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FUNCTIONAL CAPACITY AND DEPRESSION IN ELDERLY

CAPACIDADE FUNCIONAL E DEPRESSÃO EM IDOSOS

CAPACIDAD FUNCIONAL Y DEPRESIÓN EN ANCIANOS

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ABSTRACT

Objective: to identify the level of functional capacity in basic, instrumental and advanced activities of the daily life of the elderly and its correlation with the prevalence of depression. **Method:** quantitative, descriptive, cross-sectional study with 242 elderly. Data were collected using Lawton and Brody, Katz, Mini Mental State Exam and Geriatric Depression Scales and, then analyzed using descriptive and inferential statistics and tabulated in SPSS, version 21.0. **Results:** the level of functional capacity was lower in the elderly with 80 years or more, female, black, non-literate and without retirement. A negative correlation was identified between the presence of depression and the basic, instrumental and advanced activities of daily living. **Conclusion:** the elderly presented independence for performing basic and instrumental activities of daily living, but low functional capacity for advanced activities, with a correlation between the presence of depression and loss of functional capacity. **Descriptors:** Aged; Activities of Daily Living; Depressive Symptoms; Nursing.

RESUMO

Objetivo: identificar o nível de capacidade funcional em atividades básicas, instrumentais e avançadas da vida diária de idosos e sua correlação com a prevalência de depressão. **Método:** estudo quantitativo, descritivo, do tipo transversal, com 242 idosos. Os dados foram coletados com as escalas de Lawton e Brody, de Katz, o Mini Exame do Estado Mental e a Escala de Depressão Geriátrica e, em seguida, analisados por meio de estatística descritiva e inferencial e tabulados no SPSS, versão 21.0. **Resultados:** o nível de capacidade funcional foi menor em idosos com 80 anos ou mais, do sexo feminino, negros, não alfabetizados e sem aposentadoria. Foi identificada correlação negativa entre a presença de depressão e as atividades básicas, instrumentais e avançadas da vida diária. **Conclusão:** os idosos apresentaram independência para a realização das atividades básicas e instrumentais da vida diária, porém, baixo nível de capacidade funcional para as atividades avançadas, havendo correlação entre a presença de depressão e a perda da capacidade funcional. **Descritores:** Idoso; Atividades Cotidianas; Sintomas Depressivos; Enfermagem.

RESUMEN

Objetivo: identificar el nivel de capacidad funcional en actividades básicas, instrumentales y avanzadas de la vida diaria de ancianos y su correlación con la prevalencia de depresión. **Método:** estudio cuantitativo, descriptivo, del tipo transversal, con 242 ancianos. Los datos fueron recolectados con las escalas de Lawton y Brody, de Katz, el Mini Examen del Estado Mental y la Escala de Depresión Geriátrica y, a continuación, analizados por medio de estadística descriptiva e inferencial y tabulados en el SPSS, versión 21.0. **Resultados:** el nivel de capacidad funcional fue menor en ancianos con 80 años o más, del sexo femenino, negros, no alfabetizados y sin jubilación. Se identificó una correlación negativa entre la presencia de depresión y las actividades básicas, instrumentales y avanzadas de la vida diaria. **Conclusión:** los ancianos presentaron independencia para la realización de las actividades básicas e instrumentales de la vida diaria, sin embargo, bajo nivel de capacidad funcional para las actividades avanzadas, habiendo correlación entre la presencia de depresión y la pérdida de la capacidad funcional. **Descriptor:** Anciano; Actividades Cotidianas; Síntomas Depresivos; Enfermería.

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INTRODUCTION

The concept of functional capacity arises as the possibility of the elderly to take care of themselves, to plan and to perform the Basic Activities of Daily Life (BADL), Advanced Activities of Daily Life (AADL) and Instrumental Activities of Daily Life (IADL), necessary and sufficient for independent and independent living.¹⁻²

The longevity, associated with Noncommunicable Diseases (NCD), can affect the functional capacity of the elderly, preventing them from performing their activities independently.³ The combination of these factors with cognitive impairment, in addition to precarious social conditions, leads to the onset of depression, which is among the most frequent NCDs and which increase the probability of developing functional disability, being a serious public health problem.⁴

Functional capacity, along nutritional status, cognitive ability and socioeconomic and demographic factors, should be evaluated to provide subsidies for care for the elderly. This quest to understand and reach alternatives for caring for the elderly represents a challenge to all who work in health services.⁵

The complexity of the functional, emotional and morphological changes reflects in difficulties to perform daily activities (self-care, execution of simple tasks, responsibility about own acts), and leads to a condition of suffering and thoughts of uselessness by that part of the population.⁶

Depression is considered an affective disorder that causes mental changes, cognitive and mood disorders. It is characterized by the combination of symptoms that can persist for years, significantly, interfering with the individual's life.⁷ Depression is multi-determinate and can cause several impairments in social performance.⁸

Decreased functional capacity, which includes limitations and restrictions on performance and participation in activities, is an important symptom of severe depression.⁹ Therefore, functional capacity assessment is an important indicator of health status because its decline is associated with mortality in this group age.¹⁰

It is necessary to know the profile of the elderly regarding functional capacity and depressive symptomatology, as well as the influence of sociodemographic data on these variables, with the objective of elaborating strategies for the promotion of health and

prevention of aggravations resulting from the relation between functional capacity and depression, justifying the need to carry out studies like this.¹¹

OBJECTIVES

- To identify the level of functional capacity in basic, instrumental and advanced activities of the daily life of the elderly and its correlation with the prevalence of depression.
- To analyze the association of functional capacity with the sociodemographic profile of the elderly living in the city of Campina Grande-PB.

METHOD

This study is linked to a multicenter study entitled "Fragility of Brazilian Elderly Persons (FIBRA)", which was approved by edict MCT-CNPq / MSSCTIE-DECIT, n. 17/2006.

A descriptive, descriptive, cross - sectional study was carried out in the city of Campina Grande - PB, from 2007 to 2009. The sample consisted of 242 elderly individuals and the sampling process was performed by the simple random selection method, in urban census tracts. The number of sectors corresponded to the ratio between the sample number and the total number of sectors.

Included in the survey were: persons aged 65 or over who lived permanently at home and in the census tract. Exclusion criteria were: a) elderly people with severe cognitive deficits, verified through the Mini Mental State Examination (MMSE); b) those who were using a wheelchair or who were temporarily, or permanently, bedridden; c) those with severe sequelae of stroke; d) patients with severe or unstable Parkinson's disease; e) those with serious hearing or vision deficits; and f) those who were in the terminal stage.

The sociodemographic characterization of the studied group was made through the application of a sociodemographic questionnaire, including questions related to age, gender, marital status, retirement, literacy level and race.

The MMSE was used for the cognitive screening of the elderly and their choice was given because it is a widely used instrument in the evaluation of cognitive functions. The MMSE is divided into seven categories: orientation for time (five points); location guidance (five points); record of three words (three points); attention and calculation (five points); remembering the three words (three points); language (eight points) and visual constructive capacity (one point). The score

can range from zero to 30 points.¹² The cut-off points used to assess the MMSE are defined according to the schooling of the elderly: 17 (illiterate); 22 (with education between one and four years); 24 (with education between five and eight years) and 26 (with nine years or more of schooling).

Regarding functional capacity, we used the Katz Scale,¹³ to evaluate the BADL and the Lawton and Brody Scale¹⁴ to evaluate the IADL. On the other hand the AADL were evaluated using a set of questions adapted for a study carried out in São Paulo.¹⁵ These questions asked about the participation of the elderly in educational, civic, religious and leisure activities and had, as options to answer, three alternatives: "never did", "stopped doing" and "still does."

The Katz Scale evaluates six items for self-care activities, with three possible responses (no help, partial help, and total help) on the need for assistance with: bathing, dressing, toilet, transfer, sphincter control and feeding. The Lawton and Brody scale evaluates seven items for IADL, with three possible answers (none, partial or total) on help needed for: telephone use, transportation use, shopping, food preparation, household services, drug use, and handling of money.

For the evaluation of depressive symptoms, the Geriatric Depression Scale (GDS) was used, 16 with 15 negative / affirmative questions, whose result, of five or more points, reveals the presence of depression, with a score equal to or greater than 11 characterizing severe depression.

Data were collected in centers near the homes of the elderly, after clarification on the objectives of the research, guidance on data confidentiality, availability to participate and signing of the Free and Informed Consent Form (FICT) by the elderly who agreed to participate in the research. The data collection sessions were carried out by trained teams, distributed between the coordinator and the undergraduate students who were part of the Group of Studies and Research in Aging and Health (GSRAH).

The data were tabulated and analyzed in SPSS software, version 15.0. In relation to the

internal consistency of the scales used, a Cronbach's alpha of 0.801, was obtained for the AADL scale; 0.713, for the IADL scale; 0.016, for BADL and of 0.460, for GDS. Data were analyzed by means of descriptive statistics (absolute and relative frequencies, mean, median, standard deviation and amplitude) and inferential (Pearson's Chi-square and Spearman's correlation test). To evaluate the strength of the correlation, we use the following criterion: $r = 1$ (perfect); $0.80 < r < 1$ (very high); $0.60 < r < 0.80$ (high); $0.40 < r < 0.60$ (moderate); $0.20 < r < 0.40$ (low); $0 < r < 0.20$ (very low); $r = 0$ (null), the interpretation being the same for the negative coefficient values.

The non-parametric test was chosen because, according to the Kolmogorov Smirnov normality test, the variables did not present a normal distribution. For all analyzes, a significance level of 5% ($p < 0.05$) was used.

The project followed Resol's assumptions 466, of December 12, 2012, and was approved by the Committee of Ethics in Research with Human Beings of the Faculty of Medical Sciences of Unicamp, under the opinion n. 208/2007.

RESULTS

In the sample, composed of 242 subjects, it was observed that 84.3% ($n = 204$) were in the age range of 65-79; 67.4% ($n = 163$) were males; 48.3% (117) were married or lived with a partner; 55% ($n = 133$) were black; 67.4% ($n = 163$) were literate and 77.7% ($n = 188$) had retirement.

It was observed that there were no significant differences regarding the variables gender, color and race, marital status and retirement. There was an association with functional disability for both BADLs, and instrumental ($p < 0.05$), in the variable age, and only with IADLs and AADLs, in the literacy variable.

Table 1. Functional capacity according to the socioeconomic characteristics of the elderly participants. Campina Grande (PB), Brazil (2007-2009).

Variables	BADL			IADL			AADL		
	I n (%)	D N (%)	*p- value	I n (%)	D N (%)	*p- value	MA n (%)	LE n (%)	*p- value
Age									
65-79	176 (86.3)	28 (13.7)	0.019	122 (59.8)	82 (40.2)	0.001	165 (80.9)	39 (19.1)	0.084
≥80 years	27 (71.1)	11 (28.9)		12 (31.6)	26 (68.4)		26 (68.4)	12 (31.6)	
Sex									
Male	71 (89.9)	8 (10.1)	0.078	45 (57.0)	34 (43.0)	0.729	60 (75.9)	19 (24.1)	0.429
Female	132 (81.0)	31 (19.0)		89 (54.6)	74 (45.4)		131 (80.4)	32 (19.6)	
Color and Race									
White	93 (85.3)	16 (14.7)	0.582	61 (56.0)	48 (44.0)	0.867	89 (81.7)	20 (18.3)	0.347
Black	110 (82.7)	23 (17.3)		73 (54.9)	60 (45.1)		102 (76.7)	31 (23.3)	
marital status									
Married or stable marriage	102 (87.2)	15 (12.8)	0.186	64 (54.7)	53 (45.3)	0.233	93 (79.5)	24 (20.5)	0.682
Single / widowed or separated	101 (80.8)	24 (19.2)		70 (56.0)	55 (44.0)		98 (78.4)	27 (21.6)	
Literate									
Yes	140 (85.9)	23 (14.1)	0.223	99 (60.7)	64 (39.3)	0.016	138 (84.7)	25 (15.3)	0.002
No	63 (79.7)	16 (20.3)		35 (44.3)	44 (55.7)		53 (67.1)	26 (32.9)	
Retired									
Yes	157 (83.5)	31 (16.5)	0.808	101 (53.7)	87 (46.3)	0.269	148 (78.7)	40 (21.3)	0.935
No	45 (84.9)	8 (15.1)		33 (62.3)	20 (37.7)		42 (79.2)	11 (20.8)	

Note: * Pearson's Chi-square test; I = independence; D = dependency; MA = more active; LE = less active; BADL = basic activities of daily living; IADL = instrumental activities of daily living; AADL = advanced activities of daily living.

The prevalence of depression in the total sample was 24.8% (n = 60). There was no statistically significant difference between the presence of depression and the degree of

dependency in AADL, however, the individuals without depression were more active and those with depression were less active.

Table 2. Degree of functional capacity in BADL, IADL and AADL, according to the presence of depression. Campina Grande (PB), Brazil (2007-2009).

GDS	BADL			IADL			AADL		
	I n (%)	D n (%)	p-value*	I n (%)	D n (%)	p-value*	MA n (%)	ME n (%)	p-value*
WD	45 (75)	15 (25)	0.031	23 (38.3)	37 (61.7)	0.002	44 (73.3)	16 (26.7)	0.221
WoD	158 (86.8)	24 (13.2)		111 (61)	71 (39)		147 (80.8)	35 (19.2)	

Note: * Pearson's Chi-square test; I = independence; D = dependency; MA = more active; LE = less active; BADL = basic activities of daily living; IADL = instrumental activities of daily living; AADL = advanced activities of daily living; GDS = geriatric depression scale; CI = Confidence Interval; WD= with depression; WoD = without depression.

It is observed that the sample studied (table 3) showed good functional capacity for BADL and IADL. In both, the average number of activities that the elderly was unable to

perform was low, 0.01 and 0.16 respectively, with a standard deviation little. The AADL, however, did not show a good performance,

since the average number of activities still performed was low (M = 3.38).

Table 3. Descriptive analysis of the results of GDS, BADL, IADL and AADL. Campina Grande (PB), Brazil (2007-2009).

	Average	Median	Standard Deviation	Minimum	Maximum
GDS					
Total Score	3.69	3	2.521	0	12
BADL					
Total score	6.19	6.00	0.447	6	8
Number of activities performed independently	3.70	6.00	2.827	0	6
Number of activities you do with help	0.09	0.00	0.301	0	2
Number of activities unable to perform	0.01	0.00	0.111	0	1
IADL					
Total score	8.12	7.00	1.781	7	17
Number of activities performed independently	6.04	7.00	1.493	0	7
Number of activities you do with help	0.80	0.00	1.309	0	6
Number of activities unable to perform	0.16	0.00	0.477	0	3
AADL					
Total score	25.10	25	3.545	16	35
Number of activities you have never done	2.70	3.00	2.571	0	10
Number of activities you have stopped doing	1.50	1.00	1.810	0	8
Number of activities you still do	3.38	4.00	3.025	0	11

Note: BADL = basic activities of daily living; IADL = instrumental activities of daily living; AADL = advanced activities of daily living; GDS = geriatric depression scale..

Table 4 presents the result of the correlation analysis between the total score and number of activities found in BADL, IADL and AADL. All variables, with the exception of two: (number of activities unable to perform in BADL and number of activities that stopped doing in AADL), were statistically, correlated.

Table 4. Correlation between the total GDS score and the total score and number of activities found in BADL, IADL and AADL. Campina Grande (PB), Brazil (2007-2009).

Variables	GDS Total score	
	Correlation coefficient	p-value*
BADL		
Total score	0.152	0.018
Number of activities performed independently	-0.151	0.019
Number of activities you do with help	0.134	0.037
Number of activities unable to perform	0.062	0.335
IADL		
Total score	0.255	0.000
Number of activities performed independently	-0.253	0.000
Number of activities you do with help	0.241	0.000
Number of activities unable to perform	0.134	0.038
AADL		
Total score	-0.260	0.000
Number of activities you have never done	0.191	0.003
Number of activities you have stopped doing	0.118	0.067
Number of activities you still do	-0.243	0.000

Note: * Spearman Correlation Test. BADL = basic activities of daily living; IADL = instrumental activities of daily living; AADL = advanced activities of daily living; GDS = geriatric depression scale.

DISCUSSION

As for sex, the finding of other studies in the area was repeated,¹⁷⁻⁹ with a predominance of females. This feminization

can be justified by the fact that women still have greater attention to health and self-care than the male elderly, which would reflect a higher probability of survival for women.²⁰

Regarding the functional capacity, it was the female gender that showed greater dependence on BADL and IADL, being, however, the most active group in AADL. There was no statistically significant difference of sex in relation to any of the activities. This finding corroborates that found in a study of a geriatric center,²¹ where women, despite being longer-lived, show a greater decline in functional capacity.

Regarding age, in this study, the prevalent age range was between 65 and 79 years old, being that the age group presented the highest level of independence in all activities (basic, instrumental and advanced), with statistical significance between age and BADL and IADL. This association, between age and functional capacity, is confirmed by other studies,²¹⁻⁴ in which it is observed that advancing age increases the possibilities of developing difficulties for daily activities, contributing to a decrease in functional capacity. This fact can be explained by the continuous process of aging and by the fact that some comorbidities aggregate over time.²⁵

Regarding marital status, the group of unmarried / widowed and divorced individuals presented greater independence for BADL and greater activity in AADL, but, greater dependence on IADL. There was no statistically significant difference between marital status and functional capacity ($p > 0.05$). This data differs from what was found in a study with elderly people attended in primary care,²² where functional disability was higher among those who were not married. The absence of a companion, for both widowers, and single people, contributed to the isolation, causing a decrease in self-care, because the companion is a stimulus to continue carrying out the daily activities.⁵

It was observed that the literate elderly are those who perform a greater number of activities with independence and were more active. The association between literacy and functional capacity was statistically significant for both IADL, and AADL. This finding reveals that the activities carried out in the evaluation of IADL and AADL are influenced not only by health conditions, but also by gender, age, socioeconomic variables, as well as gender roles, age, socioeconomic variables and degree of instruction.²

The frequency distributions relating to AADLs that seniors had ceased to perform, still performed and had never performed suggest that their social involvement suffers not only from the influence of health conditions and functional capacity, but also

from the allocation of gender roles and age and socioeconomic variables.

The greatest loss of functional capacity was in the non-literate elderly, demonstrating schooling strongly related to the preservation of functional capacity.⁵ This data reflects, above all, that schooling may allow a better understanding of the medical diagnoses and guidelines regarding health care.

Most elderly respondents were retirees (78% $n = 188$) and a higher prevalence of functional dependency and low activity level was observed in this group ($p > 0.05$), as was also observed in other studies.²⁶⁻⁷

The prevalence of dependence in BADL was 25% ($n = 15$) among depressive individuals and of 13.2% ($n = 24$) in those who did not present depression. In the IADL, this value was 61.7% ($n = 37$) in the individuals with depression and of 39% ($n = 71$) in the individuals without depression. In AADLs, which measure how active an individual is, individuals with depression (26.7%; $n = 16$) were also less active than those without depression (19.2%; $n = 35$). In all activities considered for evaluation, the level of dependence and the low level of activity were higher in those who also had depression, but only the basic and instrumental activities, showed a statistically significant association with depression.

In view of these results, it can be inferred that depression influences the functional capacity of the elderly. This association can be explained by the fact that depression is a condition associated with low levels of activity and reduced motivational state, leading to mobility deficits, physical performance and sedentary lifestyle.²⁸

With this, it is observed that, between the decrease in functional capacity and depression, there is, in fact, a feedback relationship, where the appearance of a symptom triggers the emergence of another, which, in turn, reinforces that first symptom, leading to a cycle of losses.

In this study, the functional loss values, found in depressive individuals was greater in the instrumental activities 61.7% ($n = 37$) than in the basic 25% ($n = 15$). This data reinforces the findings of previous research that evidenced that the functional loss is greater in the instrumental activities, since the BADL and IADL present themselves hierarchically, so that a decline in functional capacity results in loss of function, starting with the IADL and deteriorating to the basic level of BADL.^{3,9,23,29}

Contrary to what was reported in another study,² these findings reveal that advanced activities were not hierarchically related to

BADL and IADL. The values of individuals less active and with depression 26.7% (n = 16), were lower than those found in IADL 61.7% (n = 37). The AADLs also showed no statistically significant association with the presence of depression.

In the correlation analyzes, it was verified that all the variables of total score presented correlation with the variable of total depression score. The total score of BADL and IADL showed a positive correlation, that is, as the activity score increases, the score of the depression scale also increases. It is worth noting that a high score suggests a greater disability and a greater degree of depression, except for the AADL scale in which the disability is demonstrated the lower its score, and, therefore, it presented negative correlation. These findings may be justified by the fact that depression is a possible precursor of functional capacity decline, and the expression of severe depressive symptoms is a factor that accelerates this process.²⁹

It was possible to observe, in this study, a weak but significant negative correlation between depression and activities performed with independence in BADL and IADL, as well as the activities that are still performed in AADL, since this allows the interpretation that the elderly person, who has its functional capacity preserved, presents lower rates of depression.

Therefore, the importance of Nursing work as a fundamental agent, in the evaluation of the functional capacity of the elderly is highlighted, so that their care practice can be developed taking into account the factors that are possibly associated with the development of disabilities and limitations that restrict the sense of quality of life in old age.

CONCLUSION

Loss of functional capacity, in all activities, was greater in individuals with depression, with an association between the presence of depression and loss of functional capacity. It was also identified a negative correlation between the presence of depression and the basic and instrumental activities performed with independence; and between the presence of depression and the advanced activities still performed by the elderly. The decrease in functional capacity was more evident in females, married, black, non-literate, retired and in the 80-year age group.

The realization of new studies with this profile may provide more data regarding the variables listed in this research. Further investigation of this study may reveal information that will support the

implementation of actions that seek to prevent the onset or progression of depressive symptoms and functional limitations, aiming at improving health care for the elderly, in order to provide them with independence and autonomy.

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