Report on sadness/depression, nervousness/anxiety and sleep problems in the Brazilian adult population during the COVID-19 pandemic

Marilisa Berti de Azevedo Barros[1] – ⊚ orcid.org/0000-0003-3974-195X
Margareth Guimarães Lima[1] – ⊚ orcid.org/0000-0001-6996-0745
Deborah Carvalho Malta[2] – ⊚ orcid.org/0000-0002-8214-5734
Célia Landmann Szwarcwald[3] – ⊚ orcid.org/0000-0002-7798-2095
Renata Cruz Soares de Azevedo[4] – ⊚ orcid.org/0000-0002-7098-7109
Dalia Romero[3] – ⊚ orcid.org/0000-0002-2643-9797
Paulo Roberto Borges de Souza Júnior[3] – ⊚ orcid.org/0000-0002-8142-4790
Luis Otávio Azevedo[3] – ⊚ orcid.org/0000-0002-4876-5948
Ísis Eloah Machado[5] – ⊚ orcid.org/0000-0002-4678-2074
Giseli Nogueira Damacena[3] – ⊚ orcid.org/0000-0002-7059-3353
Crizian Saar Gomes[2] – ⊚ orcid.org/0000-0001-6586-4561
André de Oliveira Werneck[6] – ⊚ orcid.org/0000-0002-9166-4376
Danilo Rodrigues Pereira da Silva[7] – ⊚ orcid.org/0000-0003-3995-4795
Maria de Fátima de Pina[3] – ⊚ orcid.org/0000-0002-1521-7865
Renata Gracie[3] – ⊚ orcid.org/0000-0003-0225-3696

[1]Universidade Estadual de Campinas, Departamento de Saúde Coletiva, Campinas, SP, Brazil
[2]Universidade Federal de Minas Gerais, Escola de Enfermagem, Belo Horizonte, MG, Brazil
[3]Fundação Instituto Oswaldo Cruz, Instituto de Comunicação e Informação Científica e Tecnológica em Saúde, Rio de Janeiro, RJ, Brazil
[4]Universidade Estadual de Campinas, Departamento de Psicologia Médica e Psiquiatria, Campinas, SP, Brazil
[5]Universidade Federal de Ouro Preto, Departamento de Medicina de Família, Saúde Mental e Coletiva, Ouro Preto, MG, Brazil
[6]Universidade de São Paulo, Departamento de Nutrição, São Paulo, SP, Brazil
[7]Universidade Federal de Sergipe, Departamento de Educação Física, São Cristóvão, SE, Brazil

Abstract

Objective: To analyze the frequency of sadness, nervousness, and sleep disorders during the COVID-19 pandemic in Brazil, identifying the most affected demographic segments. **Methods:** This was a cross-sectional study using an online questionnaire answered by adults and elderly people to collect information on living conditions, health and health-related behaviors. Prevalence rates and prevalence ratios adjusted for age and sex were estimated. **Results:** The data on 45,161 Brazilian respondents showed that during the pandemic 40.4% (95%CI 39.0;41.8) frequently felt sad or depressed and 52.6% (95%CI 51.2;54.1) frequently felt anxious or nervous; 43.5% (95%CI 41.8;45.3) reported the onset of sleep problems and 48.0% (95%CI 45.6;50.5) had a prior sleep problem that had become worse. Frequent sadness and nervousness, as well as change in sleep patterns were higher in young adults, women and those with a history of depression. **Conclusion:** The high prevalence found indicates the need to guarantee the provision of services for mental health and quality of sleep that are adapted to the pandemic context.

Keywords: Depression; Anxiety; Sleep; Pandemics; Coronavirus Infections; Health Surveys.

Correspondence:
Marilisa Berti de Azevedo Barros – Universidade Estadual de Campinas, Departamento de Saúde Coletiva, Faculdade de Ciências Médicas, Rua Tessália Vieira de Camargo, No. 126, Barão Geraldo, Campinas, SP, Brazil. Postcode: 13083-894
E-mail: marilisa@unicamp.br

Introduction

When the first death due to COVID-19 (CoronaVirus Disease 2019) was notified in Brazil, on March 17th 2020, 20 days after the first case was recorded, the disease had already been declared a pandemic by the World Health Organization (WHO) and had been controlled for the most part in China. Europe had accumulated over 64,000 cases, with Italy being the most affected country.[1] At that time, Brazilian health authorities and government authorities, along with the most of the population, were accompanying the spread and the impacts of the pandemic in other countries.

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A large-scale Public Health event like this, caused by a new virus, requires efforts in countless areas, especially with regard to health service organization. The need to ensure adequate provision of intensive therapy unit (ITU) equipment and beds led health authorities and government authorities of all the countries most affected by the pandemic to recommend and decree, to a greater or lesser extent, duration and territorial extension, quarantine, social isolation or social distancing measures.[2,3]

In the face of contexts such as this, it is understandable that practical and scientific efforts are focused on the biological aspects of the disease in question.[4] However, the pandemic context and recommended control measures affect the population in many dimensions of living conditions and health status, in particular the mental health component. Presence of mental disorders, mental suffering and sleep pattern changes causes recognized negative effects on people's everyday life and quality of health and life, contributing to a relevant percentage of years lived with disability.[5,6] Mental disorders can become worse or become risk factors for chronic diseases[7] and viral diseases,[8] in addition to influencing adoption of health-related behaviors.[9] In periods of epidemics and social isolation, incidence or worsening of these conditions tend to increase.

A review undertaken by Brooks et al.,[2] of studies that analyzed the psychological impact of quarantine in previous epidemics, reports that the majority of the studies found negative psychological effects, and that the main stress factors identified were length of quarantine, fear of infection, feelings of frustration and annoyance, inadequate information about the disease and caring for it, financial losses and stigma associated with the disease. The studies they reviewed reported psychological symptoms, emotional disorders, depression, stress, depressive mood, irritability, insomnia and symptoms of post-traumatic stress among people in quarantine. Other aspects that are being identified as stress factors in the COVID-19 pandemic are the dissemination of false and scientifically unfounded information, alarming news and excessive time dedicated to the pandemic by news programs,[10] as well as concrete situations of lack of food, financial resources and medication for other diseases.[3,11]

The relevance of aspects during epidemic processes has led authors to identify, alongside the occurrence of COVID-19, "pandemic fear"[3] or "coronaphobia".[12] Studies conducted in China have reported high prevalence of depression and anxiety as a whole in the populations they studied and especially among some specific population segments, such as health workers.[5,10,13] Prevalence of depression and anxiety was higher among people who were obliged to stay in quarantine, when compared to those not affected by this measure.[14] A study conducted in the Basque country found high prevalence of depression and anxiety during the pandemic, with higher rates among females.[14]

Studies also indicate that individuals with mental disorders tend to have higher levels of stress and mental suffering during COVID-19 quarantine, compared to people without such disorders,[15] as a result of greater psychological vulnerability and other factors, such as difficulty in accessing treatment during the pandemic, for instance.[11] As such, observing the presence of sadness and anxiety during the pandemic, among people who do or do not have mental disorders such as depression, can help with the definition and/or guidance of specific policies for risk groups.

Considering the evidence as to the relevance of emotional and sleep problems, ,which either start or get worse in epidemic processes, the objective of this study was to analyze the frequency of sadness, nervousness and sleep pattern changes during the COVID-19 pandemic in Brazil, identifying the most effected demographic segments.

Methods

This cross-sectional study used data from the 'ConVid – Behavior Survey', an initiative of the Oswaldo Cruz Institute Foundation (Fiocruz), in partnership with the Federal University of Minas Gerais (UFMG) and the Campinas State University (Unicamp), collected between April 24th and May 24th 2020. ConVid is a health survey conducted by means of an online questionnaire, comprised of questions about sociodemographic characteristics and changes in lifestyles, routine activities, state of mind and health conditions, as well as access to health services, during the period of social distancing due to the COVID-19 pandemic.

The questionnaire was prepared with the aid of the RedCap application (Research Electronic Data Capture), which consists of a digital data collection, management and dissemination platform. It was answered via cell phones or computers with internet access.

Nonprobability sampling was used. Respondents were invited to take part in the survey by means of a snowball sampling procedure. In the first stage, each of the study's researchers chose a further 20 researchers from different Brazilian states referred to as influencers. The influencers sent the survey link to at least 12 people in their social networks, with stratification by sex, age range (in years: 18-39; 40-59; 60 and over) and level of schooling (incomplete high school education or lower; complete high school education or higher), in order to obtain a diversity of respondents. All these people were asked to invite a further three people from their social networks, and so on and so forth. Influencers were selected from all the country's macro-regions, with the aim of obtaining a nationwide sample. Information about the survey was also disseminated by means of press releases and announcements by the participating research institutions, State Health Departments and social media.

This study analyzed reports of feeling sad or depressed according to the answers to the following question:

During the pandemic, how frequently have you felt sad, crestfallen or depressed?

While reports of feeling anxious or nervous were analyzed based on the following question:

During the pandemic, how frequently have you felt worried, anxious or nervous?

The answer categories for both questions were '*Never*', '*Rarely*', '*Often*' and '*All the time*'.

With regard to sleep, we analyzed the following variables: 'began to have sleep problems during the pandemic' (among those who did not this problem before the pandemic) and 'sleep problems got worse' (among those who had this problem prior to the pandemic). These variables were built by asking the following question:

Has the pandemic affected the quality of your sleep?

The answer options for this question were '*It hasn't affected anything, I continue sleeping well*', '*I began to have sleep problems after the pandemic started*', '*I already had sleep problems and they're just the same*', '*I already had sleep problems and they've got considerably worse*' and '*I already had sleep problems, but they've reduced*'.

These variables were analyzed according to age group (in years: 18-29; 30-59; and over), sex and prior presence of depression.

The 'prior presence of depression or report of prior depression' variable was obtained by asking the following question:

Has a doctor ever diagnosed you as having any of these illnesses?

Depression was included among the list of six illnesses.

Post-stratification weighting was used based on the National Household Sample Survey (PNAD 2019) conducted by the Brazilian Institute of Geography and Statistics (IBGE), in order for the sample to have the same distribution by sex, age range, race/skin color and schooling as the Brazilian population as a whole. Prevalence rates and 95% confidence intervals (95%CI) were estimated for (i) feeling sad or depressed, (ii) feeling anxious or nervous and (iii) change in sleep quality, during the pandemic. Crude and adjusted prevalence ratios (PR) by sex and age were also calculated, as were p values and 95%CI according to age group, sex and prior depression, using multiple Poisson regression models. A 5% significance level was used in all the analyses. All the analyses were performed with the Stata 15.0 computer program, using its survey modules, which allow post-stratification weighting to be taken into consideration.

The study project was approved by the Fiocruz Research Ethics Committee (CEP/Fiocruz) and by the National Research Ethics Committee (CONPE)/National Health Council (CNS), as per Opinion No. 3.980.277, issued on April 19th 2020, and as per Certification of Submission for Ethical Appraisal (CAAE) No. 30598320.1.0000.5241. The Free and Informed Consent form was uploaded to the RedCap application. After having read about the survey and agreed to answering the questionnaire, respondents could download the Free and Informed Consent form to their cell phone or notebook.

Results

The results refer to data from a sample of 45,161 respondents, which included people from all the country's macro-regions (45.5% from the Southeast, 25.0% from the Northeast, 15.1% from the South, 7.7% from the North and 6.7% from the Midwest). Among the sample participants, 53.6% (95%CI 52.1;55.0) were female, 20.3% (95%CI 19.1;21.6) were aged 60 or over, and 24.7% (95%CI 23.5;25.9) were 18-29 years old; 14.9% (95%CI 13.9;15.8) had a history/prior diagnosis of depression. Among young adults (18-29 years old), 44.0% (95%CI 41.4;46.7) were students, and 19.2% (95%CI 17.1;21.4) were married. Among the elderly, 38.7% (95%CI 35.4;42.2) were retired and no longer worked.

The study revealed that during the period of the pandemic and social distancing analyzed, 40.4% (95%CI 39.0;41.8) of Brazilians felt sad or depressed often or all the time (Table 1), and an even higher percentage, 52.6% (95%CI 51.2;54.1), reported feeling anxious or nervous all the time or nearly all the time. Among adult Brazilians who did not have sleep problems before the pandemic, 43.5% (95%CI 41.8;45.3) started having sleep problems and, among those who reported prior history of sleep problems, the problem got worse for 48.0% (95%CI 45.6;50.5).

It can be seen that young adults in the 18-29 year age group were the most affected in relation to the problems listed (Table 2). Whereas 27.5% (95%CI 247;30.6) of elderly people reported feeling sad or depressed often or all the time, this feeling affected 53.8% (95%CI 51.1;56.4) of young adults; 9.1% (95%CI 7.8;10.5) of young adults reported feeling sad all the time, this percentage being 2.9 (95%CI 2.0;4.1) times greater than among elderly people. Feeling nervous or anxious

all the time or nearly all the time was also reported by 31.7% (95%CI 28.6;34.9) of elderly people and by 69.5% (95%CI 67.1;71.7) of young adults. Prevalence of feeling anxious/nervous all the time among young adults was 3.7 (95%CI 2.7;5.2) times greater than among elderly people. Also in comparison to the elderly, for young adults worsening of prior sleep problems was two times greater (95%CI 1.7;2.4), and the onset of sleep problems was 84% greater (95%CI 1.6;2.1).

Feelings of sadness/depression all the time and feelings of anxiety/nervousness all the time were twice as frequent among women when compared to men (Table 3), where PR=2.1 (95%CI 1.6;2.6) and PR=1.9 (95%CI 1.6;2.4), respectively. Sleep problems began during the pandemic among 37.1% (95%CI 34.2;40.2) of men and 49.8% (95%CI 47.9;51.8) of women, and a higher percentage of women suffered from worsening of a prior sleep problem (PR=1.4 – 95%CI 1.2;1.6) (Table 3). It should be noted that the differences between the sexes persisted, with similar values, when adjusted for presence of prior depression (data not shown in tables).

Frequency of these negative feelings was greater among people with a prior history/diagnosis of depression (Table 4). Sadness/depression all the time or nearly all the time occurred in 70% (95%CI 67.1;72.9) of people with prior diagnosis of depression and in 35.2% (95%CI 33.7;36.7) of those without prior diagnosis. Similarly, among individuals with prior depression, feeling anxious/nervous all the time was 2.3 (95%CI 1.9;2.7) times greater than among those who did not have prior diagnosis. A higher percentage of individuals with prior depression reported worsening of prior sleep problems – 62.1% (95%CI 57.6;66.5) – when compared to those who did not have depression – 43.1% (95%CI 40.32;45.9) –, and onset of sleep problems during the pandemic – 56.6% (95%CI 51.5;61.6) – when compared to the 42.2% (95%CI 40.3;44.1) who did not have depression before the pandemic.

Discussion

The results of the study show that during the period of the pandemic that we studied, when confirmed COVID-19 cases in Brazil increased from 45,757 to 330,890, and deaths rose from 2,906 to 21,048,[1] frequent feelings of sadness/depression affected 40% of adult Brazilians, and frequent sensation of anxiety and nervousness was reported by more than 50% of them. More than 40%

Table 1 – Prevalence[a] (%) of sadness/depression, nervousness/anxiety and sleep problems reported by Brazilian adults (n=45,161) during the COVID-19 pandemic, ConVid – Behavior Survey, Brazil, 2020

Variables	% (95%CI)[b]
Frequency of feeling sad or depressed	
Never	18.6 (17.4;19.9)
Rarely	41.0 (39.6;42.4)
Often	35.2 (33.8;36.6)
All the time	5.2 (4.7;5.8)
Frequency of feeling anxious or nervous	
Never	12.3 (11.3;13.3)
Rarely	35.1 (33.7;36.5)
Often	41.3 (39.9;42.8)
All the time	11.3 (10.4;12.3)
Sleep problems	
Prior sleep problems increased	48.0 (45.6;50.5)
Start of sleep problems	43.5 (41.8;45.3)

a) Estimates weighted by post-stratification weight.
b) 95%CI: 95% confidence interval.

Table 2 – Prevalence (%) of sadness/depression. nervousness/anxiety and sleep problems reported by Brazilian adults (n=45.161) during the COVID-19 pandemic, by age group, ConVid – Behavior Survey, Brazil, 2020

Variables	Age groups (years)			PR[a] (95%CI)[b] (1/3)	PR[a] (95%CI)[b] (2/3)
	18-29 (1)	30-59 (2)	≥60 (3)		
Frequency of feeling sad or depressed					
Never	9.6	19.0	28.5	**0.32 (0.26;0.39)**	**0.65 (0.56;0.75)**
Rarely	36.6	41.9	43.9	**0.83 (0.74;0.92)**	0.95 (0.87;1.04)
Often	44.7	35.0	24.2	**1.91 (1.67;2.17)**	**1.47 (1.29;1.67)**
All the time	9.1	4.1	3.3	**2.87 (1.99;4.14)**	1.28 (0.88;1.87)
Frequency of feeling anxious or nervous					
Never	7.0	10.6	23.1	**0.29 (0.23;0.36)**	**0.45 (0.38;0.53)**
Rarely	23.5	36.6	45.2	**0.51 (0.54;0.57)**	**0.80 (0.73;0.88)**
Often	50.2	42.9	26.3	**1.94 (1.72;2.19)**	**1.65 (1.47;1.86)**
All the time	19.3	9.9	5.4	**3.71 (2.67;5.16)**	**1.86 (1.34;2.59)**
Sleep problems					
Prior sleep problems increased	58.8	50.1	30.2	**2.03 (1.69;2.44)**	**1.69 (1.41;2.03)**
Start of sleep problems	53.2	44.3	29.1	**1.84 (1.59;2.15)**	**1.53 (1.32;1.77)**

a) PR: prevalence ratios adjusted for sex, using 60 years or over as the reference category.
b) 95%CI: 95% confidence interval.
Note: Values in bold type: p<0.05.

of those who did not have sleep problems before the pandemic experienced sleep problems and the problem got worse for almost 50% of those who did have sleep problems before the pandemic. Feelings of sadness and anxiety and sleep problems were more prevalent among young adults, women and people with prior diagnosis of depression.

In China, a study that included 1,210 respondents from 194 cities, conducted between January 31st and February 2nd 2020, revealed that 53.8% of interviewees presented moderate or severe psychological impact, whereby 16.5% were detected as having depressive symptoms, 28.8%

as having anxiety and 8.1% as having a high level of stress.[4] Another study conducted with 1,593 participants in Southwestern China, in provinces close to Hubei (the epicenter of the epidemic in the country), compared people affected by quarantine (i.e. they themselves, their families or friends were kept in quarantine) with people not affected by this condition.[13] Among people not affected by quarantine, the authors detected 6.7% anxiety and 11.9% depression, whereas prevalence was higher among people affected by quarantine, reaching 12.9% and 22.4% respectively.[13] A more far-reaching study, with 7,236 people, also in China, found 35.1%

Table 3 – Prevalence (%) of sadness/depression, nervousness/anxiety and sleep problems reported by Brazilian adults (n=45,161) during the COVID-19 pandemic, by sex, ConVid – Behavior Survey, Brazil, 2020

Variables	Sex		PRa (95%CI)b
	Male	Female	
Frequency of feeling sad or depressed			
Never	26.2	12.1	**0.44 (0.39;0.51)**
Rarely	44.3	38.2	**0.86 (0.80;0.92)**
Often	26.2	43.0	**1.67 (1.52;1.84)**
All the time	3.4	6.8	**2.09 (1.65;2.65)**
Frequency of feeling anxious or nervous			
Never	16.6	8.5	**0.49 (0.42;0.57)**
Rarely	40.3	30.6	**0.74 (0.69;0.80)**
Often	35.4	46.4	**1.33 (1.24;1.44)**
All the time	7.7	14.4	**1.95 (1.60;2.38)**
Sleep problems			
Prior sleep problems increased	39.6	53.7	**1.41 (1.25;1.58)**
Start of sleep problems	37.1	49.8	**1.35 (1.24;1.48)**

a) PR: prevalence ratios adjusted for age, using the male sex as the reference category.
b) 95%CI: 95% confidence interval.
Note: Values in bold type: p<0.05.

Table 4 – Prevalence (%) of sadness/depression, nervousness/anxiety and sleep problems reported by Brazilian adults (n=45,161) during the COVID-19 pandemic, by presence of prior depression, ConVid – Behavior Survey, Brazil, 2020

Variables	No prior depression	Prior depression	PRa (95%CI)b
Frequency of feeling sad or depressed			
Never	20.9	5.4	**0.30 (0.22;0.42)**
Rarely	43.9	24.6	**0.57 (0.51;0.64)**
Often	31.3	57.6	**1.59 (1.44;1.74)**
All the time	3.9	12.4	**1.87 (1.47;2.36)**
Frequency of feeling anxious or nervous			
Never	13.8	3.6	**0.31 (0.22;0.45)**
Rarely	38.3	17.1	**0.47 (0.41;0.54)**
Often	38.8	55.9	**1.35 (1.26;1.46)**
All the time	9.2	23.3	**2.26 (1.92;2.66)**
Sleep problems			
Prior sleep problems increased	43.1	62.1	**1.35 (1.23;1.49)**
Start of sleep problems	42.2	56.5	**1.24 (1.12;1.37)**

a) PR: prevalence ratio adjusted for sex and age, using 'no prior depression' as the reference category.
b) 95%CI: 95% confidence intervals.
Note: Values in bold type: p<0.05.

prevalence of anxiety, 20.1% prevalence of depressive symptoms and 18.2% of interviewees with poor sleep quality. Prevalence rates were higher in Chongqing Province, which borders with Hubei.[10]

In the Basque Country in Northern Spain, a study conducted during the pandemic between March 11th and 15th with 976 people, detected 21% depression and 25.9% anxiety among females, while these rates were 17.3% and 13% among males.[14] High levels of anxiety and depression during the pandemic and under conditions of quarantine or social isolation, as detected by our study, have also been found by these and other studies, although with different prevalence rates due to the use of different sample types, studies being carried out at different times and contexts in the pandemic, cultural differences, as well as the use of different assessment instruments, such as the Impact of Event Scale-Revised (IES-R),[4] Depression, Anxiety and Stress Scale (DASS),[4,14] Self-rating Anxiety Scale (SAS),[13] Self-rating Depression Scale (SDS),[13] Generalized Anxiety

Disorcer-7 Scale (GAD-7)[10] Center for Epidemiology Scale for Depression (CES-D),[10] among others.

Our study found that young adults had higher prevalence of negative mental health symptoms during the pandemic compared to older study participants. 'Feeling sad all the time' was almost threefold and 'feeling anxious all the time' was almost fourfold in this age group when compared to older age groups. Onset of sleep problems or worsening of prior sleep problems during the pandemic was also more frequent among young adults. It is noteworthy that contrary to these findings, some authors draw attention to greater vulnerability of the elderly to emotional/mental problems during crises and epidemics.[16,17] Higher COVID-19 infection lethality among the elderly and the fact of China having the world's largest elderly population led to the organization of special health services to meet the mental health needs of this segment,[16] especially when considering that depressive symptom prevalence in the elderly in China is 23.6%.[18]

On the other hand, as in this Brazilian study, the study conducted in China by Huang & Zhao[10] found greater prevalence of anxiety disorders and depressive symptoms in individuals under 35 years old, when compared to the rest, in a sample of 7,236 people between 6 and 80 years old. Notwithstanding, differently to the Brazilian study, those authors did not find association between sleep quality and age.[15] Lei et al. (2020),[13] when analyzing a sample of people aged 18 and over, found average anxiety and depression scores significantly higher in the segment under 30 years old, when compared to the segment aged 50 or over. The study conducted by Wang et al.,[4] with individuals between 12 and 59 years old (thus not including elderly people), did not detect association with age; however, the authors did find greater psychological impact, with higher levels of stress, anxiety and depression, among students. It should be noted that in the Brazilian study, the proportion of students among adults between 18 and 29 years old corresponded to 44.0% (95%CI 41.4;46.7). An evaluative study of psychological impact and loneliness among 1,468 United States adults conducted in April 2020, also indicated that symptoms of mental suffering were more frequent among young adults (18 to 29 years old), while the lowest rates were found among adults aged 55 or over.[19]

Several conditions could explain higher prevalence of depression and anxiety symptoms and sleep problems among younger adults during a pandemic in a context of social isolation. The COVID-19 pandemic has introduced diverse stress factors, including loneliness resulting from social isolation, fear of contracting the disease, financial tension and uncertainty about the future. Although these elements affect society as a whole, among the elderly the pandemic would tend have less impact on working and income conditions, as part of them (38.7%) have already retired and are not working any more. Another aspect is the resilience acquired by the elderly due to facing difficulties accumulated over a longer period of life,[20] apart from the fact of them being more inclined to a less intense and busy social life, in comparison to younger adults, thus suffering less with a situation which deprives them of these activities. Many younger adults are still studying (44%) and seeking to define their future careers, while especially among those who are married (19.2%), it is probable that responsibility for ensuring the family livelihood weighs more heavily on this aspect. In addition, it is possible that the current context of intensified use of online tools also plays a role of having greater emotional impact on younger people: two examples of this behavioral context are uninterrupted access to real-time information, including fake news, and resulting increased concern about the pandemic, as well as the contingency measure of working from home. Among young adults, the need to remain online, intense use of the web for studying or working, or even excessive engagement in online activities, such as games, social media or shopping, can contribute to a greater negative impact on the emotional health of this group.[21]

The data produced by this study also reveal the greater psychological impact of quarantine on women when compared to men. In addition to reporting greater frequency of feelings of depression/sadness and anxiety/nervousness, the proportion of women was also greater than the proportion of men who began to have sleep problems or whose existing sleep problems got worse. Wang et al.[4] also revealed, as in our study, significant differences between the sexes in relation to depression, anxiety and stress. Although they found statistically significant differences in depressive symptoms and anxiety scores between the sexes, Lei et al.[13] noted that the magnitude of those variations was small. The study mentioned above conducted by Huang & Zhao in China[10] did not find significant differences between the sexes in relation to anxiety, depression and poor sleep. As a general rule, studies in Brazil detect higher

prevalence of complaints about health and common mental disorders among females.[22] Historically, women had less access to education, were more directed towards doing household chores and, currently, even in view of progress made, are still submitted to less prestigious lower-paid occupations and lower salaries.[23] Women are more concerned about health and pay more attention to signs and symptoms, and the results of this study point to greater care in relation to mental health and quality of sleep. Also worthy of mention is the intensification of women's daily routines, including caring for children and elderly people, doing housework and getting meals ready, these being activities that for the most part are left to them, in addition to increased domestic violence and social distancing measures during the pandemic.[24]

Association between mental health and sleep quality has been reported consistently. A study conducted in a Brazilian municipality detected that presence of common mental disorders was associated with a 61% increase in prevalence of poor sleep quality, even after adjusting for sociodemographic, behavioral and health status variables.[25] A meta-analysis involving 21 longitudinal studies conducted between 1980 and 2010 confirmed insomnia as a risk factor for depression, with an odds ratio of 2.10.[26] Moreover, a longitudinal study conducted in China identified a bidirectional relationship between sleep and optimism, whereby depressive mood totally or partially mediated the relationship.[27]

Several articles have alerted as to the appearance of mental problems during the COVID-19 pandemic, with many of them highlighting people with prior mental illnesses and disorders as being more vulnerable. Ornell et al.[3] stated: [...] *in a pandemic, fear increases anxiety and stress levels in healthy individuals and intensifies symptoms in those with prior mental disorders*. The results of our study confirm and reinforce this concern, revealing, through analyses adjusted for sex and age, that among Brazilians with prior diagnosis of depression, the percentage of those who felt sad all the time was 87% higher during the pandemic, and the percentage of those who felt anxious all the time was over two times greater, compared to those without prior diagnosis of depression. These results confirm earlier findings about greater vulnerability to feelings of psychological stress during COVID-19 quarantine among people with mental disorders.[15] As such, we highlight that during the pandemic people with pre-existing mental conditions in particular also need special mental health care.

It needs to be taken into account when assessing the results of this study, that conducting it via internet, the range of aspects that would need to be evaluated and the need to restrict the time spent on answering the instrument prevented more in-depth treatment of each topic. In order to respect time taken to answer the questionnaire, which needs to be short, it was not possible to include standardized instruments for assessing depression and symptoms of anxiety, so that our analysis is restricted to data obtained from reports of frequency of feelings of sadness/depression and nervousness/anxiety. Also with regard to sleep, the question asked by the study focused on changes that occurred during the pandemic, prioritizing detection of reported onset and worsening of sleep problems. Moreover, the objective of the study did not include assessment of the role of other independent variables with regard to sadness, nervousness and sleep problems. In addition, our analysis covered the initial period of the pandemic (between one and two months following implementation of the first social distancing measures in Brazil) and this fact must be taken into consideration when interpreting the results. The study sample was not probabilistic, but the study was successful in covering participants from all regions of Brazil and reaching a large number of respondents. In turn, applying post-stratification weighting produced an approximation of the results obtained to rates experienced by the Brazilian populationas a whole. The results of the topics covered by this article are also consistent with the related literature.

The need to address negative repercussions on mental health, in a period of emergency such as this, when personal physical contact must remain restricted in order to avoid contamination and dissemination of the virus, and millions of people need to practice social distancing or isolation for an unknown length of time, has led to proposals for organizing and implementing new formats of mental health care services. As early as January 2020, the Chinese National Health Commission released basic principles for psychological care during the pandemic, rapidly organizing the establishment of online psychological support services by means of hot-lines, provided by mental health professionals at medical and academic institutions 24 hours a day.[13] The World Health Organization and mental health

professional societies and associations in several countries have produced and publicized guidelines with recommendations for practices and case management for preserving mental health and providing mental health care services in the midst of the pandemic and during periods of social distancing or isolation.[28,29] Special recommendations have been made for health professionals, who tend to be the most heavily affected groups in such episodes.[30]

The findings reveal the dimension of the impact of the pandemic and social isolation on aspects of the mental health and quality of sleep of the population in the Brazilian context. Greater impact on young adults and women indicates demographic segments at greater vulnerability, requiring application and enhancement of mental health preservation and care strategies during the pandemic. The results highlight that people with a history of depression are the most vulnerable in the pandemic context. There is a need to give more publicity to the mental health and sleep quality preservation measures and practices recommended by the World Health Organization and mental health professional societies and associations. It is also essential to provide online services for patients needing care for their emotional and mental health conditions.

Authors' contributions

Barros MBA and Lima MG contributed to the conception and design of the study, analysis and interpretation of the data, writing and relevant critical review of the intellectual content and final approval of the manuscript, and assume their responsibility for all aspects of the work, including ensuring their accuracy and integrity Malta DC, Szwarcwald CL, Azevedo RCS, Romero D, Da Silva DRP and Werneck AO, De Souza Jr PRB, Azevedo LO, Machado IE, Damacena GN, Gomes CS, Gracie R and Pina MF contributed to the writing or relevant critical review of the intellectual content of the manuscript and approval of its final version. All authors are responsible for all aspects of the work, including ensuring its accuracy and integrity.

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