Mental disorders and employment status in the São Paulo Metropolitan Area, Brazil: gender differences and use of health services

Transtornos mentais e situação laboral na Região Metropolitana de São Paulo, Brasil: diferenças de gênero e uso de serviços de saúde

Trastornos mentales y situación laboral en la zona metropolitana de São Paulo, Brasil: diferencias de género y uso de servicios de salud

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Abstract

Mental disorders are associated with employment status as significant predictors and as consequences of unemployment and early retirement. This study describes the estimates and associations of 12-month DSM-IV prevalence rates of mental disorders and use of health services with employment status by gender in the São Paulo Metropolitan Area, Brazil. Data from the São Paulo Megacity Mental Health Survey was analyzed (n = 5,037). This is a population-based study assessing the prevalence and determinants of mental disorders among adults, using the Composite International Diagnostic Interview. *The associations were estimated by odds ratios obtained through binomial and multinomial logistic regression. This study demonstrates that having mental disorders, especially mood disorders, is associated with being inactive or unemployed among men and inactive among women, but only having a substance use disorder is associated with being unemployed among women. Among those with mental disorders, seeking health care services is less frequent within unemployed.*

Mental Disorders; Employment; Health Services

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Background

Neuropsychiatric disorders are the leading cause of disability in the world [1,2]. Results from the *Global Burden of Disease* (GBD) in Brazil showed that neuropsychiatric conditions were responsible for 21.5% of all disability-adjusted life years (DALYs) (25.1% among women and 18.6% among men), generating high social and economic costs [3,4]. Around the world, several studies were launched to estimate the prevalence and determinants of mental disorders in the general population, as well as to assess the impact of mental disorders on daily-living activities and work performance [5,6,7,8,9,10,11,12,13,14,15,16,17], including in Brazil [18]. Most mental disorders have early onset, often leading to precocious and/or permanent disability, increasing the need for health care [15,16,17,18,19,20,21]. In Brazil, mental disorders are the third leading cause of disability leaves from work and disability benefits [22].

Mental disorders are significantly associated with unemployment and early retirement due to permanent or temporary disability [6,7,9,10,15,16,17,18,19,20]. Low treatment-seeking rates reduce adequate rehabilitation and subsequent return to the workforce [7,9,10,14,15,16,22,23]. These associations, though, are likely to be two-way, as unemployment and its adverse consequences may deleteriously impact mental health [6,7,9,12,15,16,18,19].

High prevalence rates of psychiatric morbidity were reported among adult residents living in the São Paulo Metropolitan Area, Brazil [24,25], where mood, substance use and anxiety disorders, altogether, accounted for 49% of the total days out of role in the previous month [18].

The present study further explores the associations of 12-month common mental disorders with employment status in the adult population in the São Paulo Metropolitan Area, and its relation to gender and use of health care services, using data from the *São Paulo Megacity Mental Health Survey* [26].

Methods

The *São Paulo Megacity Mental Health Survey* is a population-based cross-sectional study of psychiatric morbidity in the general adult population (18+) living in the São Paulo Metropolitan Area, comprising the capital of the state of São Paulo and 38 surrounding municipalities, and covering a geographical area of 8,501km². 5,037 subjects were assessed in their households, with a global response rate of 81.3%. Data were collected between May/2005 and April/2007 by trained lay interviewers, using the *World Mental Health (WMH) Survey version of the Composite International Diagnostic Interview* (CIDI 3.0) [27], which is composed of clinical and non-clinical sections. Detailed information on the study design and methods are available elsewhere[26].

Measurements and outcomes

- **Sociodemographic characteristics**

The following characteristics were assessed: (1) age at interview, grouped into 4 categories (18-34, 35-49, 50-64, or 65+ years); (2) gender, female or male; (3) education, grouping the number of years of schooling into 4 categories (0-4, 5-8, 8-11; and 12+ years); (4) marital status, as currently married/cohabitating, separated/widowed/divorced, and never married; (5) monthly income within quintiles, in Brazilian currency (low income mean = BRL 1,217; low-middle mean = BRL 3,056; middle mean = BRL 5,055; high-middle mean = BRL 8,438; and high income mean = BRL 26,481); according to the Brazilian Ministry of Labor [28], the minimum monthly income at the time of data collection was BRL 300,00 (from may/2005 to april/2006), and BRL 350,00 (from May/2006 to April/2007).

- **Mental disorders**

To estimate the 12-month prevalence of 19 DSM-IV mental disorders (12m-MD) according to employment status by gender, nineteen mental disorders occurring in the 12 months prior to the interview (12m-MD) were assessed through the CIDI 3.0 clinical sections based on the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition (DSM-IV) diagnostic criteria [26]. Mental disorders

considered here include mood disorders (major depression, I/II bipolar disorders, and dysthymia); anxiety disorders (agoraphobia, generalized anxiety disorder, obsessive compulsive disorder, panic disorder, post-traumatic stress disorder, adult separation anxiety disorder, social phobia, and specific phobia); impulse-control disorders (attention deficit disorder, conduct disorder, oppositional defiant disorder, and intermittent explosive disorder); substance use disorders (SUD) (alcohol abuse, alcohol dependence, drug abuse, and drug dependence).

• **Current employment status**

To describe the distribution of employment status and its association with 12m-MD by gender, respondents were grouped into 3 categories according to their employment situation at the time of the interview: (1) *working* (currently working, self-employed, and/or in maternity leave; n = 3,007); (2) *economically inactive* (retirees, homeworkers, students, illness/sickness leave, and/or disabled; n = 1,487); and (3) *unemployed* (looking for work, currently unemployed, and/or temporarily laid off; n = 521). Twenty-six respondents answered to an open-ended question and were reclassified accordingly, e.g., "construction worker without a contract" or "provider of laundry/ironing services" were considered as Working. 107 respondents chose more than one option and were classified as "working" if they earned any money for the work they provided, e.g., one respondent was a student and had a part-time unregistered occupation; or a homeworker who also worked as baby-sitter. Information regarding employment status is missing for 22 respondents, which were excluded from analyses (total N = 5,015).

• **Treatment seeking**

In an attempt to verify if employment status is related to use of health care services among respondents with 12m-MD, treatment-seeking information was analyzed. Seeking specialized treatment ("any mental health treatment") was considered if respondents saw any mental healthcare professionals in the past 12 months, including psychiatrists and psychologists, or were admitted into a psychiatric hospital/ward. "Any general health treatment" included attendance to any family doctor, other specialty physicians or other medical professionals in the past 12 months.

Statistical analysis

Descriptive statistics and measurements of associations were calculated applying survey sampling procedures that consider the complex sampling design, using weights to adjust for sampling probabilities and for age-gender structure of the target-population, using Stata (StataCorp LP, College Station, USA). Descriptive analysis of sociodemographic characteristics was conducted according to employment status. The association between 12m-MD and employment status was estimated by the Pearson's chi-squared test and the magnitude of the associations by odds ratio (OR) and its 95% confidence interval (95%CI), obtained through multinomial logistic regression, with "working" as the reference category, stratified by gender, and further adjusted by age, education and marital status. We also used binomial logistic regression to assess whether treatment seeking was associated with employment status among those with any 12m-MD, adjusted by age, education, marital status and comorbidity of mental disorders. A significant level of 0.05 was considered in all tests.

Results

At the time of the interview, 63.6% (n = 3,007) of the sample were currently working, 24.6% (n = 1,487) economically inactive, and 11.8% (n = 521) unemployed (Table 1). There were significant differences in gender distributions across current employment status groups; women were 5.5 times more likely to be economically inactive (95%CI: 4.38-6.90; p < 0.01), and had 35% more chance of being unemployed (95%CI: 1.09-1.66; p < 0.01), when compared to men (results not shown in the table, but available upon request). Most working and unemployed respondents were young (18-34 years);

Table 1

Sociodemographic characteristics of respondents by employment status in the *São Paulo Megacity Mental Health Survey*, Brazil (N = 5,015).

	Employment status [% (SE)]		
	Currently working (n = 3,007; 63.6%)	Inactive (n = 1,487; 24.6%)	Unemployed (n = 521; 11.8%)
Gender			
Female	44.1 (1.15)	75.1 (1.36) *	53.1 (2.63) *
Male **	55.9 (1.15)	24.9 (1.36)	46.9 (2.63)
Age groups (years)			
18-34 **	48.4 (1.09)	25.2 (1.33)	66.8 (2.65)
35-49	36.5 (0.92)	23.3 (1.36)	24.7 (2.57) *
50-64	12.8 (0.53)	25.3 (1.51) *	8.5 (1.58)
≥ 65	2.3 (3.80)	26.1 (1.68) *	0.0 (0.00)
Years of education			
0-4 **	15.9 (0.68)	39.1 (0.16)	17.9 (2.87)
5-8	23.0 (0.11)	24.9 (0.1)	24.3 (2.30)
9-11	39.3 (0.11)	26.4 (2.26)	50.0 (3.24)
12	21.8 (0.96)	9.6 (0.92) *	7.8 (1.32) ***
Marital status			
Married/Cohabitating **	60.0 (1.32)	66.6 (1.60)	39.6 (2.36)
Separated/Widowed/Divorced	13.0 (0.86)	21.3 (0.98) *	15.0 (1.33) ***
Never mkarried	27.0 (1.18)	12.1 (1.37) *	45.4 (2.72) *
Monthly income per capita (BRL)			
High (1st quintile) **	23.6 (0.01)	18.1 (1.10)	6.9 (1.56)
High-middle (2nd quintile)	22.9 (0.90)	16.1 (1.10) *	9.2 (1.42)
Middle (3rd quintile)	19.6 (7.60)	17.5 (0.93) *	16.7 (2.36) ***
Low-middle (4th quintile)	18.7 (0.70)	25.1 (0.01) ***	31.3 (3.10) *
Low (5th quintile)	15.1 (0.56)	23.2 (1.31) *	35.8 (3.19) *

SE: standard error.

* p-value < 0.05;

** Within each employment status group;

*** p-value < 0.001 (Pearson's chi-squared tests, considering the reference category.

older cohorts were more likely to be economically inactive. Respondents with higher education were more likely to be working than economically inactive or unemployed. There were more separated and never married respondents among the economically inactive and the unemployed, and more married respondents among those currently working. Those with lower income were more likely to be economically inactive and especially unemployed, as a direct result of the lack of earnings (Table 1).

There were no differences in the prevalence of any DSM-IV 12m-MD across current employment status groups among men (Table 2) or among women (Table 3). When adjusting for sociodemographic characteristics, having any 12m-MD (OR = 1.5; 95%CI: 1.01-2.29), any anxiety disorders (OR = 1.8; 95%CI: 1.04-3.06), and specifically panic (OR = 4.4; 95%CI: 1.07-17.7), and post-traumatic stress disorder (OR = 7.7; 95%CI: 1.20-50.06) were associated with being economically inactive among men (Table 2). Moreover, the presence of any 12-month mood disorders increased the chances of being both economically inactive and unemployed (OR = 2.8; 95%CI: 1.22-6.54 and OR = 1.7; 95%CI: 1.01-2.82, respectively), as observed for bipolar disorder (OR = 17.8; 95%CI: 4.37-72.74 and OR = 4.7; 95%CI: 1.26-17.78); major depressive disorder was significantly associated with being unemployed (OR = 2.0; 95%CI: 1.20-3.24).

Among women, having bipolar disorder (OR = 3.6; 95%CI: 1.19-11.47), social phobia (OR = 2.2; 95%CI: 1.29-3.63), and oppositional defiant disorder (OR = 6.9; 95%CI: 1.47-32.25) were associated

Table 2

Prevalence of 12-month DSM-IV mental disorders and association with employment status among men in the *São Paulo Megacity Mental Health Survey*, Brazil (N = 2,185).

Disorder class/DSM-IV disorder	Employment status			
	Working * (n = 1,606)	Inactive ** (n = 368)		
	Weighted [% (SE)]	Weighted [% (SE)]	Crude OR (95%CI) ***	Adjusted OR (95%CI) #
Any mental disorder	20.6 (1.30)	20.7 (2.55)	1.0 (0.76-1.33)	**1.5 (1.01-2.29)** ##
Comorbidity (> 1 mental disorders)	5.9 (0.64)	9.1 (2.54)	1.6 (0.81-3.09)	**2.5 (1.14-5.68)** ##
Mood disorders				
Any mood disorder	5.2 (0.65)	9.01 (2.54)	1.8 (0.95-3.41)	**2.8 (1.22-6.54)** ##
Major depression	4.8 (0.62)	6.6 (1.91)	1.4 (0.73-2.78)	1.9 (0.78-4.73)
I/II bipolar disorder	0.4 (0.17)	2.4 (1.37)	**5.6 (1.27-24.48)** ##	**17.8 (4.37-72.74)** ###
Dysthymia	0.5 (0.24)	2.0 (1.55)	3.8 (0.49-29.71)	5.7 (0.82-39.30)
Anxiety disorders				
Any anxiety disorder	12.5 (1.02)	13.3 (3.00)	1.3 (0.69-2.36)	1.2 (0.68-2.02) ##
Agoraphobia	0.6 (0.32)	2.2 (1.25)	3.2 (1.00-10.07)	5.5 (0.90-33.00)
Generalized anxiety disorder	1.5 (0.37)	1.7 (0.67)	1.1 (0.44-2.88)	1.8 (0.67-4.80)
Obsessive compulsive disorder	3.0 (0.52)	2.7 (1.06)	0.9 (0.34-2.15)	1.2 (0.39-3.38)
Panic disorder	0.5 (0.14)	0.6 (0.37)	1.2 (0.30-4.87)	**4.4 (1.07-17.69)** ##
Post-traumatic stress disorder	0.5 (0.29)	2.4 (1.30)	5.1 (1.00-25.84)	**7.7 (1.20-50.06)** ##
Adult separation anxiety disorder	1.6 (0.40)	2.9 (2.02)	1.8 (0.40-9.10)	1.6 (0.23-11.61)
Social phobia	2.5 (0.45)	4.2 (1.86)	1.7 (0.53-5.46)	2.8 (0.79-9.95)
Specific phobia	5.6 (0.71)	8.3 (1.60)	1.5 (0.94-2.47)	1.5 (0.76-3.06)
Impulse-control disordes				
Any impulse-control disorder	4.7 (0.62)	3.8 (1.45)	0.8 (0.35-1.82)	1.7 (0.73-3.79)
Attention deficit disorder	1.2 (0.34)	1.8 (1.20)	1.6 (0.38-6.47)	2.9 (0.56-14.47)
Conduct disorder	0.7 (0.21)	1.3 (1.15)	1.9 (0.27-13.06)	4.5 (0.96-20.83)
Oppositional defiant disorder	0.4 (0.20)	0.5 (0.40)	1.5 (0.18-11.64)	1.3 (0.28-5.81)
Intermittent explosive disorder	3.3 (0.61)	1.8 (1.10)	0.5 (0.13-2.22)	1.2 (0.23-5.89)
Substance use disorders				
Any substance use disorder	5.7 (0.77)	4.2 (1.26)	0.7 (0.33-1.57)	1.2 (0.48-3.25)
Alcohol abuse	3.1 (0.48)	0.9 (0.60)	0.3 (0.07-1.16)	0.6 (0.15-2.56)
Alcohol dependence	1.9 (0.48)	3.3 (1.15)	1.7 (0.70-4.28)	2.4 (0.64-9.14)
Drug abuse	0.5 (0.21)	0.0 (0.00)	-	-
Drug dependence	0.8 (0.30)	0.2 (0.19)	0.2 (0.24-2.03)	0.4 (0.04-4.08)

(continues)

with being inactive. Any substance use disorder was associated with being unemployed (OR = 2.3; 95%CI: 1.02-5.09), but this association lost statistical significance when adjusted for sociodemographic characteristics.

Regarding comorbidity, having more than one psychiatric disorders in the past 12 months was associated with being economically inactive (OR = 2.5; 95%CI: 1.14-5.68) and unemployed (OR = 1.5; 95%CI: 1.0-2.38) among men, but was not related to current employment status among women.

A total of 1,395 respondents were diagnosed with at least one DSM-IV 12m-MD. Overall treatment-seeking rates in all health care settings are low, regardless of employment status. After adjusting for sociodemographic characteristics and for psychiatric comorbidities, those economically inactive were more likely to seek general health treatment (OR 3.0; CI 1.95-3.86), as well as mental health treatment (OR = 2.8; 95%CI: 1.51-5.12), when compared to those working (Table 4). Unemployed respondents with 12m-MD reported similar rates of general and specialized health care use compared to those working.

Table 2 (continued)

Disorder class/DSM-IV disorder	Employment status Unemployed (n = 211)		
	Weighted [% (SE)]	Weighted [% (95%CI)]	Weighted [% (95%CI)]
Any mental disorder	25.8 (2.82)	1.3 (0.94-1.89)	1.2 (0.82-1.84)
Comorbidity (> 1 mental disorders)	8.7 (1.41)	1.5 (1.00-2.40)	1.5 (1.00-2.38)
Mood disorders			
Any mood disorder	8.5 (1.43)	**1.7 (1.08-2.59)** ##	**1.7 (1.01-2.82)** ##
Major depression	8.9 (1.29)	**1.9 (1.12-3.24)** ##	**2.0 (1.20-3.24)** ##
I/II bipolar disorder	1.6 (1.05)	5.1 (0.94-27.82)	4.7 (1.26-17.78) ##
Dysthymia	0.4 (0.38)	0.9 (0.15-6.10)	0.8 (0.14-4.24)
Anxiety disorders			
Any anxiety disorder	13.3 (3.0)	1.3 (0.68-2.36)	1.2 (0.68-2.02)
Agoraphobia	0.3 (0.24)	0.4 (0.06-2.98)	0.2 (0.02-1.70)
Generalized anxiety disorder	1.7 (1.38)	1.1 (0.17-6.73)	1.1 (0.21-5.92)
Obsessive compulsive disorder	2.5 (1.46)	0.9 (0.27-3.00)	0.9 (0.32-3.03)
Panic disorder	0.2 (0.15)	0.3 (0.31-3.11)	0.6 (0.04-8.64)
Post-traumatic stress disorder	0.8 (0.70)	1.9 (0.19-19.50)	1.1 (0.11-11.27)
Adult separation anxiety disorder	2.9 (2.02)	1.8 (0.4-9.10)	1.6 (0.23-11.61)
Social phobia	3.6 (1.45)	1.4 (0.57-3.61)	1.7 (0.68-4.33)
Specific phobia	6.2 (2.03)	1.1 (0.54-2.29)	0.9 (0.49-2.02)
Impulse-control disordes			
Any impulse-control disorder	4.2 (1.55)	0.9 (0.36-2.15)	0.9 (0.31-2.46)
Attention deficit disorder	0.2 (0.16)	0.1 (0.01-1.30)	0.1 (0.01-1.35)
Conduct disorder	0.7 (0.61)	1.1 (0.17-6.86)	0.6 (0.05-8.72)
Oppositional defiant disorder	0.5 (0.40)	1.5 (0.18 - 11.64)	1.3 (0.28-5.81)
Intermittent explosive disorder	3.1 (0.48)	0.9 (0.31-2.81)	0.9 (0.27-3.25)
Substance use disorders			
Any substance use disorder	8.1 (2.34)	1.3 (0.60-2.87)	1.0 (0.41-2.57)
Alcohol abuse	4.4 (1.96)	1.4 (0.52-3.88)	1.3 (0.40-4.15)
Alcohol dependence	3.7 (1.68)	1.9 (0.56-6.73)	1.2 (0.24-5.54)
Drug abuse	0.4 (0.15)	0.6 (0.13-2.55)	0.4 (0.39-4.73)
Drug dependence	0.5 (0.31)	0.7 (0.65-8.59)	0.3 (0.08-1.31)

95%CI: 95% confidence interval; DSM-IV: *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition; OR: odds ratio; SE: standard error.

* Employed, self-employed, owner; OR = 1 (base-line);

** Homeworkers, students, disabled, retirees, sickness benefits;

*** OR cruded comparing inactive vs. working;

OR adjusted by sociodemographics characteristics comparing Inactive vs Working; OR obtained by multinomial logistic regression using the category "working" as the reference;

p-value < 0.05;

p-value < 0.01.

Discussion

This study provides empirical information on the 12-month prevalence and associations of 19 DSM-IV mental disorders with current employment status, according to gender, in the adult general population living in São Paulo, the largest metropolitan area in Brazil and in in all of South America. It further assessed the association between treatment seeking and employment status among respondents with 12-month DSM-IV mental disorders. Although these associations have been largely reported worldwide [5,6,7,8,9,10,11,12,13,14,15,16,17,19.18,20,21,23], there is little information of this sort in Brazil [18,22].

Regarding sociodemographic characteristics according to the current employment situation, our results are similar to reports from other populations [6,7,8,9,10,11,12]. Generally, working is associ-

Table 3

Prevalence of 12-month DSM-IV mental disorders and association with employment status among women in the *São Paulo Megacity Mental Health Survey*, Brazil (N = 2,830).

Disorder category/DSM-IV disorder	Employment status			
	Working * (n = 1,401)	Inactive ** (n = 1,119)		
	Weighted [% (SE)]	Weighted [% (SE)]	Crude OR (95%CI) ***	Adjusted OR (95%CI) #
Any mental disorder	34.7 (10.80)	30.9 (1.80)	0.8 (0.68-1.01)	1.1 (0.08-1.29)
Comorbidity (> 1 mental disorders)	15.5 (1.23)	12.3 (1.61)	0.8 (0.57-1.01)	1.0 (0.73-1.32)
Mood disorders				
Any mood disorder	15.5 (1.23)	12.3 (1.60)	0.8 (0.56-1.01)	1.0 (0.74-1.34)
Major depression	14.8 (1.30)	10.7 (1.55)	0.7 (0.50-0.94) ##	0.9 (0.65-1.22)
I/II bipolar disorder	0.5 (0.19)	1.4 (0.30)	2.6 (1.08-6.27) ##	3.6 (1.19-11.47) ##
Dysthymia	2.1 (0.62)	1.9 (0.78)	0.9 (0.31-2.54)	1.1 (0.43-2.37)
Anxiety disorders				
Any anxiety disorder	24.8 (1.49)	23.0 (1.30)	0.9 (0.65-1.30)	1.0 (0.64-1.52)
Agoraphobia	1.8 (0.48)	3.1 (0.58)	1.7 (0.95-3.18)	1.7 (0.86-3.26)
Generalized anxiety disorder	2.6 (0.44)	3.8 (0.89)	1.5 (0.81-2.73)	1.4 (0.83-2.28)
Obsessive compulsive disorder	3.5 (0.65)	3.6 (0.87)	1.0 (0.33-3.29)	0.9 (0.37-2.01)
Panic disorder	1.2 (0.26)	1.9 (0.60)	1.5 (0.79-3.05)	1.7 (0.64-4.53)
Post traumatic stress disorder	1.4 (0.31)	1.8 (0.47)	0.9 (0.53-1.85)	1.2 (0.63-2.13)
Adult separation anxiety disorder	2.6 (0.55)	2.0 (0.50)	0.8 (0.38-1.53)	0.9 (0.48-1.99)
Social phobia	4.6 (0.64)	6.0 (1.04)	1.3 (0.87-2.02)	2.2 (1.29-3.63) ##
Specific phobia	15.5 (1.32)	14.0 (0.94)	0.9 (0.67-1.17)	0.9 (0.69-1.30)
Impulse-control disordes				
Any impulse-control disorder	3.9 (0.65)	3.4 (0.73)	0.9 (0.51-1.45)	1.3 (0.74-2.38)
Attencion deficit disorder	0.7 (0.23)	0.4 (0.18)	0.5 (0.16-1.51)	0.5 (0.14-2.06)
Conduct disorder	0.2 (0.15)	0.2 (0.15)	1.0 (0.15-6.29)	-
Oppositional defiant disorder	0.3 (0.16)	0.8 (0.42)	2.4 (0.76-7.79)	6.9 (1.47-32.25) ##
Intermittent explosive disorder	2.9 (0.57)	2.6 (0.70)	0.9 (0.44-1.74)	1.4 (0.65-2.99)
Substance use disorders				
Any substance use disorder	1.4 (0.35)	0.8 (0.36)	0.6 (0.19-1.70)	0.8 (0.24-2.34)
Alcohol abuse	6.1 (0.33)	0.3 (0.24)	0.5 (0.05-3.84)	0.6 (0.07-5.94)
Alcohol dependence	0.6 (0.17)	0.2 (0.10)	0.3 (0.97-1.20)	0.5 (0.11-2.17)
Drug abuse	0.0 (0.01)	0.0 (0.01)	2.1 (0.11-38.82)	1.1 (0.06-18.51)
Drug dependence	0.3 (0.22)	0.2 (0.20)	0.7 (0.74-7.11)	1.2 (0.06-21.74)

(continues)

ated with male gender, younger age, higher education and higher income in our study, but there are specific differences when compared to reports from developed countries, where the workforce has higher proportions of middle-aged and more educated individuals [6,8,9,10,11,12]. Our findings may reflect the younger age structure and low levels of formal educational attainment in the general Brazilian population.

Overall, for both genders, having 12-month mood disorders is associated with being economically inactive, but it only relates to unemployment among men, and among women, only substance use disorders are associated with being unemployed in our study. As seen in most epidemiological studies, regardless of employment status, higher prevalence rates of mood and anxiety disorders are seen among women, while higher rates of substance use disorders are presented among men [6,8,9,10,11,12], and this gender differences in prevalence rates have not influenced the associations with employment status. In our study, among men, having any mental disorders, any mood disorders, I/II bipolar disor-

Table 3 (continued)

Disorder category/DSM-IV disorder	Employment status		
	Unemployed (n = 310)		
	Weighted [% (SE)]	Crude OR (95%CI) ***	Adjusted OR (95%CI) #
Any mental disorder	33.0 (0.84)	0.8 (0.64-1.13)	0.8 (0.60-1.17)
Comorbidity (> 1 mental disorders)	13.2 (2.28)	0.8 (0.51-1.34)	0.8 (0.51-1.29)
Mood Disorders			
Any mood disorder	12.3 (1.78)	0.8 (0.51-1.26)	0.8 (0.51-1.23)
Major depression	12.3 (1.78)	0.8 (0.52-1.23)	0.77 (0.51-1.18)
I/II bipolar disorder	0.1 (0.14)	0.3 (0.02-3.36)	0.3 (0.02-5.13)
Dysthymia	1.3 (0.6)	0.6 (0.16-2.11)	0.6 (0.18-2.34)
Anxiety disorders			
Any anxiety disorder	20.9 (3.13)	0.9 (0.48-1.76)	0.9 (0.46-1.76)
Agoraphobia	2.3 (0.86)	1.3 (0.60-2.82)	1.2 (0.56-2.60)
Generalized anxiety disorder	2.4 (0.81)	0.9 (0.36-2.32)	1.1 (0.43-2.76)
Obsessive compulsive disorder	3.0 (1.23)	0.9 (0.29-2.83)	0.8 (0.23-2.53)
Panic disorder	2.4 (1.33)	2.0 (0.55-7.55)	2.1 (0.73-6.24)
Post traumatic stress disorder	2.7 (0.98)	1.8 (0.78-4.01)	1.9 (0.84-4.54)
Adult separation anxiety disorder	1.7 (0.65)	0.6 (0.22-1.75)	0.6 (0.20-1.87)
Social phobia	3.3 (1.46)	0.7 (0.29-1.75)	0.7 (0.32-1.48)
Specific phobia	12.5 (2.84)	0.8 (0.67-1.17)	0.81 (0.41-1.32)
Impulse-control disordes			
Any impulse-control disorder	6.2 (2.48)	1.6 (0.64-4.14)	1.4 (0.56-3.65)
Attencion deficit disorder	0.6 (0.36)	0.8 (0.22-2.58)	0.6 (0.16-2.19)
Conduct disorder	0.2 (0.001)	-	-
Oppositional defiant disorder	0.0 (0.01)	0.3 (0.03-2.70)	0.3 (0.02-3.75)
Intermittent explosive disorder	5.5 (2.27)	1.9 (0.65-5.72)	1.7 (0.62-4.88)
Substance use disorders			
Any substance use disorder	3.2 (1.15)	2.3 (1.02-5.09) ##	2.1 (0.73-6.09)
Alcohol abuse	1.6 (0.82)	2.6 (0.57-11.68)	2.2 (0.28-17.26)
Alcohol dependence	0.7 (0.44)	1.2 (0.28-5.13)	1.1 (0.27-4.70)
Drug abuse	0.5 (0.46)	12.5 (0.83-185.90)	3.8 (0.40-36.08)
Drug dependence	0.6 (0.13)	1.9 (0.26-13.16)	3.7 (0.37-36.19)

95%CI: 95% confidence interval; DSM-IV: *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition; OR: odds ratio; SE: standard error.

* Employed, self-employed, owner; OR = 1 (base-line);

** Homeworkers, students, disabled, retirees, sickness benefits;

*** OR cruded comparing inactive vs working;

OR adjusted by sociodemographics characteristics comparing inactive vs working; OR obtained by multinomial logistic regression using the category "working" as the reference;

p-value < 0.05.

der, and any anxiety disorders (especially panic and post-traumatic stress) was associated with being economically inactive; and the occurrence of any 12-month mood disorders (major depression and bipolar I/II disorder) increased the chances of being unemployed. Among women, having 12-month bipolar disorder, social phobia and oppositional defiant disorder was associated with being economically inactive, and the diagnosis of any substance use disorder in the past 12-months was associated with being unemployed (crude analyses). Regarding comorbidity, having more than one mental disorder was associated with being economically inactive and unemployed among men, but was not associated to current employment status in women. We have decided to analyze the associations of mental disorders with employment status separately by gender, as there are different characteristics of work attainment for men and women in Brazil, reflecting our social and cultural backgrounds related to gender traditional roles. The economically inactive group was mainly composed of women

Table 4

Use of health services by employment status of respondents with 12-month DSM-IV mental disorders in the *São Paulo Megacity Mental Health Survey*, Brazil (N = 1,395).

	Weighted [% (SE)]	Crude OR (95%CI) *	Adjusted OR (95%CI) **	Adjusted OR (95%CI) ***
Any general health treatment				
Employment status				
Working	19.7 (2.51)	1.0	1.0	1.0
Inactive	44.6 (3.88)	2.7 (1.95-3.86) #	2.9 (1.91-4.36) #	3.0 (2.02-4.53) #
Unemployed	20.1 (4.10)	1.2 (0.71-2.20)	1.5 (0.91-2.48)	1.5 (0.85-2.73)
Any mental health treatment				
Employment status				
Working	13.7 (2.85)	1.0	1.0	1.0
Inactive	30.8 (4.27)	2.4 (1.39-4.05) ##	2.4 (1.46-5.09) ##	2.8 (1.51-5.12) ##
Unemployed	12.5 (2.89)	1.2 (0.54-2.59)	1.4 (0.69-2.88)	1.4 (0.64-3.14)

95%CI: 95% confidence interval; DSM-IV: *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition; OR: odds ratio; SE: standard error.

* Crude OR comparing Inactive and unemployed vs working;

** OR adjusted by socio demographics characteristics comparing Inactive and unemployed vs working;

*** OR adjusted by socio demographics characteristics and comorbities (≥ 2 mental disorders) comparing inactive and unemployed vs. working;

p-value < 0.05;

p-value < 0.01.

(n = 1,119; 75.3%), and 99.7% of those self-classified as homeworkers were women (data not shown herein). This assumption was corroborated when we formally tested the interaction between gender and the associations of mental disorders with employment status. This analytical strategy, however, makes it difficult to compare our results with those from other reports, as most studies analyzed men and women altogether, in the same group [7,8,9,10,11,12,13,14,15,16,17].

Chong et al. [7] assessed the association between 12m-MD and work disability in Singapore (n = 6,429), where 71% were working, 24.5% economically inactive and 4.5% unemployed, similar to our study, but smaller rates of any 12m-MD were found (2.3% among the working, 1% among the economically inactive, and 5.3% among the unemployed); although they have not evaluated associations between mental disorders and employment status, they reported high rates of work-related disability among employees with mental disorders [7].

It is well established that there are higher prevalence rates of mental disorders among the unemployed population compared to those who are in the workforce [29,30], and this association is likely to be two-way, with mental problems leading to unemployment and, also, occurring as detrimental social and/or psychological consequences of unemployment [9,18,19,30]. Indeed, individuals with mental disorders are less likely to enter workforce and to remain employed, and may have greater difficulty to reenter the workforce, whether due to disability, rehabilitation or any other negative consequences [30]. Even those who start working often have lower income wages, and present qualitative and quantitative reduction in work performance [6,7,8,9,10,11,12,13,14,15,16]. The relationship between mental disorders, work losses, work inactivity and unemployment has, therefore, a complex nature [6,7,10,11,12,13,14,15,16].

The magnitude of work losses related to the growing number of individuals unemployed and unable to work due to mental disorders has been used to estimate the burden of mental disorders on workers and their families, employers and on the whole economy. This involves not only individual financial losses, but also individual suffering and family emotional and financial burden, as well as societal load, since absenteeism and presenteeism heavily impact employers and social welfare systems [6,8,9,11,16,21,29,30,31,32].

Regarding use of health services, the early detection and adequate treatment are important steps to reduce the impact and burden of mental disorders in general, and specifically related to employment status, they may be strong determinants of returning to the workforce [29,30]. In our study, treatment seeking among those suffering from 12m-MD was more frequent among the economically inactive, both in general and mental health services, adjusting for sociodemographic characteristcs and psychiatric comorbidities. This may reflect the composition of this sub-sample, as respondents on sick leave and early retired due to disability were categorized as economically inactive in our study.

On the other hand, although those unemployed presented higher rates of specific mental disorders, treatment seeking was not more frequent among them compared to those working, and this may indicate a poorer access to general and specialized services among the unemployed population [33,34,35,36], which may retard or even prevent return to the workforce. These findings are generally reproduced in other studies. Treatment seeking was only reported by 19.2% of workers and 7.6% of economically inactive individuals with major depression in Singapore, and those with alcohol abuse and dependence, independently of employment, did not seek treatment at all [7]. In a previous report from the WMH surveys, most respondents with mental disorders have not received any kind of treatment in the previous 12-month period, although a positive relationship between mental disorder severity and treatment seeking was observed [24,37,38]. Nevertheless, healthcare treatment seeking among the São Paulo Metropolitan Area population was much less frequent than reported in high-income countries [39].

Our study has not specifically evaluated the use of healthcare services related to severity of mental disorders and its relationship with employment status, but among respondents with mental disorders, those unemployed do not usually seek healthcare services. This may indicate a treatment gap due to the lack of health insurance or insufficient resources to fund private care, as well as a poor coverage by the public health sector. Specifically related to employment, the lower demand for treatment among working respondents may also reflect the influence of the working atmosphere, which discourages medical leave and recognition of mental health symptoms, and reinforces refusal to accept a psychiatric diagnosis, due to fear of stigma, job loss and discrimination [36]. Previous studies showed that low perceived need and attitudinal barriers are the major barriers to treatment seeking and staying in treatment among individuals with common mental disorders worldwide, regardless of their employment status [40]. Apart from targeting structural barriers, mainly in countries with poor resources, improving mental health literacy in the population and addressing attitudinal barriers and stigma are important endeavors [31,36,40].

Finally, the interpretation of findings reported in this paper should take into account a number of limitations, mostly related to the cross-sectional nature of the survey. The associations of mental disorders with employment status observed should be interpreted in a bidirectional manner, limiting inferences of causality. Although we used a standardized psychiatric assessment tool, DSM-IV diagnoses were based on self-reported retrospective information concerning symptoms occurred over the past 12-month period, with no clinical gold-standard assessment to check the consistency of diagnostic procedures. However, the comparison between self-report symptoms and medical records has shown moderate to reasonable agreement in other studies [41,42,43]. The concordance of the CIDI 3.0 with the Structured Clinical Interview for DSM-IV (SCID) was also unbiased for 12-month prevalence estimates, and the reliability of a previous Brazilian version of the CIDI (CIDI 2.1) showed high kappa values, ranging from 0.76 (for OCD) to 1.0 (for alcohol and substance-related disorders) [44].

Selection bias may have contributed to underestimate the actual prevalence rates, as individuals suffering from more severe mental disorders are less likely to participate in household surveys of this sort and hospitalized patients, homeless people and individuals living in institutions are not eligible to participate. Furthermore, respondents with more severe mental or physical conditions living at home were more likely to be excluded from selection as ineligible to participate in such a complex assessment (due to impeding physical, mental or cognitive conditions) or they may present differential mortality [26,45]. Although the CIDI 3.0 was rebuilt considering several strategies to minimize recall bias and information bias while approaching sensitive issues or preceding information [27], it is unlikely that they were completely ruled out. While employment status was assessed at the time of the interview, mental disorders and treatment seeking were assessed over the previous 12-month period. Moreover, the overall use of any general and mental health care services over the

past 12 months was assessed, and it may or may not have been related to the specific mental health problems identified.

Conclusion

Understanding the complex relationship between employment status and mental disorders and the influence of employment status upon the use of health care services are essential steps to create improved local public health and welfare policies, reinforcing the need for adequate destination of usually scarce resources. Initiatives to promote inclusion in the workforce should be considered a priority in Brazil, together with individual interventions aiming at preventing the burden of mental disorders, such as disability, sickness leaves or benefits, absenteeism and presenteeism, from long-term sickness absence to permanent disability, causing high financial costs to individuals, to their families, to their workplaces, and to the social security system in Brazil.

These approaches are necessary and their advocacy can be grounded on findings from population-based studies such as this, reported herein. New types of interventions in different contexts should be considered and tested. This study demonstrates that poor mental health is associated with being economically inactive or unemployed, with significant gender differences. These findings highlight the cyclical and potentially entrenched nature and consequences of poor mental health and emphasize the need for a tuned approach involving employment, welfare and mental health policies.

Contributors

M. H. França conceived and designed the experiments, performed the experiments, analyzed the data, and wrote the paper. S. M. Barreto performed the experiments, analyzed the data, and wrote the paper. F. G. Pereira conceived and designed the experiments, she also analyzed the data and wrote the paper. L. H. S. G. Andrade conceived and designed the experiments, and wrote the paper. M. C. A. Paiva wrote and revised the paper. M. C. Viana conceived and designed the experiments, performed the experiments, analyzed the data, and wrote the paper.

Acknowledgments

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Resumo

Os transtornos mentais estão associados à situação laboral enquanto preditores significativos e consequências do desemprego e da aposentadoria precoce. Este estudo estima as taxas de prevalência de transtornos mentais nos últimos 12 meses de acordo com o DSM-IV, além do uso de serviços de saúde e as associações com situação laboral de acordo com gênero na Região Metropolitana de São Paulo, Brasil. Foram analisados dados do São Paulo Megacity Mental Health Survey (*n = 5.037*), um estudo populacional que avalia a prevalência e determinantes dos transtornos mentais entre adultos, usando a* Composite International Diagnostic Interview. *As associações foram estimadas através de razões de prevalência, obtidas por regressão logística binomial e multinomial. O estudo mostra que os transtornos mentais, especialmente transtornos de humor estão associados à inatividade ou ao desemprego entre os homens e à inatividade entre as mulheres, com exceção aos transtornos devido ao uso de substâncias psicoativas que também estão associados ao desemprego em as mulheres. Entre os portadores de transtornos mentais, a busca de serviços de saúde é menos frequente entre os desempregados.*

Transtornos Mentais; Emprego; Serviços de Saúde

Resumen

Los trastornos mentales están asociados a la situación laboral, como predictores significativos por las consecuencias que provocan el desempleo y la jubilación precoz. Este estudio estima las tasas de prevalencia de trastornos mentales en 12 meses, de acuerdo con el DSM-IV, además del uso de servicios de salud y las asociaciones existentes con la situación laboral, de acuerdo con el género en el área metropolitana de São Paulo, Brasil. Se analizaron los datos del São Paulo Megacity Mental Health Survey (*n = 5.037*), un estudio poblacional que evalúa la prevalencia y determinantes de los trastornos mentales entre adultos, usando la* Composite International Diagnostic Interview. *Las asociaciones se estimaron con razones de prevalencia, obtenidas por la regresión logística binomial y multinomial. El estudio muestra que los trastornos mentales, especialmente los trastornos de humor, están asociados a la inactividad o al desempleo en hombres y a la inactividad en mujeres, pero que sólo el trastorno de consumo de sustancias está asociado al desempleo en mujeres. Entre los portadores de trastornos mentales, la búsqueda de servicios de salud es menos frecuente entre los desempleados.*

Trastornos Mentales; Empleo; Servicios de Salud