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In the same storm, but on different boats: The social determination of mental health during COVID-19

Na mesma tempestade, mas em barcos diferentes: a determinação social da saúde mental na COVID-19

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Abstract

Objective
The social and health scenario of the pandemic caused by COVID-19 had an impact on the mental health of the population, characterized by strong health inequities. Faced with this problem, this study aimed to analyze the predictor variables of mental health in Brazilians during the pandemic, identifying the most vulnerable groups.

Method
An online survey was carried out, with a non-probabilistic sample of 1.397 Brazilians, who answered a biodemographic and general health questionnaire, analyzed using descriptive and analytical statistics.

Results
It was identified that being female, non-heterosexual, unemployed, with low income, and history of mental health comorbidities are predictors of mental health problems. In addition to these, the sample comparisons revealed other groups with greater susceptibility: single and divorced, without religion, with history of COVID-19, maintaining social distancing, and bereaved.

Conclusion
There are groups with greater vulnerability to mental health problems, requiring health policies for prevention and health promotion that are appropriate for different social groups.

Keywords: Coronavirus infections; Mental health; Social determination of health.

Resumo

Objetivo

O cenário social e sanitário da pandemia de COVID-19 repercutiram na saúde mental da população, marcada por fortes iniquidades em saúde. Diante desse problema, o presente estudo objetivou analisar as variáveis preditoras da saúde mental de brasileiros durante a pandemia, identificando os grupos mais vulneráveis.

Método

Realizou-se um levantamento online, com amostra não probabilística de 1.397 brasileiros, que responderam a um questionário biodemográfico e ao Questionário de Saúde Geral, analisados por meio de estatística descritiva e analítica.

Resultados

Identificou-se que ser do sexo feminino, não heterossexual, desempregado, com baixa renda e comorbidade prévia em transtornos mentais são preditores de problemas em saúde mental. Além desses, as comparações amostrais revelaram outros grupos com maior susceptibilidade: solteiros e divorciados, sem religião, com histórico de COVID-19, em distanciamento social e enlutados.

Conclusão

Existem grupos com maior vulnerabilidade a problemas de saúde mental, sendo necessárias políticas de saúde de prevenção e promoção da saúde adequadas aos diferentes grupos sociais.

Palavras-chave: *Infecções por coronavírus; Saúde mental; Determinação social da saúde.*

At the end of 2019, the world was impacted by the emergence of a new coronavirus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which causes the Coronavirus Disease 2019 (COVID-19). In a few months, the condition spread quickly and silently across all continents, leading the World Health Organization (WHO) to declare a state of pandemic in March 2020 (World Health Organization, 2020).

The high number of deaths, the exhaustion of health services and the lack of vaccines, created just one year later, indicated the need for interventions to reduce the spread of the disease (Faro et al., 2020; Hildebrandt et al., 2022). With this mission in mind, since the beginning of the pandemic, the WHO has guided different non-pharmacological measures to prevent and contain the disease, such as the adoption of personal hygiene etiquette rules (face masks, hand washing, and hand sanitizers), quarantine (for infected people), social isolation (for those who had contact with sick people), social distancing (to avoid crowding of the general population) and, in stricter cases, lockdown (with the closure of stores, malls, schools/universities, and all services considered non-essential) (World Health Organization, 2020).

Such prevention measures, added to the health, economic, social, and political context, despite having proven their effectiveness and being guided by international and national scientific and health organizations (Brooks et al., 2020; Hildebrandt et al., 2022), have changed the way routine and life of the population (Faro et al., 2020; Ferreira et al., 2022; Ivatiuk et al., 2022). Furthermore, it is noted that COVID-19, in addition to being a disease that, from an epidemiological point of view, generated more than 270 million cases and more than 5 million deaths worldwide by the end of 2022, has indicators that point to a disease that is also social (Crepaldi et al., 2020). In addition to the increase in case and death rates, there is an increase in levels of unemployment, hunger, school dropouts, domestic violence, and psychic illnesses.

This context attracted the attention of researchers from all over the world, who dedicated efforts to apprehending the experience and analyzing indicators, correlated factors, and predictors of psychological illness. Its results detected that, among the procedural, multifactorial and dynamic aspects that are related to mental health damage in the context of COVID-19, there are: social

isolation (Faro et al., 2020; Ivatiuk et al., 2022); the loss of face-to-face social connections (Crepaldi et al., 2020); the uncertainty and unpredictability of the future (Weaver & Wiener, 2020); the risk or actual loss of employment and income (Maia & Dias, 2020); the feeling of vulnerability with the risk of illness and death (Crepaldi et al., 2020; Maia & Dias, 2020); the losses of loved ones (Crepaldi et al., 2020); the excess of information in the media and on social networks about the rates of illness, death, and exhaustion of health services (Duarte et al., 2020; Faro et al., 2020); and contradictions in the information made available – on the one hand, scientific and health institutions advising on the severity of the disease and the need for social isolation, and on the other hand, some government officials minimizing the health situation and the importance of preventive measures (Gao et al., 2020; Van Bavel et al., 2020).

Studies dedicated to the analysis of the mental health of the population during the pandemic have indicated that this new health and social context has generated an increase in anxiety and depression indicators (Enumo et al., 2020; Ivatiuk et al., 2022; Liu et al., 2020; Maia & Dias, 2020; Wang et al., 2020; Zhao, 2020). In some countries, including Brazil, this situation has worsened with the social, economic, political scenario and with the great vulnerability of the population, characterized by strong social injustice, which causes inequalities between groups and generates inequities in health, which interfere directly or indirectly in the conditions of the health and disease process (Buss & Pelegrini Filho, 2007). Traces of an old reality, but which gain greater evidence during the pandemic, especially from the widely spread metaphor that states: "We are all in the same storm, but on different boats".

In this discussion, the concept of Social Determination of Health (SDH) is rescued (Garbois et al., 2017). From this perspective, a critique of the biomedical paradigm and the reductionism of the linear, unidimensional, biological, and individual explanation of the health-disease process is revealed. It requires an expanded understanding of this binomial, from a holistic and ecological perspective that encompasses the different and complex dimensions reflected in life in society (Dimenstein et al., 2017). To this end, it considers the dynamic processes in their social, cultural, economic, ethnic/racial, psychological, and behavioral dimensions, which influence the occurrence of health problems and their risk factors in the population (Garbois et al., 2017).

In line with the logic of the social production of health, in the Constitution of Brazil, it is understood that health is "resulting from the conditions of food, housing, educational level, income, environment, work and transportation, employment and leisure, freedom, possession of land, and access to health services" (Ministério da Saúde, 1986, p. 4). That is, health should never be reduced to an exclusively biological understanding or justified only by personal behaviors and lifestyles.

In the context of a pandemic, the SDH reflects that the risk or effectiveness of contagion by COVID-19 cannot be explained only by the desire or decision of individuals to adhere to prevention guidelines, such as the adoption of hygiene etiquette rules and maintenance of social distancing. The holistic and ecological perspective includes other determinants that influence vulnerability to contagion, such as working conditions and income in the midst of the economic crisis, housing and transportation conditions, educational level, and access to health services (Dimenstein et al., 2017).

Justified by these multiple determinations, characterized by social inequalities and health inequities, the context of a pandemic reveals that, despite COVID-19 being a disease susceptible to everyone, there are groups with greater vulnerability and risk of contagion and lethality, such as: self-employed people who, in search of family support, cannot follow social isolation; people who have to use crowded public transport; families who share the household with several family groups or a lot of people, etc. (Ruprecht et al., 2021).

In the same line of reasoning, based on the perspective of the social production of health, it can be said that mental health in the pandemic must be apprehended from these different historical, social, and cultural aspects. This means that mental health is not reduced to individual biological components, such as the ability to manage emotions and feelings, but is also influenced by aspects such as working conditions, income and housing, availability of leisure areas in open spaces and the existence of social and support network (Dimenstein et al., 2017).

These health inequities, despite gaining emphasis in discussions during the COVID-19 pandemic, have no representation in scientific research, being ignored or presented only as secondary data. However, based on this peripheral material from research on mental health carried out during COVID-19 and in previous pandemics, possible groups of greater vulnerability and risk of psychic illness are recognized, namely: older adults and/or people who belong to the group at risk of COVID-19 or live with people in the risk group (Duarte et al., 2020; Liu et al., 2020); women (Santos et al., 2021; Wang et al., 2020), LGBTTQIA+ population (people of different sexual orientations and gender identities) (Melin et al., 2021; Moore et al., 2021; Ruprecht et al., 2021); blacks and the indigenous population (Baqui et al., 2020; Ruprecht et al., 2021; Yancy, 2020); students, unemployed, and self-employed (Teixeira et al., 2021); people with lower educational level and income (Duarte et al., 2020; Zhao, 2020); single/divorced/widowed individuals (Liu et al., 2020); those living in countryside cities and in the most affected regions (Baqui et al., 2020; Zhao, 2020); people with history of psychological comorbidities prior to COVID-19 (Brooks et al., 2020; Faro et al., 2020); survivors – people who have history of COVID-19 (Wei et al., 2020; Zhao, 2020); people in social isolation (Brooks et al., 2020; Faro et al., 2020); frontline health professionals (Liu et al., 2020; Santos et al., 2021); and individuals bereaved by the death of a loved one during the COVID-19 pandemic (Crepaldi et al., 2020).

From the analysis of the mental health panorama in the pandemic and of health inequities, present in the population of different countries, it becomes important to identify the population groups most vulnerable to psychological illness in the context of COVID-19 (Dimenstein et al., 2017). The debate on SDH during the global health crisis can contribute to producing knowledge and feeding international scientific databases. It can also support the review of public policies aimed at mitigating the country's social inequalities and the creation of specific mental health actions to prevent injuries and promote health that are based on and radically extract the principles of universality, equity, and integrality of the *Sistema Único de Saúde* (Unified Health System) (Buss & Pelegrini Filho, 2007). Faced with this demand, the present research aimed to analyze the predictive variables of mental health, more precisely general health, anxiety, and depression of Brazilians during COVID-19, identifying the most vulnerable groups.

Method

This is a quantitative, cross-sectional, descriptive, and inferential study of a national survey. With this design, a phenomenon and its associated factors can be described (Paranhos et al., 2016).

Participants

A non-probabilistic convenience sample comprised of 1,397 Brazilians was used. As inclusion criteria, it was considered: being Brazilian, living in the country, and being over 18 years old. People without internet access and/or illiterate people unable to read the research instruments were excluded.

From the description of the sociodemographic data, it was found that the mean age of the participants was 32.11 years (*SD* = 11.89). Most of them were women (n = 1041; 74.5%), heterosexual (*n* = 1192; 85.3%), white (*n* = 836; 59.8%), college graduates (*n* = 459; 32.9%), single (*n* = 801; 57.3%), Catholics (*n* = 695; 49.7%), and people who attended a religious center before the pandemic (*n* = 734; 52.5%).

Those who had formal work predominated (*n* = 553; 39.6%) and had an income of 5 to 10 minimum salaries (BRL 5,226.00 to BRL 10,450.00) (*n* = 342; 24.5%). Most lived in the Northeastern region (*n* = 1007; 72.1%), in capital cities (*n* = 1084; 77.6%), and did not have children at home (*n* = 1044; 74.7%).

Most participants already had symptoms of mental illnesses before the pandemic (*n* = 828; 59.3%) and did not undergo psychological/psychiatric treatment or follow-up (*n* = 782; 56.00%). Most of these individuals: were not part of the COVID-19 risk group (*n* = 1148; 82.20%), but lived or had social interactions at home with someone who is part of these groups (*n* = 830; 59.40%); had not been infected with the coronavirus (*n* = 1045; 74.80%); had not been hospitalized due to COVID-19 complications (*n* = 1377; 98.60%); were not health professionals (*n* = 1233; 88.30%); were in voluntary social isolation (*n* = 715; 51.20%); and did not lose a loved one due to COVID-19 (*n* = 1129; 80.80%).

Instruments

Two instruments were applied:

Socio-demographic questionnaire – It contains questions about age, gender, educational level, occupation classification (employed, unemployed, self-employed, retiree, student), occupation of risk professions (health professional), income, marital status, having a child in the household, religion, region of residence, residing in capital or countryside, adherence to isolation and social distancing, history of COVID-19, and experience of bereavement.

General Health Questionnaire (QSG-12) – Validated in Brazil by Gouveia et al. (2003), it aims to perform the tracking of common mental disorders. The instrument consists of 12 items, divided into three subscales: general health, based on the sum of the 12 items ($\alpha = 0.86$; $\omega = 0.87$); depression, with 8 items ($\alpha = 0.81$; $\omega = 0.78$); and anxiety, with 4 items ($\alpha = 0.69$; $\omega = 0.68$). The questionnaire is answered using a Likert scale that can vary between 1 and 4 points, requiring the inversion of positive items. For the interpretation of the data, the mean value of the scores in the three subscales was calculated, which, in the end, can vary between 1 and 5 points. It is understood that higher scores indicate low levels of mental health, that is, general health deficit, as well as a greater presence of depression and anxiety symptoms.

Procedures

Considering the ethical aspects related to research involving human beings, the present study was approved by the Research Ethics Committee of the Universidade de Fortaleza (Unifor, University of Fortaleza), under opinion nº 4.460.534. Then, the instruments were inserted into an online platform (Google Forms) and their weblink was posted on social networks (Facebook, WhatsApp, and Instagram) through the profile of a group of researchers, with postings in heterogeneous groups, for 30 days (15/February–17/March/2021), at the beginning of the second wave of COVID-19 in Brazil. After posting, people who followed these networks could, autonomously, enter the questionnaire and answer it individually, self-administered and anonymously. The procedures used in this research complied with the Criteria of Ethics in Research with Human Beings, based on Resolution 466/2012 of the National Health Council.

Analyses were performed using the IBM®SPSS® (version 25), in two stages. Initially, analyses of descriptive statistics were carried out, involving measures of central tendency and frequency analysis, to assess the sociodemographic variables and describe the sample, and to verify the scores of the QSG-12 subscales – general health, depression and anxiety.

In the second stage, sample comparison tests regarding general health, depression, and anxiety scores were carried out between groups according to those with greater mental health vulnerability – sociodemographic data (gender, sexual orientation, age, race, religion, region of the country, residence in capital or countryside, educational level, income, marital status, having a child in the household, occupation) and data related to the pandemic (acting as a frontline professional, being part of or living with people from risk groups for COVID-19, having record of COVID-19, presence of previous comorbidity in mental health, bereavement due to COVID-19, adherence to social isolation).

Finally, to better explore the relationships between the studied variables and the mental health constructs, two biserial point correlation analyses were performed, seeking associations between depression and anxiety and the other variables collected in the study. Subsequently, two multiple linear regression analyses were carried out, allowing a greater detailing of the predictive behavior of the variables on mental health indices. In the first linear regression model, depression rates were considered as a dependent variable, and in the second model, anxiety was configured as a dependent variable.

To enable the analyses, the significant variables in the sample comparisons were adapted in binary format to be used as independent variables: gender (female = 0; male = 1), sexual orientation (LGBTQIA+ = 0; heterosexual = 1), occupation (unemployed = 0; employees = 1), income (below 3 thousand reais = 0; above 3 thousand reais = 1), marital status (single, widowed, divorced = 0; married = 1), religion (no religion = 0; with religion = 1), region of the country (Midwest, Southeast and South = 0; North and Northeast = 1), presence of previous comorbidity in mental health (presence of comorbidities = 0; absence of comorbidities = 1), history of infection by COVID-19 (yes = 0; no = 1), social isolation (adhered to isolation = 0; did not adhere to isolation = 1), health professional (yes = 0; no = 1) and, finally, loss of a loved one and bereavement (yes = 0; no = 1).

Parametric tests were used for inferential statistics (Student's *t* test, Anova, and Pearson's coefficient). This decision was based on the central limit theorem, which considers that, as the sample size increases, the distribution of its mean tends towards a normal distribution, consequently, in large samples the effects of the non-normality of the variables are reduced, allowing the use of parametric tests (Dancey & Reidy, 2020; Tabachnick & Fidell, 2018).

Results

Indicators of Mental Health Problems

In the QSG-12 factors (Gouveia et al., 2003), with a variable score between 1 and 4 points (midpoint 2.5), a mean score of 2.30 points was found in the general health factor (*SD* = 0.61), 2.55 points for anxiety (*SD* = 0.64), and 2.18 points for depression (*SD* = 0.66). The general health and depression scores are below the midpoint (Table 1) and the anxiety score is above the midpoint, but all three signaled an alert for symptoms of mental health illness.

Table 1
Descriptive statistics of mental health indicators

Variables	Minimum possible	Midpoint	Maximum possible	Minimum obtained	Maximum obtained	*M*	*SD*
General health	1	2.5	4	1.00	4.00	2.30	0.61
Anxiety	1	2.5	4	1.00	4.00	2.55	0.64
Depression	1	2.5	4	1.00	4.00	2.18	0.66

Differences in Indicators of Mental Health Problems Between Groups

Next, comparisons of different mental health indices (General Health, Depression, and Anxiety) were performed between groups according to sociodemographic and clinical data that could be associated with greater vulnerability in mental health. No differences were found in the comparisons according to race and educational level or between the general population and older adults, people who had or did not have children in the household, region of residence (capital, metropolitan area, or countryside), and whether the participant was part of a risk group for COVID-19 or lived with people from risk groups. Below, only the assessments that stood out for the existence of statistically significant differences will be described.

First, there was a statistically significant difference in general health indices [t (1395) = 3.941; $p < 0.001$], depression [t (1395) = 3.200; $p < 0.001$], and anxiety [t (1395) = 4.642; $p < 0.001$] among participants according to gender. Women had higher scores, representing greater symptomatology in general health, depression, and anxiety than men (Table 2). Comparing sexual orientation, there was also a statistically significant difference in general health indices [t (1233) = -3.374; $p < 0.001$], anxiety [t (1233) = -3.396; $p < 0.001$], and depression [t (1233) = -2.873; $p < 0.001$]. In all cases, LGBTQIA+ subjects had worse mental health scores than those who were heterosexual (Table 2).

Mental health rates were also compared among participants by type of occupation. It was found that there was a statistically significant difference in general health indices [F (4.1392) = 28.191; $p < 0.001$], anxiety [F (4.1392) = 13.728; $p < 0.001$], and depression [F (4.1392) = 12.407; $p < 0.001$]. All indices were higher among the unemployed, followed by students, self-employed workers, and retirees, the latter being the ones with the best mental health indices (Table 2). Comparing family income, it was found that there was a statistically significant difference in general health indices [F (5.1391) = 10.925; $p < 0.001$], anxiety [F (5.1391) = 6.445; $p < 0.001$], and depression [F (5.1391) = 11.787; $p < 0.001$]. All indices showed that mental health illness levels were greater in the poorest classes and that, as the income strata increases, the symptoms decrease (Table 2).

There was a statistically significant difference between subjects with different marital status in general health indices [F (3.1393) = 25.315; $p < 0.001$], anxiety [F (3.1393) = 12.357; $p < 0.001$], and depression [F (3.1393) = 27.551; $p < 0.001$]. All indices showed that mental health illness levels are higher among single people than married and divorced people, the latter being the one with the least symptomatology (Table 2).

When comparing groups with different religious beliefs, it was found that there was a statistically significant difference in general health indices [t (586.128) = 5.451; $p < 0.001$], anxiety [t (1395) = 4.632; $p < 0.001$], and depression [t (574.640) = 5.359; $p < 0.001$]. All indices showed that mental health illness levels were higher in people who had no religion (Table 2). Similarly, it was found that there were statistically significant differences in general health indices [t (1395) = -5.938; $p < 0.001$], anxiety [t (1395) = -4.590; $p < 0.001$], and depression [t (1395) = -5.982; $p < 0.001$] between religiously active and inactive groups. All indices showed greater mental health illness levels in people who no longer attended religious centers before the pandemic (Table 2).

Table 2
Mental health scores of groups with statistically significant difference (N=1397)

Groups	Variables		
	General health	Anxiety	Depression
		M ± SD	
Gender			
Male	2.19 ± 0.03	2.40 ± 0.03	2.08 ± 0.03
Female	2.33 ± 0.01	2.59 ± 0.02	2.21 ± 0.02
Sexual orientation			
Heterosexual	2.33 ± 0.01	2.49 ± 0.01	2.23 ± 0.01
Homosexual	2.65 ± 0.04	2.86 ± 0.04	2.58 ± 0.04
Occupation			
Unemployed	2.62 ± 0.06	2.73 ± 0.07	2.57 ± 0.07
Self-employed	2.23 ± 0.03	2.51 ± 0.03	2.09 ± 0.03
Employed	2.16 ± 0.02	2.44 ± 0.02	2.02 ± 0.02
Retiree	2.01 ± 0.08	2.25 ± 0.11	1.89 ± 0.08
Family income			
Up to 1 minimum salary	2.46 ± 0.61	2.68 ± 0.64	2.35 ± 0.66
From 1 to 3 minimum salaries	2.44 ± 0.63	2.61 ± 0365	2.35 ± 0.68
From 3 to 5 minimum salaries	2.33 ± 0.57	2.57 ± 0.60	2.21 ± 0.62
From 5 to 10 minimum salaries	2.30 ± 0.61	2.56 ± 0.64	2.16 ± 0.66
From 10 to 15 minimum salaries	2.27 ± 0.58	2.58 ± 0.65	2.11 ± 0.62
More than 15 minimum salaries	2.08 ± 0.59	2.34 ± 0.63	1.95 ± 0.63
Marital status			
Single	2.41 ± 0.02	2.63 ± 0.02	2.31 ± 0.02
Married/ stable union	2.14 ± 0.02	2.43 ± 0.02	2.00 ± 0.02
Divorced	2.05 ± 0.06	2.36 ± 0.07	1.90 ± 0.07
Widowed	2.35 ± 0.14	2.61 ± 017	2.23 ± 0.017
Religiosity			
Does not have a religion	2.45 ± 0.03	2.67 ± 0.03	2.34 ± 0.03
Has a religion	2.22 ± 0.02	2.46 ± 0.02	2.10 ± 0.02
Religious participation			
Religiously active	2.34 ± 0.03	2.49 ± 0.01	2.11 ± 0.01
Religiously inactive	2.24 ± 0.01	2.67 ± 0.03	2.34 ± 0.03
Prior mental health comorbidity			
With comorbidity	2.47 ± 0.02	2.71 ± 0.02	2.35 ± 0.02
Without comorbidity	2.04 ± 0.02	2.29 ± 0.02	1.91 ± 0.02
History of COVID-19			
Has been infected	–	2.63 ± 0.03	–
Has not been infected	–	2.51 ± 0.01	–
Adherence to social distancing			
Already isolated	2.34 ± 0.02	2.58 ± 0.02	2.22 ± 0.02
Has been isolated	2.28 ± 0.02	2.52 ± 0.02	2.16 ± 0.02
Has never been isolated	2.13 ± 0.05	2.42 ± 0.06	1.98 ± 0.05
Frontline health professional			
Health professional	2.18 ± 0.04	–	2.0 ± 0.04
General population	2.31 ± 0.01	–	2.1 ± 0.01
Loss and bereavement in the pandemic			
Bereaved	2.53 ± 0.10	2.7 ± 0.08	2.4 ± 0.12
Did not lose a loved one	2.29 ± 0.01	2.5 ± 0.01	2.1 ± 0.01

There was a statistically significant difference depending on the presence of previous comorbidity in mental health in general health indices [t (1395) = 8.438; $p < 0.001$], anxiety [t (1395) = 8.785; $p < 0.001$], and depression [t (1395) = 7.381; $p < 0.001$]. All indices showed that subjects who had a history of mental illness symptoms prior to the pandemic were higher than the others (Table 2).

There was a statistically significant difference depending on prior history of COVID-19 in anxiety indices [t (1395) = 2.897; $p < 0.001$], with no significant difference in general health and depression. The indices showed that subjects who already had the disease had a higher level of anxiety than the others (Table 2). Comparing adherence to social distancing, it was found that there

was a statistically significant difference in general health indices [F (2.1394) = 6.754; p < 0.001], anxiety [F (2.1394) = 3.668; p < 0.05], and depression [F (2.1394) = 7.161; p < 0.001]. All indices showed that mental health illness levels were greater among people who were in social isolation, followed by those who had already been in social isolation and no longer were, and those who had never been in social isolation, and the latter had lower mental health impairment levels (Table 2).

It was also found that health professionals had a statistically significant difference in general health [t (1395) = -2.542; p < 0.05] and depression indicators [t (1395) = -2.912; p < 0.001], with no significant difference in the level of anxiety. The indices showed that the general population had worse indicators than health professionals (Table 2).

Finally, comparisons were made between the participants by the experience of loss of a loved one and bereavement (parents, grandparents, children, and siblings). There was a statistically significant difference in general health indices [t (1395) = 2.314; p < 0.05], anxiety [t (1395) = 2.329; p < 0.05] and depression [t (1395) = 2.214; p < 0.05]. Participants who suffered bereavement had worse mental health indices than those who had not lost a loved one (Table 2).

Related Factors and Predictors of Mental Health During COVID-19

From the biserial point correlation between the depression indices and the other study variables, it can be seen that depression was negatively, weakly and significantly correlated with gender (ρ = -0.093**; p < 0.001), sexual orientation (ρ = -0.236**; p < 0.001), occupation (ρ = -0.211**; p < 0.001), income (ρ = -0.158**; p < 0.001), marital status (ρ = -0.200**; p < 0.001), previous mental health comorbidity (ρ = -0.331**; p < 0.001), religion (ρ = -0.136**; p < 0.001), loss of a loved one and bereavement (ρ = -0.054*; p < 0.05), adherence to social distancing (ρ = -0.058*; p < 0.05), and positively, weakly, and significantly related to being a health professional (ρ = 0.072**; p < 0.001).

Based on these analyses, it was verified that higher rates of depression were associated with women, LGBTQIA+ orientation, unemployment, lower income, not being married, presence of previous comorbidity in mental health, absence of religion, having lost a loved one, being in social isolation, and not being a health professional.

The variables that were significant in the correlation were added in a linear regression model as independent variables for greater data detail. When analyzing the first multiple linear regression, in which depression was the dependent variable, a statistically significant model can be seen [F (6.1390) = 36.786; p < 0.001; R^2 = 19.6%], in which the previous comorbidity in mental health (R^2 = 8.20%; β = -0.259), occupation (R^2 = 4.90%; β = -0.194), sexual orientation (R^2 = 4.10; β = -0.201), income (R^2 = 1.40%; β = -0.118), being a health professional (R^2 = 0.50; β = 0.069), and gender variables (R^2 = 0.50; β = -0.075) were statistically significant in the model, being predictive of depression rates. It is understood, therefore, that people with previous comorbidity in mental health, unemployed, LGBTQIA+, with low income, women, and non-health professional may have higher rates of depression (Table 3).

With regard to anxiety, a negative, weak and significant correlation was found regarding gender (ρ = -0.119**; p < 0.001), sexual orientation (ρ = -0.209**; p < 0.001), occupation (ρ = -0.122**; p < 0.001), income (ρ = -0.083**; p < 0.001), religion (ρ = -0.128**; p < 0.001), previous mental health comorbidity (ρ = -0.310* *; p < 0.001), history of COVID-19 (ρ = -0.085**; p < 0.001), loss of a loved one and bereavement (ρ = -0.065*; p < 0.05), marital status (ρ = -0.138*; p < 0.05), and adherence to social isolation (ρ = -0.053*; p < 0.05). It was found, therefore, that higher anxiety rates were associated with being female, LGBTQIA+, unemployed, with lower income, not having a religion,

with the presence of previous comorbidity in mental health, having had COVID-19, having lost a loved one, being in social isolation, not being married and being in social isolation.

Variables that were significant were added in a second multiple linear regression model as independent variables, with anxiety as the dependent variable. A statistically significant model can be seen [F (5.1390) = 30.156; $p < 0.001$; R^2 = 14.20%], in which the previous comorbidity in mental health (R^2 = 9.20%; β = -0.277), sexual orientation (R^2 = 2.30; β = -0.156), occupation (R^2 = 1.30%; β = -0.102), gender (R^2 = 0.90; β = -0.093), and income variables (R^2 = 0.50%; β = -0.069) were statistically significant for the model, being understood as predictors of anxiety indices. It is understood that people with prior comorbidity in mental health, non-heterosexual, unemployed, female, and with low income levels may have higher levels of anxiety (Table 3).

Table 3
Multiple linear regressions considering depression and anxiety as dependent variables (N=1397)

Dependent Variable (Model)	Independent Variable	R^2 (%)	β	$p <$
Depression	Comorbidity in mental health	8.20	-0.259	0.001
F (6.1390) = 36.786**	Occupation	4.90	-0.194	0.001
R^2 = 19.60%)	Sexual orientation	4.10	-0.201	0.001
	Income	1.40	-0.118	0.001
	Health professional	0.50	0.069	0.001
	Gender	0.50	-0.075	0.001
Anxiety	Comorbidity in mental health	9.20	-0.277	0.001
F (5.1390) = 30.156**	Sexual orientation	2.30	-0.156	0.001
R^2 = 14.20%)	Occupation	1.30	-0.102	0.001
	Gender	0.90	-0.093	0.05
	Income	0.50	-0.069	0.05

Note: **p-value is less than 0.001 ($p < 0.001$).

Discussion

Based on sample comparisons, the literature produced during the COVID-19 pandemic was corroborated, noting that there are statistically significant differences between population groups, in which female participants (Santos et al., 2021; Wang et al., 2020), people with diverse non-normative sexual orientations (Melin et al., 2021; Moore et al., 2021; Ruprecht et al., 2021), with lower income (Duarte et al., 2020; Zhao, 2020), students, unemployed and self-employed individuals (Duarte et al., 2020; Zhao, 2020), single people (Duarte et al., 2020; Zhao, 2020), those who had no religion, residents of the most affected regions during data collection (the Southern region [Baqui et al., 2020; Zhao, 2020]), people with prior mental health comorbidity (Brooks et al., 2020; Faro et al., 2020), with history of COVID-19/survivors (Wei et al., 2020; Zhao, 2020), in social distancing (Brooks et al., 2020; Faro et al., 2020), non-health professionals, and bereaved have worse mental health indices (Crepaldi et al., 2020). Regression analyses also indicated that having a previous comorbidity in mental health, being non-heterosexual, unemployed, female, and with low income levels are predictors of anxiety and depression during COVID-19.

These data reinforce that the pandemic context, and the health, social, economic, and political conditions, affected the mental health of the population (Faro et al., 2020), and increased anxiety and depression indicators (Enumo et al., 2020; Liu et al., 2020; Maia & Dias, 2020; Wang et al., 2020; Zhao, 2020). Therefore, they show that COVID-19, in addition to being a disease from an epidemiological point of view, is also a social disease (Crepaldi et al., 2020).

It is also confirmed that, although COVID-19 and its effects on mental health are susceptible to everyone, in countries like Brazil, with greater social injustice, population inequalities, and, consequently, health inequities, there are groups with greater vulnerability and risk (Ruprecht et al., 2021), due to different social determinants of health (Buss & Pelegrini Filho, 2007; Garbois et al., 2017). These groups are affected by different dynamic processes, in their social, cultural, economic, ethnic/racial, psychological, and behavioral dimensions, which influence the occurrence of mental health problems (Dimenstein et al., 2017; Garbois et al., 2017).

It can be inferred that belonging to minority social groups (women and with diverse sexual orientation), having more perverse social and economic conditions (poor, with lower income, and without a stable employment relationship), less coping resources and social support (no religion and single) and having factors related to greater risk in the pandemic context (greater isolation, history of mental health illnesses and COVID-19, and bereaved by the loss of a loved one due to the pandemic) are related to greater vulnerability. This is because mental health is influenced by individual skills and behaviors, but also by aspects such as working conditions, income and housing, availability of leisure areas in open spaces, and social and support networks (Dimenstein et al., 2017), factors that were compromised more intensely in some groups during the pandemic.

Conclusion

From the present study, it was possible to identify that being female, non-heterosexual, unemployed, with low income and previous comorbidity in mental health is a predictor of mental health symptoms during COVID-19. In addition to these, sample comparisons indicated other groups with greater vulnerability: single and divorced, without religion, with a history of COVID-19, in social distancing and bereaved. Such data confirm that "we are all in the same storm, but on different boats".

Like every scientific enterprise, although the results of the present study are theoretically consistent and represent a relevant contribution to the analysis of the social determinants of mental health in the pandemic, the present research has some limitations. The main one refers to the non-probabilistic sample and primarily from the Northeastern region, women, and highly educated, which cannot be considered as representative of the Brazilian population. It is clarified, however, that the purpose of this study is not to generalize the results, but to explore the differences between groups.

Another limitation of the study refers to the online collection procedure, which made it impossible for people without internet access or with reading limitations to participate. This was, however, a methodological decision based on cost-effectiveness, as it allowed reaching sample groups from different regions of Brazil, which can also be considered a positive differential of the present study.

It reinforces the need for more research addressing the mental health of different groups during COVID-19. It is suggested that this study be replicated at different stages of the pandemic, in order to understand the impact of the peaks and valleys of the disease on mental health, and that research with a longitudinal design be carried out to assess people over long periods. Carrying out a study on this topic contributes to producing knowledge and feeding international scientific databases. Apprehension about inequalities in mental health during the pandemic and identification of the most vulnerable population groups can offer subsidies to government officials to formulate more effective public policies and intervention strategies aimed at mitigating social and mental health inequalities in the country.

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Contributors

C. F. MELO was responsible for the study conception and design, data analysis and interpretation, and writing the article. I. M. COSTA and A. L. V. PINHEIRO collaborated with data collection, analysis, interpretation, and discussion, and in the revision of the final version. R. S. F. ALVES and E. M. F. SEIDL were responsible for data analysis, interpretation, and discussion, and for reviewing the final version of this article.