Prevalence of depressive symptoms and associated factors in older people from Primary Health Care Units in Rio Branco, Acre

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Abstract

Objective: To estimate the prevalence of depressive symptoms and associated factors in older people from Primary Health Care units in Rio Branco, Acre, Brazil. *Method:* This was a cross-sectional study conducted with older people registered in Primary Health Care units in Rio Branco, Acre, between 2016 and 2017. The prevalence of depressive symptoms was measured using the *Geriatric Depression Scale* (GDS-15), and associations were tested with selected variables. Crude and adjusted prevalence ratios were calculated with a 95% confidence interval by Poisson regression with robust variance. *Results:* The prevalence of depressive symptoms was 74.5%. The most strongly associated factors were perception of insecurity in the place of residence (PR=1.46; 95% CI 1.23-1.74), family income lower than the minimum wage (PR=1.10; 95% CI 1, 01-1.20), and unsatisfactory self-perception of health (PR=1.25; 95% CI 1.14-1.37), adjusted for gender, age, education, work activity, and frailty. *Conclusion:* There was a high prevalence of depressive symptoms in the studied population. The identification of associated factors pointed to the socioeconomic and health vulnerability in which older people are in, relating to the conditions associated with depressive symptoms.

Keywords: Depressive Symptoms. Health of the Elderly. Epidemiology. Cross-Sectional Studies.

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INTRODUCTION

Population aging is a phenomenon observed worldwide. Regarding health, the demographic transition along with the epidemiological transition represents a change in the profile of the population diseases toward a greater number of long-term diseases and severities. This change has been influenced by several factors, including advanced age, vulnerability to pathological processes, and frequently associated injuries. Among the most common morbidities in older people are cardiovascular diseases, arterial hypertension, diabetes, and psychiatric disorders, with dementias and depression emphasized among these[1].

In Brazil and several countries, the frequency of mental disorders has been increasing, which in turn has caused negative functional, mental, and social changes in affected individuals. According to the World Health Organization (WHO), it is estimated that 12.0% of the world's population suffers from some type of mental disorder and that in Brazil, this proportion is 6.0%, with depression being the most frequent disorder in population[2]. Unlike in young adults, depression in older people is mainly manifested by cognitive changes and somatic symptoms such as loss of interest in usual activities, fatigue, sleep disorders, cognitive and memory problems, thoughts about death, and hopelessness[3].

It is at the community level that the largest part of the older population is found and that treatment for this population is generally carried out within the scope of Primary Health Care (PHC). Thus, it is of great value that health units are prepared to act encompassing health promotion, protection, and prevention, as well as knowledge of the main health factors and problems affecting the population in the areas covered[4]. The main risk factors for depressive symptoms in older people are chronic diseases[5], being female[5], the presence of frailty[6], having low control in daily activities and life[7], being socially and economically vulnerable, having a functional disability, and having health problems perceived as stressful[8].

When considering the regional, cultural, and social differences observed in older Brazilian people, greater knowledge on depressive symptoms in older people in the North region is needed, as it has visible socioeconomic inequalities, limited care coverage, access difficulties, and low health indicators, making it one of the least developed regions in the country. Therefore, the present study sought to estimate the prevalence of depressive symptoms and associated factors in older people assisted by two PHC units in Rio Branco, Acre, Brazil.

METHODS

The present study is part of a matrix survey called *Frailty and health conditions of older people* carried out between October 2016 and June 2017 in Rio Branco (AC). The municipality of Rio Branco has a territorial extension of 8,835,541 km² and a population of 336,038 inhabitants, of which 23,299 (6.9%) are aged 60 years old and over[10]. Regarding the number of PHC units, the aforementioned capital of Acre had 11 Reference Units in Primary Health Care (URAP) and 43 Family Healthcare Units (USF) until 2020.

This is a cross-sectional study of a representative sample of older people registered in a URAP and a USF located in two different healthcare regions of the city[11]. The sampling process was carried out in two stages. In the first stage, the two PHC units with the largest number of registered older people and with updated family registration in the city of Rio Branco (AC) were used as sampling units. In the second stage, the drawing of older people was defined to obtain a representative sample from each health unit. The calculation of the sample size considered the estimated prevalence of frailty of 10%, sampling error of 3%, a confidence level of 95%, plus 20% for possible losses, thus resulting in an estimated sample of 365 older people.

The inclusion criteria were being aged 60 years old and over, living in the coverage area, and having registration in the selected health unit. Institutionalized older people and those with a health situation that made it impossible to answer the survey questionnaire were excluded. The older people who refused to respond to the survey, those who were not found at home after two visits, those who had moved to another area, and those whose interviews did not have all the necessary elements

for the outcome of the matrix study or the elements necessary to classify depressive symptoms for the current study were considered losses.

Data were collected at the older person's home by previously trained interviewers. The data collection instrument used was based on the questionnaire validated in the EPIFLORIPA study[12].

The outcome variable of this study was "depressive symptoms" obtained by applying the Brazilian version of the *Geriatric Depression Scale* (GDS) with 15 items[13]. The cutoff point used was five/six (categorized as 'No depressive symptoms/ With depressive symptoms').

The independent variables studied were gender, age group (60-79 years old; 80 years old and over); skin color/ethnicity; marital status; education (attended school: yes/no); household arrangements; individual income; work activity (currently working: yes/no); type of income (retirement; pension; benefits or others); family income (>1 MW; <1 MW); perception of security in the place of residence (satisfactory/unsatisfactory); body mass index; smoking habit; practice of physical activity assessed using the *International Physical Activity Questionnaire*[14]; self-perceived health (satisfactory [very good/good]; unsatisfactory [regular/bad/very bad]); cognitive deficit assessed using the Mini-Mental State Examination[15] considering the level of education; frailty assessed using the *Edmonton Frail Scale (EFS)*[16] (no [not frail and apparently; medicle]; yes [mild, moderate and severe frailty); functional disability assessed using the scale of basic and instrumental activities of daily living[17]; nutritional risk; fall history; use of medications; polypharmacy; suffered violence at some point in life; health insurance. The morbidities reported by the older people were evaluated: rheumatic diseases (spine or back disease, rheumatism, arthritis and/or arthrosis), cancer, diabetes, osteoporosis, cardiovascular disease, chronic kidney failure, tuberculosis, cirrhosis, stroke, and high blood pressure.

The association between depressive symptoms and independent variables was estimated using Poisson regression with robust variance, which is an adequate model for evaluating a dichotomous outcome with a prevalence greater than 10%.

The inclusion of variables in the multivariate model considered the following criteria: *p*-value ≤0.20 in the bivariate analysis, higher prevalence ratio, and biological plausibility. The permanence of the variables in the adjusted analysis was determined by the *p*-value ≤0.05. Data were weighted, and all analyses took into account the sample weights. After applying the weighting factor, the older people selected represented all the older people registered in the two healthcare regions. For the fit model analysis and the residual analysis, the parameters used were *deviance*, *Akaike information criterion* (AIC), and *Bayesian information criterion* (BIC).

The study safeguarded all the ethical aspects provided for Resolution No. 466/12 of the Conselho Nacional de Saúde (the Brazilian National Health Council) of the Ministry of Health. The research was submitted and approved by the Research Ethics Committee of Escola Nacional de Saúde Pública Sergio Arouca (ENSP/FIOCRUZ) under number 58791716.5.0000.5240.

RESULTS

The studied sample comprised 284 older people representing 900 older people after applying the sample correction factor. Of the 298 individuals initially in the study universe, 14 were considered losses due to missing data for the classification of the outcome.

The sample comprised mainly women (61.6%) aged between 60-98 years with an average of 71.0 years (±8.5). Most respondents declared to be nonwhite (84.2%), married (48.1%), attended school (58.4%), had an average of 2.9 years of education, lived with family members (58.6%), and were from other cities in the state of Acre (55.3%). Regarding labor activity, 81.2% did not work, 92.1% had individual income from retirement (69.0%), with a monthly family income below the minimum wage (71.8%). There was a predominance of unsatisfactory perceptions regarding safety in the neighborhood where they lived (87.4%), they did not have health insurance (84.0%), and they reported having already suffered some type of violence (60.4%) (Table 1).

Regarding the variables related to the lifestyle of the sample, the largest proportion of older people had an adequate body mass index (BMI) (44.7%), had a smoking habit (69.4%), and reported not practicing any physical activity at least three times a week (76.6%) (Table 2).

Table 1. Bivariate analysis of depressive symptoms in older people in health care units according to socioeconomic variables, Rio Branco, Acre, 2016-2017.

Variables	N 284	NExp 900 (%)	Depressive symptoms		Gross PR (95%CI)	*P*-value
			No n 230 (25.5)	Yes n 670 (74.5)		
Gender						
Male	111	345 (38.4)	110 (48.0)	235 (35.1)	1	0.001
Female	173	555 (61.6)	119 (52.0)	435 (64.9)	1.15 (1.06 – 1.25)	
Age group (years)						
60-79	237	746 (83.0)	210 (81.7)	536 (80.0)	1	<0.001
80 or more	47	153 (17.0)	19 (8.3)	134 (20.0)	1.21 (1.13 – 1.30)	
Skin Color/Ethnicity						
White	45	142 (15.8)	28 (12.2)	114 (17.0)	1	0.039
Not white	239	758 (84.2)	202 (87.8)	556 (83.0)	0.91 (0.84 – 1.00)	
Marital status*						
Married	141	437 (48.8)	116 (50.7)	321 (48.1)	1	
Single	28	87 (9.7)	33 (14.4)	54 (8.1)	0.85 (0.72 – 0.99)	0.045
Divorced/separated	42	133 (14.8)	36 (15.7)	97 (14.5)	0.99 (0.89 – 1.11)	0.915
Widow/er	72	239 (26.7)	44 (19.2)	195 (29.2)	1.10 (1.02 – 1.19)	0.013
Education						
Attended school	167	526 (58.4)	163 (70.9)	363 (54.2)	1	
Did not attend school	117	374 (41.6)	67 (29.1)	307 (45.8)	1.19 (1.11 – 1.27)	<0.001
Household arrangements						
Lives with spouse	40	129 (14.3)	42 (18.3)	87 (13.0)	1	
Lives with family**	150	487 (54.1)	94 (40.9)	393 (58.6)	1.19 (1.05 – 1.34)	0.005
Lives with spouse and family	47	144 (16.0)	53 (23.0)	91 (13.6)	0.94 (0.80 – 1.10)	0.472
Does not live with family***	18	51 (5.7)	14 (6.1)	37 (5.5)	1.08 (0.93 – 1.31)	0.420
Lives alone	29	90 (10.0)	42 (18.3)	63 (9.4)	1.02 (0.86 – 1.22)	0.790
Individual income*						
Yes	261	830 (92.1)	216 (93.9)	614 (91.5)	1	
No	23	71 (7.9)	14 (6.1)	57 (8.5)	1.08 (0.97 – 1.22)	0.157
Work activity*						
Yes	48	159 (18.8)	69 (31.2)	90 (14.4)	1	
No	220	685 (81.2)	152 (68.8)	533 (85.6)	1.37 (1.20 – 1.57)	<0.001
Type of Income						
Retirement*						
Yes	185	593 (69.0)	141 (63.8)	452 (70.8)		
No	86	266 (31.0)	80 (36.2)	186 (29.2)	0.92 (0.85 – 1.00)	0.057

to be continued

Continuation of Table 1

Variables	N 284	NExp 900 (%)	Depressive symptoms		Gross PR (95%CI)	*P*-value
			No n 230 (25.5)	Yes n 670 (74.5)		
Pension*						
Yes	55	46 (19.5)	33 (14.9)	132 (21.2)	1	
No	213	680 (80.5)	188 (85.1)	492 (78.8)	0.90 (0.83 – 0.98)	0.020
Benefits or others						
Yes	40	125 (14.8)	25 (11.3)	100 (16.1)	1	
No	228	719 (85.2)	196 (88.7)	523 (83.9)	0.91 (0.83 – 0.99)	0.043
Family Income#						
>1 MW	76	253 (28.1)	79 (34.5)	174 (26.0)	1	
≤1 MW	208	646 (71.9)	150 (65.5)	496 (74.0)	1.10 (1.01 – 1.21)	0.009
Perception of security in the place of residence*						
Satisfactory	29	113 (12.6)	49 (21.4)	64 (9.6)	1	
Unsatisfactory	254	784 (87.4)	180 (78.6)	604 (90.4)	1.34 (1.15 – 1.57)	<0.001
Health Insurance						
No	238	745 (84.0)	175 (80.6)	570 (85.1)	1	
Yes	44	142 (16.0)	42 (19.4)	100 (14.9)	0.93 (0.83 – 1.03)	0.173
Suffered violence						
No	130	425 (49.6)	117 (56.7)	308 (48.2)	1	
Yes	144	432 (60.4)	101 (46.3)	331 (51.8)	1.05 (0.98 -1.14)	0.160

*Differences in absolute frequency values correspond to losses or not applicable, **Family members: Children, grandchildren; ***Family arrangement with a person of the same generation as the older person and/or with friends/daughters-in-law/sons-in-law, among others; #MW= minimum wage; NExp= N expanded from the weights and sample design; %= proportion from NExp; PR: Prevalence Ratio.

Table 2. Bivariate analysis of depressive symptoms in older people in health care units according to lifestyle variables, Rio Branco, Acre, 2016-2017.

Variables	N 284	NExp 900	Depressive symptoms		Gross PR (95%CI)	*P*-value
			No n 230 (25.5)	Yes n 670 (74.5)		
Body mass index*						
Proper weight	105	339 (44.7)	81 (43.3)	258 (45.2)	1	
Low weight	42	123 (16.2)	32 (17.1)	91 (15.9)	0.96 (0.86 – 1.08)	0.537
Excess weight	33	94 (12.4)	22 (11.8)	72 (12.6)	1.01 (0.89 – 1.13)	0.909
Obese	68	202 (16.6)	52 (27.8)	150 (26.3)	0.97 (0.89 – 1.07)	0.594
Smoking habit						
No	92	275 (30.6)	86 (37.4)	189 (28.2)	1	0.016
Yes	192	625 (69.4)	144 (62.6)	481 (71.8)	1.11 (1.02 – 1.21)	
Physical activity practice*						
Yes	64	205 (23.4)	138 (61.1)	113 (17.5)	1	<0.001
No	215	672 (76.6)	88 (38.9)	534 (82.5)	1.42(1.26 – 1.61)	

NExp = N expanded from the weights and the sample design; % = proportion from NExp; PR: Prevalence Ratio; *Differences in absolute frequency values correspond to losses or are not applicable.

Regarding the health variables, more than half of the older people studied reported dissatisfaction with their health (74.1%), had a cognitive deficit (40.4%), presented a state of frailty (33.4%), with functional disability for carrying out activities of daily living (26.5%), were at nutritional risk (60.8%), and had suffered a fall in the last year (43.5%). Regarding medication, most older people used some medication (87.8%), and 31.6% used more than 5 medications, which configures polypharmacy (Table 3).

Almost the entire sample reported having some morbidity (96.9%), with the most prevalent being arterial hypertension (72.4%), rheumatic diseases (70.8%), and cardiovascular diseases (28.1%). Most older people reported having 1 to 3 morbidities (57.8%) (Table 3).

The prevalence of depressive symptoms in the population studied was 74.5% (95% CI 71.5–81.3). In the crude analysis for socioeconomic and demographic variables, the presence of depressive symptoms was associated with the female gender, long-lived older people (80 years or more), with nonwhite ethnicity/skin color, widow/ers, who did not attend school, lived with family members (children or grandchildren), with no work activity, who did not receive pensions and benefits, with a family income of up to one minimum wage, and unsatisfactory perception of public security in their neighborhood. Being single was associated with a lower prevalence of depressive symptoms (Table 1).

For the variables related to lifestyle habits, the presence of depressive symptoms was associated with individuals with smoking habits and those who did not practice physical activities (Table 2).

In the variables related to health, older people with an unsatisfactory perception of their health, cognitive deficit, frailty, functional incapacity, who were at nutritional risk and using medication, using polypharmacy, and who reported stroke and osteoporosis as morbidities were associated with the outcome. The lowest prevalence of depressive symptoms was observed in the older people who reported rheumatic diseases (arthritis/arthrosis, rheumatism, and spine/back disease) in the crude analysis (Table 3).

Considering the criterion of $p<0.05$ for the multivariate analysis, depressive symptoms were positively associated with the following characteristics: female gender, age group of 80 years and over, not having attended school, lack of work activity, family income lower than one minimum wage, unsatisfactory self-perception of health, frailty, and unsatisfactory perception of security in the place of residence (Table 4).

Table 3. Bivariate analysis of depressive symptoms in older people in health care units according to the health variables, Rio Branco, Acre, 2016-2017.

Variables	N 284	NExp 900 (%)	Depressive symptoms		Gross PR (95%CI)	*P*-value
			No n 230 (25.5)	Yes n 670 (74.5)		
Self-perceived health						
Satisfactory	105	323 (35.9)	131 (57.0)	192 (28.7)	1	
Unsatisfactory	179	577 (74.1)	99 (43.0)	478 (71.3)	1.37 (1.25 – 1.50)	<0.001
Cognitive Deficit*						
Has no deficit	164	514 (59.6)	42 (18.3)	68 (10.1)	1	
Has deficit	110	349 (40.4)	187 (81.7)	602 (89.9)	1.22 (1.14 – 1.31)	<0.001
Frailty						
No	190	599 (66.6)	201 (87.8)	398 (59.4)	1	
Yes	94	300 (33.4)	28 (8.2)	272 (40.6)	1.36 (1.28 – 1.45)	<0.001
Functional Disability*						
No	210	652 (73.5)	201 (87.8)	451 (68.5)	1	
Yes	72	235 (26.5)	28 (12.2)	207 (31.5)	1.27 (1.19 – 1.36)	<0.001
Nutritional risk*						
No nutritional risk	94	286 (39.8)	97 (56.7)	183 (33.6)	1	
At nutritional risk	140	435 (60.8)	74 (43.3)	361 (66.4)	1.25 (1.15 – 1.37)	<0.001
History of falls*						
No	164	506 (56.5)	156 (74.6)	358 (54.7)	1	
Yes	110	390 (43.5)	53 (25.4)	296 (45.3)	1.06 (0.99 – 1.14)	0.101
Use of medications*						
No	164	115 (12.2)	42 (18.3)	68 (10.1)	1	
Yes	110	785 (87.8)	113 (49.1)	602 (89.9)	1.22 (1.06 – 1.41)	0.006
Polypharmacy						
No	8	640 (68.4)	9 (3.9)	19 (2.8)	1	
Yes	276	249 (31.6)	221 (96.1)	651 (97.2)	1.09 (1.02 – 1.18)	0.018
Self-reported morbidities*						
No	8	28 (301)	9 (32.1)	19 (67.9)	1	
Yes	171	872 (96.9)	142 (27.3)	378 (72.7)	1.07 (0.85 – 1.36)	0.568
Self-reported morbidities*						
Cancer	19	56 (6.2)	19 (33.9)	37 (66.1)	0.88 (0.74 – 1.06)	0.176
Diabetes	66	224 (24.9)	59 (26.3)	165 (73.7)	0.99 (0.91 – 1.07)	0.986
Heart/Cardiovascular	77	253 (28.1)	57 (22.5)	196 (74.5)	1.06 (0.99 – 1.15)	0.109
Chronic Kidney Failure	23	74 (8.2)	14 (18.9)	60 (81.1)	1.10 (0.98 – 1.23)	0.100
Tuberculosis	5	13 (1.4)	5 (38.5)	8 (61.5)	0.80 (0.53 – 1.21)	0.289
Cirrhoses	4	11 (1.2)	3 (27.3)	8 (72.7)	1.00 (0.72 – 1.39)	0.990
Stroke	31	108 (12.0)	16 (14.2)	92 (85.2)	1.15 (1.06 – 1.26)	0.002
Osteoporosis	75	234 (26.0)	41 (17.5)	193 (82.5)	1.14 (1.07 – 1.23)	<0.001
Arterial hypertension	204	650 (72.4)	167 (25.7)	483 (74.3)	1.00 (0.92 – 1.08)	0.983
Rheumatic Diseases	201	634 (70.8)	171 (27.0)	463 (73.0)	0.96 (0.88 – 1.03)	0.045

NExp = N expanded from the weights and the sample design; % = proportion from NExp; PR: Prevalence Ratio; *Differences in absolute frequency values correspond to losses or are not applicable.

Table 4. Bivariate analysis of depressive symptoms in older people in health care units according to socioeconomic and health variables, Rio Branco, Acre, 2016-2017.

Variables	Prevalence Ratio		
	Crude	Adjusted	*P*-value
Gender			
Male	1	1	
Female	1.15 (1.06 – 1.25)	1.10 (1.02 - 1.20)	0.013
Age group (years)			
60 to 79	1	1	
80 and over	1.21 (1.13 – 1.30)	1.13 (1.06 - 1.21)	<0.001
Education			
Attended school	1	1	
Did not attend school	1.19 (1.11 – 1.27)	1.11 (1.03 – 1.19)	0.006
Work activity			
Yes	1	1	
No	1.37 (1.20 – 1.57)	1.20 (1.05 - 1.37)	0.008
Family income			
≥1 MW	1	1	
<1 MW	1.10 (1.01 – 1.21)	1.10 (1.01 – 1.20)	0.025
Perception of security in the place of residence			
Satisfactory	1	1	
Unsatisfactory	1.34 (1.15 – 1.57)	1.46 (1.23 – 1.74)	<0.001
Self-perceived health			
Satisfactory	1	1	
Unsatisfactory	1.37 (1.25 – 1.50)	1.25 (1.14 - 1.37)	<0.001
Frailty			
No	1	1	
Yes	1.36 (1.28 - 1.45)	1.19 (1.11 - 1.27)	<0.001

Model adjustment: *deviance: 366*.079; loglikehood: -870,039; *Akaike information criterion: 1760,079* e *Bayesian information criterion*: 1808,398.

DISCUSSION

The present study identified a high prevalence of depressive symptoms in older people (74.5%; 95% CI 71.5–81.3) based on responses to the GDS-15. The most recognized variables associated with such symptoms were those related to gender, age group of 80 years and over, not attending school, lack of work activity, family income lower than one minimum wage, and frail health. The variable of perception of security in the place of residence was the largest factor of association among the variables mentioned above and has not yet been described in other studies.

National and international studies have shown prevalences ranging from 14.2% to 79.6% for depressive symptoms in noninstitutionalized older people[18-21]. The prevalence of depressive symptoms observed here was higher than those observed in other studies carried out in Brazil and similar to the study carried out in Mexico with older people aged 65 years or more identifying that 79.6% of the participants had depressive symptoms[20].

The high prevalence of depressive symptoms in these older people can be explained by the peculiar characteristics of the studied population,

especially those living in a region with socioeconomic conditions and social circumstances expressing deep inequalities compared to other regions in Brazil and countries around the world. Note that the typical biological declines of senescence added to the conditions of social, individual, and economic vulnerabilities of individuals lead to psychosocial illness, especially depression[22].

The association between depressive symptoms and sociodemographic factors is well defined in the scientific literature. Such symptoms are more prevalent in those with unfavorable socioeconomic status and health conditions than in those with better conditions. Being a female has already been identified as a factor associated with depressive symptoms, as found in the study by Mendes-Chiloff et al.[18] with 972 older people (OR=1.75; 95% CI 1.24-2.47) in the city of São Paulo. The association with the female gender can be explained by the social issues to which women are more susceptible, the potential stressful events determined by gender, and the low estrogen production during menopause, which have been pointed as risk factors for depression[23,24].

Likewise, older age is well established in the literature as associated with depression[24,25]. Aging is considered to be related to a greater predisposition to episodes of losses, mourning, and susceptibility to chronic diseases.

A low educational level was also associated with depressive symptoms, corroborating the cross-sectional studies carried out by Borges et al.[26] in Florianópolis with 1,656 older people (PR=2.11; 95% CI 1.46–3.05) and by Cheung and Chou[27] with 1,959 older people in Hong Kong (OR=1.85; 95% CI 1.85–2.86). Individuals with a higher level of education may find it easier to deal better with every day and stressful exposures. This emphasizes that low education will indirectly interfere with the socioeconomic situation of the elderly[28].

Not having a work activity similarly showed a positive association with depressive symptoms. Gazalle et al.[29] carried out a study in 2004 in the city of Pelotas, Rio Grande do Sul, to identify the highest occurrence of depressive symptoms in older people who did not work. The authors related these data with the devaluation of older people in the labor market, especially in developing countries, which results in the feeling of the individual being less useful to society when compared to younger people, a feeling caused by the social stigma of unproductiveness and the development of activities at work.

Family income below the minimum wage was a factor associated with depressive symptoms. This association reinforces that the socioeconomic conditions inherent to the individual contribute to the onset or maintenance of depressive symptoms. The relationship between this variable and the outcome was evidenced in other studies observing that the prevalence of depression decreases as family income increases[26].

The perception of security in the place of residence was positively associated with depressive symptoms in the older people studied. The relationship with the physical environment in which an older person lives influences environmental docility[30]. This is characterized by the basic functions of the environment, such as encouragement, freedom, and support, which are necessary for older people to exercise control and well-being[31]. Friendly and comfortable environments directly influence the behavioral performance of older people. If they feel insecure, they will find it difficult to leave the house, which will generate social isolation and difficulties playing an affective role. It should also be considered that the feeling of insecurity interferes with the dysfunctional production and performance of neurotransmitters, as well as with the increased production of cortisol, conditions directly related to depression[32].

Regarding health conditions, having an unsatisfactory self-perception of health was positively associated with depressive symptoms, a finding that is already consolidated in the literature[15]. The unsatisfactory perception of health (regular, bad, or very bad) is considered a good marker for health assessment and conditions of physical, mental, and social well-being. Borges et al.[26] state that, in some cases, the unsatisfactory perception of their health can already be understood as the presence of depressive symptoms in older people.

Depressive symptoms were associated with frailty, a finding similar to that found in another study. A study carried out with 367 older people in Italy using the depression scale from the center for epidemiological studies also observed an association with depression[33]. The association with frailty may be related to the simultaneous characteristics of these health conditions and configure exhaustion, psychomotor delays and inactivity[34]. Another factor related to these characteristics that is supported by scientific literature is the increased production of cytokines that act on sarcopenia in older people, which is directly related to the impairment of neuropsychological functions and frailty[35].

A possible limitation of the present study is that it is restricted to two PHC units. However, the methodology chosen allowed for a more detailed assessment of the health of the noninstitutionalized older person living in the areas covered by public health policies, raising hypotheses for broader studies related to the topic in the region.

Another relevant limitation is the possible existence of memory bias, considering that the methodology used required a recall method. It is a consensus that increased age interferes with memory and depression, reflects on the older person's cognition and possibly interferes with self-reported responses, which can then lead to biased responses. However, control over the variables of cognitive deficit and age was used for this limitation.

The number of losses in one of the health units was implied as a limitation. These losses are justified by the change of address, as the comprehensive area of the unit is considered a risk area and exposes the residents to situations of vulnerability. However, we emphasize the use of the sampling process to ensure randomness and representativeness of older people in the area investigated, considering that the sample studied shows a similar profile to the group of the population in the study area.

The main strengths of the present study are the methodological rigor, training, and quality control, in addition to the profile description of the older population in their area of coverage based on a validated questionnaire, making it possible to direct the treatment of PHC in the local network given the factors associated with depressive symptoms via measures of health education from the perspective of health problems and strategic planning in the work processes of the teams facing the health of older people. Furthermore, its results allow us to raise hypotheses for other longitudinal studies to verify the causality and factors potentially associated with the development of depression.

CONCLUSION

Screening for depressive symptoms showed a high prevalence of these symptoms in the population studied. This result expresses the need to work on sanitary responsibility in managing the phenomenon of population aging. It is necessary to understand that older people's diseases are progressive and associated with other conditions and are not a phenomenon exclusively addressed by the healthcare sector. Thus, an intersectoral approach is important, as some social conditions favor depressive symptoms and other various health problems.

At the same time, the specific role of public healthcare must reinforce the focus on health promotion strategies, prevention of identified risk factors, screening, early diagnosis, and access to appropriate therapeutic resources. The joint action of the healthcare network units, in particular the PHC units, is recommended with the situational analysis of the coverage area, knowledge of individual, household, and environmental characteristics associated with depressive symptoms, and the use of instruments for early screening of health problems affecting older people, in addition to the Mental Health Care Network to act for care and treatment along with the PHC. Future studies are also suggested to identify unstudied variables such as epigenetic studies and genetic determinants of depressive symptoms and depression.

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