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Prospective measures of depressive symptoms in community-dwelling elderly individuals

ABSTRACT

OBJECTIVE: To identify sociodemographic factors associated with patterns of incidence, remission and stability of depressive symptoms in community-dwelling elderly individuals.

METHODS: prospective study was conducted, where 310 community-dwelling elderly individuals of the city of Juiz de Fora, Southeastern Brazil, were interviewed between 2002 and 2004. Follow-up (T2) was performed 15.7 months after the first interview (T1). Depressive symptoms were evaluated with the Center for Epidemiological Studies Depression Scale. Elderly individuals were classified according to the progression of depressive symptoms and compared in terms of sociodemographic variables with Pearson's chi-square test and Fisher's exact test.

RESULTS: There were no differences in the prevalence of depressive symptoms between T1 and T2 (33.8%). A total of four groups were identified, according to the progression of symptoms from the first to the second measure: without depressive symptoms (50.9%); recurrence (19.7%); incidence (15.2%); and remission (14.2%). Scoring for depression in T1, being female and having a low level of education represented risks of manifesting depressive symptoms in T2.

CONCLUSIONS: The worst progressions of depressive symptoms (incidence and recurrence) were associated with the female gender.

DESCRIPTORS: Aged. Depression. Socioeconomic Factors. Gender and Health. Prospective Studies.

INTRODUCTION

The increase in vulnerability to depression and reduction in physical resilience in old age are closely associated with diseases, physical disability, social isolation, stressful events and decrease in the sense of well-being.[6,12] The literature points out that the occurrence and deterioration of such conditions are affected by current and past living conditions, which, in their turn, are affected by preceding variables such as income, level of education and gender.[11] Gender and age indicate educational influences and other social opportunities, as well as the level of risk for diseases, poverty and chance of experiencing adverse and uncontrollable life events in old age.[1]

The relationships between aging and the presence of depressive symptoms have not been clearly established, especially due to the interference

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from conceptual or methodological differences among studies. However, to understand how certain phenomena, such as the presence of depressive symptoms, are distinguished from ages is essential for disciplines on aging, because they indicate what is typical and common in each stage.[2] Age is an important variable in research on aging, not because this is the cause, but rather an indicator of a set of other influences associated with behavioral changes.

The international epidemiological and gerontological literature has pointed out the existence of three classes of data on the relationship between aging and depressive symptomatology.[6,14] The first, resulting from the application of scales to screen the elderly population for symptoms, finds a negative linear correlation, i.e. a decrease in symptoms with age, or positive curvilinear correlations, which suggest an increase in symptoms in the younger and older groups, compared to intermediate age groups. The second class of data is based on the application of clinical diagnostic criteria for major depression and it shows a positive linear correlation or negative curvilinear correlations. This indicates that depression increases with age or that it is less evident in younger and older age groups, respectively, when compared to intermediate age groups. The third class of data, resulting from studies in which risk factors associated with age are controlled, such as physical health, material resources and social factors, suggest that aging per se is not a risk factor for depression.

Aiming to clarify the relationships between aging and the presence of depressive symptoms, certain studies seek to identify which factors, among which are sociodemographic ones, are associated with the incidence of significant depressive symptomatology in old age for the first time, being responsible for its persistence or remission in time.[5,8,10,12,16,17] These studies seek to clarify whether the presence of depressive symptoms in old age can be characterized as a phenomenon of an episodic or permanent nature, whether it is a trait related to the experience of negative affects in the long term, personality, or a state or response to stressful events.[11] To understand factors associated with the incidence of depression in old age for the first time could help to prevent and understand depression manifested in this period of life. On the other hand, to recognize factors associated with the persistence and remission of symptoms in time would enable the early identification of individuals who need specific intervention strategies.

There are few prospective or longitudinal studies on depression in old age in Brazil. The present study aimed to identify sociodemographic factors associated with patterns of incidence, remission and stability of depressive symptoms in community-dwelling elderly individuals.

METHODS

Data of this study were obtained from the first and second measures of the Healthy Aging Studies Project (PENSA), developed in Juiz de Fora, Southeastern Brazil, between 2002 and 2004. The study sample was selected using a systematic search in the 14 city districts with the highest percentage of elderly individuals. All households in these districts were visited (N=7,089), and the 1,686 elderly residents identified were invited to participate in the study. Of these, 956 (56%) accepted to participate, 614 (36%) refused and 116 did not participate because of physical or cognitive impairments. The total sample of the first PENSA measure was comprised of 71.2% of women. Age varied between 60 and 103 years (mean of 72.4 years; SD=8.3). Half of the elderly individuals were married (N=478), 38 were single and the remaining ones were widowed, separated or divorced (N=440). A total of 3% of the sample were illiterate, 45% were literate or had completed the 4th grade of primary education, 17% had completed primary education, 24% had completed secondary education, and 11% of the sample had an incomplete or complete higher education level. Data from the first set of measures were collected between 2002 and 2003. Approximately one third of the initial sample was interviewed again in 2003-2004. After a mean time of 15.7 months (SD=4.57) since the first interview, a prospective measure of self-reported health, functional capacity, depressive symptoms and cognition was performed with 347 elderly individuals, randomly selected from the PENSA database.

Data from 310 elderly individuals, who participated of the two PENSA measures and had complete data on depressive symptomatology, were used in the present study. Of all these, 73.5% were females; the mean age was 71.9 years (SD=8.45); 45.8% were aged between 60 and 69 years; 34.8%, between 70 and 79 years; and 19.3%, more than 80 years. There were no statistically significant differences in the distribution between sex and age (chi-square=2.01; df=2; p=0.366). With regard to the level of education, about 3% were illiterate, 45% were literate or had only completed the 4th grade of primary education, 17.5% had completed primary education, 24% had completed secondary education and 11% had an incomplete or complete higher education level.

The following variables were analyzed, collected from a questionnaire about sociodemographic data: sex, age, level of education and marital status.

The frequency of depressive symptoms experienced in the week prior to the interview was evaluated by the Center for Epidemiological Studies–Depression (CES-D) scale,[15] validated for Brazilian elderly individuals.[4,18] The scale includes 20 likert items about mood, somatic symptoms, social interactions and

Table 1. Depressive symptoms in elderly individuals, in the first and second measures of the study. Juiz de Fora, Southeastern Brazil, 2002-2004.

Variable	First measure				Second measure				p
	n	%	Mean	SD	n	%	Mean	SD	
Absence of depression	205	66.13			202	65.16			0.753**
Presence of depression	105	33.87			108	34.84			
Total	310	100	11.04	10.18	310	100	10.19	8.61	0.061*

* Wilcoxon's test
** McNemar's test

psychomotor functioning. Responses follow the Likert scale (0-never or rarely; 1-sometimes; 2-frequently; 3-always). In a validation study with Brazilian elderly individuals,[15] the valid cut-off point was identified (≥12 points) to track significant depressive symptomatology. This same study found a high index of internal consistency (α=0.86) and factorial solution of three factors that explained 47.5% of the total data variability (1-negative affects; 2-difficulty in beginning behaviors; 3-positive affects). The present study used the two measures of such item, taken from the baseline measure (T1) and from the follow-up measure (T2).

A descriptive analysis of the variables of interest was performed in the two moments of measure, with calculations of frequency and position. Categorical data were treated with McNemar's test and scale data were treated with Wilcoxon's test. Elderly individuals were classified according to the progression criterion to compare depression scores in the first and second measures of the study: Group 1 (free – those who remained without depression), Group 2 (incidences – those who began to have a depression score), Group 3 (those showing remission) and Group 4 (those showing recurrence). Groups were compared in terms of socio-demographic variables with Pearson chi-square test and Fisher's exact test.

The present study was approved by the Human Research Ethics Committee of the Hospital Universitário da Universidade Federal de Juiz de Fora (Protocol CEP/HU 170-009/2002).

RESULTS

There were no significant differences in the prevalence of depressive symptoms (34%) in the two measures of the study, nor in the mean score of the sample in the CES-D scale (Table 1).

A total of four groups of progression were formed between the CES-D measures. The first group did not change its condition, remaining free from depression (50.9%). The second showed recurrence of significant depressive symptomatology (19.7%). The third was formed by new cases (incidences) in T2 (15.2%). The fourth was comprised of elderly individuals with an improvement or remission of depressive symptoms (14.2%) (Figure 1).

Sex was the only variable significantly associated with patterns of progression of depressive symptomatology. The frequency of women was higher in the groups with incidence and recurrence, while that of men, in the group that remained free from depression and that with remission (Table 2). The Kruskal-Wallis test did not point to significant differences between mean ages (p=0.194) (Table 3).

Individuals showing depressive symptomatology in T1 had a risk of showing such symptomatology in T2 that was four times higher. Illiterate elderly individuals or those with a low level of education had a higher risk than those with a high level of education and females (2.54 times higher, compared to males). Specific age groups did not show a statistically significant risk for depression in T2 (Table 4).

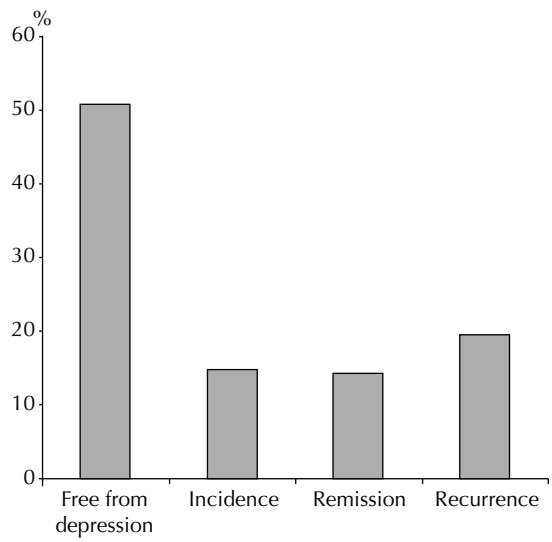

Figure. Patterns of progression in terms of significant presence of depressive symptoms in elderly individuals in the second measure, compared to the first measure. Juiz de Fora, Southeastern Brazil, 2002-2004.

Table 2. Sociodemographic variables, according to the progression of depression in elderly individuals. Juiz de Fora, Southeastern Brazil, 2002-2004.

Variable	Free		Incidence		Remission		Recurrence		Total	p
	n	%	n	%	n	%	n	%		
Sex										
Male	50	31.6	8	17.0	15	34.0	9	14.7	82	0.019
Female	108	68.4	39	82.9	29	65.9	52	85.2	228	
Total	158		47		44		61		310	
Age (years)										
< 70	73	46.2	14	29.7	23	52.2	32	52.4	142	
70-79	58	36.7	18	38.3	13	29.5	19	31.1	108	0.168
≥ 80	27	17.1	15	31.9	8	18.2	10	16.4	60	
Total	158		47		44		61		310	
Marital status										
Married	79	50	21	45.6	22	50	26	42.6	148	
Single	12	7.6	5	10.8	5	11.4	3	4.9	25	0.565*
Separated	8	5.0	2	4.3	5	11.4	6	9.8	21	
Widowed	59	37.3	18	39.1	12	27.3	26	42.6	115	
Total	158		46		44		61		309	
Level of education										
Illiterate	5	3.2	1	2.2	1	2.3	2	3.3	9	
Up to 4th grade of primary education	61	38.6	28	60.9	17	38.6	32	52.5	138	
Primary education	25	15.8	6	13.0	9	20.4	14	23	54	0.159*
Secondary education	44	27.8	9	19.6	11	25	10	16.4	74	
Higher education	23	14.5	2	4.3	6	13.6	3	4.9	34	
Total	158		46		44		61		309	

* Fisher's exact test.

DISCUSSION

There was no difference in the prevalence of depressive symptoms between the two measures. However, the analysis of progression of depression between those who were free from this condition and others who were screened for depression in the first measure showed differences in time. Approximately half of the sample remained free from the depressive condition and 15% began to show this condition in the second measure. This means that ¼ of the elderly evaluated as not depressed in the first measure progressed to possible depression in about 16 months. On the other hand, among those who had scored for depression in the first measure, approximately 42% of them showed an improvement or remission from the depressive condition in the second measure, while the remaining ones showed recurrence.

The results of this study confirm the characterization of depressive symptomatology in elderly individuals as episodic and dynamic, in addition to the possibility of its being permanent, which is associated with traits resulting from the experience of negative affects or personality.[8] Data on the occurrence of the present study may be an indication of both the internal validity of the Brazilian version of the CES-D for elderly individuals and the possibility that part of the individuals are clinically identifiable depressive disorder cases.

Table 3. Age, according to progression of depression in elderly individuals. Juiz de Fora, Southeastern Brazil, 2002-2004.

Depression	Age (years)	
	n	Mean (SD)
Free	158	71.85 (8.18)
Incidence	47	74.34 (9.25)
Remission	44	70.61 (7.97)
Recurrence	61	71.36 (8.64)

Among the sociodemographic variables of the study, only sex showed different associations with the four groups of progression of CES-D. The best progression (to remain free from depression or show remission of symptoms) was more frequent in men, while the worst progressions (new cases and recurrence) were found in women. The highest risk for depression associated with the female sex is considered to be classic in the

Table 4. Univariate logistic regression analysis for depression in elderly individuals, in the second measure. Juiz de Fora, Southeastern Brazil, 2002-2004.

Variable	p	OR	IC 95%
Sex			
Male	-	1	-
Female	0.002	2.54	1.40;4.61
Age (years)			
70-79	0.757	0.92	0.54;1.56
60-69	-	1	-
80 or more	0.341	1.37	0.72;2.62
Level of education			
Higher and secondary education	-	1	-
Primary education	0.048	2.06	1.01;4.21
Illiterate/ 4th grade of primary education	<0.001	2.63	1.50;4.59
Depression (T1)			
No	-	1	-
Yes	<0.001	4.66	2.81;7.73

literature on depression,[3] and it can also be observed in the progression of symptoms in elderly women in the period studied.

The literature on depression points out that a depressive episode poses a risk to the occurrence of other episodes, especially in individuals who did not receive any type of mental health intervention.[7] Although the CES-D is only an instrument to track the significant presence of depressive symptoms, its application is valid to detect the possibility of occurrence of the same condition subsequently. Thus, there was a significant risk of elderly individuals screened for depression being found in the same condition, in a period longer than one year. Considering the fact that the presence of depressive symptoms increases the risk of physical comorbidities and mortality, the application of the CES-D to this group could be a valid indication of general health.

In addition, the present study corroborates findings of sex and level of education, as it reveals the higher risks of occurrence in women and individuals with a lower level of education. In the gerontological literature, level of education has been pointed out as a factor of resilience or protection, because it increases the resources available for elderly individuals to cope with stressful situations and depression.[7,9]

The different progressions of symptomatology evidence heterogeneous psychological aging patterns and the variability in conditions that predispose one to or prevent depression. Age was not significantly associated with the depression progress. Authors[7,13] defend the increase in somatic symptoms of depression in the oldest age group and, consequently, the increase in the risk of occurrence of the worst progression, something that did not occur in this sample.

The study of depressive symptoms shows relevant information about the process of psychological aging. Based on a multidimensional and evolutionary dimension of these phenomena in the aging context, this variable helps to explain non-adaptive processes throughout old age and the phenomena of adaptation and development towards challenges, summarized in the concept of psychological resilience.[2] Once the majority of elderly individuals were not identified as probably depressed, it could be observed that, even in old age, it is possible to preserve a subjective well-being when dealing with changes resulting from aging.

However, this study showed certain limitations of a methodological nature. The use of a non-probabilistic sample of the population of elderly individuals living in Juiz de Fora should be emphasized. Although the PENSA sample had been sufficiently large to enable more refined statistical analyses to be performed and their characteristics to be identified with those of the population of Juiz de Fora, it was not randomized. Mean age of the re-interviewed sample decreased 0.5 years, showing a difference of almost two years between the expected mean age (after 1.3 years since the first collection) and that observed in the second collection. It is possible that selection bias occurred, due to a higher number of younger individuals accepting to participate in the new collection.

Although time between both measures was relatively short to enable significant changes in the aging process to be observed, the study confirmed the multidimensional and dynamic nature of depression, in addition to its co-variation with sociodemographic variables.

New studies and prospective analyses with a higher number of measures can provide more indicators of validity for the CES-D. To replicate the measures would be useful, once it could enable changes in all variables of interest and their relationships with depression to be observed. It is suggested that new studies continue the validation or construction of other research instruments, such as physical health inventories, to be used in elderly Brazilians, especially community-dwelling individuals. The control of frequency of men and women in the composition of the sample could guarantee more reliable measures of differences between sexes.

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