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Research report

Major depressive episode among Brazilian adults: A cross-sectional population-based study

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ABSTRACT

Background: Despite the fact that there is extensive scientific research on depression very few population-based studies have been conducted in Brazilian cities.
Methods: A sampling design of two-stage conglomerates with probability proportional to size. All adults aged 20 or more living in the selected households were invited to participate in the study. Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9) with a cutoff ≥9.
Results: The study sample comprised 2925 respondents. The prevalence of depression in the sample studied was 20.4% (95% CI 18.9;21.8). After adjustment for confounding factors according to a conceptual analysis model the following variables were associated with a higher prevalence of depression: female gender; younger age; white skin color; lower socioeconomic condition; lower education; smoking; being single or separated; being unemployed; and reporting a heart condition. Alcohol use, arterial hypertension, and diabetes mellitus were not found to be associated with depression.
Limitations: The difference in the proportion of males among losses and refusals compared to that in the sample analyzed. Another limitation is reverse causality bias that is a problem inherent to cross-sectional studies.
Conclusions: Our findings support the relevance of depression as a prevalent condition among adults. It also provided evidence of the factors associated with depression, and that some are potentially modifiable risk factors may have implications for policy and health service planning.

1. Introduction

Depression is a common mental disorder affecting people's mental health worldwide (Andrade et al., 2003; Bromet et al., 2011; Ferrari et al., 2013). A study conducted in 18 low-, middle-, and high-income countries found that the prevalence of a major depressive episode (MDE) for 1-month recall period ranged from 2.2% (95% CI 1.4;3.0) in Japan to 10.4% (95% CI 9.2;11.6) in Brazil (Bromet et al., 2011). Population-based studies in Brazil showed a prevalence of depression in adults ranging between 7.5 (95% CI 5.9;9.1) (Vorcaro et al., 2001) and 16.2% (95% CI 14.3%;18.2%) (Boing et al., 2012). In low- and middle-income countries a significant economic and social burden is placed on families due to lack of or inadequate mental health services; and these families usually experience prejudice and stigmatization (Sartorius, 2007). The World Health Organization (WHO) Atlas Project reported long-term systematic failure to allocate resources for mental health research, policy and care services especially in low- and middle-income countries (World Health Organization., 2011). Although provision of mental health services increased in Brazil in recent years there is no effective integration between primary care and specialized mental health services (Mateus et al., 2008). The purpose of our study was to contribute to the understanding of social determinants of depression with input for the implementation of public mental health policies at different levels of healthcare. The present study aimed to assess the prevalence of depression and to describe demographic, socioeconomic and behavioral factors associated in adult.

2. Methods

A population-based cross-sectional study was conducted in the urban area of Pelotas, state of Rio Grande do Sul, southern Brazil, between February and June 2012. Pelotas is a city with approximately 328,000 inhabitants according to the 2010 Population Census. Its population is predominantly urban (93.3%).

The sample size for the study of prevalence was calculated considering a 5% alpha error and a design effect of 2. The sample

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size required given a prevalence of depression of 7.5% in the study population (Vorcaro et al., 2001), an accepted error of 2 percentage points and an additional 10% for losses was 1464 adults. For the study of association considering a power of 80%, a relative risk equal to or greater than 2, a prevalence of 4.4% among the unexposed (socioeconomic condition), a three-to-seven ratio of unexposed to exposed and an additional 10–20% for controlling for confounding factors, the largest sample size needed was 3498 individuals.

A sampling design of two-stage conglomerates with probability proportional to size was used. According to the 2010 Population Census there were 130 primary sampling units. The secondary sampling units were households. All private households with permanent residents as of December 2011 in the census tracts selected were listed. They were then randomly selected by applying probability proportional to size. All individuals aged 20 years or more living in the selected households were invited to participate in this study. Individuals who had cognitive or mental disabilities confirmed by the fieldwork supervisor as well as those institutionalized (hospitals, elderly homes, among others) were excluded.

The following demographic information was collected: gender (male/female); age (20–29, 30–39, 40–49, 50–59, 60–69, 70 or more years); self-reported skin color (White, Black, and other); marital status (married or living with a partner, single or no partner, separated or widowed). Socioeconomic variables included education (0–4, 5–8, 9–11, 12 or more years of schooling); the Brazilian National Economic Index (IEN); and employment status (employed, unemployed). The IEN is a family well-being indicator constructed based on principal components analysis of the ownership of domestic goods (TV set, car, radio, refrigerator, freezer, VCR, washing machine, microwave, telephone line, computer and air conditioner), household characteristics (number of bedrooms and bathrooms), and education of the head of the household. For analyses, the first principal component was used (Barros and Victora, 2005).

As for employment status respondents were considered employed when they reported being employed, self-employed or employers. Information on smoking and self-reported alcohol use was also collected. Smokers were those who reported having smoked at least one cigarette in the prior month (smoking was categorized as never smoked, former smoker and current smoker). Alcohol use (yes/no) was defined as the consumption of any alcoholic beverage in the prior month. Self-rate health (excellent, very good, good, fair, and poor) and reported chronic conditions (yes/no) were also studied.

To assess depression the Patient Health Questionnaire-9 (PHQ-9) was used (Kroenke et al., 2001). This instrument assesses major depressive episodes characterized by 9 symptoms that last 2 weeks or more according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association., 2000). Briefly, the nine symptoms are: depressed mood, anhedonia (loss of interest or pleasure in activities once enjoyed), sleep problems, fatigue or lack of energy, change in appetite or weight, feelings of guilt or worthlessness, reduced ability to concentrate, motor agitation or retardation and suicidal thoughts. The questionnaire also includes an additional question to assess the impact of these symptoms on daily activities (e.g., at work, school). But this variable was not taken into consideration in the assessment of the prevalence of depression. The term depression is used as a synonym for MDE here. The epidemiological and clinical validity of the PHQ-9 was confirmed in studies in many countries. It has been validated in the Brazilian population, and a cutoff ≥9 showed the highest sensitivity (77.5%, 95% CI 61.5; 89.2) and specificity (86.7%, 95% 83.0; 89.9) for detecting individuals with MDE. In addition to assessing the crude prevalence, i.e., based on the PHQ-9 cutoff, this prevalence was corrected for the test's sensitivity and specificity according to the Rogan–Gladen formula: [CP=(OP+Sp−1)/(Se+Sp −1)], where CP=corrected prevalence; OP=observed prevalence; Sp=test specificity; and Se=test sensitivity (Rogan and Gladen, 1978).

Trained interviewers visited the selected households to collect data. The study instrument was electronically programmed in Pendragon 6.1 (Pendragon® Software Corporation for Windows, see: http://pendragonsoftware.com/formsviinfo/index.html). Netbooks were used for data collection which allowed entry of information directly in the data server and a check for inconsistencies. To determine repeatability of the data collected, 10% of interviews in each randomly selected census tract were repeated by the fieldwork supervisor through a short questionnaire. The Kappa coefficient for the variable tested (consultation with a psychologist or psychiatrist) was 0.75.

Data analysis was performed with the use of Stata/IC® 12.1 for Windows. First, a descriptive analysis of the variables collected was carried out. Taking into account the sampling design, the *svyset* command was used to correct the estimates of intracluster correlation variation. Crude and adjusted analyses were performed using Poisson regression and the *svy* prefix. The results were expressed as prevalence ratios (Barros and Hirakata, 2003).

The adjusted analysis used a previously constructed conceptual model (Victora et al., 1997) (Fig. 1) with three hierarchical levels of depression. The first hierarchical level included demographic and socioeconomic characteristics; the second included behavioral variables; and the third reported chronic conditions and self-rated health. This analysis takes into account the effect of each variable in relation to the outcome of depression controlling for confounding variables at the same level and in upper levels. The adjusted analysis included only those variables with a p-value < 0.20 at each level.

Ethical approval was granted by the Research Ethics Committee of the Universidade Federal de Pelotas School of Medicine (protocol 77/2011). All respondents signed a consent form prior to data collection. Individuals who were at risk of suicide or had severe symptoms of depression were home visited by mental health providers or were referred to care services.

3. Results

Of 3379 eligible adults, 2925 were interviewed. The refusal and loss rate was 13.4%. There was a higher proportion of males ($p < 0.001$) among losses and refusals but their age was similar to the study sample (45.7 [s.d.=16.6] in the sample and 45.8

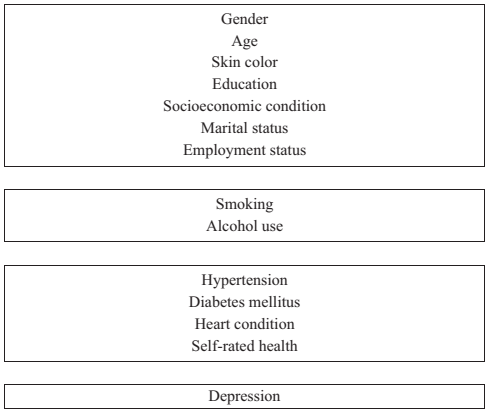

Fig. 1. Conceptual model for the analysis.