Journal of Affective Disorders 250 (2019) 145–152

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research paper

Use of mental health services by community-resident adults with DSM-IV anxiety and mood disorders in a violence-prone area: São Paulo, brazil

Gerda G. Fillenbaum[a,*], Sergio L. Blay[b], Marcelo F. Mello[b], Maria I. Quintana[b], Jair J. Mari[b], Rodrigo A. Bressan[b], Sergio B. Andreoli[b]

[a] Center for the Study of Aging and Human Development, Box 3003, Duke University Medical Center, Durham, NC 27710, USA
[b] Department of Psychiatry, Federal University of São Paulo, São Paulo, São Paulo, Brazil (Escola Paulista de Medicina - UNIFESP)

ARTICLE INFO

Keywords:
Violence
Anxiety
Depression
Mental health services
Resilience
Minority group

ABSTRACT

Background: While under-use of mental health services by adults with anxiety and/or depression is well established, use in a violence-prone area, and as a function of diagnosis and personality characteristics such resilience, is little known. We examine the sociodemographic and personality characteristics (specifically resilience), associated with use of mental health services in a violence-prone city by those with anxiety, depression, and their comorbidity.

Methods: The structured Composite International Diagnostic Interview was used to identify 12-month DSM-IV- and ICD-10-defined anxiety and depression in a cross-sectional, representative, community-resident sample age 15–75y ($N = 2536$) in São Paulo, Brazil, and their use of mental health services. Resilience was determined by the Wagnild and Young scale. Analyses, using weighted, design-corrected statistical tests, included frequency measures and multivariable logistic regression.

Results: Mental health services were used by 10% with only anxiety, 22% with only depression, and 34% with comorbidity, with odds of use in controlled analyses doubling from anxiety to depression to comorbidity. Use was significantly higher among those who were white, older (age >30 years, with substantial social support, low resilience, living in low homicide rate areas; use was not affected by experience of traumatic events. Psychiatrists, general practitioners, and psychologists were the primary providers.

Limitations: Cross-sectional design

Conclusions: Contrary to expectation, use was greater among residents of lower homicide areas, and was not associated with personal traumatic experience. This may reflect increased immunity to violence in higher homicidal rate areas, lower resilience, and poorer access to services. Increased access to mental health services is needed.

1. Introduction

At over 20 homicides/100,000 residents, Brazil, a middle income country, has one of the highest homicide rates internationally. The homicide rate in São Paulo, the largest city in Brazil, varies greatly across the city, from close to 0/100,000 residents to over 60/100,000, but overall averaged 10.9/100,000 in 2009 (UNODC, 2011 Global Homicide Survey).

Violence-prone areas are associated with a high prevalence of psychiatric conditions, including anxiety, depression, and their comorbidity (Cerda et al., 2012; Clark et al., 2008; Ribeiro et al., 2013; Wilson-Genderson and Pruchno, 2013). Nevertheless, "Most people exposed to PTEs (potentially traumatic events) do not develop lasting psychopathology, and among this broad category, clear individual differences in prospective or longitudinal patterns of adjustment have been consistently observed." (Bonanno and Diminich, 2013, p. 382; specific examples also given in Bonanno, 2008; Vilete et al., 2014). Four types of reaction to such events have been suggested – severe, continuing, chronic disruption in normal functioning; delayed disruption; initial disruption followed by recovery; and resilience (minimal disruption), which is the majority type (Bonanno, 2008).

"Resilience" has enjoyed a number of overlapping definitions: "the process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of threat" (American Psychological Association definition as reported by Southwick and Charney, 2012); the ability of individuals to absorb life's challenges and to carry on and

* Corresponding author.
E-mail address: gerda.fillenbaum@duke.edu (G.G. Fillenbaum).

https://doi.org/10.1016/j.jad.2019.03.010
Received 25 November 2018; Received in revised form 1 February 2019; Accepted 3 March 2019
Available online 05 March 2019
0165-0327/ © 2019 Published by Elsevier B.V.

persevere in the face of adversity (Aburn et al., 2016); the "process of effectively negotiating, adapting to, or managing significant sources of stress or trauma" (Windle, 2011); and an inner reserve for reducing the harmful effect of stress and for maintaining mental health through adversity (Lazarus and Folkman, 1987). Thus, under conditions of stress due to violence, personal resilience may determine whether anxiety or depression develop, and whether to seek mental health services.

Depression, anxiety, and their comorbidity have serious personal and social consequences. Major depression is a frequent, recurrent, disorder associated with diminished role functioning and quality of life, medical morbidity, and mortality (Charlson et al., 2016). In 2015 it was the third leading cause of disability worldwide, years lived with disability having increased by 18.2% over the previous 10 years.

Similarly, anxiety disorders include a range of persistent conditions that may interfere with daily life, lead to serious physical and mental discomfort, and are an important cause of disability (Andrade et al., 2012; Roy-Byrne et al., 2008). While anxiety disorders were the ninth leading cause of disability in 2015, years lived with disability had increased by 14.8% in the previous 10 years.

In addition, there is considerable, clinically significant, comorbidity between depression and anxiety (Alonso et al., 2004; Blazer, 2003; Kaufman and Charney, 2000; Kessler et al., 2015), reflected by greater disability, higher suicide attempts, poor medication adherence, medical comorbidity, and greater health care costs (Bolton et al., 2010; de Heer et al., 2014; Kaufman and Charney, 2000; Keyloun et al., 2017; Sheehan et al., 2008).

Overall, however, only a small proportion of individuals with anxiety, depression, and their comorbidity receive treatment, and treatment when received may be inadequate (Alonso et al., 2007; Evans-Lacko et al., 2018; Thornicroft et al., 2017; Wang et al., 2007).

To the best of our knowledge, the association of resilience with health service use for anxiety and mood disorders has not been determined, but it could potentially help to explain the low use of mental health disorders common in these conditions.

Thus, in examining determinants of health service use in a violence-prone area, in addition to taking into account characteristics typically associated with use of mental health services (sociodemographic characteristics, diagnosis), it seems reasonable to also take into account the violent nature of the area, personal experience of traumatic events, and personality characteristics such as resilience.

Using data from a community-representative sample age 15–75 years in São Paulo, Brazil, we examine mental health service use in the previous 12 months by sample members reporting anxiety, depression, or both. The data available allow examination not only of sociodemographic characteristics and social support, but also take into account experience of a large variety of traumatic events, the homicide rate in the area of residence, and, uniquely, level of personal resilience (Ribeiro et al., 2013).

We anticipate that those with anxiety, depression, and their comorbidity who sought help within the previous 12 months, will be more likely to live in higher (rather than lower) homicide rate areas, have had personal experience of violent events in the previous year, be more likely to have comorbid anxiety and depression than either condition alone, and have lower resilience as measured by a standard resilience scale, than those who do not seek mental health services.

2. Methods

Our data come from a cross-sectional survey of community-representative residents age 15–75 years, carried out in 2007–08, in Rio de Janeiro and São Paulo. Based in geographic areas with homicide levels ranging from ≤10/100,000 residents to ≥60/100,000 residents, the study focused on the association between local homicide level, violence (traumatic life events) and mental health, and the personal characteristics (demographic, genetic, social, personality) that might modify the associations found. The cities selected are recognized as being the most violent in Brazil, a country with high violence. We focus here on data from São Paulo, for which the sample is twice as large as for Rio de Janeiro. We chose not to combine the information from the two cities since doing so could hide the effects of differences in rates of violence.

The study design, from which the current description is copied, has previously been described fully (Andreoli et al., 2009; Ribeiro et al., 2013). Very briefly, a 5-stage sampling procedure was used to select participants, whereby areas in the city were first ranked on a 7-level scale according to homicide rates, census tracts within each level were then mapped, and four to 18 census tracts selected inversely proportional to population size. The three levels with the highest homicide rates were oversampled to improve the likelihood of identifying cases of post-traumatic stress disorder. Forty three households per tract were randomly selected, within which one household member 15–75 years old was randomly selected using the Kish method (Kish, 1949). The response rate was 84.5%, yielding a sample size of 2536 (58.1% female) (Ribeiro et al., 2013).

The study was reviewed and approved by the Ethics Committee of the Federal University of São Paulo (Andreoli et al., 2009). Participants 18 years of age and over personally signed letters of informed consent before enrollment, parents and legal guardians signed for those 15–17 years of age.

The current analyses build on previous work during which the prevalence of anxiety, depression, and their comorbidity in these cities was determined (Blay et al., 2018).

2.1. Data gathering procedures

Data were gathered in the participants' homes by trained interviewers. Completed questionnaires were reviewed within a week, with supervisors re-interviewing 20% of the participants to establish accuracy.

2.2. Measures

Psychiatric disorders. Relevant to the present paper, sample members with depressive disorders (major depression, major depressive disorder (single or recurrent episodes), dysthymia), and anxiety (generalized anxiety disorder, panic disorder with or without agoraphobia, agoraphobia without history of panic disorder, specific phobia, social phobia, post-traumatic stress disorder (PTSD), and acute stress disorder), were identified using the World Health Organization World Mental Health Survey Composite International Diagnostic Interview (WHO WMHS CIDI) version 2.1, validated for Brazil (Quintana et al., 2004, 2007). The Brazilian translation had a sensitivity of 82.5% and specificity of 92.8% for depressive disorders, and 80.6% and 93.5% respectively for phobic-anxiety disorders (Quintana et al., 2007). Kappa for inter-rater reliability was 0.94 for 12-month depressive disorder, 0.92 for phobic anxiety disorder, 0.66 for obsessive-compulsive disorder, and 0.95 for PTSD. These values indicate good (0.66), and very good agreement (0.92, 0.95) (Quintana et al., 2004). No information on reliability was provided for anxiety as a whole.

CIDI 2.1 is a standardized, fully structured interview that provides psychiatric diagnoses according to the International Classification of Diseases, 10th edition (ICD-10), and the American Psychiatric Association Diagnostic and Statistical Manual, 4th edition (DSM-IV). We focus here on the DSM-IV diagnoses. For the purpose of the current study DSM-IV diagnoses of anxiety and depression were classified into four mutually exclusive groups: 1) no anxiety/depression (reference group); 2) anxiety only; 3) depression only; 4) comorbid anxiety/depression.

Sociodemographic characteristics included age (15–22, 23–29, 30–44, 45–59, 60–75), education (≤4 years (basic education) vs ≥5 years), race (White, Afro-descendants, other), sex (male, female), marital status (married, never married, previously married (widowed, separated,

divorced)), and family income (indicative of the poverty level: ≤US $555 [2.6 * minimum wage] vs >US$555).

Social support – Social support may have both positive and negative effects regarding seeking mental health care, depending on the views of the community, and of family and friends (Valtorta et al., 2018). Since information on social attitudes was not available, we examine the association of social support with seeking mental health care, but present no hypotheses. Social support was determined from "support from individuals in the community" (coded as 0, 1, ≥2), since prior investigation showed that this was the only one of the three aspects of structural social capital assessed by the Short Social Capital Assessment Tool (SASCAT, de Silva et al., 2007), associated with service use. The other, non-associated measures, were "membership in groups", and "involvement in citizenship activities".

Exposure to violence in the previous 12 months was assessed using the 11-item traumatic events list included in CIDI 2.1, supplemented by 20 additional items "selected to cover most of the traumatic events experienced by individuals in Brazilian urban centers." (Ribeiro et al., 2013), but with naturally occurring traumatic events (e.g., natural death of a close family member), excluded.

Resilience was measured by the Wagnild and Young (1993) 25-item Resilience Scale translated into Portuguese, and adapted for Brazil (Coehloso et al., 2017; Pesce et al., 2005). This scale has been used with multiple populations varying in age and location. Review of nine studies that included participants with ages ranging from adolescence to the 90 s, found that internal reliability (Cronbach's alpha) ranged from 0.85–0.94, with the exception of one study at 0.72. Construct validity was established by positive correlations between Resilience Scale score and psychological well-being, health promoting activities, purpose in life, sense of coherence, morale, and forgiveness, and negative correlations with stress, depression, anxiety, loneliness, and hopelessness (Wagnild, 2009). With a maximum score of 175, eight of the 11 samples in the nine studies had mean scores ranging from 140–148, two small samples of adolescents, and one with mean age 69 years, had lower mean scores. Where presented, standard deviations ranged from 16.1–24.0 (a standard deviation given as 1.0 seems unlikely).

Service use was determined by first asking sample members whether they had used mental health services in the previous year, and if so, the type of provider they had used. Providers were categorized as psychiatrist, general practitioner, psychologist, other professional, religious leader, and "other".

2.3. Statistical analysis

Descriptive statistics (frequencies: raw Ns, weighted%) were used to describe the sociodemographic characteristics of the sample, the 12-month prevalence of anxiety alone, depression alone, and comorbid anxiety/depression, their personal experience of traumatic events, the homicide rate in the area of residence, and their level of resilience. Chi square was used in weighted, design-adjusted, bivariate comparisons of mental health service users and nonusers. Because of relatively small sample sizes, percentages unadjusted for personal characteristics were used to examine the association between diagnostic category and type of mental health service provider consulted.

Stage-wise weighted logistic regression, which took the clustered sampling design into account, was used to determine controlled association with use of mental health services. With the exception of age, only characteristics which, on bivariate analysis differed by $P < 0.10$ in use of mental health services, were included in the multivariate analysis. All significance tests were two-sided ($P < 0.05$ accepted as significant). Analyses were carried out using STATA version 13.

3. Results

Of the sample (Table 1), 58% were women, and a similar proportion were married. Similar proportions of the sample were 15–29, 30–44, and 45–75 years old, just over half were white, and 61% had an income above the poverty level. Nearly two thirds had little social support. One in five had experienced a traumatic event, and nearly 80% lived in an area with a homicide rate of >20/100,000 residents. The average resilience level was 139, slightly lower than that typically reported (Wagnild, 2009). Just over 20% had a condition of interest (anxiety only – 13%, depression only – 5%, both – 4%). While, contrary to expectation, residential homicide rate was not associated with diagnosis, there were statistically significant differences between the diagnostic ((groups with respect to personal experience of traumatic events in the previous 12 months, and level of resilience when screened. Compared to those with neither anxiety nor depression, those with anxiety only were ~20% more likely to have experienced a traumatic event, those with depression only were 80%, and those with comorbidity were 125% more likely to have experienced a traumatic event (Table 2). At the time of evaluation, similar proportions (less than half), of those with neither anxiety nor depression and those with anxiety only had resilience scores below the median, compared with approximately two thirds of those with any depression (depression only, and depression comorbid with anxiety) (Table 2).

Overall, 6.9% of the total sample had used mental health services in the previous 12 months. Of the 80% who had none of the diagnosed conditions, mental health services were used by 3.0%, and of the 20%

Table 1
Demographic characteristics of the sample (raw Ns, weighted percentages; $N = 2536$).

	Raw N	Weighted% (95% CI)
Sex		
Men	1096	41.9 (40.1–43.8)
Women	1440	58.1 (56.2–59.9)
Age		
15–22	398	14.4 (12.9–16.0)
23–29	453	16.9 (14.8–19.4)
30–44	873	32.3 (29.9–34.9)
45–59	545	24.3 (22.0–26.9)
≥60	267	12.0 (10.5–13.7)
Education (years)		
≤4 years	588	20.0 (17.4–22.9)
≥5 years	1947	80.0 (77.1–82.6)
Marital status		
Married	1467	56.9 (53.4–60.4)
Previously married	352	14.8 (13.1–16.7)
Never Married	717	28.3 (25.4–31.5)
Race/ethnicity		
White	1118	51.0 (47.2–54.7)
Afro-Brazilian	350	12.5 (10.5–14.7)
Other race/ethnicity	1066	36.5 (33.8–39.4)
Mean family income		
At/below poverty line	1216	39.4 (35.3–43.8)
Above poverty line	1320	60.6 (56.2–64.7)
Social support		
0	1701	64.2 (60.8–67.4)
1	385	16.4 (14.5–18.5)
2+	450	19.4 (16.8–22.3)
Traumatic exposure		
No 12-month exposure	2034	80.4 (78.7–81.9)
Exposed last 12 months	502	19.6 (18.1–21.3)
Homicide rate/100,000 inhabitants		
0 - 10	137	7.8 (5.3–11.4)
10.01–20	145	10.2 (6.6–15.5)
20.01–30	195	20.8 (16.7–25.6)
30.01–40	290	24.8 (20.8–29.2)
40.01–50	593	12.2 (10.5–14.1)
50.01–60	651	12.3 (10.4–14.6)
Over 60.01	525	11.86 (9.89–14.16)
Diagnostic category		
Neither anxiety nor depression	1984	78.2 (76.2–80.0)
Anxiety only	310	12.7 (11.2–14.3)
Depression only	131	4.9 (4.0–5.9)
Comorbid depression and anxiety	111	4.2 (3.3–5.5)
Resilience (raw N, mean, 95% CI)	2519	139.26 (138.2–140.3)

Table 2
Diagnosis by experience of traumatic event, area homicide rate, and level of resilience (weighted percentages, standard deviation).

	Total sample	No anxiety or depression	Anxiety only	Depression only	Comorbid anxiety and depression	*P*-value
Traumatic event past 12 months						<0.0001
No	77.52 (65.47–79.45)	79.98 (77.97–81.85)	75.25 (69.49–80.23)	63.90 (49.71–76.02)	54.82 (42.58–66.51)	
Yes	22.48 (20.55–24.53)	20.02 (18.15–22.03)	24.75 (19.77–30.51)	36.10 (23.98–50.29)	45.18 (33.49–57.42)	
Homicide rate						0.3046
≤20/100–000 residents	38.81 (33.72–44.16)	37.39 (32.01–43.11)	45.24 (37.93–52.75)	43.79 (34.31–53.75)	40.00 (26.36–55.39)	
20-≤50/100–000 residents	36.99 (32.68–41.52)	38.26 (33.50–43.25)	32.32 (25.88–39.51)	31.41 (21.98–42.66)	34.02 (23.13–46.91)	
>50/100–000 residents	24.2 (21.23–27.44)	24.35 (221.17–27.83)	22.44 (17.86–27.80)	24.80 (17.94–33.22)	25.98 (18.24–35.57)	
Resilience score						<0.0001
<139 (below median)	44.32 (41.2–47.49)	41.66 (38.39–45.01)	45.3 (39.03–51.71)	67.9 (56.68–77.37)	63.19 (52.48–72.73)	
≥139 (at and above median)	55.68 (52.51–58.8)	58.34 (54.99–61.61)	54.7 (48.29–60.97)	32.1 (22.63–43.32)	36.81 (27.27–47.52)	

Table 3
Mental health service use in the previous 12 months in São Paulo by sociodemographic, social/personal support, environmental and diagnostic characteristics (N = 2536).

	Mental health service use (weighted%)					
	No use (n = 2361)		Used services (n = 175)		Chi sq	P value
	%	95% CI	%	95% CI		
Service use	92.68	91.00–94.06	7.31	5.93–9.00	——	——
Sex					5.903	0.0172
Male	94.76	92.56–96.33	5.24	3.66–7.44		
Female	91.19	88.70–93.17	8.81	6.83–11.30		
Age					1.254	0.2890
15–22	95.79	92.3–97.74	4.21	2.26–7.71		
23–29	93.34	88.88–96.09	6.66	3.91–11.12		
30–44	92.83	91.09–95.72	7.17	5.10–9.97		
45–59	90.70	86.20–93.83	9.30	6.17–13.80		
60+	91.66	86.26–95.06	8.34	4.94–13.74		
Education					0.59	0.441
≤4 years	91.82	88.39–94.30	8.18	5.70–11.61		
≥5 years	92.89	91.16–94.31	7.32	5.70–8.84		
Race/ethnicity					6.035	0.0048
White	90.65	88.14–92.67	9.34	7.33–11.86		
Afro-Brazilian	96.67	93.93–98.19	3.33	1.81–6.07		
Other race/ethnicity	94.12	91.41–96.01	5.87	3.99–8.59		
Marital status					2.68	0.0755
Married	93.56	92.78–95.94	6.43	5.01–8.24		
Previously married	87.57	84.72–93.00	10.43	7.00–15.28		
Never married	92.54	89.73–94.63	7.45	5.37–10.27		
Mean family income					0.101	0.7512
≤ poverty level	9.92	90.45–94.78	7.08	5.22–9.55		
Above poverty level	92.53	90.58–94.11	7.46	5.89–9.42		
Social support					15.05	0.0001
0	95.11	93.77–96.17	4.89	3.83–6.23		
1	90.38	86.28–93.34	9.62	6.66–13.72		
2+	86.63	81.25–90.65	13.37	9.35–18.75		
Traumatic exposure in last 12 months					3.500	0.0648
None	93.36	91.55–94.8	6.64	5.20–8.45		
Exposed	90.35	86.55–93.16	9.65	6.84–13.45		
Homicide rate/ 100,000 inhabitants					4.33	0.0023
0–10	81.02	71.86–87.71	18.98	12.29–28.14		
10.01–20	90.34	81.49–95.21	9.65	4.79–18.51		
20.0 −30	95.38	89.43–98.06	4.61	1.94–10.57		
30.01–40	93.10	89.28–95.63	6.89	4.37–10.72		
40.01–50	94.10	92.85–95.14	5.90	4.86–7.16		
50.01–60	94.01	91.91–95.59	5.99	4.41–8.09		
Over 60.01	93.9	91.19–95.82	6.09	4.18–8.81		
Diagnostic group					39.54	0.0001
No anxiety or depression	95.47	94.08–96.56	4.52	3.45–5.92		
Anxiety alone	90.27	85.15–93.75	9.73	6.25–14.85		
Depression alone	77.74	67.21–85.60	22.26	14.40–32.79		
Both anxiety and depression	65.83	52.15–77.30	34.17	22.70–47.85		
Resilience score*	140	139–141	131	128–134		< 0.05

* Resilience score: statistically significant difference, no overlap of 95% confidence intervals.

who had a condition of interest, 3.9% used a mental health service. Among the 20% with a condition of interest, 18.3% used mental health services. Specifically, mental health services were used by 10% of those with anxiety only, 22% with depression only, and 34% with the comorbid condition.

Bivariate comparison of users and nonusers of mental health services (Table 3), indicated no difference with respect to education, income, or age (except closer examination suggests increased use at ages 23–29, and again at ages 45–59 years), and a marginal difference as a function of marital status. Use was significantly greater among women,

Table 4
Weighted and cluster-adjusted logistic regression of 12 month mental health service use by sociodemographic, social support, environmental, and diagnostic variables and resilience.

	Model 1	Model 2	Model 3	Model 4
	OR (95% CI)[a]	OR (95% CI)	OR (95% CI)	OR (95% CI)
Sociodemographic variables				
Sex				
Female (yes)	**1.70 (1.45- 1.99)**	**1.62 (1.34–1.97)**	1.01 (0.80–1.28)	1.01 (0.80–1.27)
Age				
18–22 (ref)	–	–	–	–
23–29	1.88 (0.78–4.49)	2.17 (0.92–5.12)	1.66 (0.66–4.13)	1.79 (0.69–4.64)
30–44	**2.60 (1.17–5.75)**	**3.17 (1.40–7.16)**	2.42 (0.93–6.26)	**2.73 (1.06–7.03)**
45–59	**3.45 (1.39–8.55)**	**4.51 (1.71–11.8)**	**3.34 (1.23–9.01)**	**3.54 (1.35–9.30)**
> =60	**2.63 (1.21–5.73)**	**3.16 (1.20–8.31)**	**3.34 (1.10–10.1)**	**3.59 (1.26–10.2)**
Race/Ethnicity				
Caucasian (ref)	–	–	–	–
Afro-Brazilian	0.55 (0.26–1.17)	0.63 (0.32–1.25)	0.61 (0.27–1.39)	0.62 (0.27–1.41)
Other	**0.63 (0.43–0.93)**	0.70 (0.47–1.04)	0.68 (0.45–1.03)	**0.64 (0.43–0.94)**
Marital status				
Married (reference)	–	–	–	–
Previously married	1.47 (0.94–2.28)	1.28 (0.84–1.95)	1.35 (0.92–1.99)	1.40 (0.95–2.06)
Never married	**1.52 (1.06–2.20)**	1.39 (0.93–2.08)	1.48 (0.89–2.45)	1.37 (0.84–2.22)
Social support and environmental variables				
Social support				
0 (reference)	–	–	–	–
1	–	**1.87 (1.58–2.23)**	**1.66 (1.27–2.20)**	**1.64 (1.26–2.14)**
2+	–	**2.33 (1.75–3.10)**	**1.93 (1.50–2.48)**	**1.92 (1.56–2.38)**
Traumatic Event – yes	–	**1.89 (1.26–2.81)**	1.39 (0.97–1.99)	1.40 (0.97–2.02)
Homicide rate/100,000				
0–10 (reference)	–	–	–	–
10.01–20	–	**0.44 (0.40–0.48)**	**0.47 (0.42–0.52)**	**0.48 (0.43–0.55)**
20.01–30	–	**0.23 (0.20–0.25)**	**0.17 (0.15–0.20)**	**0.18 (0.16–0.22)**
30.01–40	–	**0.38 (0.35–0.42)**	**0.39 (0.35–0.43)**	**0.42 (0.37–0.47)**
40.01–50	–	**0.37 (0.32–0.43)**	**0.33 (0.28.0.40)**	**0.35 (0.29–0.42)**
50.01–60	–	**0.36 (0.30–0.42)**	**0.31 (0.27–0.37)**	**0.34 (0.28–0.40)**
> =60;01	–	**0.44 (0.38–0.50)**	**0.40 (0.34–0.46)**	**0.42 (0.36–0.49)**
Diagnostic variables				
Diagnostic category		–		
No anxiety or depression (ref)	–	–	–	–
Anxiety only	–	–	**3.10 (1.94–4.95)**	**3.08 (1.85–5.15)**
Depression only	–	–	**6.79 (4.41–10.4)**	**5.90 (3.68–9.44)**
Both anxiety and depression	–	–	**12.9 (6.43–26.1)**	**11.2 (5.56–22.6)**
Resilience				
Resilience score*	–	–	–	**0.98 (0.97–098)**

OR = odds ratio; CI = confidence interval.
Model 1 = sociodemographic characteristics.
Model 2 = model 1 + social support and environmental variables.
Model 3 = model 2+ diagnostic characteristics.
Model 4= model 3 + resilience score.

whites, those with more social support, and marginally greater among those who had experienced traumatic events. Mental health use was *reduced* among residents of higher homicide rate areas.

Stage-wise multivariable logistic regression (Table 4), indicated that women's greater odds of using mental health services still held after controlling for other demographic characteristics (Model 1), and then for social support and environmental variables (Model 2). But with the further inclusion of diagnostic variables (Model 3) and resilience (Model 4), there was no longer any sex-associated difference in service use. Age 30 and over, being White, and having increasing social support increased the odds of mental health service use, but homicide rates above the minimum *reduced* use. Use varied with diagnosis: compared to persons with none of the diagnoses examined, there was a three-fold odds of use among persons with anxiety, this rate nearly doubled among persons with depression only (but did not differ significantly from those with anxiety only), and nearly doubled yet again among persons with both anxiety and depression, whose use was significantly higher than that of persons with anxiety only. Higher resilience reduced odds of use of mental health services. The main service providers (Table 5) were psychiatrists, general practitioners, and psychologists. Religious leaders also provided help, seeing about half as many people as psychologists.

4. Discussion

Our interest lies in determining the extent of mental health service use in the previous 12 months by residents of violence-prone areas who receive a diagnosis of anxiety, depression, or the comorbidity of these conditions. In particular, we wish to determine whether service use is affected by homicide rate in the area of residence, by personal experience of violence other than naturally occurring traumatic events, and by personal resilience. While the impact of homicide rate on use of health services in general has been examined (Chiavegatto Filho et al., 2015), the effect of personal resilience has not been examined, and might help to explain low mental health service use.

In agreement with other studies both local and worldwide, use of mental health services to address anxiety or depression was low. Specific comparison across studies is problematic because of differences in assessment methods, sampling and age distribution, the diagnoses included, and the manner of provision of health care services in different countries (Alonso et al., 2007; Blay et al., 2015; Evans-Lacko et al., 2018; Lam et al., 2015; Medina-Mora et al., 2005; Thornicroft

Table 5
Mental health service use in past 12 months by provider and diagnosis.

Service source	Total sample (*N* = 2536)% (95% CI)	Neither anxiety nor depression (*N* = 1984)% (95% CI)	Anxiety alone (*N* = 310)% (95% CI)	Depression alone (*N* = 131)% (95% CI)	Comorbid anxiety and depression (*N* = 111)% (95% CI)
Psychiatrist					
No use (*N* = 2462)	96.22 (95.97–97.65)	98.43 (97.46–99.03)	96.25 (92.67–98.12)	88.96 (80.03–94.18)	80.33 (68.05–88.67)
Used (*N* = 74)	3.08 (2.35–4.03)	1.57 (0.97–2.54)	3.74 (1.88–7.32)	11.04 (5.81–19.97)	19.67 (11.33–31.95)
General Practitioner					
No use (*N* = 2458)	97.00 (95.89–97.91)	98.43 (97.53–99)	97.48 (95.37–98.64)	90.64 (81.5–95.51)	78.35 (66.4–86.89)
Used (*N* = 78)	2.93 (2.09–4.11)	1.57 (1.00–2.47)	2.52 (1.36–4.63)	9.36 (4.49–18.50)	21.65 (13.11–33.6)
Psychologist					
No use (*N* = 2470)	96.97 (95.85–97.79)	98.26 (97.19–98.93)	97.39 (93.18–99.03)	87.4 (77.19–93.43)	82.99 (71.95–90.28)
Used (*N* = 66)	3.03 (2.21–4.15)	1.74 (1.07–2.81)	2.61 (0.97–6.82)	12.6 (6.57–22.81)	17.01 (9.72–28.05)
Other mental health professional					
No use (*N* = 2523)	99.61 (99.2–99.81)	99.69 (99.19–99.88)	99.04 (97.12–99.69)	99.58 (96.96–99.94)	100
Used (*N* = 13)	0.38 (0.19–0.80)	0.31 (0.12–0.81)	0.95 (0.31–2.88)	0.42 (0.06–3.04)	0
Religious leader					
No use (*N* = 2502)	98.42 (97.55–98.99)	99.18 (98.46–99.57)	96.02 (92.04–98.05)	95.02 (86.3–98.30)	95.52 (87.90–98.43)
Used (*N* = 34)	1.57 (1.01–2.45)	0.81(0.43–1.54)	3.98 (1.95–7.96)	4.97 (1.70–13.70)	4.47 (1.57–12.10)
Other services					
No use (*N* = 2523)	99.50 (98.92–99.77)	99.52 (98.72–99.82)	100	98.41 (92.89–99.66)	99.03 (96.05–99.77)
Used (*N* = 13)	0.49 (0.23–1.08)	0.4 (0.18–1.28)	0	1.58 (0.34–7.11)	0.97 (0.23–3.95)

CI = Confidence Interval.

et al., 2017; Wang et al., 2007; Wang et al., 2017). However, compared to overall findings of 22.0% for upper-middle-income countries among which São Paulo is specifically included, mental health use, at 18.3%, is even more limitedand also (Evans-Lacko et al., 2018).

The São Paulo Megacity study, with a prevalence of depression and anxiety comparable to the present study, but including chronic physical health conditions and health services in general (Andrade et al., 2012; Chiavagetto Filho et al., 2015), also found increased use of health services with a diagnosis of anxiety or depression (and also a non-significant difference in use between these diagnoses), and with increased age (but also with being female and better educated). That study defined "traumatic event" in terms of homicide rate, indicating the care necesssary in comparing studies.

Due to lack of information, we were unable to address adequacy of treatment, or use of mental health care as a function of severity of condition. However, a larger proportion of those with comorbid anxiety and depression (whose condition could be considered more severe), used mental health care services than those with only one of these conditions. In addition, a larger (but not statistically significant) proportion of persons with only depression used services than those with only anxiety. It is not clear whether depression, which may have a more pervasive personal effect than anxiety, was better recognized as a health condition; considered, by the patient, or the patient's social support system, to be a more severe condition to which attention should be paid; or assumed to be a more treatable condition. Anxiety, can be confused as everyday anxiety, stress, and worry, and can in some instances, be controlled by the patient by side-stepping issues that create a problem, and hence lead to avoidance of formal treatment.

Unlike most studies, no statistically significant differences in use of mental health services were found in controlled analyses as a function of sex, income, education, or marital status (but race/ethnicity differences were found). The 1988 Federal Constitution of Brazil, recognizes health care as …a 'right of all and a duty of the State' (Constituição da República Federativa do Brasil, 35° ed. 2012. Art. 196° e 197°). The Sistema Único de Saúde (SUS – 'Single Health System') was created to ensure equal and free access to health care. Facilitating this, the Family Health Strategy (FHS), dependent on community health workers and focused on the physical health of residents without health insurance, was developed in 1994 (Macinko and Harris, 2015). Several population subgroups, however, have difficulty with access (Blay et al., 2015; Chiavegatto-Filho et al., 2015). Only recently has increased attention has been paid to mental health care (Mari, 2014), where relevant plans had yet to come to fruition in 2008. This may in part explain the low use of such services (http://www.who.int/mental_health/evidence/atlas/profiles/bra_mh_profile.pdf?ua=1).

Contrary to expectation, we found that residents of the lowest homicide rate area were twice as likely to report mental health services as those in higher homicide rate areas. Possibly, living where area violence is pervasive "inoculates" or "immunizes" the resident, and becomes a "normal" situation to which residents may adjust by becoming more resilient. Low homicide areas may be more affluent, with residents able to avail themselves of increased personal protection, so that homicide, when it occurs, is less expected, more disturbing, and seen as less under personal control. Such areas may also reflect the location where mental health care providers may be more willing to practice. Higher use of mental health services in more affluent areas (Chiavegatto Filho et al., 2015), and in more affluent countries (Evans-Lacko et al., 2018), has been reported previously,

There is little objective information on the association between community violence, its effect on mental health, and provision of mental health services. Our findings highlight the current mismatch between mental health service needs, mental health service use, and location of mental health services. Recent planning to address this problem has focused on political interventions, increasing the safety of the lived environment, training mental health workers (e.g., Minayo et al., 2018), and on-line therapies (Fitzpatrick et al., 2017).

In addition to lack of resources, and difficult access, the low use of mental health services at the personal level may, among other considerations, reflect concern regarding possible stigma regarding mental disorders and for using services, lack of recognition of a treatable condition, expectation (not always unrealistic) that the condition will improve, personal view and that of others that the individual should "buck up" and attempt self-improvement, avoidance of specific anxiety-provoking situations, and unwillingness to accept the treatment available (medication, psychotherapy) (Peluso and Blay, 2008).

In the current study, the relative frequency with which mental health practitioners were consulted did not agree well with their apparent availability (Mateus et al., 2008). For each diagnostic category there was little difference in the rate at which alternative providers were seen, with the exception of lower use of religious leaders by persons with depression only or comorbidity. Use of "others" was negligible, but there was no specific enquiry into social workers, nurses, friends and family, although relatives in particular may be a first choice for some (Peluso and Blay, 2009). Given this, it is possible that a larger proportion receives treatment than the data indicate.

Personal experience of traumatic events did not invariably result in

a diagnosis of anxiety or depression, although there was an increase in depression and particularly in the comorbid disorder (Bonanno, 2008; Vilete et al., 2014); depression was also associated with lower resilience (a common finding, Wagnild, 2009). From current cross-sectional data it is difficult to determine precisely how depression, trauma, and resilience are related, since information on level of resilience before trauma and before depression is unavailable.

While a main driver of mental health service use was a mental health condition, significant determinants of use were a higher number of social contacts (suggesting reduced stigma in this society, Phillips et al., 2016), and a personality characteristic – resilience. There appears to be little information on the association of resilience with health service use. It is possible that "resilience" distinguishes those who know they need help (i.e., have low resilience), from those who (rightly or wrongly), may be better able to cope without formal assistance (i.e., have high resilience).

According to Rutter (2013, Abstract), "Resilience findings do not translate into a clear plan of prevention and treatment, but they do provide numerous leads that focus on the dynamic view of what may be involved in overcoming seriously adverse experiences." Our data suggest that low use of mental health services may not always be as serious a concern as feared, although admittedly we do not know the outcome when services are not used by those who are expected to benefit from them. Interventions, however, are not always effective (O'Connor et al., 2010), and with limited resources, and to identify those who might gain, increased attention may need to be paid to personality characteristics, and the severity of the mental health condition. Approaches intended to foster resilience should be promoted, since they are likely to have broad application, and facilitate personal control.

As in other studies, we found that residents who do not have the conditions of interest also use mental health services. Doing so may reflect previous use by persons whose status has improved, use by persons who have other mental health conditions, and continued supportive care.

This study has several limitations. While widely accepted measures were used to assess the presence of mental health conditions, information on condition severity and treatment adequacy was unavailable. In addition, with the advent of DSM-5, conditions included under "anxiety" have been modified, and no longer include PTSD. We were unable to check on the location or accessability of health care. Information on private health insurance was not gathered for the whole sample, and so not included in analysis; this may have an effect regarding use, and the provider. Perhaps most important, this was a cross-sectional study, which assessed current status but required recall of mental health service use over the previous 12 months. Recall can be faulty, the conditions that required treatment at the time may no longer hold, and current conditions may be too recent to lead to seeking care.

5. Summary

In exploring determinants of use of mental health services by persons diagnosed with anxiety or depression, we have, uniquely, included consideration of environmental issues (homicide rate), and personal issues (experience of social support, traumatic events, and personal resilience). We have found that use of mental health services is low, varies with diagnosis, is greater among majority White persons, and above age 30. The homicide rate had an unanticipated inverse effect on mental health service use, perhaps because of reduced service provision in high homicide areas. Increased social contact may allay the stigma associated with anxiety and depression, and facilitate service receipt, while higher levels of personal resilience reduced use of services. Increased attention should be paid to improving resilience in the population, identifying and training the array of professionals who can provide mental health services, and ensuring access to them.

Author Contributions

Concept and design: GGF, SLB, IMQ, MFM, RAB, JJM, SBA

Acquisition of subjects and/or data: SLB, IMQ, MFM, RAB, JJM, SBA

Analysis and interpretation of data: GGF, SLB, IMQ, MFM, RAB, JJM, SBA

Preparation of manuscript: GGF and SLB drafted the paper and all authors reviewed and approved the final version of the manuscript.

Conflict of Interest

During the conduct of the study RAB received personal fees and non-financial support from Ache, Lundbeck and Janssen, all unrelated to the submitted work.

Sponsor's Role

The funding source had no role in the study design, data collection, data analysis or writing of the report.

Acknowledgments

Funding: This study was supported by the State of São Paulo Funding Agency (FAPESP) by grant 2004/15039–0, and the National Research Council (CNPq) by grant 420122/2005–2. This work was also supported by grants from the National Institute on Aging grant number 1P30 AG028716 for GGF; National Council for Scientific and Technological Development (CNPq; Conselho Nacional de Desenvolvimento Cientifico e Tecnologico) to SLB, research grant (Bolsista de Produtividade em Pesquisa 305274/2014–7), and to MFM (Bolsa Produtividade CNPq-2); JJM(Bolsa Produtividade-1); and RAB (Bolsa Produtividade). This work was also supported by grants from Fundação de Amparo a Pesquisa do Estado de São Paulo to RAB (FAPESP - 16/02246–5), and by grants and personal fees from Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) to RAB.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jad.2019.03.010.

References

Aburn, G., Gott, M., Hoare, K., 2016. What is resilience? An integrative review of the empirical literature. J. Adv. Nurs. 72, 980–1000. https://doi.org/10.1111/jan.12888.

Alonso, J., Angermeyer, M.C., Bernert, S., Bruffaerts, R., Brugha, T.S., Bryson, H., de Girolamo, G., Graaf, R., Demyttenaere, K., Gasquet, I., Haro, J.M., Katz, S.J., Kessler, R.C., Kovess, V., Lépine, J.P., Ormel, J., Polidori, G., Russo, L.J., Vilagut, G., Almansa, J., Arbabzadeh-Bouchez, S., Autonell, J., Bernal, M., 2004. 12-month comorbidity patterns and associated factors in Europe: results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. Acta Psychiatr. Scand. Suppl. 420, 28–37. https://doi.org/10.1111/j.1600-0047.2004.00328.x.

Alonso, J, Lépine, J.P., 2007. ESEMeD/MHEDEA 2000 Scientific Committee. Overview of key data from the European Study of the Epidemiology of Mental Disorders (ESEMeD). J. Clin. Psychiat. 68 (Suppl 2), 3–9.

Andrade, L.H., Wang, Y-P., Andreoni, S., Silveira, C.M., Alexandrino-Silva, C., Siu, E.R., Nishimura, R., Anthony, J.C., Gattaz, W.F., Kessler, R.C., Viana, M.C., 2012. Mental disorders in megacities: findings from the São Paulo megacity mental health survey, Brazil. PLoS One 7 (2), e31879. https://doi.org/10.1371/journal.pone.0031879.

Andreoli, S.B., Ribeiro, W.S., Quintana, M.I., Guindalini, C., Breen, G., Blay, S.L., Coutinho, E.S., Harpham, T., Jorge, M.R., Lara, D.R., Moriyama, T.S., Quarantini, L.C., Gadelha, A., Vilete, L.M., Yeh, M.S., Prince, M., Figueira, I., Bressan, R.A., Mello, M.F., Dewey, M.E., Ferri, C.P., Mari, J.de J., 2009. Violence and post-traumatic stress disorder in Sao Paulo and Rio de Janeiro, Brazil: the protocol for an epidemiological and genetic survey. BMC Psychiatry 34. https://doi.org/10.1186/1471-244X-9-34.

Blay, S.L., Fillenbaum, G.G., Peluso, E.T., 2015. Differential characteristics of young and midlife adult users of psychotherapy, psychotropic medications, or both: information from a population representative sample in Sao Paulo, Brazil. A cross-sectional study. BMC Psychiatry 15, 268. https://doi.org/10.1186/s12888-015-0651-2MS.

Blay, S., Fillenbaum, G., Quintana, I., Mari, J., Mello, M., Andreoli, S., Bressan, R., 2018. 12-month prevalence and concomitants of DSM-IV depression and anxiety disorders in two violence-prone cities in Brazil. J. Affect. Dis. 232, 204–211. https://doi.org/10.1016/j.jad.2018.02.023.

Blazer, D.G., 2003. Depression in late life: review and commentary. J. Gerontol.: Med. Sci. 58A, 249–265. https://doi.org/10.1093/gerona/58.3.M249.
Bolton, J.M., Pagura, J., Enns, M.W., Grant, B., Sareen, J., 2010. A population-based longitudinal study of risk factors for suicide attempts in major depressive disorder. J. Psychiatry Res. 44, 817–826. https://doi.org/10.1016/j.jpsychires.2010.01.003.
Bonanno, G.A., 2008. Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events? Psychol. Trauma-US vol. S No. 1, 101-113. Reprinted from Am. Psychol. 2004 59, 20–28. https://doi.org/10.1037/1942-9681.S.1.101 ().
Bonanno, G.A., Diminich, E.D., 2013. Annual Research Review: positive adjustment to adversity – trajectories of minimal–impact resilience and emergent resilience. J. Child Psychol. Psychiatry 54, 378–401. https://doi.org/10.1111/jcpp.12021.
Cerda, M., DiGangi, J., Galea, S., Koenen, K., 2012. Epidemiologic research on interpersonal violence and common psychiatric disorders: where do we go from here? Depress. Anxiety 29, 359–385. https://doi.org/10.1002/da.21947.
Charlson, F.J., Baxter, A.J., Dua, T., Degenhardt, L., Whiteford, H.A., Vos, T., 2016. Excess mortality from mental, neurological, and substance use disorders in the Global Burden of Disease Study 2010. In: Patel, V., Chisholm, D., Dua, T., Laxminarayan, R., Medina-Mora, M.E. (Eds.), Third Edition. Mental, Neurological, and Substance Use Disorders: Disease Control Priorities 4 The International Bank for Reconstruction and Development/The World Bank, Washington, DC Chapter 3.
Chiavegatto-Filho, A.D., Wang, Y-P., Malik, A.M., Takaoka, J., Viana, M.C., Andrade, L.H., 2015. Determinants of the use of health care services: multilevel analysis in the Metropolitan Region of Sao Paulo. Rev. Saude Publica 49, 15. https://doi.org/10.1590/S0034-8910.2015049005246.
Clark, C., Ryan, L., Kawachi, I., Canner, M.J., Berkman, L., Wright, R.J., 2008. Witnessing community violence in residential neighborhoods: a mental health hazard for urban women. J. Urban Health 85, 22–38. https://doi.org/10.1007/s11524-007-9229-8.
Coelhoso, F., del Castillo, J.A.G., Marzo, J.C., Dias, P.C., del Castillo-López, A.G., 2017. Construct validity of the Portuguese version of the Wagnild and Young Resilience Scale. J. Nurs. Meas. 25, 421–1430. https://doi.org/10.1891/1061-3749.25.3.421.
de Heer, E.W., Gerrits, M.M.J.G., Beekman, A.T.F., Dekker, J., van Marwijk, H.W.J., de Waal, M.W.M., et al., 2014. . The association of depression and anxiety with pain: a study from NESDA. PLoS One 9 (10), e106907. https://doi.org/10.1371/journal.pone.0106907.
de Silva, M.J., Huttly, S.R., Harpham, T., Kenward, M.G., 2007. Social capital and mental health: a comparative analysis of four low income countries. Soc. Sci. Med. 64, 5–20. https://doi.org/10.1016/j.socscimed.2006.08.044.
Evans-Lacko, S., Aguilar-Gaxiola, S., Al-Hamzawi, A., Alonso, J., Benjet, C., Bruffaerts, R., Chiu, W.T., Florescu, S., de Girolamo, G., Gureje, O., Haro, J.M., He, Y., Hu, C., Karam, E.G., Kawakami, N., Lee, S., Lund, C., Kovess-Masfety, V., Levinson, D., Navarro-Mateu, F., Pennell, B.E., Sampson, N.A., Scott, K.M., Tachimori, H., Ten Have, M., Viana, M.C., Williams, D.R., Wojtyniak, B.J., Zarkov, Z., Kessler, R.C., Chatterji, S., Thornicroft, G., 2018. Socio-economic variations in the mental health treatment gap for people with anxiety, mood, and substance use disorders: results from the WHO World Mental Health (WMH) surveys. Psychol. Med. 48, 1560–1571. https://doi.org/10.1017/S0033291717003336.
Fitzpatrick, K.K., Darcy, A., Vierhile, M., 2017. Delivering cognitive behavior therapy to young adults with symptoms of depression and anxiety using a fully automated conversational agent (Woebot): a randomized controlled trial. JMIR Ment. Health 4 (2), e19.
Kaufman, J., Charney, D., 2000. Comorbidity of mood and anxiety disorders. Depress. Anxiety 12 (Suppl 1), 69–76. https://doi.org/10.1002/1520-6394(2000)12:1 ± ≤69::AID-DA9≥3.0.CO;2-K.
Kessler, R.C., Sampson, N.A., Berglund, P., Gruber, M.J., Al-Hamzawi, A., Andrade, L., Bunting, B., de Girolamo, G., Gureje, O., He, Y., Hu, C., Huang, Y., Karam, E., Kovess-Masfety, V., Lee, S., Levinson, D., Medina Mora, M.E., Moskalewicz, J., Nakamura, Y., Navarro-Mateu, F., Oakley Browne, M.A., Piazza, M., Posada-Villa, J., Slade, T., ten Have, M., Torres, Y., Vilagut, G., Xavier, M., Zarkov, Z., Shahly, V., Wilcox, M.A., 2015. Anxious and non-anxious major depressive disorder in the World Health Organization World Mental Health Surveys. Epidemiol. Psychiatry Sci. 24, 210–226. https://doi.org/10.1017/S2045796015000189.
Keyloun, K.R., Hansen, R.N., Hepp, Z., Gillard, P., Thase, M.E., Devine, E.B., 2017. Adherence and persistence across antidepressant therapeutic classes: a retrospective claims analysis among insured US patients with major depressive disorder (MDD). CNS Drugs 31, 421–432. https://doi.org/10.1007/s40263-017-0417-0.
Kish, L., 1949. A procedure for objective respondent selection within the household. J. Am. Stat. Assoc. 44, 380–387.
Lam, L.C., Wong, C.S., Wang, M.J., Chan, W.C., Chen, E.Y., Ng, R.M., Hung, S.F., Cheung, E.F., Sham, P.C., Chiu, H.F., Lam, M., Chang, W.C., Lee, E.H., Chiang, T.P., Lau, J.T., van Os, J., Lewis, G., Bebbington, P., 2015. Prevalence, psychosocial correlates and service utilization of depressive and anxiety disorders in Hong Kong: the Hong Kong Mental Morbidity Survey (HKMMS). Soc. Psychiatry Psychiatr. Epidemiol. 50, 1379–1388. https://doi.org/10.1007/s00127-015-1014-1015.
Lazarus, R.S., Folkman, S., 1987. Transactional theory and research on emotions and coping. Eur. J. Pers. 1, 141–169. https://doi.org/10.1002/per.2410010304.
Macinko, J., Harris, M.J., 2015. Brazil's Family Health Strategy – Delivering community-based primary care in a universal health system. N. Engl. J. Med. 372 (23), 2177–2181. https://doi.org/10.1056/NEJMp1501140.
Mari, J.J., 2014. Mental healthcare in Brazil: modest advances and major challenges. Adv. Psychiatr. Treat. 20, 113–115. https://doi.org/10.1192/apt.bp.113.011593.
Mateus, M.D., Mari, J.J., Delgado, P.G.G., Almeida-Filho, N., Barrett, T., Gerolin, J., Goihman, S., Razzouk, D., Rodriguez, J., Weber, R., Andreoli, S.B., Saxena, S., 2008. The mental health system in Brazil: policies and future challenges. Int. J. Ment. Health Syst. 2, 12. https://doi.org/10.1186/1752-4458-2-12.
Medina-Mora, M.E., Borges, G., Lara, C., Benjet, C., Blanco, J., Fleiz, C., Villatoro, J., Rojas, E., Zambrano, J., 2005. Prevalence, service use, and demographic correlates of 12-month DSM-IV psychiatric disorders in Mexico: results from the Mexican National Comorbidity Survey. Psychol. Med. 35, 1773–1783. https://doi.org/10.1017/S0033291705005672.
Minayo, M.C.S., de Souza, E.R., da Silva, M.M.A., de Assis, S.G., 2018. Institutionalizing the theme of violence within Brazil's national health system: progress and challenges. [Institucionalização do tema da violência no SUS: avanços e desafios]. Ciencia e Saude Coletiva 23, 2007–2016. https://doi.org/10.1590/1413-81232018236.04962018.
O'Connor, C.M., Jiang, W., Kuchibhatla, Ma., Silva, S.G., Cuffe, M.S., Callwood, D.M., Zakhary, B., Stough, W.G., Arias, R.M., Rivelli, S.K., Ranga Krishnan, R., for the SADHART-CHF Investigators, 2010. Safety and efficacy of sertraline for depression in patients with heart failure results of the SADHART-CHF (Sertraline Against Depression and Heart Disease in Chronic Heart Failure) Trial. Am. Coll. Cardiol. 56, 692–699.
Pesce, R.P., Assis, S.G., Avanci, Q., Santos, N.C., Malaquias, J.V., Carvalhaes, R., 2005. [Cross-cultural adaptation, reliability and validity of the resilience scale.]. Cad Saude Publica 21, 436–448. https://doi.org/10.1590/S0102-311X2005000200010.
Peluso, E.deT.P., Blay, S.L., 2008. Public perception of depression in the city of São Paulo. Rev. Saúde Pública 42 (1), 1–7.
Peluso, E.deT.P., Blay, S.L., 2009. Public beliefs about the treatment of schizophrenia and depression in Brazil. Int. J. Soc. Psychiatry 55, 16–27.
Phillips, S.P., Auais, M., Belanger, E., Alvarado, B., Zunzunegui, M.V., 2016. Life-course social and economic circumstances, gender, and resilience in older adults. The longitudinal International Mobility in Aging Study (IMIAS). SSM – Popul. Health 2, 708–717. https://doi.org/10.1016/j.ssmph.2016.09.007.
Quintana, M.I., Andreoli, S.B., Jorge, M.R., Gastal, F.L., Miranda, C.T., 2004. The reliability of the Brazilian version of the Composite International Diagnostic Interview (CIDI 2.1). Braz. J. Med. Biol. Res. 37, 1739–1745. https://doi.org/10.1590/S0100-879X2004001100020.
Quintana, M.I., Gastal, F.L., Jorge, M.R., Miranda, C.T., Andreoli, S.B., 2007. Validity and limitations of the Brazilian version of the Composite International Diagnostic Interview (CIDI 2.1). Rev. Bras. Psiquiatria 29, 18–22. https://doi.org/10.1590/S1516-44462006005000024.
Ribeiro, W.S., Mari, J.deJ., Quintana, M.I., Dewey, M.E., Evans-Lacko, S., Vilete, L.M., Figueira, I., Bressan, R.A., de Mello, M.F., Prince, M., Ferri, C.P., Coutinho, E.S., Andreoli, S.B., 2013. The impact of epidemic violence on the prevalence of psychiatric disorders in Sao Paulo and Rio de Janeiro, Brazil. PLoS ONE 8 (5), e63545. https://doi.org/10.1371/journal.pone.0063545.
Roy-Byrne, P.P., Davidson, K.W., Kessler, R.C., Asmundson, G.J., Goodwin, R.D., Kubzansky, L., Lydiard, R.B., Massie, M.J., Katon, W., Laden, S.K., Stein, M.B., 2008. Anxiety disorders and comorbid medical illness. Gen. Hosp. Psychiatry 30, 208–225. https://doi.org/10.1016/j.genhosppsych.2007.12.006.
Rutter, M., 2013. Annual research review: resilience – clinical implications. J. Child Psychol. Psychiatry 54, 474–487.
Sheehan, D.V., Keene, M.S., Eaddy, M., Krulewicz, S., Kraus, J.E., Carpenter, D.J., 2008. Differences in medication adherence and healthcare resource utilization patterns: older versus newer antidepressant agents in patients with depression and/or anxiety disorders. CNS Drugs 22, 963–973. https://doi.org/10.2165/00023210-200822110-00005.
Southwick, S.M., Charney, D.S., 2012. The science of resilience: implications for the prevention and treatment of depression. Science 338 (6103), 79–82.
Thornicroft, G., Chatterji, S., Evans-Lacko, S., Gruber, M., Sampson, N., Aguilar-Gaxiola, S., Al-Hamzawi, A., Alonso, J., Andrade, L.H., Borges, G., Bruffaerts, R., Bunting, B., Jose Caldas de Almeida, M., Florescu, S., de Girolamo, G., Gureje, O., Haro, J.M., He, Y., Hristo Hinkov, H., Karam, E., Kawakami, N., Lee, S., Navarro-Mateu, F., Piazza, M., Posada-Villa, J., Torres de Galvis, Y., Kessler, R.C., 2017. Undertreatment of people with major depressive disorder in 21 countries. Br. J. Psychiatry 210, 119–124. https://doi.org/10.1192/bjp.bp.116.188078.
UNODC (United Nations Office on Drugs and Crime) Global Homicide Survey, 2011. https://www.unodc.org/documents/congress/backgroundinformation/Crime_Statistics/Global_Study_on_Homicide_2011.pdf, Accessed date: 20 November 2018.
Valtorta, N.K., Moore, D.C., Barron, L., Stow, D., Hanratty, B, 2018. Older adults' social relationships and health care utilization: a systematic review. Am. J. Pub. Health 108, e1–e10. https://doi.org/10.2105/AJPH.2017.304256.
Vilete, L., Figueira, I., Andreoli, S.B., Ribeiro, W., Quintana, M.I., Mari, J., Coutinho, E.S., 2014. Resilience to trauma in the two largest cities of Brazil: a cross-sectional study. BMC Psychiatry 14, 257. https://doi.org/10.1186/s12888-014-0257-0.
Wagnild, G.M., 2009. A review of the Resilience Scale. J. Nurs. Meas. 17, 105–113.
Wagnild, G, M., Young, H.M., 1993. Development and psychometric evaluation of the Resilience Scale. J. Nurs. Meas. 1, 165–178.
Wang, P.S., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M.C., Borges, G., Bromet, E.J., Bruffaerts, R., de Girolamo, G., de Graaf, R., Gureje, O., Haro, J.M., Karam, E.G., Kessler, R.C., Kovess, V., Lane, M.C., Lee, S., Levinson, D., Ono, Y., Petukhova, M., Posada-Villa, J., Seedat, S., Wells, J.E., 2007. Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO World Mental Health Surveys. Lancet 370, 841–850. https://doi.org/10.1016/S0140-6736(07)61414-7.
Wang, Y-P, Chiavegatto Filho, A.D.P., Campanha, A.M., Malik, A.M., Mogadouro, M.A., Cambraia, M, Viana, MC, Andrade, LH, 2017. Patterns and predictors of health service use among people with mental disorders in São Paulo metropolitan area, Brazil. Epidemiol. Psychiatric Sci. 26 (1), 89–101. https://doi.org/10.1017/S2045796016000202.
Wilson-Genderson, M., Pruchno, R., 2013. Effects of neighborhood violence and perceptions of neighborhood safety on depressive symptoms of older adults. Soc. Sci. Med. 85, 43–49. https://doi.org/10.1016/j.socscimed.2013.02.028.
Windle, G., 2011. What is resilience? A review and concept analysis. Rev. Clin. Gerontol. 21, 152–169. https://doi.org/10.1017/S0959259810000420.