

Covid-19 and the impacts on mental health: a sample from Rio Grande do Sul, Brazil

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Abstract *Pandemics such as that of COVID-19 affect a relatively large number of people and impose new rules and social habits on the world population. Information about the pandemic is constant in the media. Moreover, social distancing has been adopted in Brazil to prevent the spread of COVID-19, which may have economic and psychosocial consequences. This study aimed to verify the factors associated with indicators of mental disorders symptoms in residents of Rio Grande do Sul during the initial period of the social distancing policy. The study was approved by CONEP. There were 799 participants, aged between 18 and 75 years ($M = 36.56$; $SD = 12.88$); 82.7% were women, who answered a sociodemographic questionnaire of social distancing and the Self-Report Questionnaire (SRQ-20). The results indicated that having decreased income in the period, being part of the risk group and being more exposed to information about deaths and infected, are factors that can significantly harm mental health in this pandemic period. Investigating social determinants that contribute to greater vulnerability to the mental illness of the population is vital in the field of collective health for the planning of public actions and policies.*

Key words COVID-19, Mental health, Media, Risk factors, Pandemic

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Introduction

Pandemics are known as epidemics that spread rapidly in several countries and affect a relatively large number of people¹. In general, that generates consequences from the micro to the macrosystemic level, imposing new rules and social habits for the world population and mobilizations of different natures to contain them for the time they last. Data from the WHO² point that the COVID-19 outbreak began in China in December 2019, spreading to different locations and populations ever since.

The latest WHO report, published on May 8, 2020, documented 3,759,967 confirmed cases and 259,474 deaths worldwide³. In Brazil, the first case of the disease was notified on February 25, 2020⁴, and the number of people affected by the virus has grown gradually since then. Brazil confirmed 145,328 cases and 9,897 deaths by the afternoon of May 8, 2020⁵. In Rio Grande do Sul (RS), the Health Secretariat⁶ confirmed on March 10 the first case of infection with the new Coronavirus in the state. As of May 2, 2020, Rio Grande do Sul reported 1,687 cases and 63 deaths⁶.

Concerning social aspects, the Ministry of Health launched a series of recommendations for the population to inform them about transmission, prevention, and procedures with disease infection⁷. In this sense, one of the main consequences was social distancing as a COVID-19 dissemination prevention measure, and people were primarily oriented to leave their home environments only in case of need (market/pharmacy/health care).

The differentiation between the concepts of social distancing, social isolation, and quarantine is emphasized. Wilder-Smith and Freedman⁸ affirm that distancing refers to the effort to reduce contacts and physical approach between people in a population to curb the speed of infection; isolation is a way to separate infected and asymptomatic people; and quarantine mitigates the movement of people who may have been potentially exposed to the disease. However, these terms are often used interchangeably to communicate the population more comprehensively and intelligibly⁹. In this work, we investigated whether people were at home under medical advice or going out only for bare necessities (groceries and pharmacy). Therefore, the term social distancing will be used, as it is probably the one that most applies to the studied context.

In RS, state government decrees established

measures to prevent infection by the new Coronavirus. In Decree 55.118 of March 16, 2020¹⁰, provisions were made to establish home office, avoid agglomerations, and suspend public and private school classes as of March 19, 2020. In Decree 55.128 of March 19, 2020¹¹, a state of public state calamity was declared. The prohibition of non-essential public and private activities and services, the closure of shopping centers, and specific measures for essential services to serve the population were determined.

Studies with the population of China, the first country that adopted quarantine and social isolation as protective measures against the spread of the new Coronavirus, indicate possible psychological consequences of this mass confinement. The results showed a higher rate of anxiety, depression, harmful alcohol use, and less mental well-being than the usual population rates¹². In general, patients with confirmed or suspected COVID-19 infection may be afraid of the consequences of the infection – potentially fatal, and those in the quarantine may experience boredom, loneliness, and anger¹³.

Moreover, some economic losses are observed in the most affected areas, with growing concern about the practical consequences of the pandemic in the economic sector¹⁴. It has been seen, for example, that stress due to financial losses would be a widespread psychosocial risk in times of economic recession, poverty and unemployment¹⁵; that is, these are factors that could also adversely affect the mental health of individuals during this pandemic episode.

A plethora of erroneous formation circulates on social media, which increases anxiety about the disease¹⁶. Furthermore, the type of information itself and how it is provided can have more or less positive consequences on the mental health of the population in pandemic times¹⁷.

Considering that all technological progress also depends on advances in human and social policies and practices, mental health is fundamental for maintaining creative and productive human capacities. In this sense, this study is justified by the need to better target and guide the campaigns and proposals to control the advancement of the new Coronavirus since people's mental health levels influence citizens' behavior to adhere to distancing policies. Thus, this study aimed to verify the factors associated with indicators of mental disorder symptoms in residents of Rio Grande do Sul during the initial period of the social distancing policy due to the COVID-19 pandemic.

Methods

This is a cross-sectional, exploratory, and quantitative study conducted with individuals aged 18-75 years and living in the State of Rio Grande do Sul. This research is nested in a larger project entitled “The COVID-19 pandemic and its impacts on Brazilian mental health” (free translation from Portuguese), which sought to investigate sociodemographic, health, and pandemic-related aspects and their association with risk indicators for minor mental disorders (depression and anxiety). The largest project started on April 8 and is currently underway, and aims to include Brazilians from all regions of the country. For this preliminary study, we decided to investigate some relevant variables to the local profile. The choice of using data from RS alone is due to the higher number of respondents obtained in the region in the initial collection period, and also because of the specificities related to the containment measures to lower spread of the virus in each state. In the case of Rio Grande do Sul, a decree was issued to close non-essential services from March 19, and the measures were relaxed on April 15. Therefore, this preliminary survey included individuals who experienced the last eight days of the decree and the first eight days after the decree was relaxed (Between April 8 and 23, 2020). During this period, the social distancing index in the state of Rio Grande do Sul ranged from 58.6% (April 10) to 43.3% (April 23).

Participants

In general, this study intended to cover any residents of Rio Grande do Sul, who were over 18 and who knew how to read and write, since the pandemic situation affects, to some degree, all individuals. Only respondents who declared to reside in the state of Rio Grande do Sul were considered for the analysis. A total of 799 subjects aged between 18 and 75 years participated in this research ($M=36.56$; $SD=12.88$), and 82.7% were women.

Instruments

The participants answered a Sociodemographic Questionnaire, with 18 self-reported items, and 13 items were used in this research. We investigated the age of the participants (in years); gender (female and male); profession (for example, doctor, psychologist, industry, and commerce worker, among others); children (“do

you have any children?”); monthly household income (in Brazilian reais); impact on income after the start of the pandemic (“Did your income decrease after the new Coronavirus pandemic?”); previous mental disorder (“Have you ever been diagnosed with a mental disorder?”), and being part of the COVID-19 risk group (“Are you part of the New Coronavirus risk group [COVID-19] – People above 60 years of age, diabetic, hypertensive, with heart or breathing problems?”). This last variable was included because, being pregnant, over 60 years old or having pre-existing diseases, such as diabetes and heart disease, means being at increased risk of having the disease in its aggravated form⁵.

Moreover, it was also investigated whether the participants had a family member in the COVID-19 risk group (“Do you live in the same house as people in the COVID-19 risk group?”); the participants’ distancing characteristics (“Are you at this moment following a distancing measure [by medical indication or leaving home only for the bare necessities]?”) and whether they are alone or with someone (in this last topic, with whom). Access to information was also investigated, where participants were asked by which means they access the information (newspapers, television, WhatsApp, among others) and how much they accessed information on the number of infected and deaths, and on self-care and prevention concerning the new Coronavirus.

We also employed the Self-Report Questionnaire (SRQ-20), an instrument developed by the WHO and widely used to measure indicators of possible mental and behavioral disorders. It works as a screening tool for the detection of symptoms, suggesting the suspected level (presence/absence) of minor mental disorders such as depression, anxiety, and stress. In the adaptation to the Brazilian context of the SRQ-20 performed by Santos, Araújo, Pinho, and Silva¹⁸, the instrument proved to be suitable for use in national studies, with a sensitivity rate of 68% and specificity rate of 70.7%. The positive predictive value was 73.9%. In this study, the SRQ-20 was evaluated considering 7 as the cutoff point, in line with the trend pointed out by other Brazilian studies^{18,19}.

Procedures and ethical considerations

The research and the requirements for participation were defined and presented in all participant recruitment invitations. The invitations were sent via social networks (Facebook,

WhatsApp, Instagram) and by electronic mail (e-mail)²⁰. The questionnaire was answered via an online survey from April 8 to April 23, 2020. Once completed, participants accessed illustrated cards with tips on mental health prevention and promotion, which follow the information recommended by the WHO and the Ministry of Health.

Data analysis

The data from the Sociodemographic Questionnaire were subjected to descriptive statistical analysis to understand and explain the profile of the sample. As the main objective of the study is to investigate factors related to the risk of minor mental disorders, the variables in the questionnaire were treated as independent variables, and the variable measured by SRQ-20 as a dependent variable. Thus, a hierarchical binary logistic regression analysis was performed to understand the contribution of independent variables to the risk of minor mental disorder assessed by the SRQ-20. The sample was divided into two groups: “risk of minor mental disorders” ($n = 327$) versus “absence of risk of minor mental disorders” ($n = 472$), and the outcome variable (1) is the risk of minor mental disorders.

The independent variables were included sequentially in two steps. In step 1, a block of variables was included containing gender (categorical and of reference: female), age (ordinal), and a previous diagnosis of mental disorder (categorical and of reference: having a diagnosis), commonly associated with outcomes in mental health and used as controls. In the second step, a second block of variables specifically related to the pandemic context was added: being a health professional versus other professions (professions were allocated categorically to investigate health professionals, since this category is the most affected by the pandemic, as explained above), being under distancing measures versus not being in this condition (binary), being alone versus being accompanied under distancing measures (categorical), decreased income during the pandemic versus maintaining income (categorical), being in the COVID-19 risk group versus not being in this condition (binary), having a relative in the COVID-19 risk group versus not having any relative in this group (binary) and the varying exposure to information on self-care and prevention and on the number of infected and deaths (both continuous variables, measured between 0 and 10, ranging from little to a lot).

All analyses were performed using the IBM SPSS version 20 statistical software package.

Results

The sample consisted of 799 locals, predominantly female (82.7%). Regarding the participants' income, 49% declared a monthly household income of up to R\$ 5,200.00, and only 7.5% declared a household income around one minimum wage. When asked about the economic impact generated by the pandemic, 44.6% reported having had economic losses in that period.

Regarding the profession, 29.4% of the respondents were civil servants, followed by 14.4% of health professionals with hospital activities (such as doctors, nurses, nursing technicians, and psychologists). Moreover, 12.6% of the sample consisted of undergraduate and graduate scholarship holders and 8.6% of freelancers or self-employed professionals. The other professions (industrial/commercial/administrative/informal workers, business owners, military, retired, and other unlisted workers) ranged between 7.5% (for others) and 0.3% (for informal workers).

Regarding family aspects, 61% of respondents said they did not have children. Of the total sample ($n = 799$), 45% were being quarantined at home with their spouse, 36.8% with pets, 33.5% with their parents or grandparents, 27.9% with children, 12.5% with other people and 8.4% were alone, and the participants could choose more than one option. Furthermore, 90.7% of the total number of participants ($n = 799$) were under distancing measures when they answered the survey.

About data related to the health context, around 25% reported having already received a diagnosis of mental disorder. Regarding COVID-19, 23.8% is part of the risk group for the disease, and 43.4% lives in the same household as people in the risk group.

Regarding how participants access information about the new Coronavirus, most people (79.6%) reported using news sites to get information, 76.3% said from television, 37% Facebook, 28.3% WhatsApp, 25.8% Instagram, 20.7% Twitter, 19.9% the radio, 9% by the printed newspaper, and 1.1% said they did not get informed at all. Participants could select more than one option. Regarding exposure to different types of information about COVID-19, individuals reported similar rates of access to information on the number of infected and deaths and self-care and

prevention. In Table 1, these results and those related to the health context are detailed according to the groups “risk of minor mental disorders” (G1) and “absence of risk for minor mental disorders” (G2).

An analysis of hierarchical binary logistic regression was conducted considering the main objective of the study. In the first step, 68.1% of the sample was correctly classified globally. In the second step, 70.2% of the data were correctly classified with the inclusion of the second block of variables more related to the pandemic. According to the results of step 2, 25% of the risk variance for minor mental disorders was explained ($R^2 = 0.251$; $p < 0.001$).

Among the control variables that seem to increase the likelihood of a risk of minor mental disorders in the current context, the one with the highest predictive power was gender, showing that women in this sample are almost three times more likely to incur risk for disorders (OR = 2.73; $p < 0.01$). The other two variables were also predictive, with the presence of a previous diagnosis of mental disorder (OR = 2.24; $p < 0.01$) and age (OR = 0.94; $p < 0.01$). Of the variables most directly related to the pandemic context, it is noteworthy that being in the risk group

for COVID-19 (OR = 1.62; $p < 0.05$), having decreased income due to the pandemic (OR = 1.42; $p < 0.05$) and being more frequently exposed to information on the number of infected and deaths (OR = 1.1; $p < 0.05$) increased by 62%, 42%, and 10% the likelihood to be in the risk group for minor mental disorders, respectively.

A possible factor that reduces the likelihood of mental disorders for this sample refers to the profession: health professionals were 40% less likely to be in the risk group for minor mental disorders compared to the other professions (OR = 0.60; $p < 0.05$). However, it is essential to note that 74.8% of these health professionals were under social distancing measures, that is, in isolation and not working directly in their professions.

Being a health professional is a variable that, in general, can affect the conduct of distancing, and those who least reported being under social distancing measures were health professionals ($n = 115$). However, the rate of distancing between them is still high, not representing most professionals in this class at present in the country. Table 2 describes the detailed results of the regression for steps 1 and 2.

Table 1. Descriptive statistics for health variables and related to exposure to information according to groups at risk for minor mental disorders (G1) and with no risk for minor mental disorders (G2).

	G1 (n = 327)		G2 (n = 472)	
	n	%	n	%
Health				
Has been or is being followed up in mental health				
Yes	249	76.1	302	64
No	78	23.9	170	36
Previous diagnosis of mental disorder				
Yes	122	37.3	79	16.7
No	205	62.7	393	83.3
New coronavirus risk group [§]				
Yes	85	26	105	22.2
No	242	74	367	77.8
Lives in the same house as people in the risk group for the new Coronavirus				
Yes	153	46.8	194	41.1
No	174	53.2	278	58.9
Exposure to information regarding the new Coronavirus [¶]				
About number of infected and deaths	6.66	2.61	6.18	2.7
About prevention and self-care	7.43	2.45	7.13	2.46

Note. [§] Risk group includes people over 60, diabetic, hypertensive, cardiac, with respiratory problems and/or pregnant women;

[¶] Participants answered how much they were exposed to information from 0 to 10, ranging from little to a lot.

Discussion

The data in this study were collected in the first period of more restrictive measures concerning commercial activities and services in the state of RS since the onset of the COVID-19 pandemic. Only 10% of the participants said they were not under social distancing measures. According to the movement monitoring by the In Loco²¹ company, the distancing rate in this region reached 70% in the first weeks of the pandemic in March but has been declining ever since – which, at the time of this data collection, was 43.5% (on April 23, 2020). One hypothesis for the high rate of distancing among the participants of this study is that there is a participation bias, which is higher among people with more information and concerns about the pandemic.

Regarding the risk of presenting minor mental disorders, a binary logistic regression model indicated that being younger, woman, having a previous diagnosis of mental disorder, not being a health worker, having a reduced income in the period, being part of the risk group and being more exposed to information about deaths and infected, are factors that may indicate more significant damage to mental health in this sample.

Regarding age, the results indicate that younger people may be at a 6% higher risk of having minor mental disorders. Research findings in a Chinese sample are that younger subjects would be in a more vulnerable position concerning mental health conditions and alcohol use in a social distancing situation¹². Although they are not in the age-at-risk group, it appears that this modified context may further affect the mental health of this age group. However, studies in other cultures have not found this difference²².

Another risk variable indicated by logistic regression concerns gender. In this sense, the evidence suggests that being a woman increases 2.73 times the likelihood to have a minor mental disorder, that is, more than twice the opposite sex. The literature has shown similar results in different studies, such as the one by Kuehner²³, who assessed gender gaps in the prevalence, incidence, and course of depression. Besides the higher predisposition to internalizing disorders pointed out by epidemiological studies²⁴, the author also indicates the influence of genetic, hormonal, physiological, and personality aspects^{23,25}. The environment and relationships also appear to explain the higher prevalence of illness, taking into account the cases of violence, abuse, and discrimination

Table 2. Hierarchical Binary Logistic Regression between risk or absence of risk for minor mental disorders and independent variables.

Variable	Model 1				Model 2			
	B	SE B	OR	Lower and Upper CI of the OR	B	SE B	OR	Lower and Upper CI of the OR
Constant	-0.03	0.44	0.96		-1.19	0.61	0.33	
Gender	0.83	0.22	2.31	1.49 – 3.56**	1	0.23	2.73	1.73 - 4.32**
Age	-0.05	0.007	0.94	0.93 – 0.95**	-0.06	0.008	0.94	0.92 – 0.95**
Diagnosis ^a	0.83	0.17	2.3	1.62 – 3.27**	0.80	0.18	2.24	1.55 - 3.22**
Profession					-0.51	0.24	0.6	0.37 - 0.96*
Being alone					-0.51	0.32	0.60	0.31 - 1.13
Income					0.35	0.16	1.42	1.03 - 1.96*
RG Individual					0.48	0.19	1.62	1.1 – 2.39*
RG Family					-0.14	-0.17	0.86	0.62 – 1.21
Distancing					-0.08	0.29	0.92	0.52 – 1.63
EI infected					0.09	0.03	1.1	1.02 – 1.18*
EI prevention					0.03	0.04	1.03	0.95 – 1.12
χ^2 ^b				2.65				4.42
Sig				0.95				0.81
Nagelkerke				0.20				0.25

Note. Dependent variable: risk of minor mental disorders (Coded as 1), absence of risk for minor mental disorders (coded as 0). CI = Confidence Interval; OR = Odds Ratio; RG = Risk group; EI = Exposure to Information. ^a Previous diagnosis of mental disorder; ^b Referring to the Hosmer–Lemeshow statistic, which measures the model's accuracy level, whose significance value must be greater than 0.05. ** $p < 0.01$; * $p < 0.05$.

to which women are most exposed and which tend to increase during periods of isolation^{23,26,27}. However, in this sample, it is necessary to consider the high percentage of female participants (82.7%), and this is a critical bias that may have actively contributed to the variable to enter the explanatory model of this logistic regression.

In this study, having a previous diagnosis of mental disorder partly explained the risk of mental disorder assessed by screening. While this is a logical result, since the sensitivity of the instrument (used to measure the outcome) is expected in these cases, this finding is worrying, as 25% of the sample had a previous diagnosis and the stressors originated in the pandemic may contribute to aggravate the mental health status of these subjects^{28,29}. Studies have also suggested that people with mental disorders are more vulnerable to infections³⁰ and may have reduced access to mental health services during the pandemic³¹, making them a risk group that urgently needs specific interventions.

Regarding the professions of the participants, data indicate that being a health professional decreases the likelihood of presenting minor mental disorders by 40%. Although these professionals are more exposed to the disease than most of the population, factors that can help us understand this decline are greater access of these professionals to health services and broader knowledge about COVID-19 prevention and treatment. The literature has indicated that health literacy, that is, greater knowledge about diseases, their risk factors, self-care and trained health professionals and services for treatment, contribute to better mental health rates^{32,33}. However, in any case, it is worth emphasizing that health professionals were mostly under social distancing measures, which could decrease the likelihood of being infected, and, therefore, alleviate anxiety related to the disease and the risk of mental disorder. Future studies should access more widely the professionals who are effectively working in hospitals and other health units during this period.

Likewise, the existence of a considerable number of intensive care unit (ICU) beds in the state to date, showing that there is currently no collapse in the state's health system, may be contributing to better health rates of the share of health professionals who were working at the time of the research. Another important factor concerns the maintenance of employment and income of these professionals, who have been fundamental for the management, treatment, and control of the pandemic in the state. Several

scientific studies show the association between insecurity concerning work and income and mental illness, and those who are still in an uncertain situation regarding the retention of their jobs and the guarantee of income tend to present a higher risk for the development of mental disorders, such as stress, anxiety, and depression^{34,35}.

The results also showed the effects of exposure and type of information accessed about the pandemic on the sample's mental health. Therefore, participants who reported being more often exposed to information about deaths and infected are more likely to have a minor mental disorder. It is known that this exposure to frequent news about a situation like the pandemic can harm mental health. Previous research has already indicated that indirect exposure to mass trauma (such as the current pandemic) through the media can increase the initial rates of post-traumatic stress disorder (PTSD) symptoms^{36,37}. A study carried out with the Chinese population during the current pandemic found that frequent exposure to social media and news about COVID-19 would be associated with a higher likelihood of risk for symptoms of anxiety and depression, which remained even when other factors were controlled³⁸. On this topic, WHO Director-General stated that the world is facing both a pandemic and "infodemic", indicating prolonged and excessive exposure to information about a problem, which hinders a solution³⁹. As a result, a lot of misinformation and rumors can also be spread during a health emergency, which can hamper an effective response to public health and create confusion and distrust among people³⁹.

Being part of the risk group for the new Coronavirus, that is, being pregnant, being over 60 years old, or pre-existing diseases, such as diabetes and heart disease, means having a higher risk of having the disease in its aggravated form⁵. As expected, the results indicated that these participants might be up to 1.6 times more likely to be at risk for minor mental disorders than the rest of the sample. A population study conducted in China also found more harm in this population group, which can be explained by the knowledge of the higher mortality rates among these subjects, who may then be at a higher risk of suffering psychological impact during the pandemic⁴⁰.

In the context of a pandemic, political crisis management has adverse socioeconomic effects on the local population, increasing unemployment and financial insecurity¹⁴. Thus, if concerns about physical health and the risk of death are

the most likely to happen in this context, the declining household income is also a factor that afflicts and seems to harm the mental health of the population. The data from this study showed that participants who are experiencing economic losses in the current context are 1.4 times more likely to be at risk for minor mental disorders more than those who have not experienced such losses. Other previously mentioned studies also point to a relationship between the country's economic recession and damage to people's mental health^{15,41}, especially for those directly affected¹⁴. Considering that the physical and mental health of a population is influenced by the socioeconomic context, the labor market, social assistance, and public policies, it is possible to consider that changes in these dimensions reflect on their well-being indicators, especially when there is already a previous prevalence of mental disorders¹⁵.

Some limitations of this study are the scope and type of sample, and it is not possible to generalize the results found here beyond the participants of this study. Generalizations are not possible for the rest of the state or country and social groups other than those presented here. It is noteworthy that Rio Grande do Sul, like the other regions of Brazil, have specific cultural and population characteristics, and the data were collected at the beginning of social distancing. In general, Brazilian states are experiencing different pandemic moments, which can affect the final results. Moreover, the exact time in days of the period and in which each participant was under social distancing measures was not verified, which could also have implications for mental health outcomes.

Final considerations

Although social isolation is identified as a source of anxiety and stress in the population¹², this was not a significant variable in the regression model. Such findings may indicate that social distancing and decreased physical contact with people during the pandemic is not a risk factor for mental illness, but that other factors permeate this context. Having a declining household income due to the impacts of the disease on the local economic scenario and being exposed to conflicting information about COVID-19 (such as the number of deaths and infected), for example, can pose more risk to mental health. Thus, attention to economic factors and harm to household income

requires special care, which may reinforce the need for public policies and financial aid benefits in this period.

It is also essential to develop interventions in primary care focused on prevention, such as health literacy campaigns and actions^{32,33}. In this sense, it is understood that easily understood information related to prevention, contagion, and mental health care becomes essential for the population. Studies that can simultaneously investigate and intervene, as was the proposal that originated the present paper, are of fundamental importance in this pandemic moment, where socially sometimes misinformation and false news circulate, without scientific or factual basis, the so-called fake news.

Moreover, the results of this preliminary study emphasize the need to increase the number of psychological and social service providers to meet community members' needs, especially those most at risk of developing a mental disorder. These data also suggest the importance of counseling and psychotherapy, specifically in the online service modality, in this context in which there is a need to reduce direct interactions between individuals. Likewise, providing tips and instructional health materials, following the principles of literacy, can contribute to the maintenance of mental health and make the population aware of the correct measures of care and prevention of contagion.

As already planned for the continuation of this preliminary study, we suggest that future studies expand the sample, including greater social diversity and other states and regions of the country, considering their specificities. We also propose that, besides diagnostic screening instruments, such as screening, specific instruments should be used for each of the central minor mental disorders to expand and direct efforts on the primary prevention actions possible in this pandemic moment. Developing studies with a methodological design that includes follow-up or longitudinal measures is crucial for monitoring the development of the population's mental health and the effectiveness of primary health literacy-oriented actions.

Health education is essential for the population to become aware of the measures to prevent COVID-19 infection. Adherence to control measures necessarily follows this path. As already indicated by the World Health Organization, mental and behavioral disorders are among the leading causes of absence from work^{42,43}. For this reason, enabling reasonable mental health rates

helps preventive behavior and maintaining the health of the population, allowing them to return to their activities in the post-pandemic period, which will be fundamental for the recovery of the country's economy.

Collaborations

MQ Duarte: Conception and planning of research, obtaining, interpreting and analyzing data; critical writing and review. MAS Santo: Conception and planning of research, obtaining, interpreting and analyzing data; writing (introduction, results, discussion) and critical review. CP Lima: Conception and planning of research, obtaining, interpreting and analyzing data; writing (method, results, discussion) and critical review. JP Giordani: Conception and planning of research, obtaining, interpreting and analyzing data; writing (introduction, discussion and closing remarks) and critical review. CM Trentini: Conception and planning of research, data interpretation; critical and final writing and revision of the manuscript.

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