

ORIGINAL ARTICLE

Higher prevalence of major depressive symptoms in Brazilians aged 14 and older

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Objective: Depression is a highly prevalent condition and is considered a major public health issue. The aim of the present study was to estimate the prevalence of depressive symptoms in the Brazilian population and establish their sociodemographic correlates.

Method: A cross-sectional study was conducted between November 2005 and April 2006. Data were collected in face-to-face interviews using a standardized questionnaire. The sample consisted of 3,007 interviews with individuals aged 14 years and older and followed a probabilistic design covering the Brazilian national territory. Depressive symptoms were assessed according to the Center for Epidemiologic Studies Depression Scale.

Results: The observed prevalence of depressive symptoms was 28.3% (13% mild/moderate; 15.3% major/severe; $p < 0.01$). Increased depressive symptom rates were associated with being a female, being 45 years of age and older, having lower educational attainment, being single, having family income of up to 2.5 times minimum wage, and living in the northern region of Brazil ($p < 0.05$).

Conclusions: The prevalence of depressive symptoms in Brazil is high, with major depressive symptoms being the most frequent form of this symptomatology. Considering the biopsychosocial model of mental disorders, this survey points to the involvement of psychosocial factors in the prevalence of depressive symptoms in Brazil.

Keywords: Mood disorders; unipolar; community mental health; epidemiology; statistics; other research areas

Introduction

Depression is highly prevalent and is considered a major public health problem that accounts for a great socioeconomic burden worldwide.¹ According to the United Nations World Health Statistics report, depression was responsible for 4.5% of the total burden of disease (using the disability-adjusted life year) in 2002. Depression usually has a chronic course with recurrent episodes and is associated with progressive impairment of the ability to take care of oneself and to manage the activities of daily living.² Depressive symptoms are strongly associated with higher utilization of health resources and poor social functioning³ and quality of life^{3,4} in primary care patients in Brazil. Despite the high prevalence of patients with depression assisted by primary care services, the condition continues to be under-recognized and under-diagnosed, and, hence, is not properly treated.⁵

Neurobiological, genetic, and environmental factors are believed to contribute to the pathophysiology of depression. For instance, Ehlers et al.⁶ have suggested that distressing life events may disrupt daily activities (social rhythms), affecting biological rhythms and causing depressive symptoms. This model seems to integrate psychosocial and biological theories for the comprehension of the pathophysiology of depressive states.⁷

Several epidemiologic surveys have been conducted on the prevalence of depression in the general population of high-income countries, but are less common in low- to middle-income countries. A systematic review of articles published between 1980 and 2000 reported a 12-month prevalence rate of 4.1% and a lifetime prevalence rate of 6.7%.⁸ Generally, rates were higher in European studies and lower in Asian studies.

In Brazil, a multicenter study on psychiatric morbidity that included three metropolitan areas (São Paulo, Brasília, and Porto Alegre) estimated the lifetime prevalence of depressive states to be 1.9, 2.8, and 10.2%, respectively.⁹ Another study done in Brazil reported prevalence rates of depression of 2% among men and 6% among women.¹⁰ The São Paulo megacity household survey reported a lifetime prevalence of major depressive

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episodes of 18.4% and a 12-month prevalence of 10.4%.¹¹ A previous household survey conducted in the São Paulo metropolitan area had detected lifetime, 12-month and 1-month prevalence rates of depressive episodes of 16.8, 7.1, and 4.5%, respectively.¹² A population-based study on health and aging in a small Brazilian community reported a 38.5% prevalence of depressive symptoms in residents aged 60 years or older.¹³ Finally, a cross-sectional study involving high school students living in the city of São Paulo detected an overall prevalence rate of depressive symptoms of 7.5%.¹⁴

A number of studies done previously have demonstrated a correlation between depression and different socio-demographic variables. However, differences in the methodology related to sample size, screening instruments, primary clinical outcomes (lifetime, 12-month, and 30-day prevalence), and disorder identified (major depressive disorder or major depressive episode versus depressive symptoms) in each of these studies makes it difficult to compare results across studies.⁸

Recently, the World Health Organization conducted the WHO Mental Health Survey,¹⁵ which collected comparable epidemiologic data across several countries. The survey presented novel evidence concerning the occurrence of mental disorders, including depression, around the world. This has facilitated comparison of the data obtained in these studies^{16,17} and has fostered a greater comprehension of the cross-cultural similarities and differences related to depression. This survey reported average lifetime and 12-month prevalence estimates of major depressive episode of 14.6 and 5.5% in the ten high-income and 11.1 and 5.9% in the eight low- to middle-income countries, including Brazil (São Paulo megacity survey cited before). Almost all studies found that gender, age, level of education, income, and marital status were associated with depression.^{11,18}

The prevalence rate of depressive symptoms in the Brazilian population as a whole has not been determined. Also, there is a lack of studies involving samples from the North and Northeast regions of the country. Using data collected in the first Brazilian National Alcohol Survey (BNAS),¹⁹ we aimed to estimate the prevalence of depressive symptoms in a representative sample of the Brazilian population aged 14 and older and to identify the sociodemographic correlates of depressive symptoms, including age, level of education, income, marital status, region, and gender.

Method

The study sample was part of the first BNAS¹⁹ done by the Unit of Studies on Alcohol and Other Drugs (UNIAD) at Universidade Federal de São Paulo (UNIFESP), São Paulo, Brazil. Between November 2005 and April 2006, a multistage cluster probabilistic sampling procedure was used to select 3,007 individuals aged 14 and older, representing a profile of the Brazilian household population, excluding native Brazilians who live in Indian reservations and populations who live in communities, such as prisons.

The survey covered 143 Brazilian cities and, within them, a total of 325 census sectors, including those situated in rural areas. The interviews were carried out in the home. First, the Brazilian municipalities were divided into 25 strata according to their size and region (North, Mid-West, Northeast, Southeast, and South). Within each stratum, a systematic selection was carried out where municipalities were pre-sorted based on their income and selected with probability proportional to their size (PPS). Within each stratum, the cities were arranged by average income and were submitted to a systematic selection, and the income composed a third stratum, which was implicit. The cities were selected in proportional probability to their estimated population (both average income and population were based on the last national socio-demographic census taken by the Brazilian Institute of Geography and Statistics, IBGE).²⁰ In the second stage of sampling, census sectors were chosen within the cities selected in the first stage. All sectors were included, even rural ones. The sectors were also chosen proportionally to their size, after having been arranged by average income. Large cities had their sectors arranged by neighborhood and income, thus forming two implicit strata. Each allotted sector had its households counted and listed, and households were then selected according to a table of random numbers. The objective was to obtain eight interviews per census sector; therefore, a greater number of households were chosen in anticipation of the non-response rate. This rate was calculated according to the Brazilian Social Survey (PESB), per region (<http://www.uff.br/datauff/PESB.htm>).

After selecting the household, the interviewer listed all the residents and the person with the nearest birthday. Only the chosen person could be interviewed; neither the person nor the household could be substituted. In order to ensure a high response rate, strict fieldwork rules were in place for cases where the interviewer was not able to find the selected person. The interviewer had to revisit the household at least 3 times at 3 different times of day and on 3 different days of the week, including a day during the weekend. One-hour face-to-face interviews were conducted in the respondent's home by trained interviewers using a standardized closed questionnaire. Initially, 2,522 interviews were conducted with respondents 14 years of age and older (176 aged 14 to 17 years and 2,346 above 18 years old). Afterwards, 485 extra interviews were conducted with respondents 14 to 17 years of age (adolescent oversample), yielding 661 interviews in this age range and a total of 3,007 interviews overall. The socio-demographic distribution of the sample is shown in Table 1. Socio-economic classes were established according to the Brazilian Socio-Economic Classification Criteria.²¹ The original questionnaire form is available at www.uniad.org.br. In this questionnaire, the evaluation of depressive symptoms was performed using the Portuguese version of the Center for Epidemiologic Studies Depression Scale (CES-D),²² which contains 20 items assessing current depressive symptoms in the general population with an emphasis on depressive mood during the week preceding the assessment. CES-D scores

Table 1 Socio-demographic data of a random sample of Brazilian individuals aged 14 and older collected between November 2005 and April 2006 in the first Brazilian National Alcohol Survey (BNAS)¹⁹

Demographic variables	n	%
Sex		
Female	1,722	57.2
Male	1,285	
Age range		
14-15	320	10.6
16-17	341	11.3
18-24	368	12.3
25-34	588	19.5
35-44	488	16.2
45-59	501	16.7
≥ 60	401	13.3
Education		
Illiterate/Basic	1,017	33.8
Incomplete or complete elementary school	872	29.0
Incomplete or complete high school	950	31.6
Incomplete or complete higher education	168	5.6
Ethnicity		
White	1,466	48.8
Black	326	10.8
Brown	1,132	37.7
Asian	29	1.0
Indigenous	46	1.5
Not informed	8	0.3
Social class*		
A1	6	0.2
A2	59	2.0
B1	121	4.0
B2	270	9.0
C	976	32.5
D	1,259	41.9
E	316	10.5
Marital status		
Single	1,156	38.4
Married	1,445	48.1
Widowed, divorced, separated	406	13.5
Income		
≤ US\$ 208	1,235	41.1
US\$ 209-347	584	19.4
US\$ 348-555	483	16.1
US\$ 556-1,157	303	10.1
> US\$ 1,157	120	4.0
Not informed	282	9.4
Economically active population (EAP)		
Active	1,660	55.2
Inactive	1,347	
Country region		
North	208	6.9
Mid-West	236	7.9
Northeast	884	29.4
Southeast	1,275	42.4
South	404	13.4
Sector		
Urban	2,525	84.0
Rural	482	
Total	3,007	100

* Defined according to the Brazilian Socio-Economic Classification Criteria.²¹

range from 0 to 60, with higher scores indicating more depressive symptoms. A cutoff score of 16 is commonly used to discriminate persons at risk for depression. Scores between 16 and 26 indicate mild to moderate depression and scores above 27 may be indicative of major depression.²³ High scores reflect the intensity of the discomfort that accompanies depression. A validation study of a

Portuguese version of the CES-D conducted in a population of primary care patients in Brazil showed a satisfactory global performance, despite too many false-positive results. The area under the ROC curve (AUC) was 0.80, with 91% sensitivity and 52% specificity, for the cutoff score of 18. This version also showed significant reliability, with an internal consistency of $\alpha = 0.90$.²⁴ Another study conducted among adolescents and young-adult college students in Brazil detected that the best performance of the CES-D was obtained when using a cutoff score of 15. For this cutoff, the scale showed excellent sensitivity (1.00) with respect to the diagnoses of depressive disorders, a specificity of 0.75 and a misclassification rate of 0.24, with a reliability of $\alpha = 0.84$.²⁵ Finally, other Brazilian studies have detected the best performance of the CES-D when using the cutoff score of 14 for high school students²⁶ and 11 among Brazilian elderly.²⁷ Socioeconomic issues, cultural differences, and the way people express their feelings may be important factors to determine the most appropriate cutoff point.

The response rate in the survey was 66.4% and all respondents provided a signed informed consent to participate. The study was approved by the UNIFESP Ethics Committee (process no. CEP 1672/04).

Statistical analysis

The data were weighted to take into account the probability of the sample (and oversampling) selection and non-response rates. Data were initially weighted by an expansion factor which assigns to each individual the inverse of his/her probability of selection. This factor was multiplied by another weighting factor aimed at correcting the non-response rate (gender, educational attainment, and region). We also applied a post-stratification weight to adjust the sample (and oversampling) to known census-based distributions of the population on selected demographic variables (gender, age, and region of the country).²⁰ All analyses were performed with complex samples procedures - SVY commands from STATA 11.0.²⁸

Associations between pairs of variables (depressive symptoms levels and socio-demographics) were analyzed with the Rao-Scott test, which considers sample weights,²⁹ with associations considered significant with a p-value of < 0.05 .

To estimate variations in the prevalence of depressive symptoms across socio-demographic categories, a multi-variate analysis with dichotomized variables was conducted. Thus, the dependent variable depressive symptoms was coded as either 0 (reference; without depressive symptoms) or 1 (with depressive symptoms).

Similarly, the independent variables and co-variables were also dichotomized. For those variables for which more than two categories were desired, dummy variables were used, with 0 indicating that the subject did not belong in a given category and 1 indicating that he or she did. The analysis was performed using binary logistic regression with weighting, due to sampling design and for robust estimation.³⁰ Odds ratio with a value of 1.0 for the reference categories were used for comparison. The level

of statistical significance was 5% and confidence intervals were calculated at 95%.

Results

The prevalence of depressive symptoms in the Brazilian population by socio-demographic variables is shown in

Table 2. Except for ethnicity ($p = 0.29$) and urban/rural sector ($p = 0.15$), all other sociodemographic characteristics are statistically associated with depressive symptoms ($p < 0.01$).

The total prevalence of depressive symptoms in the studied sample was 28.27%, and symptoms were more frequent in women than in men.

Table 2 Prevalence of depression in relation to socio-demographic characteristics of Brazilian individuals aged 14 and older collected between November 2005 and April 2006 in the first Brazilian National Alcohol Survey (BNAS)¹⁹

Demographic variables	Depression (% according to the CES-D)				p-value
	No depression	Mild/ Moderate	Major	Total	
Gender					
Male (n=1,285)	79.7	9.5	9.6	19.1	
Female (n=1,722)	60.0	16.3	20.6	36.9	< 0.01
Age range					
14-15 (n=320)	68.5	20.0	8.9	28.9	< 0.01
16-17 (n=341)	68.8	13.5	17.1	30.6	
18-24 (n=368)	71.2	14.9	13.3	28.2	
25-34 (n=588)	71.6	11.8	14.8	26.6	
35-44 (n=488)	74.3	10.1	11.8	21.9	
45-59 (n=501)	66.8	11.4	19.9	31.3	
≥ 60 (n=401)	61.2	15.9	19.1	34.9	
Education					
Illiterate/basic (n=1,017)	61.8	13.7	20.6	34.3	< 0.01
Incomplete or complete elementary school (n=872)	69.2	14.5	14.6	29.1	
Incomplete or complete high school (n=950)	74.2	12.5	12.0	24.5	
Incomplete or complete higher education (n=168)	84.2	7.3	7.7	15.0	
Ethnicity					
White (n=1,466)	71.5	13.1	13.1	26.2	0.29
Black (n=326)	62.9	14.7	21.0	35.7	
Brown (n=1,132)	68.5	13.1	16.1	29.2	
Asian (n=29)	75.0	0.0	20.3	20.3	
Indigenous (n=46)	72.0	7.4	20.7	28.0	
Not informed (n=8)	84.0	0.0	16.0	16.0	
Social class*					
A1 (n=6)	71.2	0.0	28.8	28.8	< 0.01
A2 (n=59)	80.2	16.1	1.6	17.8	
B1 (n=121)	87.9	4.9	6.2	11.1	
B2 (n=270)	80.2	9.2	10.2	19.4	
C (n=976)	73.0	11.3	13.4	24.6	
D (n=1,259)	63.1	15.6	18.7	34.4	
E (n=316)	59.4	15.9	21.6	37.5	
Marital status					
Single (n=1,156)	70.9	14.8	13.0	27.7	< 0.01
Married (n=1,445)	71.2	11.5	14.8	26.2	
Widowed, divorced, separated (n=406)	56.8	15.0	25.0	40.1	
Income					
≤ US\$ 208 (n=1,235)	61.3	15.6	19.6	35.3	< 0.01
US\$ 209-347 (n=584)	66.5	14.9	16.4	31.3	
US\$ 348-555 (n=483)	75.5	11.4	11.7	23.1	
US\$ 556-1,157 (n=303)	78.8	8.4	11.7	20.1	
> US\$ 1,157 (n=120)	84.1	8.7	7.2	15.9	
Not informed (n=282)	75.9	10.0	12.0	21.9	
Economically Active Population (EAP)					
Active (n=1,660)	72.8	10.8	14.3	25.1	< 0.01
Inactive (n=1,347)	64.1	16.4	16.9	33.3	
Country region					
North (n=208)	53.7	21.0	16.3	37.3	< 0.01
Mid-West (n=236)	66.0	14.5	17.4	31.9	
Northeast (n=884)	71.9	11.1	15.6	26.7	
Southeast (n=1,275)	70.6	12.8	14.9	27.6	
South (n=404)	73.0	11.6	14.3	25.9	
Sector					
Urban (n=2,525)	70.3	12.7	15.1	27.8	0.15
Rural (n=482)	65.2	14.7	16.2	30.8	
Total	69.5	13.0	15.3	28.3	

CES-D = Center for Epidemiologic Studies Depression Scale (CES-D).²²

* Defined according to the Brazilian Socio-Economic Classification Criteria.²¹

Higher prevalence rates were also found in the population 60 years of age and older and in the 45- to 59-year-old group. Importantly, a high prevalence of mild/moderate depressive symptoms (scores between 16 and 26) was also found in subjects aged 14 and 15.

A steady decrease in the prevalence of depressive symptoms was associated with increased education.

Depressive symptoms were more frequent in the two lowest socioeconomic categories, namely D and E, and less prevalent among married subjects. They were more prevalent among widowed and legally separated individuals. Major depressive symptoms (scores above 27) were more prevalent than mild/moderate depressive symptoms across all marital statuses, except among single individuals.

The group that earned more than US\$ 1,157 (8.3 times the minimum wage at the time of data collection) showed the lowest prevalence rates of depressive symptomatology, and only in this group was the prevalence of mild/moderate depressive symptoms higher than that of major depressive symptoms. The highest prevalence rates were seen among subjects earning less than US\$ 208 (1.5 times the minimum wage).

Depressive symptoms were more prevalent in the economically inactive population and in the North region of Brazil.

Variations in the prevalence of depressive symptoms within the socio-demographic categories are shown in Table 3. The results related to ethnicity, social class, marital status (legally separated/divorced/widowed), Mid-West, Northeast, and Southeast regions, and urban/rural sector showed no statistically significant differences ($p > 0.05$).

Being a female multiplied the chances of having depression by 2.65 compared to men and age above 45 was associated with a 39% higher risk of depressive symptoms as compared with lower age ranges.

The educational level complete elementary education showed a 1.43 times higher chance of being associated with depressive symptoms than higher levels of education.

Being single increased the risk of depressive symptoms by 39% when compared to being married, and earning less than US\$ 347 (2.5 times the minimum wage) increased the risk of depressive symptoms by 58%.

As compared to the South, living in the North represented a 79% higher risk of having depressive symptoms.

Discussion

The prevalence of depressive symptoms in Brazil was high, following patterns observed worldwide^{16,31} and in some Brazilian cities.^{9,11,13} Our findings show that almost one-third of the Brazilian population suffers from

Table 3 Results of multivariate analysis through logistic regression for the variable presence of depressive symptoms according to data from Brazilian individuals aged 14 and older collected between November 2005 and April 2006 in the first Brazilian National Alcohol Survey (BNAS)¹⁹ (n=2,672; Wald test 153,26; $p = 0.000$)

Variables/categories	Frequency (% of depression symptoms)	Odds ratio	p-value	95%CI
Gender				
Male	19.4	1.00		
Female	38.1	2.65	< 0.001	2.13-3.29
Age				
< 45 years	26.9	1.00		
≥ 45 years	33.7	1.39	0.008	1.09-1.78
Education				
> Elementary school	22.5	1.00		
≤ Elementary school	33.1	1.43	0.005	1.11-1.82
Color/Race				
Caucasian	27.5	1.00		
Non-Caucasian	30.7	1.05	0.678	0.84-1.30
Marital status				
Married	26.8	1.00		
Single	28.7	1.39	0.009	1.09-1.77
Divorced/ separated/widowed	41.5	1.33	0.078	0.97-1.82
Income				
> US\$ 348	21.5	1.00		
≤ US\$ 348	34.8	1.58	< 0.001	1.21-2.07
Social class				
A / B	17.7	1.00		
C / D / E	31.7	1.38	0.084	0.96-2.00
Country region				
South	26.2	1.00		
North	41.0	1.79	0.017	1.11-2.89
Mid-West	32.4	1.34	0.221	0.84-2.16
Northeast	27.0	0.85	0.378	0.60-1.21
Southeast	26.2	1.19	0.306	0.85-1.65
Sector				
Urban	27.8	1.00		
Rural	30.8	0.86	0.288	0.65-1.13

95%CI = 95% confidence interval.

depressive symptoms and that major depressive symptoms are the most frequent symptomatology. Considering that patients with major depressive symptoms consume more health services, stay longer in hospital, miss more days at work and evaluate their quality of life as worse when compared to the less depressed,³ the high prevalence rates of depressive symptoms that we detected become a matter of concern in terms of individual and public health in Brazil. These rates are consonant with data from the UN concerning the impact of depression in terms of burden of disease and years lived with disability.²

The finding that depressive symptoms are two to three times more frequent among women than men agrees with most epidemiologic studies.³²⁻³⁴ The higher rates found in subjects aged 45 to 59 also agree with the results of other international surveys^{35,36} and the São Paulo megacity survey,¹⁷ which found higher rates of depression in middle age. Although these surveys reported lower rates of depression among people aged 60 and above, in our study and others,^{13,37,38} old age was associated with high prevalence rates of depressive symptoms. Also, a previous Brazilian survey (PNAD-2003)¹⁰ detected the highest prevalence of depression between the ages of 60 and 69, with a downward trend after the age of 70. However, the questionnaire on health used in the PNAD-2003 included questions related to chronic diseases that were self-reported. No specific depression screening instruments were used, which limits comparison with our data.

The high prevalence of depressive symptoms found in the 14-15 and 16-17 age groups is a matter of concern. In Brazilian studies^{10,26} and in international reviews,^{39,40} the prevalence of mood disorders is lower in adolescence, increasing afterwards and reaching a peak in middle age. In our survey, on the other hand, adolescents had higher rates of depressive symptoms than adults between the ages of 18 and 44. A Brazilian survey on the patterns of alcohol use in adolescence found that the mean age of initiation with alcohol was 14, and 24% of adolescents reported the use of alcohol at least once a month, in addition to having frequent episodes of binge drinking.⁴¹ This drinking pattern has been associated with physical, social, and mental harms, including depression.⁴² Future longitudinal studies should investigate the association between alcohol and depression in Brazilian adolescents and possible causal relations.

Contrary to observations made in the São Paulo megacity survey,¹⁷ but in agreement with other international studies,^{38,43} we detected that lower education levels were associated with more severe depressive symptoms. This is disturbing, since only a small part of the Brazilian population has access to higher education. The lowest prevalence of depressive symptoms was found in participants with higher education, which indicates that higher educational levels may act as a protective factor against depressive symptoms.

Depressive symptom prevalence rates were inversely related with income, that is, the lower the financial resources available, the higher the prevalence of the symptomatology, consonant with previous investigations.^{11,43} Since classes

D and E have fewer resources, including less access to medical and psychological treatment, and are closely related to lower education, the possible participation of psychosocial stressors in these extremes seems more evident, suggesting that low income could be a risk factor for depressive symptoms.⁴⁴ Nevertheless, it is important to note that little evidence is available linking childhood depression directly to poverty^{45,46} and it may be that poverty seriously increases risk for depression only in adulthood.^{47,48} Therefore, other factors must be taken into consideration when analyzing this association, such as economical inactivity, which was associated with higher rates of depressive symptoms in our study.

With respect to marital status, being single increased the chances of having depressive symptoms as compared with being married, consonant with a previous investigation.⁴⁹ On the other hand, widowed, separated, and divorced status did not significantly differ from married status in terms of the risk of depressive symptoms, raising the hypothesis that marriage, regardless of its continuation, may be a protective factor against depressive symptoms, although contradictory findings exist.^{11,37,43,49-51}

Living in Northern Brazil, where social, economic, and health resources are limited, was associated with the higher rates of depressive symptoms when compared to the South of Brazil. Despite having the largest jurisdiction in the country (approximately 45% of the total area of Brazil), the North is the second least populated region. However, the region has shown the greatest population growth in the country according to the 2010 census.⁵² This high association of depressive symptoms to the North region is a very relevant finding since there is a lack of studies about depression involving representative samples from the North region. A previous survey⁹ involving the South, Southeast and Mid-West regions had detected higher prevalence rates of depressive symptoms in the South. Our findings support the opposite: people from the South have less depressive symptoms. Future multicenter surveys should include states in this region of the country to investigate the association of depressive symptoms in depth. Also, specific public policies need to be developed for this region in particular.

Some limitations of the present study should be mentioned. First, the cross-sectional design allowed investigation of the associations between socio-demographic variables and depressive symptoms, but not analysis of causality. In addition, the CES-D is a depression screening instrument (rather than a diagnostic instrument) that assesses symptoms occurring over the week before the assessment, which is not consistent with the criteria for defining major depression. This limits the comparability of our results with studies using more acceptable diagnostic measures of depression.

Another limitation is the fact that our results are based on the 2000 national socio-demographic census and, as mentioned earlier in this study, our survey does not include Native Brazilians who live in Indian reservations or populations who live in communities, such as prisons. This limitation is usual in population sample surveys and

does not markedly affect the results of the present investigation, as the excluded population represents a very small percentage of the national population.

Finally, the non-response rate was relatively high (34%), although the sample size (n=3,007) is considered to be representative of the Brazilian population.

In sum, we can infer from our results that the prevalence of depressive symptoms in Brazil is high. Furthermore, major depressive symptoms are the main presentation, and depressive symptom rates are higher among those who are single and in some historically disadvantaged groups: women, the elderly, people with low education and income, and those living in the northern region of Brazil. These findings underscore the need for further cross-sectional studies to better understand risk and protective factors for depression. Longitudinal studies aimed at establishing causal relations could also help develop coordinated and adequate interventions that may improve social functioning and quality of life of individuals. Knowing what groups in the Brazilian population show a higher prevalence of depressive symptoms may help the diagnosis of depression and the development of targeted programs and national public policies aimed at assisting these groups, which may translate to lower utilization of health resources and a lower socioeconomic burden in Brazil.

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