas y condiciones de salud, el *Mini examen del Estado Mental* y la *Medida de Independencia Funcional*. **Resultados:** Fueron identificados 215 ancianos con déficit cognitivo, de los cuales 32 (14,9%) presentaban algún grado de dependencia. Hubo mayor grado de dependencia en el sexo masculino y en el grupo etáreo de 80 años y más. Las dimensiones locomoción y cognición presentaron los menores valores. **Conclusión:** Los diagnósticos cognitivos y funcionales son fundamentales para la planificación de acciones que favorezcan la promoción y mantenimiento de la capacidad funcional del anciano.

Descriptores: Atención primaria de salud; Salud del anciano; Cognición; Evaluación geriátrica

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INTRODUCTION

Population aging denominates the change in age structure of a population in which there is an increase in the relative number of elderly persons. This process has taken place all over the world during the last few decades. In Brazil it has occurred rapidly without being accompanied by political and social changes compatible with the new demographic profile.⁽¹⁾

This reality demands the proposal of public policies, especially in health, due to the fact of the elderly being a group that is particularly vulnerable to becoming ill.^(2,3)

The loss of functional capacity, and consequently, independence is the main problem that may affect the elderly.⁽³⁾ Difficulties or limitations in performing day-to-day activities may lead to their dependence on other persons, both because of physical infirmities and mental diseases, and both conditions are important risk factors for mortality and loss of independence.⁽⁴⁾

Dependence involves more than physical aspects; it also includes cognitive and emotional factors, as well as social and economic conditions.⁽²⁾ Social, economic and cultural determinants in addition to the presence of some diseases, deficiencies or health problems affect the quality of life of the elderly.⁽³⁾

Functional evaluation is a systematic method of analyzing the capacity of the elderly to function in their environment, identifying abilities or deficiencies in self-care and needs related to daily activities. Evaluation of functional status is a basic dimension for geriatric evaluation.^(2,5) Various types of scales, known as “functional assessment instruments” are used to verify the elderly persons capacity to perform Daily Life Activities (DLA), comprising: Basic Daily Life Activities (BDLA), Instrumental Daily Life Activities (IDLA) and Advanced Daily Life Activities (AAVD). Functional evaluation contributes with an important support to enable planning adequate assistance for the elderly with cognitive impairment. For each type of DLA, there are specific instruments.^(2,5)

In 2006, Administrative Ruling No. 2.528 of the Ministry of Health approved the National Health Policy for Older Persons. Its primordial purpose is “to recover, maintain and promote the autonomy and independence of elderly individuals, by directing collective and individual health measures towards this purpose, in agreement with the principles and guidelines of the Brazilian national health system – SUS” (“Sistema Único de Saúde”).⁽⁶⁾ The Administrative Ruling emphasizes that to the elderly person, health is expressed by the condition of independence and autonomy rather than by the presence or absence of organic disease. By autonomy one understands the capacity for self-government, which is manifested by the freedom to act and take decisions about oneself, apart from the degree of dependence and incapacity.⁽⁶⁾

Nursing plays a relevant role in the identification and monitoring of health conditions of different social groups. With the implementation of the Family Health Strategy, Primary Health Care in Brazil began to count on teams formed by doctors and nurses, in the ratio of 1:1, allowing nurses to assume a more caregiving function instead of the management role they traditionally performed in the Basic Health Units. Thus, their clinical action was extended, at the same time in which there was an increase in the demands for assistance on teams, which began to act in a proactive manner, identifying the health requirements of families and social groups in the territory, and no longer restricted to attendance on spontaneous demand.

Attention to the health of the elderly in the Basic Attention network, especially home care, represents yet another challenge to the Health System, particularly for the FHS teams. Nursing plays a role of extreme relevance in this process, by the very characteristics of its professional action, such as monitoring the conditions of life and health of individuals, families and social groups, identifying their needs, proposing an intervention project agreed to with the different the subjects involved and provision of health care, followed by evaluation of the results achieve.

This study presents indicators for the evaluation of functional capacity of elderly persons with cognitive impairment. The aim of the study was to identify the social and health conditions of elderly persons with cognitive impairment and their relationship with socioeconomic determinants and the degree of functional dependence.

METHODS

This was a cross-sectional study with a quantitative, descriptive approach, conducted in the urban region of Dourados, Mato Grosso do Sul. This municipality is the second largest in the State, and at the time of the research, had a total number of 181,869 inhabitants⁽⁷⁾, among whom 13,328 (7.3%) were persons of 60 years of age or older.

Of the thirty family health teams in the urban area at the time of the research, 28 participated in the study, as not all of them had the records of the families resident in the area of coverage.

The inclusion criteria were as follows: elderly persons of both genders, 60 years of age or older, not institutionalized, and assisted by Family Health Service teams (FHS). The exclusion criteria were: persons who were incapable of communicating, and those who refused to participate, or to sign the Term of Free and Informed Consent.

For sample selection, the simple random sampling technique was used, and 672 elderly persons were drawn. Of these, five (0.7%) refused to participate in

the study; 135 (20.1%) were not found at home at the time of data collection and 29 (4.3%) were excluded because they were incapable of communicating; thus, the final sample was composed of 503 participants. The number was sufficient to detect differences of at least 9%, with a level of significance of 5% and test power of 80%, considering an estimated proportion of 16.5% elderly persons with cognitive impairment in relation to the population over the age of 60 years.⁽⁸⁾ For the results, the evaluation of the mental state of the elderly was considered based on the Mini Mental State Exam (MMSE), with scores indicating cognitive impairment.

The instruments used were a questionnaire for sociodemographic data, the Mini Mental State Exam (MMSE) to evaluate cognitive impairment, and the Functional Independence Measure (FIM) to evaluate functionality.

In the questionnaire for sociodemographic data, the variables used for characterization of the studied population were as follows: age (categorized into ranges 60 to 69, 70 to 79 and 80 years and over), gender, monthly *per capita* income up to 0.5 Minimum Wage (MW), from 0.6 to 1.0 MW and over 1.0 MW, and the number and types of self-reported illnesses.

The MMSE is an instrument that evaluates cognitive functions. It is composed of questions grouped according to the cognitive functions: space-time orientation, record of memory fixation, attention and calculation, evocative memory, language and constructive praxis. The total score of this test ranges from 0 to 30 points. To track the cognitive state in the elderly, the cut-off point must be suited to schooling, according to the "Suggestions for the use of the Mini Mental Health State in Brazil"⁽⁹⁾. Therefore, 20 and 25 were adopted as cut-off points for illiterate and literate persons respectively, respecting the median of the MMSE for both conditions.⁽¹⁰⁾

Therefore, of the 503 elderly persons interviewed, those whose MMSE score was lower than 20 points for illiterate individuals, and lower than 25 points for literate subjects, were selected for this study.⁽¹⁰⁾ The MMSE was used for the purpose of allowing a sub-sample to be identified, and therefore, it was not a study variable *per se*, because it was used only for tracking the population.

The FIM is a functional evaluation instrument that analyzes the degree of independence of the individual in 18 Daily Life Activities.⁽¹¹⁾ It is divided into two dominions: motor FIM and cognitive FIM, which are subdivided into the dimensions of self-care, sphincter control, mobility, transfers, locomotion, communication and social cognition. The activities are evaluated on a scale of seven levels of dependence, in which level 1 indicates complete dependence and level 7, complete independence. The items of FIM are added to create a total score that ranges from 18 (complete dependence) to 126 points, which indicate complete independence.

The total result of FIM measures the level of dependence which, according to some authors, is classified as follows⁽¹²⁾: a) **18 points** – complete dependence (total assistance); b) **19 to 60 points** – changes in dependence (assistance with up to 50% of the task); c) **61 to 103 points** – changes in dependence (assistance with up to 25% of the task) and d) **104 to 126 points** – changed or complete independence. After identification and classification of the dependent elderly persons, these were categorized as being independent (with a total score \geq 104 points) and having some degree of dependence in self-care (total score < 104 points).

The questionnaires were applied at the participant's home by a duly trained team, in the company of Community Health Agents (CHA). Data collection was performed between the months of June 2007 and March 2008. The homes visited were drawn by lottery (around 20 elderly persons per FHS); interviews were held individually, in a single session; the data were digitized in a database and tabulated in statistical analysis software. To meet the proposed objective, descriptive analysis was performed, based on absolute and percentage frequencies and descriptive measures (median, mean and standard deviation).

To compare the mean values of functional evaluation between the genders, the Student's-*t* test for independent samples was used. In the case of age-group, the Kruskal-Wallis test was used to calculate the analysis of variance, and the Mann-Whitney U test, with $p < \alpha/3$, to test the age group values in pairs. The use of the above-mentioned tests was justified by the lack of homogeneity among the variances. In the case of *per capita* income, Pearson's correlation was used. All the results were analyzed considering the level of significance < 5%.

In compliance with ethical aspects, the present study was submitted to and approved by the Research Ethics Committee of the School of Nursing of USP, and was given the Process No. 593/2006. Before filling out the questionnaires, the elderly persons and their families were informed about the research objectives, and if they agreed to participate, the elderly person or his/her guardian was asked to sign the FITC.

RESULTS

Of the 503 elderly persons interviewed, 215 (42.7%) had a result indicative of cognitive impairment, with 116 (54.0%) being illiterate and 99 (46.0%) literate, according to tracking by MMSE. The majority were women ($n=159$, 74.0%), between 60 and 69 years old ($n=82$, 38.1%) and lived with a *per capita* income of up to one minimum wage ($n=146$, 67.9%) which, at the time of data collection, corresponded to R\$ 380.00.

With regard to the number of self-reported illnesses, the mean was 2.9 (standard deviation = 1.8) per per-

son. Only nine elderly persons (4.2%) with cognitive impairment did not mention morbidities, while 95.8% informed that they had at least one chronic condition. As regards the most prevalent diseases, 161 (74.9%) of the elderly mentioned arterial hypertension, 83 (38.6%) presented health problems such as back pain, 55 (25.6%) osteoarthritis, 50 (23.3%) and diabetes and 48 (22.3%) mentioned digestive disorders.

With regard to the result of the total FIM, 183 (85.1%) were independent and 32 (14.9%) presented some degree of dependence, with seven (3.3%) having changes in dependence (assistance with up to 50% with the task) and 25 (11.6%) with changes in dependence requiring assistance with up to 25% in performing self-care tasks. The mean of the total FIM result was 114.3 (standard deviation = 17.2).

The results of the dominions and dimensions of FIM, according to distribution by gender are shown by the data in Table 1. It is possible to note higher values for the female gender, however, this difference is significant only for total FIM, the motor dominion, self-care and transfer dimensions, and marginally significant for control of the sphincters. The cognitive domain and the other dimensions showed no significant results.

Table 1. Influence of the variable gender on the dominions and dimensions of FIM in elderly persons with cognitive impairment. Dourados (MS) – 06/2007 to 03/2008

FIM Dominions and Dimensions	Male	Female	p-Value
	Mean (SD)	Mean (SD)	
FIM Motor	78.1 (19.9)	84.8 (10.3)	0.018
Self-care	36.2 (9.1)	39.9 (5.3)	0.006
Sphincter control	12.4 (3.2)	13.2 (1.6)	0.069
Transfer	18.8 (4.7)	20.2 (2.0)	0.035
Locomotion	10.7 (3.7)	11.6 (2.8)	0.127
FIM Cognitive	30.7 (5.5)	31.4 (4.9)	0.371
Communication	13.2 (1.8)	13.3 (1.7)	0.576
Social Cognition	17.5 (4.4)	18.1 (3.6)	0.336
FIM Total	108.8 (22.5)	116.2 (14.5)	0.023

SD: standard deviation

The data in Table 2 present the means of the FIM results, according to the age range of the elderly persons. One observes that the values were lower in the more advanced age ranges. In general it was observed that the score between the first two age ranges showed no significant difference in the domains and dimensions. From the second to the third age range no significant difference was shown for sphincter control, transfer

and locomotion. From the first to the third range, only sphincter control presented no significant difference.

As regards *per capita* income, no significant correlation was observed with any domain and dimension in the functional evaluation ($p > 0.050$).

Table 2. Influence of the variable age range on the domains and dimensions of FIM in elderly persons with cognitive impairment. Dourados (MS) – 06/2007 to 03/2008

FIM Dominions and Dimensions	Age Range [in years]			Kruskal-Wallis p-Value	Mann-Whitney
	a=60 to 69 Mean (SD)	b=70 to 79 Mean (SD)	c=80 and over Mean (SD)		
Motor	85.9 (10.2)	83.7 (13.3)	77.7 (17.3)	<0.001	a=b; b>c; a>c
Self-care	40.2 (4.7)	39.3 (6.3)	36.3 (8.8)	<0.001	a=b; b>c; a>c
Sphincter Control	13.2 (1.9)	13.0 (1.9)	12.5 (2.7)	0.122	a=b; b=c; a=c
Transfer	20.3 (2.2)	19.8 (3.1)	19.1 (3.8)	0.052	a=b; b=c; a>c
Locomotion	12.2 (2.4)	11.6 (3.1)	9.7 (3.4)	<0.001	a=b; b=c; a>c
Cognitive	32.3 (4.1)	31.9 (3.8)	28.6 (6.8)	0.001	a=b; b>c; a>c
Communication	13.6 (1.3)	13.4 (1.3)	12.8 (2.4)	0.002	a=b; b>c; a>c
Social Cognition	18.7 (3.1)	18.5 (3.0)	16.0 (4.8)	0.002	a=b; b>c; a>c
FIM Total	118.3 (11.8)	115.6 (15.7)	106.3 (22.8)	<0.001	a=b; b<c; a<c

SD: standard deviation

DISCUSSION

Various studies have identified the predominance of women among the elderly with cognitive impairment or mental problems.⁽¹³⁻¹⁵⁾ The explanation may be that longevity among women is more accentuated, which also favors the prevalence of cognitive impairment, a condition related to advancing age. The sample of this study, composed only of persons with some cognitive impairment, was also shown to be predominantly female.

The percentage of illiterate persons was higher in the elderly in the cognitively impaired elderly; low schooling was associated with greater functional incapacity. Income level was shown to be associated with physical and mental health, and elderly persons with lower

income presented a higher number of chronic diseases, depression and functional dependence.^(3-4,13)

With aging it is expected that the elderly will present some chronic diseases. Nevertheless, in this study, only the minority presented no morbidity. It should be pointed out that all had some cognitive impairment, but this is not equivalent to the identification of morbidity or medical diagnosis, as this was an evaluation performed by means of a tracking test. However, even in those who did not mention morbidities, the very state of mental deficiency indicated that they were not in a favorable situation as regards their overall state of health.

In agreement with other researches^(4,15-17), the findings of this study pointed out hypertension and problems of the musculoskeletal system (arthritis/osteoarthritis, problems of back pain) as the most frequently reported chronic conditions.

There are still only a few studies that have used the FIM in Primary Health Care, a situation that results in an important limitation for comparing the results obtained. However, in the diverse studies of functional evaluation of the elderly, the large majority made no association with the evaluation of the mental state of the population. As a basis for discussion, only studies that were closest to the characteristics of the present study were analyzed.

Based on the classification that considers individuals with a score equal to or higher than 104 as being independent, in this study there was predominance of functionally independent elderly persons with cognitive impairment, which is positive, as elderly with dependence in seven or more DLAs have three times for risk of dying than independent individuals. Dependence is a condition that can be altered with preventive actions and rehabilitation that retard the complications that lead to death, differently from other sociodemographic conditions that cannot be changed.^(12,16)

Large population studies using functional evaluation, such as the health, wellbeing and aging project – SABE (“Projeto Saúde, Bem-Estar e Envelhecimento”) and data from the national research by home sample – PNAD (“Pesquisa Nacional por Amostra de Domicílio”), representative of the Brazilian elderly population, showed a trend towards greater basic and instrumental functional limitations in women, which progress with age.⁽¹⁸⁻²¹⁾

Various studies have demonstrated more extensive compromise of functional capacity with regard to increasing age, which implies a situation of greater vulnerability, and consequently, greater risk.^(4,15)

In the present study, the motor dimension presented lower values for men and in the more advanced age ranges. A reduced score could be observed, particularly with regard to the social cognition dimension, which refers to memory, problem solving and social interaction. This lower scored was shown in the more advanced age group.

The dimension of FIM, as well as of the other instruments for the evaluation of IDIA is connected with activities that demonstrated the elderly person's autonomy; that is to say, the capacity to manage one's own life. The result suggests that elderly men with cognitive impairment and the group over the age of 80 years may have a greater tendency towards functional dependence, and consequently, to losing their autonomy, since the two factors are related.

Elderly persons will be considered healthy when they are capable of managing their own lives and determining when and how to perform their daily activities, in spite of the morbidity they present. Consequently, those who are able to obtain successful treatment, live happily and socially integrated, will be healthy.

CONCLUSION

This research identified 215 elderly persons (42.7%) with cognitive impairment, the majority were women with low schooling and income, and multiple pathologies. Around 15.0% presented some degree of dependence, locomotion and social cognition being the most affected areas.

Based on these results, the importance is pointed out of performing functional and cognitive diagnosis of the elderly population, such as recommended by the National Health Policy for Older Persons. In addition to knowing the problems and needs that interfere in this diagnosis in some way, it will make possible to engage in implementing alternatives that favor their health, active and healthy aging, with quality of life and autonomy. These measures include support from the Health System for the families of the elderly, health education for the maintenance of functional capacity, and permanent education and consciousness-raising among public health professionals, particularly the members of the FHS, about this new challenge in the field of health.

The municipality of Dourados lacks social and health resources to attend this portion of the population. This study was presented to the Municipal Council for the Defense of the Elderly Person in 2009, with the intention of helping in the discussions about the implementation of a Day-Center, whose construction project was approved in March 2010 by the Municipal Secretary of Social Assistance.

Cognitive and functional diagnosis may contribute to the planning of actions that favor health promotion and the maintenance of functional capacity of elderly persons. In addition, there is an initiative of fundamental importance because it represents an opportunity to monitor the conditions of life and health of the elderly in Basic Attention – namely the implementation of the Family Health Strategy (FHS), on which the important task of providing assistance to the elderly is incumbent.

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