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RESEARCH

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Depressive Symptoms in Elderly People

Sintomas Depressivos em Grupos de Terceira Idade

Los Síntomas Depresivos en los Terceros Grupos de Edad

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ABSTRACT

Objective: The study's goal has been to identify depressive symptoms in elderly people living in communities or groups in the municipality of *Petrolina, Pernambuco* State, Brazil, through the Geriatric Depression Scale. **Methods:** It is a cross-sectional study that was carried out with 185 elderly people. Three structured and semi-structured instruments were applied, including the Geriatric Depression Scale. Descriptive statistics and the logit model with Odds Ratio (OR) were used. The Kruskal Wallis and Mann Whitney tests were applied in order to evaluate the scale score. A significance level of 5% and a confidence interval of 95% were used. **Results:** The active elderly showed 36.2% of depressive symptoms. The multivariate model presented the gender (for men OR=0.31; p-value=0.043) and the health perception (OR=10.27 and p-value=0.001) as depression associated factors. **Conclusion:** There is a need for implementing strategies aiming to prevent depressive symptoms in elderly people, and also taking into consideration the factors associated with its occurrence.

Descriptors: Elderly, Depression, Health Promotion, Senior Centers.

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RESUMO

Objetivo: Identificar a ocorrência de sintomas depressivos a partir da Escala de Depressão Geriátrica em idosos participantes de centros e grupos de convivência de idosos no município de Petrolina-Pernambuco. **Métodos:** Estudo transversal com 185 idosos. Aplicaram-se três instrumentos estruturados e semiestruturados, incluindo a Escala de Depressão Geriátrica. Utilizou-se a estatística descritiva e o modelo *logit* com apresentação do *odds ratio*. Os testes de Kruskal Wallis e Mann Whitney foram aplicadas para avaliação do escore da escala. Adotou-se nível de significância de 5% e intervalo de confiança de 95%. **Resultados:** Observou-se ocorrência de 36,2% de sintomas depressivos nos idosos ativos. O modelo multivariado apresentou o sexo (homens OR=0,31; p-valor=0,043) e a percepção de saúde (ruim OR=10,27; p-valor=0,001) como fatores associados à depressão. **Conclusão:** Há necessidade da implantação de estratégias de prevenção para enfrentamento de depressão na pessoa idosa nos fatores que estiveram associados à sua ocorrência.

Descritores: Idoso, Depressão, Promoção da saúde, Centros Comunitários para Idosos.

RESUMEN

Objetivo: Identificar la aparición de los síntomas depresivos en la Escala de Depresión Geriátrica en ancianos que participan de los centros y grupos de convivencia de ancianos en la ciudad de Petrolina, Pernambuco. **Métodos:** Estudio transversal con 185 ancianos. Se aplicaron tres instrumentos estructurados y semi-estructurados, incluyendo la Escala de Depresión Geriátrica. Se utilizó la estadística descriptiva y el modelo logit con presentación odds ratio. Las pruebas de Kruskal Wallis y Mann-Whitney se aplicaron para evaluar la puntuación de la escala. Se adoptó un nivel de significación de 5% y un intervalo de confianza de 95%. **Resultados:** Se ha observado una ocurrencia 36,2% de los síntomas depresivos en los ancianos activos. El modelo multivariado mostró sexo (hombres OR = 0,31 ; valor de p = 0,043) y percepción de la salud (OR = 10,27; p-valor = 0,001) como factores asociados a la depresión. **Conclusión:** Hay necesidad de implementar estrategias de prevención para hacer frente a la depresión en los ancianos en los factores que se asociaron con su ocurrencia.

Descriptores: Persona Anciana, Síntomas Depresivos, Promoción de la Salud, Centros para Personas Mayores.

INTRODUCTION

Brazil has been undergoing a process of demographic transition over the last decades through the reduction in the fertility and mortality rates. The *Instituto Brasileiro de Geografia e Estatística (IBGE)* [Brazilian Institute of Geography and Statistics] estimates that in 2050, 19% of the Brazilian population will consist of elderly people, thus evidencing the population aging and an alteration in the age pyramid.[1-2]

According to a study from the IBGE, 23.5 million Brazilians were elderly in 2014. Comparing this result with those between 2009 and 2011, this age group increased by 7.6%, that is, 1.8 million more people. In 2011, there were 21.7 million elderly people in Brazil.[2] The *Pernambuco* State has an elderly population estimated at 21,537 inhabitants according to the last census.[3]

Aging causes biological, psychological and social changes. Currently, depression is the most common psychiatric illness in elderly people, being of great relevance to public health[4]. In 2015, the percentage of the world population affected by depression was estimated at 4.4%. Depression is a multifactorial disorder of the affective or mood area, and its main symptoms are the depressed mood and the loss of interest or pleasure in daily activities, producing a strong functional impact in any age group.[4-5]

The evaluation and effective approach to mental health problems favors the early detection of symptoms related to depression in the elderly, which can be performed by using scales, such as the Geriatric Depression Scale (GDS),[6-7-8] which is a survey conducted to discover depressive symptoms in the elderly through questions about what they have felt in recent weeks.

The GDS's reduced form is composed of 15 items that aim to identify feelings of worthlessness, disinterest, annoyance, happiness, among others. A GDS score above five points suggests probable depression.[7] Therefore, this scale contributes to the diagnosis and symptom evaluation; and it supports the elderly monitoring and treatment results.[9]

Considering the changes during the aging process, despite the elderly's limitations, it is necessary to create strategies to prevent diseases and promote their health, reducing risks and offering viable procedures for a healthy and active aging, and also providing them quality of life.[8]

The actions from the Living Center for the Elderly (LCE) contribute to the performance of activities that enhance the elderly's physical and mental well-being. The social support by participating in physical, religious, group, or community activities helps to prevent the development of depressive symptoms.[6]

Therefore, the following study's question was asked: "Do the community-living elderly people experience depression?" Consequently, the study's purpose was to identify the occurrence of depressive symptoms in elderly people living in communities from the Petrolina city, Pernambuco State, Brazil, by using the GDS.

METHODS

It is a descriptive and cross-sectional study with a quantitative approach that was carried out with elderly people who participated in living centers and groups in *Petrolina* city, *Pernambuco* State, Brazil. Data were collected between December 2015 and August 2016 in ten LCEs located in the urban area of the city.

Inclusion criteria were as follows: elderly people aged 60 years old or more, who were attending LCEs or elderly groups, living in *Petrolina* city, and whose that did not show cognitive deficit through the Small Mental State Examination (SMSE). The exclusion criteria were as follows: elderly people who had a SMSE score below ten as proposed by Almeida and Almeida (1999) for the validation of the GDS, and agreed to participate in the study by signing

the Free and Informed Consent Term after the study was explained to them.

The sample was calculated based on the number of elderly people registered in groups from *Centros de Referência e Assistência Social (CRASs)* [Reference and Social Assistance Centers] and LCEs (482) according to the Department of Social Development of the municipality, estimated at 215 elderly people, considering a confidence level of 95%, a maximum error of 5%, and an estimated prevalence of 50%. Only 185 elderly people satisfied the inclusion criteria. The sampling process was carried out in a non-probabilistic way in all the living centers and elderly groups of the municipality.

Three structured and semi-structured instruments were used in this study. The first instrument was the SMSE, used to evaluate the elderly's cognition considering their education. The second instrument was related to the elderly's socio-demographic profile and self-reported diseases developed by the researchers. The third instrument was the Brazilian GDS validated by Paradela *et al.*[10]

The socio-demographic variables studied were: age (in years); sex; civil status (married, divorced, single, widow); self-reported race/ skin color (white or non-white: brown, black, yellow, indigenous); education (none, 1 to 4, 5 to 8, 9 to 11 and 12 or more years of study); income (in Brazilian Real).

The variables related to health and participation in groups/centers were: self-perception of health (very good/ good, regular/bad/very poor); chronic non-transmissible diseases pointed out by the elderly (diabetes; hypertension; cardiovascular disease other than hypertension; stroke; or cerebral ischemia); participation time in living centers or groups for the elderly (in years); weekly frequency of participation in living groups (in days); number of hours spent in the living center/group per day; means of transportation used during the route to/from the living center/group (on foot or others); alcoholic beverage consumption (yes or no); smoking (smoking or not smoking); and physical activity (yes or no).

Data were analyzed through descriptive statistics presented in absolute numbers and proportions. The numerical variables were evaluated by means of central tendency and dispersion (average and Standard Deviation - SD). The 95% Confidence Intervals (95% CI) were calculated for the means. For the proportions, the 95% CIs followed the binomial distribution. The GDS was verified in its numerical value and dichotomized by means of a dummy variable (case/not case). The comparison of the mean GDS score among the socio-demographic, economic and clinical characteristics of the elderly was performed by the Kruskal Wallis and Wilcoxon-Mann-Whitney tests, considering the non-normality of the variable distribution by the Shapiro Wilk test ($p<0.05$).

The evaluation of factors associated with depression was performed by the logit model considering the binary dependent variable. After the bivariate evaluation, the variables that p-values were lower than 0.20 were then included in the final model. The model values were verified by means of the Odds Ratio (OR) for $p<0.05$. A significance level of 5% and confidence level of 95% were used for all tests. Also, the statistical analysis was carried out using the Stata 12.0 software.

The study complied with the guidelines and norms regulating research involving human beings, and was approved by the Research Ethics Committee from the *Universidade Federal de Pernambuco (UFPE)*, under the Legal Opinion No. 1.333.183 and *Certificado de Apresentação para Apreciação Ética (CAAE)* [Certificate of Presentation for Ethical Appraisal] No. 48031915.6.0000.5207.

RESULTS AND DISCUSSION

As showed in **Table 1**, the elderly who participate in groups or attend LCEs are mostly women (89.2%), non-white (69.2%), and widow (45.4%), having education between one and four years of study (40.2%). The mean age was 69.9 years (SD=7.8). The average income was R$ 1,027.80 (SD=708.4).

Table 1 – Socio-demographic and economic characteristics of the elderly participants of living centers or groups.

	n	%	95% CI*	
Sex				
Female	165	89.2	84.7	93.7
Male	20	10.8	6.3	15.3
Civil State				
Married	53	28.7	22.1	35.2
Divorced	25	13.5	8.5	18.5
Single	23	12.4	7.6	17.2
Widow	84	45.4	38.2	52.6
Education				
None	42	22.8	16.7	28.9
1 to 4 years of study	74	40.2	33.1	47.4
5 to 8 years of study	35	19.0	13.3	24.7
9 to 11 years of study	13	7.1	3.3	10.8
12 years of study or more	20	10.9	6.3	15.4
Race/skin color				
Non-white	128	69.2	62.5	75.9
White	57	30.8	24.1	37.5
Age group				
60 to 69 years old	104	56.2	49	63.4
70 to 79 years old	57	30.8	24.1	37.5
80 years old or more	24	13	8.1	17.9
	Mean	**SD**	**95% CI****	
Age	69.9	7.8	68.8	71.1
Income	1027.8	708.4	920.2	1135.4

*95% CI - Confidence Interval of 95% assuming a binomial distribution; ** 95% CI - Confidence Interval of 95% for the average; SD - Standard Deviation.

Among the diseases self-reported by the elderly, 43.2% of them reported having hypertension. Comparing the two most predominant pathologies such as hypertension and/or diabetes, 65.9% of the participants reported having

hypertension. The majority of them informed performing some physical activity (64.9%), 76.2% of them reported going to the LCE by foot. When answering about the perception of their health, 60,0% of them reported that they have a regular, bad, or very bad health. 87.6% of them informed that they were not consuming alcoholic beverages or never had consumed it before. Conclusively, 47.0% of the participants reported that they smoked or still smoke.

The GDS score presented an incidence of 36.2% of depression among the elderly, reaching five or more points according to *Table 2*.

Table 2 – Self-reported chronic diseases, life habits and indicative of depression by the GDS.

	N	%	95% CI*	
Self-reported diseases				
Diabetes	12	6.5	2.9	10
Hypertension	80	43.2	36	50.4
Cardiovascular diseases	8	4.3	1.3	7.3
Cerebrovascular accident	1	0.6	0.5	1.6
More than one disease	25	13.5	8.5	18.4
No disease	59	31.9	25.1	38.6
Hypertension and diabetes				
Diabetes	13	10.8	5.1	16.4
Hypertension	79	65.9	57.2	74.4
Both of them	28	23.3	15.6	31
Physical activity				
No	65	35.1	28.1	42.0
Yes	120	64.9	57.9	71.8
Locomotion				
Other means	44	23.8	17.5	29.9
On foot	141	76.2	70.0	82.4
Self-perception about health				
Very good/good	74	40.0	32.8	47.1
Regular/Bad/Very bad	111	60.0	52.8	67.1
Alcoholic consumption				
No	162	87.6	82.7	92.3
Yes	23	12.4	7.6	17.2
Smoking				
No	98	53.0	45.7	60.2
Yes	87	47.0	39.7	54.2
Indicative of depression				
No	118	63.8	56.7	70.7
Yes	67	36.2	29.2	43.2
	Average	**SD**	**95% CI****	
Participation time in the living center/group (in years)	6.6	7.0	5.6	7.6
Weekly frequency (in days)	2.5	1.6	2.2	2.7
Number of hours participating in the living center/group per day	3.3	2.8	2.9	3.7

*95% CI - Confidence Interval of 95% assuming a binomial distribution; ** 95% CI - Confidence Interval of 95% for the average; SD - Standard Deviation..

Only the GDS average scores for health perception varied according to the categories. The worse the elderly's health perception, the higher the score (p=0.0001) from the Kruskal Wallis test. The elderly who reported poor health perception had a mean score of 6.4 (SD=3.2) while those who informed having a very good, good or regular health had a mean score below five, 3.1 (SD=1.9) and 4.1 (SD=2.0), respectively. The mean scores of the other characteristics reported by them such as self-reported diseases, sociodemographic conditions, and life habits, had no significant differences (p-value>0.05).

When analyzing the factors related to depression by applying the GDS, it was observed that only the health and genre perception had p-value<0.20 according to the bivariate analysis. Moreover, the adjusted multivariate model presented the sex and health perception as factors associated with depression. The elderly men were less likely to have the disease when compared to the elderly women (ORadjusted=0.31, p=0.043). The elderly who reported having a poor or very poor health perception were ten times more likely than those who reported having a very good or good health (p-value>0.05) to present depression, as can be seen from **Table 3**.

Table 3 – Bivariate and multivariate analysis of the logit model for the indicative of depression in the elderly participants.

	OR bruto	IC95%		p-valor	OR ajustado	IC95%		p-valor
Sexo								
Masculino	0,40	0,13	1,27	0,121	0.31	0.10	0.96	0.043
Feminino	1,00							
Faixa Etária (em anos)								
60 a 69	1,00							
70 a 79	1,09	0,56	2,13	0,797				
80 ou mais	0,72	0,27	1,88	0,498				
Raça/cor								
Branca	0,66	0,34	1,30	0,23				
Não Branca	1,00							
Viúvo								
Sim	0,87	0,48	1,60	0,663				
Não	1,00							
Locomoção								
A pé	1,29	0,63	2,66	0,489				
Outros meios	1,00							
Fuma								
Sim	0,87	0,47	1,59	0,645				
Não	1,00							
Uso de bebida alcoólica								
Sim	1,74	0,72	4,19	0,221				
Não	1,00							
Atividade Física								
Sim	1,06	0,56	1,99	0,863				
Não	1,00							
Hipertensão e/ou diabetes								
Sim	0,86	0,46	1,61	0,641				
Não	1,00							
Percepção de saúde								
Muito boa	1,00							
Regular	2,39	1,22	4,72	0,012	2.40	1.22	4.73	0,012
Ruim	8,38	2,32	30,25	0,001	10.27	2.57	41.00	0,001

OR – Odds Ratio; [a] GDS average score; [b] 95% CI – Confidence Interval of 95% for the GDS average score; [c] 95% CI - Confidence Interval of 95% for the OR and adjusted OR.

The study participants were mostly younger, widow non-white women having low education and high variability in the average income as evidenced by its high standard

deviation. Despite their preserved cognitive autonomy and participation in LCE and elderly group activities, they showed a high prevalence of symptoms that are indicative of depression.

A study performed in the Northeastern region of Brazil, which aimed to estimating the prevalence of depression among the elderly, pointed out a higher proportion of younger women with lower education levels, and women showed depressive symptoms twice as often than men,[12] which is consistent with the study's findings. The higher prevalence of females may be related to a greater number of females in society, and their longer life expectancy.[13]

A study carried out with institutionalized elderly pointed out a predominance of females (60.8%) and white people (43.1%). Furthermore, 49.0% of the elderly had depression, 36.3% of these people had mild depression, and 12.7% had severe depression.[14]

When compared the literature, the prevalence of the depressive symptomatology found this study is high. In a study carried out in a LCE from the *Taguatinga* administrative region, Federal District, Brazil, evidences of depression were identified in 31% of the elderly.[9] The high prevalence of depressive symptoms in active elderly people leads to multifactorial indicatives that are not satisfied by the activities developed in LCEs or elderly groups only. Nevertheless, the elderly's maximum autonomy maintenance and functional capacity becomes important to improve their quality of life.

Regarding the marital situation, widowhood appeared in a more noticeable way in this research. The widow elderly attended the centers looking for companionship and entertainment after the companion's death. This result shares a number of similarities with the findings of a study carried out in the municipality of *Piumhi, Minas Gerais* State, Brazil, which reported a predominance of widow elderly with cognitive decline. Nonetheless, there was no relationship between cognitive decline and the symptoms that are indicative of depression.[15] Moreover, a study aimed to identify the prevalence of depressive symptoms in the Health Center from the Central region of Portugal, which was performed on institutionalized and non-institutionalized elderly people, revealed a high number of widow elderly and more predominant depressive symptoms in the elderly living alone.[16]

Most of the elderly participants had low education levels and income inequality. In a study that evaluated the elderly's depressive symptomatology in *João Pessoa* city, *Paraíba* State, Brazil, it was identified that 47.5% attended school for 5 years at least and most had an income between 1 and 3 minimum wages. Furthermore, 19.6% of the participants had mild depression and only 4.6% of them had severe depression.[17]

Concerning the self-reported diseases, the Systemic Arterial Hypertension (SAH) was the most frequent disease reported by the interviewees. There was a predominance of regular physical activity. The "on foot" was the most frequent variable for "means of locomotion". Regarding the self-perception of health, the "bad" or "very bad" variables were the most frequent. The "no" variable for "alcoholic beverage consumption" and "smoking" was also more frequent.

A study carried out with elderly patients in *Passo Fundo* city, *Rio Grande* do Sul State, Brazil, found that 66.9% of them reported having hypertension, demonstrating its high occurrence among the elderly.[18] A study conducted with elderly residents in rural areas found that elderly patients with a greater number of morbidities were 24% more likely to have indicative depression, but it had no relationship to hypertension and diabetes.

In a study aimed to compare the relationship between anxiety and depression levels among active and sedentary elders, the variables that influenced the presence of anxiety or depression were the physical activity ($p<0.001$) and education ($p<0.01$) levels. The sedentary group was 38 times more likely to develop anxiety and depression symptoms and disabled individuals were 11 times more likely to develop these symptoms.[19]

Physical activities cause positive consequences on health and quality of life, and helps to prevent anxiety and depression. Therefore, there is a relationship between physical activities and psychological benefits.[19]

In a study carried out with elderly people with depressive disorders, it was observed that alcohol was the most used drug among men, and tobacco among women. The depressive episode was the most frequent occurrence between the sexes. In this context, easily accessible drugs (alcohol and tobacco) and lack of information were the main factors related to depression and drug consumption among the elderly.[20]

The adjusted multivariate model identified the factors associated with mild to severe depression. Among the independent variables analyzed, it was observed that the sex of the elderly was associated with depression because the elderly men presented lower chances of developing a depressive symptomatology than elderly women. Another important factor associated with depression was the self-perception of health. The elderly participants who perceived their health as bad or very bad were ten times more likely to have depression. Those who perceived their health as regular were twice as likely to present depressive symptomatology.

There is still no precise explanation about the high occurrence of depression in women, but some hypotheses were developed. Women have different biological reactions to stress during the premenstrual period or menopause and are victimized in several societies. Other factors that increase the risk of depression in women are the human aging and the decreased family support.[8-9,12]

A study carried out with elderly people assisted by a Family Health Strategy unit aiming to identify the factors associated with depression by univariate analysis, showed that the health perception was statistically significant (p-value<0.01). 21.2% of the participants showed prevalence of depression, and 17.9% of these were classified as having mild to moderate depression and 3.3% with severe depression.[18]

Despite the lack of relationship between comorbidities and depression in this study, there is evidence that this association contributes for the development of depression.8 Specially chronic, non-communicable diseases, which can cause depressive symptoms including among the elderly.18 This shows that diseases influence the social condition and the appearance of depressive symptoms, which makes the elderly have more health problems, causing a significant impact on the quality of life and health services.

In this context, health actions nowadays are focused on health promotion and disease prevention issues to promote a healthy and active aging. It is important to identify interesting elderly activities that stimulate healthy habits, education, culture, and leisure. This fact enables the maintenance of an active life and personal satisfaction, thus strengthening the social support network. This emphasizes the importance of the elderly's participation in groups, which allows the exchange of experiences that may help them to overcome this phase.[8-9] Nevertheless, from the perspective of preventing depression in the elderly considering its high occurrence, other factors must also be studied.

Therefore, it is necessary to emphasize the importance of social health care actions for the elderly to prevent affective or mood disorders, especially those related to depression. Thus, the creation of national programs in LCEs and the elderly's participation in groups are fundamental to achieve an active aging, being able to decrease the occurrence of depressive symptoms.[9]

Although the elderly, in this study, were active participants of LCEs and elderly groups, the indicative of depression was high. They can show depressive symptoms even participating in actions that promote the physical and mental well-being in those institutions.

CONCLUSIONS

The high occurrence of depressive symptoms in active elderly people who participate in LCEs and elderly groups was evidenced in this study. Most of them were younger, widow women, with a high inequality of income and low education. Also, most of them had hypertension, performed physical activities and consumed no alcohol or tobacco.

The elderly interviewees' bad self-perception of health was highlighted, leading them to likely develop depressive symptoms. Moreover, the participants' sex was important: the elderly men were less likely to develop depressive symptoms, but their poor self-perception of health led them to be ten times more likely to experience depressive symptoms when compared to elderly people who had good health self-perception.

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