

Prevalence of bipolar disorder in a sample of older adults

Prevalência de transtorno bipolar em uma amostra de idosos

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ABSTRACT

AIMS: To estimate the prevalence of bipolar disorder in a sample of older adults and to examine associated socio-demographic and clinical factors.

METHODS: Cross-sectional population-based study of individuals aged 60 years or older registered with the Family Health Strategy in Porto Alegre, Rio Grande do Sul, Brazil, selected randomly from 30 different basic health units. Participants were subjected to diagnostic assessment for bipolar disorder and suicide risk using the Mini International Neuropsychiatric Interview Plus 5.0.0. Categorical variables were described as absolute and relative frequencies. Quantitative variables were expressed as means and standard deviations. The Pearson chi-square or Fisher's exact tests were used as appropriate to evaluate potential associations between the independent variables suicide attempt and risk of suicide. To control for possible confounders and assess variables independently associated with the outcome of interest, the strength association among different risk factors was assessed by means of prevalence ratios, which were estimated with a controlled Poisson model or multivariate Poisson regression. The significance level was set at 5% ($p \leq 0.05$).

RESULTS: The sample comprised 550 older adults. The lifetime prevalence of bipolar disorder in the sample was 5.8% and the point prevalence was 1.5%. In those with bipolar disorder, 59.4% were type I and 40.6% type II. Significant associations were observed between bipolar disorder regardless of type and female gender (prevalence rate [PR] 2.42, 95% confidence interval [CI] 1.01-5.81), living with a partner (PR 2.52, 95%CI 1.21-5.24), history of suicide attempt (PR 3.16, 95%CI 1.53-6.25), and suicide risk (PR 2.98, 95%CI 1.47-6.06). When analyzed each type of bipolar disorder, statistically significant associations were found between age under 70 years and type I bipolar disorder; having companion and type II bipolar disorder; and risk of suicide was associated with both types of bipolar disorder.

CONCLUSIONS: Regardless of the type of bipolar disorder, women and those living with a partner were more affected. History of suicide attempts and suicide risk were more frequent in elderly subjects with bipolar disorder than in those without the disorder.

KEYWORDS: bipolar disorder; elderly; aging.

RESUMO

OBJETIVOS: Estimar a prevalência do diagnóstico de transtorno bipolar em idosos e examinar fatores sociodemográficos e clínicos associados.

MÉTODOS: Um estudo transversal de base populacional incluiu indivíduos com 60 anos ou mais cadastrados na Estratégia de Saúde da Família, em Porto Alegre, Rio Grande do Sul, selecionados aleatoriamente de 30 diferentes unidades básicas de saúde. Os participantes realizaram avaliação diagnóstica para transtorno bipolar usando o Mini International Neuropsychiatric Interview Plus 5.0.0. Variáveis categóricas foram descritas como frequência absoluta e relativa. Variáveis quantitativas foram expressas como média e desvio padrão. O teste qui-quadrado de Pearson ou o exato de Fisher quando apropriado foram usados para avaliar associações potenciais entre as variáveis independentes tentativa de suicídio e risco de suicídio. Para controlar para possíveis confundidores e avaliar as variáveis independentemente associadas com o desfecho de interesse, a força da associação entre diferentes fatores de risco foi avaliada por meio de taxas de prevalência, que foram estimadas através de um modelo controlado de Poisson ou regressão multivariada de Poisson. O nível de significância foi de 5% ($p \leq 0.05$).

RESULTADOS: A amostra foi composta por 550 idosos. A prevalência ao longo da vida de transtorno bipolar foi 5,8% e a prevalência pontual foi 1,5%. Naqueles com transtorno bipolar, 59,4% eram do tipo I e 40,6% do tipo II. Foram observadas associações significativas de transtorno bipolar, independentemente do tipo, com gênero feminino (razão de prevalência [RP] 2,42, intervalo de confiança (IC) 95% 1,01-5,81), morando com um parceiro (RP 2,52, IC 95% 1,21-5,24), história de tentativa de suicídio (RP 3,16, IC 95% 1,53-6,25) e risco de suicídio (RP 2,98, IC 95% 1,47-6,06). Quando analisados separadamente cada tipo de transtorno bipolar, associações estatisticamente significativas foram encontradas entre idade inferior a 70 anos e transtorno bipolar tipo I; ter companheiro e transtorno bipolar tipo II; e o risco de suicídio foi associado a ambos os tipos de transtorno bipolar.

CONCLUSÕES: Independentemente do tipo de, as mulheres e os que viviam com parceiros foram mais afetados. História de tentativa de suicídio e risco de suicídio foram mais frequentes entre os indivíduos idosos que apresentavam transtorno bipolar do que entre os que não o apresentavam.

DESCRIPTORIOS: transtorno bipolar; idoso; envelhecimento.

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Abbreviations: BD, bipolar disorder; CI, confidence interval; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition; FHS, Family Health Strategy; MINI Plus, Mini International Neuropsychiatric Interview Plus 5.0.0; PUCRS, Pontifical Catholic University of Rio Grande do Sul; PR, prevalence ratio; RS, Rio Grande do Sul.

INTRODUCTION

Aging process currently constitutes an unprecedented phenomenon, with major public health implications. Many countries are facing the challenge of dealing with an ever-growing elderly population affected by chronic diseases, such as mood disorders. As of 2012, an estimated 810 million people worldwide were over the age of 60, accounting for 11.5% of the global population; this figure is expected to reach 1 billion in less than a decade and to double by 2050 to represent 22% of the world population [1].

In Brazil, the elderly population was 23.5 million in 2011 (accounting for 12.1% of the population overall), and during the following four decades, this segment of the population has grown at a rate of 3.2% a year [2]. In the Southern Brazilian state of Rio Grande do Sul, older adults account for 13.6% of the population, and the state capital, Porto Alegre, has the highest proportion of individuals aged 60 or older living alone in the country (12.8%). In view of current trends in population aging, it is increasingly important to evaluate the health status of older adults and identify disabling conditions, to ensure quality of life for each individual [5].

A history of mental illness may be present in approximately one in six older adults living in the community. These conditions constitute a major clinical and public health issue, and are associated with poor health-related quality of life [6, 7]. Mood or affective disorders are among the most common psychiatric disorders in the elderly, and are an important cause of loss of independence in this population, as well as causing deterioration of comorbid pathological conditions [3, 4]. Within this context, comorbidities, suicidality and risk of suicide, social and professional impairments, and low treatment adherence increase the burden and cost of disease and are implicated in poor prognosis; consequently, mood disorders are associated with increased health services utilization by older adults [7].

Among the mood disorders, bipolar disorder (BD) is a chronic mental illness that constitutes the most

severe form of mood disturbance, characterized by mood swings and recurrent depressive and manic episodes during life, and has a significant impact on quality of life [3, 4]. BD may affect 1-3% of the overall population, and 0.1-1.0% of adults over the age of 60 years [8-11]. Furthermore, it is associated with psychosocial impairment, reduced quality of life, and increased suicide risk and suicide attempts [7-9, 12-15]. There is a strong association between psychiatric conditions and suicide; major depression and bipolar depression are particularly associated, and are implicated in 65-90% of suicides [15, 16].

In the general population, BD is strongly associated with suicidal ideation, suicide attempts, and completed suicide. The prevalence of suicide is 30-fold greater among patients with BD [15-16, 18-20]. However, recognition of BD in older adults in primary care settings is considered low or imprecise. This is related to underdiagnosis or diagnostic delay in major depressive episodes and in patients with chronic diseases [21] and to failure to detect BD in patients presenting with depressive episodes [22]. Most first episodes of mania occur early in life, but may present at any age, and have been reported in the elderly [11, 23].

Epidemiological studies of geriatric BD are scarce; accordingly, the prevalence of BD in older adults varies widely across studies, probably due to issues attributed to the complexity and heterogeneity of the disease [10, 11, 24-32]. There are no precise estimates of the incidence and prevalence of BD in random samples of older adults in Brazil [24], which further hinders the possibility of evaluating potential associations between BD and other variables in the elderly. The present study sought to estimate the prevalence of BD in older adults and examine potential associations of this disorder with suicide risk and socio-demographic parameters.

METHODS

This cross-sectional study with secondary data analysis used part of data of the broader research "Multidimensional Study of Elderly of Porto Alegre Family Health Strategy (FHS), Brazil", started in 2010, which was approved by the Research Ethics Committee of Pontifical Catholic University of Rio Grande do Sul (PUCRS) (registry 10/04967) and the Public Health Secretariat of Porto Alegre City (registry 499, process 001.021434.10.7). All participants or their legal representatives signed a consent form.

The inclusion criteria were age 60 years or older, FHS registration, and living in the catchment

area of the selected basic health units. Exclusion criteria were not being able to understand the questions for the research protocol, inability to respond coherently to the tests, withdrawal at any time of the survey, and refusing to participate in the stages of collection.

Demographic estimative 2008 of the Instituto Brasileiro de Geografia e Estatística was used to plan the sample size for this analysis. At the time of development of protocol, the FHS in Porto Alegre was made up of 97 basic health units, serving 22,000 seniors. Initially, a random sample of 1,080 old aged was selected, composed by 36 individuals from each 30 different FHS centers, covering all regions of the city (North, South, Center and East). After this randomization, community health workers (CHW) in each basic health unit provided the names of the selected sample. Data collection occurred in two phases: 1) screening and general data collected by the CHW in the homes; and 2) expert evaluation carried out at the São Lucas Hospital of PUCRS.

The second stage of the study was characterized by assessments and diagnoses made by professionals in the São Lucas Hospital of PUCRS. At this stage diagnostic instruments were used which include Brazilian version of the Mini International Neuropsychiatric Interview Plus 5.0.0 (MINI Plus), according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) rating in current time and lifetime diagnosis of psychiatric disorders and suicide risk. MINI Plus include six questions about suicidal ideas and behavior (current and past). All the professional team had experience in elderly patients with neuropsychiatric disorders and participated in the team of the Brain Aging Clinic of PUCRS (*Ambulatório de Envelhecimento Cerebral – AMBEC*).

Variables used in this research deriving from a "General Questionnaire", that collected information about sociodemographic and economic data, and a "Psychiatric evaluation", that applied instrument and diagnostic criteria for psychiatric disorders and suicide risk.

Categorical variables were described as absolute and relative frequencies. Quantitative variables were expressed as means and standard deviations. For comparison of variable frequencies, the sample-wide prevalence of BD was estimated with a 95% confidence interval. The Pearson chi-square or Fisher's exact tests were used as appropriate to evaluate potential associations between the independent variables suicide

attempt and risk of suicide. To control for possible confounders and assess variables independently associated with the outcome of interest, the strength of association among different risk factors was assessed by means of prevalence ratios, which were estimated with a controlled Poisson model or multivariate Poisson regression. The prevalence ratio (PR) with 95% confidence intervals was the effect measure employed. The significance level was set at 5% ($p \leq 0.05$), and all analyses were carried out in the software IBM SPSS version 21.0.

RESULTS

Of the initial selected sample of 1,080 older adults, 550 (51%) met the inclusion and exclusion criteria and agreed to participate in the study. All of them signed an informed consent and attended the second phase of the research. Most were female (62.9%), white (64.9%), "young old" (i.e., 62% were aged 60-69), with a low level of educational attainment (44.6% had not completed primary education), and with a low household income (89.1% had a monthly income of \leq US\$ 900) (**Table 1**).

The univariate analysis found borderline-significant associations between having a partner ($p=0.062$) or being retired ($p=0.066$) and diagnosis of BD. Subjects who had a partner or companion had a tendency for a higher prevalence of BD than did those without a companion (8.3% vs. 4.0%). The lifetime prevalence of BD in the sample was 5.8%, and 1.5% of all subjects currently had the disorder. Of those with the disorder, 59.4% had type I and 40.6% had type II BD (**Table 1**).

Suicide attempts and risk of suicide were significantly associated with BD ($p=0.001$). Older adults with a history of attempted suicide and those at risk of suicide had a higher lifetime prevalence of BD than those who had never attempted suicide (21.6% vs. 4.8%) and those not at risk of suicide (15.7% vs. 4.3%), respectively. After adjustment by the multivariate model, the variables that remained significantly associated with BD were female gender, having a partner or companion, have attempted suicide, and risk of suicide (**Table 2**).

After stratification of the sample by BD type, risk of suicide remained associated with both types. Regarding the other factors of interest, age under 70 years remained associate with type I BD. Older adults who had a partner or companion had a greater chance of receiving a type II BD diagnostic compared to subjects who did not have a partner (**Table 3**).

Table 1. Sociodemographic data of the study sample, constituted by 550 older adults registered in the Family Health Strategy in Porto Alegre, RS, Brazil, between 2010-2015.

Variable	Overall (n=550) n (%)	Bipolar disorder prevalence	
		% (95%CI)	p
Age range			0.299
60-69	341 (62.0)	7.1 (2.15)	
70-79	163 (29.6)	4.4 (1.71)	
≥ 80	46 (8.4)	2.4 (1.28)	
Gender			0.103
Male	204 (37.1)	3.5 (1.54)	
Female	346 (62.9)	7.4 (2.19)	
Educational attainment			0.456
Illiterate	122 (22.3)	3.4 (1.51)	
< 4 years	122 (22.3)	5.0 (1.82)	
4-7	218 (39.8)	7.5 (2.2)	
≥ 8	86 (15.7)	7.0 (2.13)	
Skin color			0.537
White	347 (64.9)	7.0 (2.13)	
Black	73 (13.6)	5.5 (1.91)	
Brown	100 (18.7)	4.2 (1.68)	
Other	15 (2.8)	0.0	
Marital status			0.309
Married	202 (37.5)	8.0 (2.27)	
Separated	86 (16.0)	7.1 (2.15)	
Single	93 (17.3)	5.6 (1.92)	
Widowed	157 (29.2)	3.3 (1.49)	
Partner/companion			0.062
Yes	252 (48.1)	8.3 (2.31)	
No	272 (51.9)	4.0 (1.64)	
Lives alone			1.000
Yes	105 (19.6)	5.8 (1.95)	
No	432 (80.4)	5.9 (1.97)	
Retired			0.066
Yes	340 (66.4)	4.7 (1.77)	
No	172 (33.6)	9.3 (2.43)	
Household income*			0.893
≤ US\$ 300	165 (35.1)	8.0 (2.27)	
US\$ 301-900	254 (54.0)	6.1 (2.0)	
US\$ 901-1,800	44 (9.4)	7.0 (2.13)	
US\$ 1,801-3,000	6 (1.3)	0.0	
> US\$ 3,000	1 (0.2)	0.0	
Suicide attempt			0.001
Yes	37 (6.9)	21.6 (3.44)	
No	501 (93.1)	4.8 (1.79)	
Risk of suicide			<0.001
Yes	83 (15.7)	15.7 (3.04)	
No	447 (84.3)	4.3 (1.7)	

* 79 subjects (14.4%) refused to report their income.
p values refer to bipolar disorder prevalence variations across variables.

Table 2. Multivariate Poisson regression analysis of factors independently associated with bipolar affective disorder regardless of its type, in elderly people.

Variable	PR	95%CI	p
Age range			
< 70	1.38		
≥ 70	1.0	0.59-3.25	0.460
Gender			
Male	1.0		
Female	2.42	1.01-5.81	0.048
Partner/companion			
Yes	2.52		
No	1.0	1.21-5.24	0.014
Retired			
Yes	0.75		
No	1.0	0.37-1.54	0.433
Suicide attempt			
Yes	3.16		
No	1.0	1.53-6.52	0.002
Risk of suicide			
Yes	2.98		
No	1.0	1.47-6.06	0.003

PR, prevalence ratio; CI, confidence intervals.

DISCUSSION

This study found a 5.8% lifetime prevalence of BD in a community sample of older adults receiving primary health care in the city Porto Alegre, RS, Brazil. Of those with the disorder, 59.4% had type I and 40.6% had type II BD. As expected, suicide attempts and risk of suicide were associated with both types.

The prevalence of BD in this community sample of elderly is consistent with the current literature. Population-based studies have suggested BD prevalence values ranging from 0.1% to 9.8% in primary health care samples [25-28]. When the prevalence of BD is assessed in psychiatric inpatient samples, this figure rises to 4-17% [11, 23]. The variability is attributable to differences in diagnostic modalities and methodology across studies.

Considering any diagnosis of BD (i.e., not stratified by type), we observed a 2.42-fold greater prevalence of BD in women. Carlborg et al. [29] conducted a cohort study and found unequal representation of gender in the studied population of patients with BD, with a greater trend in women than in men. Large, population-based studies attempting to correlate BD types with gender failed to find significant gender differences in the distribution of types I and II [30-32], which is consistent with the results of the present study.

Table 3. Multivariate Poisson regression analysis of factors independently associated with each type of bipolar disorder in elderly people.

Variable	Type I bipolar disorder			Type II bipolar disorder		
	PR	95%CI	p	PR	95%CI	p
Age range						
< 70	4.47	1.10-18.1	0.036	0.45	0.13-1.57	0.212
≥ 70	1.0			1.0		
Gender						
Male	1.0	0.75-8.70	0.135	1.0	0.70-7.63	0.172
Female	2.54			2.30		
Partner/companion						
Yes	2.02	0.80-5.05	0.136	3.83	1.14-12.8	0.030
No	1.0			1.0		
Retired						
Yes	1.32	0.32-2.33	0.759	0.60	0.22-1.70	0.339
No	1.0			1.0		
Risk of suicide						
Yes	3.17	1.24-8.13	0.016	3.14	1.06-9.32	0.040
No	1.0			1.0		

PR, prevalence ratio; CI, confidence intervals.

In our sample, suicide attempt and risk of suicide were significantly associated with BD. Older adults with a history of attempted suicide had a higher lifetime prevalence of BD than those who had never attempted suicide. Older adults at risk of suicide also had a higher lifetime prevalence of BD than those not at risk of suicide. Similar findings have been reported elsewhere in the literature. Thus, BD may be considered a life-threatening illness. In the Epidemiological Catchment Area Study, 29% of bipolar patients from the general population were estimated to have attempted suicide at least once during their lives [18].

In clinical samples, 25-56% of patients with BD report at least one lifetime suicide attempt, and 10-20% die by suicide [15-18]. One study showed that persons with BD die sooner than the general population, and estimated that 10-15% of those with the disorder may die by suicide [19]. Ciulla et al. [15] conducted a study of suicide risk in a community sample of adults from Porto Alegre (RS, Brazil), the same setting of our study, and the potential relations of this risk with demographic parameters and mood disorders. The authors found that aging is a predictor of suicide. Furthermore, a high percentage of the older adults in the sample who had unipolar depression (59.2%) exhibited risk of suicide, as did older adults with a current and prior history of BD (62.5% and 33.3% respectively) [15]. There is a

strong association between psychiatric conditions and suicide; major depression and bipolar depression are particularly associated, and are implicated in 65-90% of suicides [20].

Strengths of this study include diagnosis of BD established by means of a psychiatric interview, performed by trained psychiatrists, and a sample comprised by older adults living in the community and treated at a basic health unit, and may thus be considered representative of the general population. Its limitations include the cross-sectional design, without follow-up of the study sample; the female predominance of the sample; and the fact that subjects were recruited from the network of care of the public health system, which predominantly covers the low-income population.

From these results we can conclude that the prevalence of BD was 5.8% in a Brazilian community sample of older adults receiving primary health care. Regardless of the BD type, women and those living with a partner were more affected, and history of suicide attempts and suicide risk were more frequent in subjects with BD than in those without the disorder. These findings demonstrate a growing need for comprehensive health care policies that include specific interventions for the elderly population.

NOTES

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Conflicts of interest disclosure

The authors declare no competing interests relevant to the content of this study. They claim to have had full access to all available data and they take full responsibility for the integrity of the results described herein.

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