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ORIGINAL ARTICLE

Health profile of the elderly person accompanied by the family health strategy in a countryside of Ceará - Brazil

Perfil de saúde da pessoa idosa acompanhada pela estratégia de saúde da família numa cidade do interior do Ceará - Brasil

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KEYWORDS

Aging
Elderly health
Primary health care

ABSTRACT

Objective: To evaluate the correlation between functional dependence and emotional state, cognitive function, and ambulation of the elderly people accompanied by a family health team.
Methods: A cross-sectional, quantitative, and prospective study was conducted in the city of Quixeré/CE between August 2020 and April 2021. Participated in 229 elderly people registered in the Family Health Strategy teams evaluated using the Lawton scale, MMSE, GDS-15, and Tinneti test. The association of variables was verified using the chi-square or Fisher's exact tests. Odds Ratio (95%CI) were calculated, followed by logistic regression using the Hosmer and Lemeshow test.
Results: The sample was primarily composed of women with low education, average age of 70 years, and a high demand for primary health services. Women were more vulnerable to depression, with no difference in falls related to sex. Age was a risk factor for all aspects evaluated. There was a correlation between functional dependence and all aspects analyzed. There was a relationship between the level of functional dependence and education (OR: 2.0; 95%CI: 0.05 - 78.32), living in the rural area (OR: 2.83; 95%CI: 1.6 - 5.1), depression (OR: 5.18; 95%CI: 1.2 – 22.8) and risk of falls (OR: 1.67 CI: 0.8 – 3.5), with the last two factors remaining significant in the logistic regression.
Conclusion: Functional dependence to more complex daily activities among the elderly was significant, with an essential relationship with emotional and cognitive aspects and risk of falls.

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PALAVRAS-CHAVE

Atenção primária à saúde
Envelhecimento
Saúde do idoso

RESUMO

Objetivo: Avaliar a correlação entre dependência funcional e estado emocional, função cognitiva e deambulação da pessoa idosa acompanhada pela equipe de saúde da família.
Métodos: Estudo transversal, quantitativo e prospectivo realizado na cidade de Quixeré/CE entre agosto de 2020 e abril de 2021. Participaram 229 idosos cadastrados nas equipes de Estratégia de Saúde da Família avaliados através da escala de Lawton, MEEM, GDS-15 e Teste de Tinneti. Verificou-se a associação das variáveis pelos testes Qui-quadrado ou exato de Fisher. Calcularam-se os Odds Ratio (IC95%), seguida de regressão logística com o teste de Hosmer e Lemeshow.
Resultados: Amostra composta majoritariamente por mulheres, com baixa escolaridade, média de 70 anos de idade e com alta procura pelos serviços primários de saúde. As mulheres foram mais vulneráveis à depressão, não havendo diferença para quedas relacionados ao sexo. A idade se configurou fator de risco para todos os aspectos avaliados. Houve correlação entre a dependência funcional e todos os aspectos analisados. Observou-se relação entre o nível de dependência funcional e escolaridade (OR: 2,0; IC95%: 0,05 – 78,32), moradia na zona rural (OR: 2,83; IC95%: 1,6 – 5,1), depressão (OR: 5,18; IC95%: 1,2 – 22,8) e risco de quedas (OR:1,67; IC95%: 0,8 – 3,5), com os dois últimos fatores permanecendo significativos na regressão logística.
Conclusão: A dependência funcional para executar atividades mais complexas do dia a dia entre os idosos foi significativa, havendo relação importante entre esta e os aspectos emocionais, cognitivos e risco para quedas.

INTRODUCTION

Population aging is a worldwide phenomenon observed in the most diverse countries, regardless of economic condition.Individuals aged 60 years or older are considered elderly[1], with the minimum age varying depending on the socioeconomic level of the analyzed country; in developed countries, the age of 65 years is taken as the starting point[2].

It is estimated that the world population of elderly is 600 million people nowadays, projected to double by 2025[3]. In Brazil, aging is also quite evident; in 2020, the elderly population corresponded to about 30.1 million people, representing 14.3% of the entire population[4]. It is estimated that by 2060 the number of elderlies will reach 73.4 million, corresponding to 32.2% of Brazilian citizens[5].

Each country has been experiencing population aging differently due to its social, political, economic, and health changes.The aging differences go beyond the physical aspect, generating changes also related to education, social security, and the family organization itself[6]. Concerning health, the elderly consume more services due to the characteristics of chronic diseases, with more frequent and prolonged hospital admissions than in other age groups, thus generating a shortage in the supply of services and a considerable increase in public spending resulting from the demand growing[7].

Thus, recognizing that a objective of Primary Health Care (PHC) is to prevent and promote health conditions, the more effectively the elderly population is cared for in their community, the lower the need for access to the network of specialized services. This in turn generates continuous and facilitated access to these services, and guarantees a better quality of life[8]. Family health teams can promote the healthy aging of the elderly in their community so that they remain autonomous and functional as long as possible. Such actions would thus be in line with the National Policy for the Elderly (PNI), which aims to recover, maintain and promote their autonomy and independence, directing collective and individual health measures for this purpose in line with the principles and guidelines of the Unified Health System (UHS)[9]. Considering that clinical conditions and functional disabilities impact the family environment, the health system, and the daily life of the elderly, efforts should be made to minimize this process, aiming for greater longevity of this population with greater autonomy, independence, and better quality of life[10].

Activities of daily living (ADLs) are divided into basic (BADL) and instrumental activities of daily living (IADL).BADLs are associated with self-care tasks with the most straightforward degree of execution, whereas IADLs are related to living in a community and performing more complex tasks[11]. The more the ability to perform BADL and IADL is maintained and preserved, the longer the independence of the elderly will be[12]. It has already been observed that the elderly who have difficulty or require help in these activities are subject to a higher risk of mortality, hospitalization, and need for long-term care, ultimately generating a burden on healthcare services[13].

There is a gap in the scientific literature on the relationship between functional dependence/walking with cognition and emotional state, rarely dealing with the relationship of frailty in the elderly. Thus, in light of this, we sought to evaluate the correlation between functional dependence and emotional state, cognitive function, and ambulation of the elderly monitored by the Family Health Strategy (FHS).

METHODS

This is an exploratory, cross-sectional, prospective and quantitative study conducted between August 2020 and April 2021 in Quixeré, CE, Brazil.

The research was approved by the Research Ethics Committee of the University of the State of Rio Grande do Norte (CEP/UERN) (CAAE 29267720.4.0000.5294, ID# 3.999.941), under resolutions 466/12 and 510/16 of the National Health Council. Individuals were informed about their participation and study objectives and, after acceptance, signed the Informed Consent Form,

following the current legislation.

The participants were elderly users of the UHS associated with the Family Health Teams. The city of Quixeré has 22,293 inhabitants[14], and the elderly population represents about 10.6% of the whole population. The FHS in the city covers more than 90% of the population, corresponding to about 2,926 elderly people, assigned to nine teams, three of which are distributed at the headquarters and the others in the rural areas of Água-Fria, Boqueirão, Lagoinha, and Tomé. Elderly people aged 60 years or over, of both sexes, registered in the health team, who walked with or without support aid, and who had preserved communication and understanding skills were included. Elderly people with a history of stroke, Alzheimer's disease, Parkinson's disease, or any other disease that affected memory, cognition, or gait were excluded.

Based on these criteria, the community health agents of each family health team provided a list of elderly people with a possible profile of participation in the study, who were randomly selected by drawing in a ballot box, blinded, to avoid bias. The sample was divided by the total number of health teams, indicating the number of individuals per team. The randomly selected elderlies were contacted by the community health agent (CHA) and invited to receive an evaluator at their home. After their agreement, a home visit was conducted to ensure research participation.

The evaluation started with clarifying the study objectives, followed by the informed consent signature and a pre-assessment questionnaire to confirm the inclusion and exclusion criteria. The instruments used to evaluate the participants were the Lawton Scale, Geriatric Depression Scale (GDS-15), Mini-Mental State Examination (MMSE), and Tinneti test.A researcher applied all instruments individually at the elderly's home and in a reserved place without family interference, respecting the individual's privacy.

The Lawton Scale assesses the most complex activities related to the independence of the elderly in living in the community in nine items, scoring from 1 to 3 according to the degree of dependence. The elderly who score 3 for all tasks, totaling 27 points, are considered independent, while those with a score equal to or less than 26 are considered dependent[15].

The MMSE is intended to screen cognitive functions and dementia by evaluating various domains such as temporal and spatial orientation, immediate and recall memory, calculation, language naming, repetition, comprehension, writing, and drawing copy. The test result is based on the years the participant has studied. The maximum score is 30 points, and the suggested cut-off points are illiterate - 19; 1 to 3 years of schooling - 23; 4 to 7 years of schooling – 24; more than 7 years of schooling - 28. Thus, the result suggests preserved cognition or cognitive deficit[16].

The Geriatric Depression Scale (GDS) suggests depression in the elderly, classifying the emotional condition into three types: normal, mild, or severe[17].

The Tinneti test assesses balance and gait abnormalities, indicating the risk of falls among the elderly. The test consists of 16 items, 9 for body balance and 7 for gait. The total score is the sum of the assessment of gait (12 points) and balance (16 points). Scores below 19 points indicate high risk, between 19 and 24 points moderate risk, while scores above 24 lowrisk[18].

A sampling error of 5% was adopted, with a confidence level of 95%, identifying a sample of 340 subjects, considering a finite population.

Data were expressed as mean and standard deviation, minimum and maximum values, or simple frequency and percentage, using SPSS software (Statistical Package for the Social Sciences), version 23.0. The chi-square or Fisher's exact tests were used to verify the association of the different categorical variables. Odds ratios were calculated with their respective 95% confidence intervals, followed by logistic regression to obtain the adjusted values. Statistical differences in the proportions of Lawton's levels of dependence were obtained using the binomial test for two homogeneous proportions. After verifying the normality of the data using the Shapiro-Wilk tests and homoscedasticity by the Levene test, statistical differences between sex and age in the different variables were obtained from the Mann–Whitney test, and their relationship was verified by Spearman correlation for continuous variables. The level of significance established was 5% ($p < 0.05$). For logistic regression, as a measure of the model's goodness of fit, the Hosmer-Lemeshow test was used ($p > 0.05$ indicated that the model is adjusted).

RESULTS

A total of 229 results referring to the target audience were obtained. The final number of data collected was below the projected because of the adversities related to the COVID-19 pandemic period.

The participants in this study were predominantly female (58.1%) with low education, having attended incomplete elementary school (52.8%) or being illiterate (40.2%). Most were over 65 years of age (68.6%), with a mean age of 70 ± 7.0 years, living in the rural area of the municipality (51.5%). Most participants (74.2%) reported they had sought the services of their basic health unit in the last year for various health needs.

We observed that the elderly showed preserved cognitive status (59.4%) and no emotional changes related to depression (89.5%), with a mean of 2.93 ± 2.24 on the geriatric depression scale. 68.1% of the participants depended on performingmore complex daily activities, with a mean of 23.8 ± 3.73 points on the Lawton scale.

It was evidenced that men were less vulnerable to depression than women, even though both presented low fragility for psychological impairment related to depression. Mean score for men was lower than for women (Table 1), although both had low values on the geriatric depression scale, which considers psychological normal up to 5 points. There was no difference in vulnerability for falls related to sex; however, women appeared more susceptible to dependence on instrumental activities of daily living.

Age over 65 years was configured as a risk factor for impairment of cognitive aspects, the performance of instrumental activities of daily living, gait, and balance (Table 2).

Table 3 shows the values of Spearman's correlation coefficient between the age of the elderly and the scores of the Lawton, MMSE, GDS, and Tinneti instruments. Weak negative relationships were observed between age and functional independence, cognition and gait, and balance; the older people become, the greater their functional dependence, cognitive deficit, and impairment of gait and balance. There was a weak positive correlation between age and the geriatric depression scale. The correlation between the Lawton scale and the other variables (Table 4) showed correlation coefficients of low magnitude, with negative values for age and psychological status associated with depression, and positive values for the time of study, cognitive status, and gait and balance.

Table 1 — Result of the evaluation of cognitive and emotional aspects, risk for falls and functional dependence of the elderly in relation to sex.

Variable	Sex		p-value*
	Male	Female	
MMSE	21.76 ± 3.84	22 ± 4.33	0.548
GDS	2.47 ± 1.84	3.27 ± 2.44	0.016
Tinneti	25.81 ± 2.56	25.47 ± 3.24	0.816
Lawton	24.17 ± 3.22	23.69 ± 4.06	0.984

*Mann-Whitney test.

Table 2 — Result of the assessment of cognitive and emotional aspects, risk for falls and functional dependence of the elderly in relation to age.

Variable	Age		p-value*
	Up to 65 y	Above 65 y	
MMSE	23.39 ± 3.65	21.22 ± 4.16	< 0.001
GDS	2.67 ± 1.98	3.06 ± 2.35	0.235
Tinneti	26.43 ± 2.4	25.24 ± 3.14	0.002
Lawton	24.76 ± 2.64	23.49 ± 4.08	0.047

*Mann-Whitney test.

Table 3 — Spearman correlation values (r_s) of age in relation to cognitive and emotional aspects, risk for falls and functional dependence of the elderly.

Variable	Age (r_s)	p-value
MMSE	-0.31	< 0.001
GDS	0.22	< 0.001
Tinneti	-0.34	< 0.001
Lawton	-0.27	< 0.001

Table 4 — Spearman correlation values (r_s) of the functional dependence in relation to the analyzed variables.

Variable	Lawton (r_s)	p-value
Age	-0.27	< 0.001
Years of study	0.26	< 0.001
MMSE	0.37	< 0.001
GDS	-0.22	< 0.001
Tinneti	0.28	< 0.001

It was identified that the elderly classified as dependent for instrumental activities of daily living are primarily women (56.4%), illiterate (47.4%) or with incomplete elementary education (48.7%), aged over 65 years (71.2%), living in rural areas (59.6%) and who regularly seek basic health services (75%). Although they showed dependence on more complex activities of daily living, these elderly were mainly cognitively preserved (56.4%), without considerable changes in the emotional state related to depression (86.5%), and at low risk of falls (71.2%) (Table 5). There was a relationship between the level of functional dependence and education (OR 2.0; CI: 0.05 – 78.32), living in the rural area (OR 2.83; CI: 1.6 – 5.1), depression (OR 5.18; CI: 1.2 – 22.8) and risk of falls (OR 1.67; CI: 0.8 – 3.5).

The association with education showed a linear trend, with the prevalence of disability for IADL being higher among the elderly with less education. Elderly people living in rural areas had a higher prevalence of functional dependence (PR = 2.83; 95%CI 1.6 — 5.1). Elderly people with a mild degree of depression had a higher prevalence of functional dependence than those with a normal degree (PR = 5.18; 95%CI: 1.2 —22.8). There was no significant association with functional dependence between elderly individuals with high and low risk of falls (PR = 14.01; 95%CI: 0.8 — 240.9).Adjusted logistic regression showed that mild depression (PR = 5.38; 95%CI: 1.16 — 24.93; p = 0.031) and living in rural areas (PR = 2.86; 95%CI: 1.58 — 5.18; p = 0.001) were statistically significant.

DISCUSSION

The aging process has been a recurring research theme in the most diverse areas of knowledge, highlighting its intrinsic and extrinsic factors. It was observed in this study an elderly population composed mainly of women, with low education, with an average of 70 years, residing in rural areas and with a significant search for health services in the basic unit of reference.

The profile of the Brazilian elderly shows prevalence in the age group of 60–69 years, most female and with low education[19-27]. However, a survey carried out with elderly people in rural areas observed a predominance of male participants, however illiterate[28].

The access and demand for health services in primary care are the main issues for the economically disadvantaged population, which does not have a complementary health plan, including the elderly[28,29]. Thus, the role of the FHS in minimizing social inequalities in this population is highlighted, although there are still barriers to access that need to be overcome[30].

The emotional state related to depression in the elderly is configured as a predictive factor for reduced functionality, making them more susceptible to a compromising level of frailty. Elderly people with depressive symptoms tend to be socially isolated, participate less in community events and have a lower frequency of visits to family and friends, further compromising their functional performance and leading to inadequate health care[31-33].

The volunteers in this study did not show emotional changes related to depression, of which just over 10% of the sample showed changes. This corroborates the findings of other studies, which

Table 5 — Association of the functional dependence level in relation to the different variables studied.

Variables	Lawton				OR (95%CI)	p-value
	Dependent		Independent			
	Freq.	%	Freq.	%		
Sex						
Female	88	56.4	45	61.6	0.81 (0.46 - 1.42)	0.454
Male	68	43.6	28	38.4	1	
Scholarity						
Illiterate	74	47.4	18	24.7	8.2 (0.7 - 95.8)	
IEE	76	48.7	45	61.6	3.38 (0.3 - 38.3)	
CEE	03	1.9	3	4.1	2.0 (0.1 - 35.8)	
IHS	1	0.6	1	1.4	2.0 (0.05 - 78.32)	0.002*
CHS	1	0.6	4	5.5	0.50 (0.01 - 12.91)	
PostG	1	0.6	2	2.7	1	
Age						
Over 65 years	111	71.2	46	63.0	1.44 (0.80 - 2.60)	0.216
Up to 65 years	45	28.8	27	37.0	1	
Residence						
Rural zone	93	59.6	25	34.2	2.83 (1.6 - 5.1)	< 0.001†
Urban zone	63	40.4	48	65.8	1	
Medical consultation						
No	39	25.0	20	27.4	0.88 (0.5 - 1.7)	0.699
Yes	117	75.0	53	72.6	1	
MMSE						
Deficit	68	43.6	25	34.2	1.48 (0.8 - 2.6)	0.180
Preserved	88	56.4	48	65.8	1	
GDS						
Severe	1	0.6	1	1.4	0.51 (0.03 - 8.42)	
Middle	20	12.8	2	2.7	5.18 (1.2 - 22.8)	0.023*
Normal	135	86.5	70	95.9	1	
Tinneti						
High	12	7.7	0	0	14.01 (0.8 - 240.9)	
Moderate	33	21.2	11	15.1	1.67 (0.8 - 3.5)	0.007‡
Low	111	71.2	62	84.9	1	

* Fisher's exact test; † Chi-square; ‡: Chi-square for linear association. OR (95%CI): Odds Ratio (95% confidence interval). IEE: incomplete elementary education; CEE: complete elementary education; IHS: incomplete high school; CHS: complete high school; PostG: graduate.

observed that 82.9% of the elderly participants did not present depressive symptoms, and most of the elderly did not score above the cut-off point on the Geriatric Depression Scale. However, this factor was significantly associated with vulnerability[26,34].

It was evidenced that depressive symptoms had a solid and increasing association with levels of pre-frailty and frailty among the elderly, with the frail being 2.6 times more likely to have depressive symptoms, with no risk of vulnerability related to sex[22].

A longitudinal study evaluated the reduction of functional capacity in the elderly, noting that symptoms of depression were important factors for dependence, significantly reducing their functional capacity with a risk of 2.4 times greater than elderly without depressive symptoms[35]. Women, functional incapacity, and signs of depression were associated with more morbidities[27].

Research in the elderly population shows a high incidence of balance and gait difficulties arising from the natural aging process, which brings with its dysfunctions in the locomotor and sensory systems, generating instability and changes[36].However, the findings of this study diverged from the literature since they showed a low risk of falls, followed by moderate and high risk.

Functional alterations in balance and gait among the elderly showed a tendency toward falls, with age being a risk factor, with no association with gender[37], which is similar to the results of this study. A study that exclusively evaluated the recurrence of falls among elderly people in the community showed that 77.6% participants suffered from their recurrence, which is more evident in women over 70 years and with low education[38].

Dementia is understood as one of the main triggering factors for the increased risk of falls in the elderly.Although balance is more affected in the most severe degrees of dementia, a significant impairment in the mild degree can be observed[39].

The high risk of falls in elderly people with cognitive deficits is related to the great possibility of exposure to neglect, social exclusion, and depressive symptoms[40], with a strong influence of cognitive factors on the functionality and independence of the elderly individual.

The fall event triggers the vulnerability of the elderly person, being an important factor for developing

the frailty syndrome as well as for fractures, prolonged hospitalizations, social isolation due to the fear of falling, and increased dependence[29].

Regarding cognitive functions, most of the elderly in this research showed preservation of capacities, similar to the assessment results in independent elderly people[29]. It was found that elderly people with cognitive alterations had more difficulty performing IADL compared to BADL, intensified in those who lived in poverty[41]. Research has shown that in the early stages of dementia, there may already be changes in the performance of activities of daily living and that elderly people with mild cognitive changes have impairments in IADL. In contrast, for BADL, this impairment would be more significant in more advanced stages of dementia[42], which may be associated with stroke events[43], with falls being a triggering factor for injuries that worsen the impairment of nervous system functions[44].

In this study, 68.1% of the elderly were assessed as dependent, and female gender, low education, advanced age, and living in rural areas were significant for their dependence. Similarly, a description of dependence related to the performance of instrumental activities of daily living was found in the elderly population[24,34].

It is noticed that there is a substantial divergence in the analyzed studies regarding the dependence of the elderly[21,23,24].However, there is a consensus that the elderly become dependent first for IADLs, delaying their dependence for BADLs.Several factors have been related to the functional dependence of the elderly for IADLs in the scientific literature, including advanced age[20], the number of chronic conditions and level of social involvement[33], lack of education, and frailty[22]. A study evaluating the reduction in the functional capacity of elderly people residing in the community between 2011 and 2014 identified the female sex, age over 80 years, illiteracy, marital status without union, income less than one salary, and active insufficiency as the main contributing factors for the reduction of independence[35]. Alternatively, this study showed an association between functional dependence and the results of the other assessment instruments, noting that mild depression and high risk of falls were predisposing factors to functional dependence. In the multivariate analysis model, the mild degree of depression and living in rural areas constituted significant factors in the functional dependence of the elderly.

A study carried out with elderly people living in rural areas suggested that they had worse performance in IADLs than BADLs and had fewer depressive symptoms and fewer multimorbidities than residents in urban areas[28], which is directly related to what was found in this study. Other authors also found a strong relationship between the self-perception of the health status of depressive symptoms and the frequency of falls, stressing that depression affects the functional capacity of the elderly based on cognitive symptoms, minimizing the ability to perform ADLs[45], which differs from the results of this study.

Professional performance in primary health care based on an assessment that identifies the influencing factors can contribute to the maintenance or delay of functional dependence, reflecting a better quality of life for the elderly person for as long as possible. Thus, it is essential to develop activities that promote physical well-being and contribute to the promotion of cognitive and emotional functions. In this way, family health teams can develop strategies based on individual and collective situations inherent to their territory, promoting activities that favor the autonomy and independence of the elderly.

It can be mentioned as limitations of the study the collection of data from a single and small city, the number of participants limited by the COVID-19 pandemic, and possible biases in data collection. Considering this, it opens the possibility of future studies related to the functional dependence of the elderly in primary health care.

CONCLUSION

Functional dependence to perform more complex daily activities among the elderly was significant, with an important relationship between functional dependence and emotional and cognitive aspects and fall risk. Low schooling, living in rural areas, mild depression, and fall risk were risk factors for functional dependence.

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