Depressive symptoms in Brazilians elderly:population-based study

Síntomas depresivos en ancianos brasileños: estudio de base poblacional

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ABSTRACT

Objective: To analyze the factors related to the depressive symptoms in elderly of a community with low socio-economic indicators.
Methods: Epidemiological cross-sectional population-based household study. The study included 316 elderly resident of a city in Brazil's northeast Region. Data were collected in January 2011. The depressive symptoms were evaluated by means of a Geriatric Depression Scale (15-item version). The independent variable included socio-demographic factors, health state, functional limitation and life style. Crude and adjusted Poisson regression models were used in the statistical analyses.
Results: The prevalence of depressive symptoms was 20 %. The adjusted regression model showed that the depressive symptoms were positively related to the female sex (PR = 2.00); marital status: single (PR = 2.73) and divorced (PR = 3.59); change for worse (PR = 2.53) or better (PR = 2.86) health state in comparison to the 12 previous months; worse health state in relation to other people of the same age (PR = 2.22); and functional limitation (PR = 1.72). There was an inverse association between the depressive symptoms and financial difficulty (PR = 0.46).

Conclusions: The results suggest that socio-demographic factors, health self-assessment and functional capacity can be stronger depression determinants than morbidity and life style.

Keywords: depression, health of the elderly, mental health.

RESUMEN

Objetivo: analizar los factores asociados a los síntomas depresivos en ancianos de una comunidad con bajos indicadores socioeconómicos.
Métodos: estudio epidemiológico transversal de base poblacional y domiciliar. El estudio incluye 316 ancianos residentes en una ciudad de la región nordeste de Brasil. Los datos fueron colectados en enero de 2011. Los síntomas depresivos fueron evaluados por la Escala de Depresión Geriátrica (versión 15 ítems). Las variables independientes incluyeron factores sociodemográficos, estado de salud, limitación funcional y estilo de vida. Fueron usados modelos simples y ajustados de regresión de Poisson en los análisis estadísticos.
Resultados: la prevalencia de síntomas depresivos fue de 20 %. El modelo de regresión ajustado mostró que la sintomatología depresiva fue positivamente asociada al sexo femenino (RP = 2,00), estados civiles soltero (RP = 2,73) y divorciado (RP = 3,59), mudanza para peor (RP = 2,53) o mejor (RP = 2,86) en el estado de salud comparado a 12 meses anteriores, peor estado de salud en relación a otras personas de la misma edad (RP = 2,22) y limitación funcional (RP = 1,72). Fue observada asociación inversa entre sintomatología depresiva y dificultades financieras (RP = 0,46). **Conclusiones**: los resultados sugieren que factores sociodemográficos, autoevaluación de la salud y capacidad funcional pueden ser determinantes más fuertes de depresión de que morbilidad y estilo de vida.

Palabras clave: depresión, saluddelanciano, salud mental.

INTRODUCTION

The depression is a mental disorder that, according to estimates,[1] reaches more than 350 million people in the whole world, and the prevalence varies in accordance with the studied population and evaluation criterion.[2,3] This disorder may be long-term or recurrent, and its characteristics sadness, dejection, disinterest, feelings of guilt, low self-esteem, changes to sleep or appetite patterns, lack of concentration and thoughts of death can hinder the individual's capacity to deal with the situations of the daily life, be them of social or occupational nature.[1]

In the elderly the depression is related to physical,[4,5] functional,[6,7] and cognitive decline;[8] to certain non-communicable diseases;[9] to the life style;[10] to the social commitment,[11] and to the socio-demographic characteristics (sex, income, schooling, marital status).[3,9,12,13] Moreover, the depression is related to a higher risk of suicide[14] and greater mortality risk,[15] making it a serious public healthproblem.

There are still few population researches on the mental health of the elderly in Brazil. The existing researches involve the elderly of large urban centers[3,4,16] or in cities of more developed regions.[17]

This study aimed to analyze the factors related to the depressive symptoms in elderly of a community with low socio-economic indicators in the Brazilian northeast.

METHODS

Design and Population

This is a cross-sectional study that analyzed data relating to an epidemiologic household-based research called «Nutritional status, risk behaviors and health conditions of the elderly of Lafaiete Coutinho-BA».Details on the study place and population and data collection were previously published.[5] In summary, the study population comprised of all residents in the urban zone of the studied city with ages of e» 60 years (n = 355). Of the 355 elderly that comprised the study population, 316 participated in the research (89 %):17 refusals (4.8 %), and 22 (6.2 %) individuals were not located after three domiciliary visits in alternated days, being considered as losses.

The study was carried out according to the Declaration of Helsinki of the World Medical Association, and was approved by the Ethics Committee in Research on Human Beings.

Measures

Depressive symptoms (dependent variable)

An abbreviated version of the Geriatric Depression Scale (GDS) was used to evaluate the depressive symptoms.This scale comprises 15 questions with dichotomous answers (yes/no) about the depressive symptoms.Each question answered suggesting such symptoms adds a point. The following punctuation is considered to define the depressive symptoms:[18]< 6 points = negative (absence of depressive symptoms) and e» 6 points = positive (presence of depressive symptoms).

The GDS was not applied in people with cognitive deficiency, evaluated by means of the modified version of the Mini Examination of the Mental State[19] and by the Questionnaire of Pfeffer for Functional Activities.[20]

Explanatory variables

Socio-demographic:sex, age group (60-69 / 70-79 / e» 80 years), marital status (common law partnership / single / widower / divorced), literacy (yes/no) and financial difficulty (yes/no).

State of health:number of self-reported chronic illnesses (none/one/two or more) considering high blood pressure, diabetes, cancer (except skin tumors); chronic lung disease; heart, circulatory, and rheumatic problems, and osteoporosis; health self-perception classified as positive (excellent/good/very good) or negative (regular /bad); health self-perception in relation to the 12 last months (better / equal/worse); health self-perception compared to other people of the same age (better / equal/worse).

Functional limitation:evaluated by means of the walk test (track of 2.44 m), in which the participant was instructed to walk from one end to the other in its usual speed.The participants could use support devices if necessary.The track was walked twice, and the shorter time, in seconds, was considered.The test was considered concluded when the individual could finish the task in d» 60 seconds.To evaluate the performance in the test, an adaptation of the criterion used by Guralniket al.[21]was used, establishing a score in accordance with the distribution of the time in percentile (P_k):incapable or did not conclude = score 0 (incapable); > P_{75} = score 1 (weak); > $P_{25\ to} \leq P_{75}$ = score 2 (average); $\leq P_{25}$ = score 3 (good).The functional limitation was determined thus:scores 0 or 1 = with limitation and scores 2 or 3 = without limitation.

Lifestyle:smoking (smoker / former-smoker / never smoked), alcoholic beverages consumption (< 1 day/week / $\geq$ 1 day/week) and physical activity (insufficiently active / active).The tool used to evaluate the level of physical activity was the International Physical Activity Questionnaire (IPAQ), long version.[22]Those who spent less than 150 minutes per week in moderate or vigorous physical activities were considered insufficiently active; and those who spend more than 150 minutes per week in physical activities were considered active.

Analytic Strategy

The relationship between the depressive symptoms and the explanatory variables were verified by means of the raw and adjusted estimated of the prevalence ratios, per point and per confidence interval of 95 % (CI95 %), by means of the Poisson regression model.In crudeanalyses the prevalence of depressive symptoms was calculated for each category of the explanatory variables, and the level of significance was tested by means of the Wald test of heterogeneity.The variables that presented statistical significance of at least 10 % (p $\leq$ 0.10) in the raw analyses were included in the adjusted analysis, following the order of a hierarchic model for determination of the outcomes (Figure). In accordance with the established model, the variables of the higher levels (distal) interact and determine the variables of the lower levels (proximal).The effect of each explanatory variable on the outcome was controlled for the variables of the same level and of higher levels in the model.The statistical criterion of permanence in the model was 10 % (p $\leq$ 0.10). The significance level adopted in the study was 5 % (α = 0.05).The data were tabulated and analyzed in the statistical program SPSS® version 16.0.
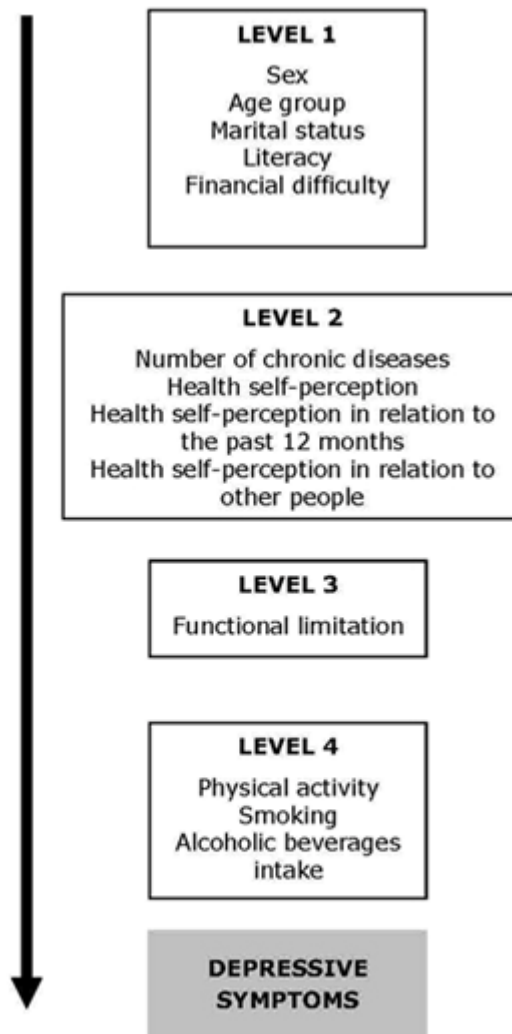
Fig. Conceptual model of determination of the outcome used in the multiple analyses. Lafaiete Coutinho, Brasil, 2011.

RESULTS

The study relied on the participation of 173 women (54.7 %) and 143 men (45.3 %).The age varied from 60 to 105 years (74.2 ± 9.8 years).The age average of the women was 74.9 ± 10 years (60 - 103 years) and of the men it was 73.4 ± 9.4 years.The other characteristics of the studied population are shown in table 1. Most individuals reported living in common law partnership, not knowing how to read or write, having financial difficulties, having two or more chronic illnesses, presenting negative health self-perception, having better health as compared to people of the same age, and not making routine use of alcoholic beverage.

Table 1.Characteristics of the study population. Lafaiete Coutinho, Brazil, 2011.

Variables	% response	N	%
Age group	99.7		
60-69 years		115	36.5
70-79 years		106	33.7
≥ 80 years		94	29.8
Marital status	100.0		
Living with partner		179	56.6
Single		38	12.0
Widower		81	25.6
Divorced		18	5.7
Literacy	100.0		
Yes		105	33.2
No		211	66.8
Financial difficulty	97.8		
Yes		220	71.2
No		89	28.8
Number of chronic diseases	95.9		
None		62	20.5
One		103	34.0
Two or more		138	45.5
Health self-perception	95.9		
Positive		127	41.1
Negative		176	58.1
Health self-perception in relation to the past 12 months	96.2		
Better		80	26.3
The same		91	29.9
Worse		133	43.8
Health self-perception in relation to other people	89.2		
Better		191	67.7
The same		54	19.1
Worse		37	13.1
Functional limitation	95.9		
Yes		78	25.7
No		225	74.3
Physical activity	98.1		
Insufficiently active		148	47.7
Active		162	52.3
Smoking	99.7		
Smoker		35	11.1
Former-smoker		147	46.7
Never smoked		133	42.2
Alcoholic beverage consumption	99.7		
< 1 day/week		27	8.6
≥ 1 day/week		288	91.4

The depressive symptoms were evaluated in 290 individuals.Considering the depressive symptoms as a numerical score, the average of symptoms in the population was 3.6 ± 2.4. The prevalence of depressive symptoms in the analyzed elderly was 20.0 %.

The data on table 2 show the prevalence of depressive symptoms, in accordance with the explanatory variables of the study.The depressive symptoms were significantly more frequent in women, individuals that do not live with a partner, individuals that presented two or more chronic illnesses, that noticed changes (for worse or better) in their health state in comparison to the 12 previous months, those that reported worse health state in relation to other people of the same age, that presented functional limitation, and that were insufficiently active.However, it was less frequent among those that reported having financial difficulties.The results of the raw analysis showed that, except for smoking and consumption of alcoholic beverages, the other explanatory variables reached statistical significance (p d» 0.010) to be included in the multiple model.

Table 2. Prevalence of depressive symptoms and its relationship with the explanatory variables of the study. Lafaiete Coutinho, Brazil, 2011.

Level	Variables	%	PR_{crude}	CI95 %	p-value
	Sex				0.006
	Female	26.1	2.10	1.24-3.56	
	Male	12.4	1		
	Age group				0.050
	60-69 years	18.9	1		
	70-79 years	14.1	0.75	0.40-1.39	
	≥ 80 years	28.8	1.52	0.91-2.55	
	Marital status				< 0.001
1	Living with partner	12.5	1		
	Single	30.6	2.44	1.30-4.61	
	Widower	24.6	1.97	1.11-3.50	
	Divorced	52.9	4.23	2.32-7.72	
	Literacy				0.065
	Yes	13.9	1		
	No	23.3	1.68	0.97-2.91	
	Financial difficulty				0.002
	Yes	15.3	0.48	0.31-0.76	
	No	31.7	1		
2	Number of chronic illnesses				0.062
	None	12.3	1		
	One	17.5	1.43	0.63-3.23	
	Two or more	26.8	2.18	1.03-4.64	
	Health self-perception				0.059
	Positive	14.2	1		
	Negative	23.4	1.65	0.98-2.77	
	Health self-perception in relation to the previous 12 months				0.009
	Better	20.8	2.52	1.10-5.80	
	The same	8.2	1		

	Worse	27.0	3.28	1.52-7.04	
	Health self-perception in relation to other people				0.003
	Better	16.0	0.94	0.48-1.87	
	The same	17.0	1		
	Worse	39.4	2.32	1.12-4.82	
3	Functional limitation				< 0.001
	Yes	37.7	2.75	1.73-4.37	
	No	13.7	1		
4	Physical activity				0.003
	Insufficiently active	28.2	2.07	1.28-3.33	
	Active	13.7	1		
	Smoking				0.917
	Smoker	21.9	1.15	0.54-2.44	
	Former-smoker	20.6	1.08	0.66-1.77	
	Never smoked	19.0	1		
	Alcoholic beverage consumption				0.125
	< 1 day/week	7.4	0.35	0.09-1.34	
	≥ 1 day/week	21.4	1		

After the inter- and intra-level adjustments in accordance with the hierarchic model, the variables age group, number of chronic illnesses, health self-perception, and physical activity, did not remain in the final model, for not meeting the significance criterion (p d» 0.10).The presence of depressive symptoms was positively associated with the feminine female sex, single and divorced marital status, change for worse or better in the health state as compared to the 12 previous months, worse health state in relation to other people of the same age, and functional limitation.There was an inverse association between positive depressive symptoms and financial difficulty.Although it has remained in the final model for adjustment purposes, the variable literacy was not associated with the depressive symptoms (table 3).

Table 3. Poisson model of hierarchic regression of the relationship between positive depressive symptoms and the explanatory variables of the study.
Lafaiete Coutinho, Brazil, 2011.

Variables	$PR_{adjusted}$	CI95 %	p-value
Sex			
Female	2.00	1.21-3.30	0.007
Male	1		
Marital status			
Living with partner	1		
Single	2.73	1.50-4.99	0.001
Widower	1.56	0.87-2.83	0.133
Divorced	3.59	2.06-6.25	< 0.001
Literacy			
Yes	1		

No	1.58	0.93-2.66	0.080
Financial difficulty			
Yes	0.46	0.30-0.72	0.001
No	1		
Health self-perception in relation to the previous 12 months			
Better	2.86	1.18-6.93	0.020
The same	1		
Worse	2.53	1.04-6.13	0.040
Health self-perception in relation to other people			
Better	0.91	0.48-1.70	0.759
The same	1		
Worse	2.22	1.07-4.59	0.032
Functional limitation			
Yes	1.72	1.07-2.75	0.024
No	1		

DISCUSSION

The results of this study showed that, in accordance with the GDS[18] a fifth of the studied population presented depressive symptoms.The factors related to the depressive symptoms were the female sex, single and divorced marital status, financial difficulty, worse health self-perception, and functional limitation.

The prevalence of depression symptoms in men and women of this study can be compared with the prevalence of a multicentricinvestigation that used the same tool and classification criterion.[3]It is possible to observe that the prevalence of depressive symptoms in the older women of this study resembled the results found in other populations of elderlyof Latin America, as in São Paulo (women = 23.8 % and men = 14.1 %), Montevideo(women = 22.9 % and men = 12.6 %) and Mexico City (women = 21.6 % and men = 15.0 %).In a recent study carried out with the elderly of Sri Lanka,Malhotraet al.[21]found higher general prevalence (27.8 %) than that observed in this study (20.0 %).However, it is worth noting that the sampling process was different between the studies, what may interfere with the comparison.

The results showed a positive association between the presence of depressive symptoms and the female sex, as verified in previous studies.[3,22,23]The explanation for the occurrence of higher depression in women is due to the fact that the women present worse social conditions and lesser schooling degree, in addition to having more health problems related to chronic illnesses.[23]The precocious economic disadvantages of the women in relation to the men arise from cultural differences and the definition of the social roles, which contribute for the sex difference in the prevalence of depressive symptoms in the elderly.[3]

The findings of this research showed that the financial difficulty was inversely related with the depressive symptoms.There is no consensus as regards the relationship between economic condition and depressive disorders.Some authors pointed out that the depression is related with the lower family income or higher social risk.[12,24]Other authors suggest that depression is less prevalent in individuals with poor economic situation,[13] who tend to deny the depressive symptoms.Moreover, elderly in need are provided with more social protection, present more traditional social networks, and seek more religious environments. The differences between the results of the studies seem to be related to the characteristics of the studied populations: Spain,[24] Germany,[12] and Nigeria.[13]

It is necessary to consider that, in this study, the majority of the elderly interviewed (71.2 %) reported having financial difficulties.Moreover, the incidence of poverty in the city is 47.8 %, and the Gini index, that measures the social inequality, is 0.35.[25] That is, the city presents high incidence of poverty and low inequality index.This fact allows inferring that the social discrepancies in the city are minimum and the internal conflicts, with aspirations of consumption and services are diminished.On the other hand, those with a more favorable economic situation can suffer local isolation and/or contact with other realities that may give rise to depressive symptoms, as a result of the frustrations, in view of the need for consumption of products and services not offered in the study region.

The results pointed out that single and divorced elderly tend to present more depression symptoms in comparison with the individuals that live with a partner, as verified in other studies.[7,22,26]The relationship between the single marital status and the occurrence of depression can be related to the fact that, in comparison with married elderly, bachelors suffer more with loneliness, have poorer social support, present lower self-confidence, and are more prone to living alone.[26] In the case of divorced elderly, the circumstances that lead to the divorce or separation, especially if they occur late in life, can take to adjustment problems, which may appear as depressive symptoms.Moreover, these elderly feel the lack of support from the spouse, what makes some difficulties of life become complicated to be overcome, causing psychological stress and depression.[22]

Other factors related the occurrence of depressive symptoms were the perception of current health compared to the condition of the 12 previous months, and the perception of health in relation to other people of the same age.At the same time, the relationship between the number of chronic illnesses and depressive symptoms was not verified.It is believed that the bad evaluation of the health state seems to be more important than the presence of chronic illnesses for the development of the depression.[27]However, it should be pointed out that there are no studies investigating the relationship between depressive symptoms and health self-perception with change for worse or better in the 12 previous months.Likewise, the previous studies did not associate the depression with the perception of health compared to people of the same age.These facts emphasize the importance of studies that address these variables, as they allow perceiving if there were changes in relation to the health state of the elderly, and if they present a more negative vision of their health in relation to the people of the same age.

The functional limitation was associated with the depressive symptoms, as previous noted.[6,11]The mechanisms involved in this association can involve cognitive, sensorial and biological aspects, presence of physical comorbidities, besides health[6]and social commitment behaviors.[11] In general, literature points out that there seems to be a relation of reciprocity between functional limitation and depressive symptoms, because both can be the cause or consequence one of the other.[7]

This research presents strengths and limitations.Although the croos-sectional design does not allow establishing a cause and effect relationship, the observed results are coherent with literature.The GDS-15 scale,[18] for evaluation of depressive symptoms, is a low-cost, easy-to-use tool used in the tracking of depression in the elderly.[3]The items of the GDS show good diagnostic accuracy, and adequate sensitivity, specificity and reliability.[28] Moreover, this seems to be the first study of population and householdbase carried out in Brazil to investigate depressive symptoms in low income population.

The results of the study may contribute so that the health professionals may be aware of the factors related to the depressive symptoms, and for the development of actions directed to the prevention and strategies that aim at the reduction of the damages caused by depression in the elderly already affected.

In summary, the study allowed identifying that the positive depressive symptoms affect one fifth of the studied population.The results suggest that socio-demographic factors, health self-assessment and functional capacity can be stronger depression determinants than morbidity and lifestyle.

ACKNOWLEDGEMENTS

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