

Measuring Anxiety Symptoms During the COVID-19 Pandemic Through the Lens of Sexual Orientation

ABSTRACT

Objective: This study aims to investigate the impact of coronavirus disease (COVID-19) on anxiety symptoms, examining differences of sexual orientation.

Methods: A total of 1590 individuals participated, 63% (n=1002) were females, 88% (n=1399) self-identified as straight, and all replied to the anxiety subscale of the Brief Symptoms Inventory-18, the Fear of COVID-19, and the COVID-19 Negative Impact scales.

Results: Anxiety symptomatology negatively associated with age and positively associated with coronavirus disease-aggravated replies, Fear of COVID-19, and Negative Impact of COVID-19. Hierarchical linear regression examination revealed that age, gender, and sexual orientation explained 8% of the variance of anxiety symptoms, and together with the Fear and the Negative Impact of COVID-19, it explained 28% of the results.

Conclusion: Perceived anxiety symptoms were higher than anticipated and aggravated by the COVID-19 pandemic: female and bisexual participants showed higher levels of anxiety symptomatology compared to male and straight, and gay or lesbian participants.

Keywords: Anxiety, COVID-19, sexual orientation

Introduction

Coronavirus disease (COVID-19) was announced as a pandemic by the World Health Organization (WHO) in March 2020^{1,2} and was defined as a respiratory disease^{3,4} that has caused over 2.7 million deaths as of March 2021.⁵ Thus, worldwide concern for health, social, political, and economic issues emerged.⁶⁻¹⁰ To control the spread of the disease, hygiene measures were imposed by local governments, such as social distancing¹¹ and lockdown,³ which led to the increase of mental health problems,¹² including anxiety.

Anxiety can be a positive motivation generator, but it usually causes negative effects on both physical and mental health,¹³ especially under adverse circumstances, such as the COVID-19 outbreak.¹⁴⁻¹⁶ Furthermore, drastic changes related with the pandemic, such as loss of salaries, loneliness,¹⁷ uncertainty, depression, and post-traumatic stress,¹⁸ may have led people to feel impotent, fearful, and anxious,¹⁹ intensifying pre-existing psychiatric symptoms.²⁰ Aspects such as mistrust in public health authorities²¹ decreased adherence to public health measures²² and stigma felt by those who contracted COVID-19 can lead to discouragement from testing²³ all contributing to a growth in anxiety levels.

Anxiety symptoms triggered by the COVID-19 pandemic can cause several impairments in psychosocial functioning,^{15,24} especially among people from socially disadvantaged groups, such as sexual minorities,⁹ because lesbian, gay, and bisexual (LGB) people already suffer from sexual discrimination and victimization,^{25,26} creating aggravated risk factors, such as domestic violence,²⁷ isolation and trauma,²⁸ loss of privacy,²⁹ increased risk of unemployment, unstable housing,³⁰ and drug and alcohol abuse.³¹ This is because of the influence of sexual minority stress^{32,33} that decreases psychological well-being³⁴ through experiences of



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sexual stigma,³⁵ social exclusion,³⁶ trauma,³⁷ and the accentuation of eventual psychiatric comorbidity.³⁸ LGB people can be the target of prejudice, harassment, and denial of their civil and human rights³⁹ and become more vulnerable to victimization and family rejection,⁴⁰ depression, anxiety,⁴¹ and suicidal ideation.⁴²

Recently, important advancements have been made at the legislative level to include sexual minorities' inequality measures.⁴³⁻⁴⁵ In Portugal, for example, a non-discrimination article based on sexual orientation was included in the Portuguese Constitution,⁴⁶ and in 2010, a law was implemented to allow same-sex couples to marry,⁴⁷ and in 2016, a law was approved to allow adoption for same-sex couples.⁴⁸ Notwithstanding, LGB people continue to deal with prejudice⁴⁹ and negative social attitudes,⁵⁰⁻⁵² mainly due to the influence of Catholic traditions that remain active in Portuguese society⁴⁴ and also to etiological beliefs related to sexual minority expression⁵³ that perpetuate prejudice and social discrimination.^{54,55} This reality is also shared by Brazilian societal norms where discrimination, violence, and exclusion of LGB people is still a reality.^{56,57} Although homophobia was considered a crime by the Supreme Federal Court,⁵⁸ Brazil is the nation with the highest percentage of hate crimes against LGB people in the world.⁵⁶

Modest attention has been given to the impact of COVID-19 on anxiety symptomatology in LGB people in Portuguese-speaking countries. Therefore, there is a need to examine whether sexual minorities are uniquely affected by the COVID-19 pandemic and are disproportionately impacted on anxiety levels. We aim to fill this gap by conducting this study.

Methods

We used the following instrument measures in this study: a sociodemographic questionnaire, the anxiety subscale of the Brief Symptoms Inventory-18 (BSI-18), the Fear of COVID-19 scale, and the Negative Impact of COVID-19 scale.

Sociodemographic Questionnaire

The social and demographic data were collected using a questionnaire. Participants were questioned about their age, nationality, gender, marital status, sexual orientation, and socioeconomic status, among others.

Anxiety Symptoms

Participants' anxiety symptoms were measured by using the anxiety symptoms scale of the Portuguese form of the BSI-18.⁵⁹ This inventory

assesses the existence of possible anxiety-related troubles or symptoms faced in the previous week and focuses on the main symptoms of anxiety disorders, such as feeling tense, or restless, nervous, having a sense of imminent danger, panic or doom, augmented heart rate, hyperventilation, and perspiration, among others. The overall severity indicator delivers an assessment of the individuals' levels of mental distress, which is achieved after the sum of the 6 items on the scale. Higher scores disclose stronger symptoms. Reliability analysis was $\alpha = 0.94$. A single complementary question was asked regarding the participants' perception of the aggravation of their replies due to the pandemic: "How were the answers you provided to the previous questions aggravated by the COVID-19 pandemic?" Response options were Likert type and wide ranged from 1 (not at all) to 6 (a lot).

Fear of and Negative Impact of COVID-19

The Fear of COVID-19 scale was first proposed by Ahorsu et al,¹⁹ besides like the original version, the Portuguese version encompassed 7 questions, varying from 1 to 5 as quantified by a Likert-type scale, higher results meaning more severe fear of COVID-19.⁶⁰ Instances of questions were as follows: "I am afraid of losing my life because of Corona," or "It makes me uncomfortable to think about Corona," or "When I watch news about Corona on social media, I become nervous or apprehensive." Concerning the Negative Impact of the COVID-19 scale, it permitted assessing the participants' self-assessment of the negative impact that the COVID-19 pandemic imposed on their lives. It encompassed 10 questions related to several areas of psychosocial functioning, varying in score from 1 to 5 as quantified by a Likert-type scale. Instances of questions were as follows: "Compared to my life before the COVID-19 pandemic, it had a negative impact ... on my professional or academic life, ...on my family life, ...on my financial life, etc." Reliability analysis was $\alpha = .87$ for both scales.

The study was implemented through an online site that stayed accessible between the months of October and December 2020. Partaking in the research was unpaid, voluntary, and participants were sent to a linked site made purposely for this research. The first part of the survey explained the goals and gave participants information about how to fill it in, withdraw from the research, and how to contact the researchers for more information if necessary. Also, it was requested that participants read and agreed to an informed consent waiver.

Around 8000 electronic notices were sent, and 1590 participants replied voluntarily (20% response rate). The spreading of the questionnaire obeyed the ethical values of informed consent, anonymity, and confidentiality. Inclusion criteria included being 18 years of age or older and being a Portuguese native speaker (from Portugal or Brazil). Ethical approval was conceded by the Ethics Committee of the University of Beira Interior (code CEUBI-Pj-2020-088) on December 7, 2020.

Statistical Analysis

The data obtained were entered in the SPSS version 26 (IBM Corp., Armonk, NY, USA). Descriptive analyses were conducted to describe the sample (mean, standard deviation, frequencies, and percentages). Student's t-tests and one-way analyses of variance (ANOVAs) were used to evaluate differences between comparison groups; Tukey's post hoc tests were applied after ANOVA.

MAIN POINTS

- Prevalence of anxiety symptoms differed according to participants' sexual orientation, affecting more severely self-identified bisexual participants.
- Anxiety symptoms were strongly and negatively associated with age and strongly and positively associated with Fear of COVID-19, Negative Impact of COVID-19, and COVID-19-aggravated responses.
- The variables "age," "gender," and "sexual orientation" explained 9% of the variance of anxiety symptoms in the regression model, while together with COVID-19's fear and negative impact, the model explained 28% of the variance of anxiety symptoms.

To calculate correlation levels between Fear of COVID-19, Negative Impact of COVID-19, and anxiety symptoms, Pearson’s correlation coefficients were used. Lastly, a hierarchical linear regression analysis was used to calculate the effects of age, gender, sexual orientation, fear of COVID-19, and negative impact of COVID-19 on anxiety symptoms. Hierarchical linear regression is a statistical technique used to analyze the outcome of predictor variables after controlling other variables. This control is attained by computing the change in the adjusted R^2 at each step of the analysis, and we used the forward selection method, which is a type of stepwise regression that allows us to add in variables step by step. In each forward step, we added the variables that gave us the best improvement to our model.

Results

The study participants included 1590 Portuguese-speaking adults. Participants varied in age from 18 to 74 years, average age was 33.68 years (SD = 12.95), and 63% (n=1002) were females. Regarding marital status, 56.8% (n=903) were single and 25.9% (n=412) were married. In general, participants possessed elevated educational attainment levels, with 68% (n=1081) having a university education. Furthermore, participants predominantly lived in urban areas, with 42.2% (n=671) living in small cities and 30.5% (n=485) in large cities. Concerning socioeconomic status, 57.8% (n=919) claimed to possess middle socioeconomic status, 24.1% (n=383) asserted that they held lower-middle socioeconomic status, and 4.3% (n=68) claimed to have low socioeconomic status. When asked about their sexual orientation, most of participants self-identified as straight (88%, n=1399), while 6.1% (n=97) self-identified as bisexual and 5.9% (n=94) as lesbian or gay. Concerning professional status, the majority of participants said that they were currently employed (49%, n=779) or self-employed (8.7%, n=139). Table 1 describes sociodemographic characteristics in greater detail.

Study participants presented higher levels of anxiety symptoms (mean [SD] = 1.04 [0.79]) than the general population (mean [SD] = 0.94 [0.77]) but lower levels of anxiety than the clinical population.⁶¹ Table 2 describes the anxiety symptoms results by gender, which indicated that women (mean [SD] = 1.14 [0.80]) significantly scored higher than men (mean [SD] = 0.86 [0.73]) ($P < .001$).

Table 3 shows results for anxiety levels by sexual orientations. Statistically significant differences were found concerning participants’ self-assessment of anxiety symptoms ($F(2)=9.73$; $P < .001$). Participants self-identifying as bisexual displayed the highest scores (mean [SD] = 1.45 [0.88]), followed by self-identified gay or lesbian participants (mean [SD] = 1.30 [0.82]). Self-identified straight participants displayed the lowest scores (mean [SD] = 0.99 [0.76]).

Table 4 shows the adjusted Tukey’s post-test means of 3 groups of sexual orientations. The mean I-J difference was significant for all comparisons ($P < .05$) except for the bi-sexual and gay or lesbian comparison.

As shown in Table 5, the study performed a correlation analysis to determine association levels among anxiety symptoms and age, fear of COVID-19, negative impact of COVID-19, and COVID-19-aggravated responses. Correlation coefficients showed that anxiety symptoms were weakly and negatively correlated with age ($r = -0.203$; $P < .001$) and moderately and positively correlated with

Table 1. Sociodemographic Characteristics of the Participants (n = 1590; age, mean [SD] = 33.68 [12.95])

Variable	Category	n (%)
Gender	Women	1002 (63.0)
	Men	588 (37.0)
Nationality	Portuguese	1221 (76.8)
	Brazilian	369 (23.2)
Marital status	Single	903 (56.8)
	Married	412 (25.9)
	De facto union	167 (10.5)
	Divorced/separated	94 (5.9)
	Widower	14 (0.9)
Educational attainment	No schooling	2 (0.1)
	Up to 9 years of school	57 (3.6)
	Up to 12 years of school	437 (27.5)
	Undergraduate degree	537 (33.8)
	Postgraduate degree	388 (24.4)
Place of residence	Small rural	280 (17.6)
	Big rural	154 (9.7)
	Small urban	671 (42.2)
	Big urban	485 (30.5)
	Socioeconomic status	Low
Medium-low		383 (24.1)
Medium		919 (57.8)
Medium-high		205 (12.9)
Sexual orientation	High	15 (1.0)
	Straight	1399 (88.0)
	Bisexual	97 (6.1)
	Gay or Lesbian	94 (5.9)
Professional status	Unemployed	36 (2.3)
	Student	425 (26.7)
	Working student	186 (11.7)
	Self-employed	139 (8.7)
	Employed	779 (49.0)
	Retired	25 (1.6)

Table 2. Mean Results for Anxiety Symptoms by Gender

Gender	n	%	Mean (SD)	P
Women	1002	63.0	1.14 (0.80)	<.001
Men	588	37.0	0.86 (0.73)	

fear of COVID-19 ($r=0.363$; $P < .001$), negative impact of COVID-19 ($r=0.426$; $P < .001$), and COVID-19-aggravated responses ($r=0.505$; $P < .001$).

Finally, the study performed a hierarchical regression study to assess the outcomes of age, gender, sexual orientation, fear of COVID-19, and negative impact of COVID-19 on anxiety symptoms. We added

Table 3. Mean Results for Anxiety Symptoms by Sexual Orientation

Sexual Orientation	n	%	Mean (SD)	P
Straight	1399	88.0	0.99 (0.76)	<.001
Bisexual	97	6.1	1.45 (0.88)	
Gay or lesbian	94	5.9	1.30 (0.82)	

Table 4. Results for Tukey's Post Hoc Comparison Groups of Sexual Orientation

Dependent Variable	(I) Sexual Orientation	(J) Sexual Orientation	Mean Difference (I-J)	P
Anxiety symptoms	Straight	Bisexual	-0.45615	<.001 ^a
		Gay or lesbian	-0.30717	.001 ^b
	Bisexual	Straight	0.45615	<.001 ^a
		Gay or lesbian	0.14898	.407
	Gay or lesbian	Straight	0.30717	.001 ^b
		Bisexual	-0.14898	.407

^aP < .001; ^bP < .05.

Table 5. Results for the Correlation Matrix Between Age, Fear of COVID-19, Negative Impact of COVID-19, COVID-19-aggravated Responses and Anxiety Symptoms

	1	2	3	4	5
1. Age	1				
2. Fear of COVID-19	0.008 ^a	1			
3. Negative impact of COVID-19	-0.037 ^a	0.402 ^a	1		
4. COVID-19-aggravated responses	-0.085 ^a	0.464 ^a	0.557 ^a	1	
5. Anxiety symptoms	-0.203 ^a	0.363 ^a	0.426 ^a	0.505 ^a	1

^aP < .001. COVID-19, coronavirus disease.

the variables "age," "gender," and "sexual orientation" in the first block (model I), and we then added COVID-19's fear and negative impact in the second block (model II). The first model explained 9% of the variance of anxiety symptoms, whereas the second model explained 28%. Therefore, as displayed in Table 6, all variables are significant predictors of anxiety symptomatology.

Discussion

The focus of this study was to measure the impact of COVID-19 on anxiety symptoms through the lens of sexual orientation. Overall anxiety symptomatology in the sample was high because of the harmful effects of the COVID-19 pandemic on people's psychosocial well-being⁶² which is similar to other findings.^{16,63} Loss of income, poverty, bereavement, isolation, and fear may be triggering mental health conditions that many people face and lead to increased levels of anxiety.

Our findings show that female participants show more anxiety symptoms when compared to male participants. These results are similar to other research implemented during the COVID-19 pandemic in Portugal and Brazil,⁶⁴ and China.⁶ This gender inequality is most likely related to the fact that women feel more heavily the negative consequences of prolonged lockdown measures since they have

less access to social protection, are more likely to be burdened with unpaid care and domestic work, tend to earn less, and have fewer savings and tend to face an increase in loneliness and a decrease in their spiritual well-being.⁶⁵ Additionally, women may be more likely to feel the burden of social distancing and to have concerns related not only to the disease but also to the possible infection of family members.⁶

Gender inequalities were exacerbated by the COVID-19 pandemic^{66,67} and so were sexual orientation inequalities.⁶⁸ Our findings confirm that the prevalence of anxiety symptoms differed according to participants' sexual orientation. More specifically, bisexual participants experienced significantly more anxiety symptoms when compared to straight and lesbian or gay participants. Before the outbreak of COVID-19, bisexual people already showed higher values of anxious symptoms compared to straight and lesbian or gay people.⁶⁹ Disparities like these can be attributed to biphobia and lack of social support for bisexual people.⁷⁰

Other studies have demonstrated a high prevalence of anxiety symptoms in LGB people, particularly associated with emotional distress, lower levels of social support and reduced social contacts,⁷¹ exposure to sexual stigma,⁷² low self-esteem,⁷³ lack of social support,⁷⁴ social isolation,⁷⁵ unemployment and lack of job opportunities,⁷⁶ and loneliness.⁷⁷

Table 6. Hierarchical Regression Analyses of Independent Variables' Impacts on Anxiety Symptoms

Variables	Model I				Model II			
	β	SE	95% CI	P	β	SE	95% CI	P
Age	-0.172	0.002	(-0.014/-0.008)	<.001	-0.177	0.001	(-0.014/-0.008)	<.001
Gender	-0.174	0.044	(-0.337/-0.163)	<.001	-0.114	0.040	(-0.240/-0.082)	<.001
Sexual orientation	0.177	0.041	(0.113/0.247)	<.001	0.100	0.037	(0.050/0.170)	<.001
Fear of COVID-19					0.211	0.025	(0.150/0.248)	<.001
Negative impact of COVID-19					0.319	0.023	(0.238/0.329)	<.001
R ² (adj.)			0.087				0.279	
P			<.001				<.001	

COVID-19, coronavirus disease; SE, standard error.

The assessment of worsened anxiety symptomatology throughout the COVID-19 pandemic among sexual minorities is a demonstration of how adverse circumstances disproportionately impact mental health outcomes.⁷⁸ Our results show that being older, being male, being LGB, and having higher scores of Fear of COVID-19 and Negative Impact of COVID-19 are strongly associated with anxiety symptoms. These results are likely intertwined not only with social distancing and lockdown measures and quality of access to COVID-19-related information⁷⁹ but also with the tangible impact that the pandemic has had in most varied contexts of daily life, such as professional, academic, leisure, or relationship levels.⁶⁰ Thus, stressors caused by COVID-19 such as fear of death, restrictions on the performance of outdoor activities, and feelings of loneliness¹⁶ may trigger anxiety symptoms.

The COVID-19 pandemic has heightened anxiety conditions in people worldwide due to changes in community function but affected sexual minority populations because of factors such as fear of stigmatization or declining care because of prior negative experiences. Therefore, this research highlights the demand for health care professionals to support, affirm, and deliver specific care for the LGB community to cope and preserve their psychological health, through and following the COVID-19 pandemic.⁸⁰⁻⁸⁴

This study is not without limitations. This was a nonprobability sampling, which limited generalizability, since online survey focused on people who have online access. Although the percentage of LGB participants is around 10% (the same as the prevalence in the overall population), the comparisons between sexual orientations may have been exposed to bias as comparison groups were unequal. Furthermore, the sample was highly educated, with inputs from 2 diverse countries (Portugal and Brazil). Forthcoming research should comprise more diverse samples and other research approaches, such as face-to-face studies or qualitative studies. Also, longitudinal studies could be significant contributions to evaluate the long-term impacts of the COVID-19 pandemic on anxiety symptomatology in sexual minority populations.

Nevertheless, ours was an important contribution to the assessment of in what way the COVID-19 pandemic has unequally impacted on the mental health of people. Individuals who preexisted in susceptible psychosocial circumstances were the ones who felt more penalties from the pandemic, and this negative influence emphasizes the necessity for additional investigation in the arena of mental health, particularly among more vulnerable groups. Knowing that the consequences of the COVID-19 pandemic may be prolonged throughout time, it would be crucial to formulate mental health intervention strategies to respond to the necessities and problems of the individuals most at risk, such as females and LGB people. Our research delivers a very significant contribution to the understanding of the factors resulting from the pandemic that may impact the mental health of sexual minorities.

Ethics Committee Approval: Ethics committee approval was received for this study from the Ethics Committee of the University of Beira Interior (Approval Date: December 7, 2020; Approval Number: CEUBI-Pj-2020-088).

Informed Consent: Informed consent was obtained from the individuals who participated in this study.

Peer Review: Externally peer-reviewed.

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Data Availability Statement: The data presented in this study are available upon request.

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