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Effects of working in vulnerable contexts on the mental health of primary healthcare professionals during the COVID-19 pandemic: a mixed-methods study

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ABSTRACT

Objective The objective of this study is to analyse the relationship and psychosocial issues between working during the COVID-19 pandemic in primary healthcare (PHC) facilities located in the most vulnerable health region (HR) of the Federal District of Brazil (FDB) compared with a lesser region.

Design Mixed-method study data. The questionnaire was based on the World Health Survey and the Convid Behavioural Survey. Quantitative data were described in absolute and relative frequency. Pearson's χ^2 test verified differences according to the region (significance level <5%). A margin of error of 8% with 95% CI defined the sample. The content analysis (by Bardin) analysed the qualitative data.

Setting A representative sample of PHC professionals working at the Western HR and Central HR of the FDB.

Participants 111 women and 27 male PHC professionals, aged ≥ 18 years.

Outcome measures Psychosocial variables—personal emotions towards the clients, social relationships and use of psychoactive substances (PAS).

Intervention An online questionnaire (27 questions) and 1 open-ended question.

Results The sample comprised 138 PHC professionals; 80.40% were female aged between 40 and 49 years old (27.3%); declared themselves as black/pardo (58.7%); were married (53.60%), and worked in family healthcare teams (47.80%). No association between working in the most vulnerable HR compared with the least one and presenting psychosocial issues, except for anger towards clients (p=0.043). 55.10% worked much more than usual, 60.80% reported being depressed, 78.20% anxious, 76.80% stressed, 77.50% had no empathy and 78.30% felt isolated from family/friends. Towards the clients, 59.40% reported empathy and 72.5% no affection/care. The consume of psychotropic medications was reported by 34.80%, and 14.50% increased alcohol/PAS use. Qualitative data leverage quantitative findings: work overload, the indifference of the Federal Government and distance from family/friends.

Conclusion Working in the most vulnerable region and in the least one affects the psychosocial aspects of the PHC professionals equally.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study considers the role of socioeconomic and epidemiological vulnerability in the providers' psychosocial aspects during the COVID-19 pandemic.
⇒ The study correlates different aspects that is, work overload, social distancing, personal and clients-related feelings and emotions and alcohol/other drugs use.
⇒ Mixed-method study (quantitative and qualitative data) was applied.
⇒ The participants' lack of interest in face-to-face participation restricted the study to responses obtained only online.
⇒ Screening questionnaires can overestimate the prevalence of mental issues relative to structured diagnostic interviews.

INTRODUCTION

SARS-CoV-2, a type of coronavirus that causes COVID-19, is more aggressive than other viruses in the same class, is highly transmissible, affecting especially the respiratory system, and was classified by WHO as a pandemic in March 2020.[1] Brazil had more than 36 million confirmed cases with about 690 000 deaths caused by the disease, becoming the 4th country with more confirmed cases worldwide and the 2nd with more deaths until December, 2022.[2]

The COVID-19 pandemic forced the world population to adopt strategies to face the disease to avoid or slow down the contamination rate, aiming not to overload the health systems and preserve lives. Besides the use of masks, health education and proper hygiene, progressive measures of social distancing

were implemented, except for essential services such as health services.[3 4] Because of the disruption of daily life caused by the social restriction measures, psychosocial issues emerged in the population worldwide such as an increase in anxiety, depression and lower mental well-being[5–7] which may present impacts in the short term and long term.[8]

In Brazil, primary healthcare (PHC) has been a protagonist in the network for assistance, prevention, promotion and mass testing for COVID-19.[9] PHC is the gateway to the Brazilian Unified Health System (SUS), and it contributed to reducing the incidence and, consequently, to reducing morbidity and mortality related to the disease.[9] The SUS is Brazil's universal public health system guided by the principles of equity and integrality; it covers the simplest to the most complex health procedures for all citizens in the Brazilian territory.[10] With the high demand generated by the COVID-19 infection, added to the regular everyday needs and clients and the recommendation of 85% of solubility in the PHC—without having to transfer clients to specialised facilities—healthcare professionals were even more overloaded and exposed to several risks, such as contamination that leads to absence from work and the consequent overburdening of other colleagues, persistent symptoms of disease (long-term COVID-19), and even deaths, in addition to intense psychological suffering expressed as generalised anxiety disorder, sleep disorders,[11] substance use disorders[12] and fear of getting sick and contaminating colleagues and family members.[13]

Some studies have demonstrated the psychosocial impact on healthcare professionals worldwide during the COVID-19 pandemic. In India, health students have experienced psychological distress and exhibited behaviours such as self-blame and substance use.[12] In Turkey, healthcare workers were exposed to situations that aggravated their mood state and emotions during this period, such as worrying about infection, lack of sleep quality caused by anxiety and a negative affective state.[11] In China, it was observed that healthcare workers reported the highest rate of poor sleep quality during the pandemic and a higher prevalence of anxiety and depressive symptoms.[14] In another study in China, more than 50% of healthcare professionals reported depressive symptoms, 44.6% anxiety, 34% insomnia and 71.5% anguish.[15]

In addition to the mood state and emotions impairment of those who deal directly with clients infected/potentially infected by COVID-19 who work in more vulnerable regions; both from a socioeconomic and epidemiological point of view due to the higher mortality of COVID-19; may present a higher number of absences from work due to psychosocial issues. According to the Department of Health of the Federal District of Brazil (FDB),[16] the most vulnerable region presented 13.37% of absences from work due to emotional and behavioural disorders and the least one 9.07%. A study conducted in China[15] also observed the differences in mental disorders among healthcare workers stratified by geographical region. This study identified that healthcare professionals who worked in areas more affected by the disease (number of cases) presented a higher risk of suffering (more severe symptoms of depression, anxiety, insomnia and distress) than those who worked in less affected areas.

As a result, it is relevant to understand the psychosocial impact that healthcare professionals have been affected by in the short term, medium term and long term,[17] dealing not only with the clinical issues of the COVID-19 infection, but all suffering, fear and grief leveraged by the disease, which can be further aggravated due to the context of vulnerability where these professionals were working.

Therefore, the present study aimed to analyse the relationship between working during the COVID-19 pandemic in PHC facilities located in the most vulnerable health region (HR) of the FDB—both from socioeconomic and epidemiological aspects—compared with the less vulnerable HR and presenting the psychosocial issues (mood state and emotions, social relationships and use of alcohol and/or other psychoactive substance, PAS).

METHODS

This is a mixed-method study (quantitative and qualitative data) on a representative sample of PHC professionals working at two HRs of the FDB, Western and Central, who were older than 18 years old.

The FDB has an unusual geopolitical configuration. It is divided into 33 Administrative Regions (ARs) such as neighbourhoods. As a decision of the Department of Health, the ARs of the FDB were grouped into HRs based on the proximity of one community to another, the epidemiological profile and the health infrastructure. Thus, the FDB is split into seven HRs to integrate the organisation, planning and execution of health service.[18] There is a concern with balancing ARs with different socioeconomic profiles in the same HR so as not to create isolated 'islands' of poverty and wealth. Thus, within the same HR, there are critical socioeconomic differences, that is, the Central HR, the least socioeconomically vulnerable of the FDB is composed of the Varjão AR with a per capita income in the range of US$96.63 and US$193.26, and Lago Norte AR between US$966.28 and US$1159.53.[19]

Setting, participants and procedures

The seven HRs of the FDB are Central (per capita income ~US$796.75), South-Central (~US$527.28); East (~US$411.18); Southwest (~US$348.30); North (~US$217.69); South (~US$217.69) and Western (~US$196.44). The HRs chosen for the study were the Central with the highest per capita income and the Western with the lowest. The Central HR also had the highest COVID-19 incidence (about 179 000 cases until 21 December 2022), and the Western HR had about 93 000 cases until the same date. The Central HR has a population of 436 912 which represents a COVID-19 rate contamination rate of 41%, while the Western HR has a population of 526 871 with a 17.7% contamination rate.

However, the Western HR registered more deaths by COVID-19 (~2000) than the Central HR (~1400), which represents 0.4% and 0.3% of death rates in each HR, respectively.[19 20]

In the Western region, there were 1118 active PHC professionals and 93 answered the questionnaire, and in the Central, there were 539 active PHC professionals and 45 professionals participated in the study. The sample size (n=138) was calculated online using the Raosoft software with a confidence level of 95%, a margin of error of 8%, a population size (number of participants meeting the inclusion criteria) of 1657, and a response rate of 50%, totalling n=138 participants. The proportional distribution of the sample was considered 67.4% (n=93) for the Western HR and 32.5% (n=45) for the Central HR, considering the total number of professionals working in each HR (n=1118 for the Western and n=539 for the Central).

In Brazil, the teams that compose PHCs are divided into family healthcare teams distributed into healthcare units; consisting of doctors, nurses, nursing technicians and community health workers,[21] added by the health specialists' team such as occupational therapists, physical therapists, speech therapists, nutritionists and social workers, in addition to the management team of each healthcare unit.[22]

An online questionnaire with 28 questions, including 27 objective questions and 1 open-ended question—which originated the qualitative data: *'Which reason(s) do you consider to be most influential for the change in your perception regarding your mental health?'*—was applied. Of these, 7 questions were about the sociodemographic profile (gender, race, marital status, income, whom do you live with?; which health region do you work in?; professional status), and 20 questions aimed to evaluate behavioural changes and mood states and emotions by self-report during the pandemic, such as the question: *'Do you believe your mental health has been affected by the pandemic?'* or *'During the pandemic, did you take psychotropic medications (sleeping pills, tranquilizers, antidepressants, stimulants, mood stabilizers)?'*

The questionnaire was built based on health surveys already performed in Brazil. The questions regarding mood state and emotions were extracted from the World Health Survey[23] conducted worldwide by the WHO. The questions regarding lifestyle and substance use were adapted from the Convid Behavioural Survey conducted by Fiocruz/Brazil[24 25] which was performed nationwide using a virtual self-completion questionnaire during the COVID-19 pandemic. Questions regarding the use of marijuana, crack-cocaine, psychotropic medications, synthetic drugs (ecstasy and LSD) and inhalants were included in the study questionnaire in addition to the original Convid survey questions, which asked only about tobacco and alcohol use.

The invitation to participate in the study was done in person through visits by the research team to the health facilities of the two HRs considered in the study and virtually using social media such as Facebook and Instagram, as well as sending email and text messages (WhatsApp) to the coordinator and PHC professionals. To achieve that, at the time of the visits to the health facilities and during the virtual dissemination of the study, the research team spoke to the PHC professionals and coordinators of the units in both HRs to explain the aims of the study to encourage them to participate (face to face or virtually) and to exchange phone/email contacts to maintain active communication and solve any questions, as well as inform the link to access the questionnaire for participation (also available via QRcode to be scanned). The PHC professionals accessed the link to the questionnaire which was to be completed online through the Google Form Platform on acceptance of the Informed Consent Form. In order to control the possibility of selection and location bias, before accessing the questionnaire, the participant had to indicate whether he/she was a PHC professional from the Central or Western HR, the name of the health unit where they worked, their professional status (whether they were part of the Family Healthcare teams or they were Health Specialist or coordinators or others), and the initials of their name. With these procedures, it was possible to minimise potential bias (eg, repeating the same participant and having professionals from other regions answering the questionnaire), and to ensure anonymity and diversity of professional status The data collection occurred virtually from 4 August 2021 to 28 August 2022. The participants were identified using abbreviations in parentheses, such as professional 1=(P.1), and so on, successively according to the sequence in which the answers were registered.

Measures and data analysis

The sociodemographic variables were categorised and represented in terms of frequencies and percentages.

The variables of interest were the psychosocial issues (mood state and emotions, social relationships and PAS use) affected/aggravated by the COVID-19 pandemic related to the PHC professionals of the Central and Western HR of the FDB. The parameters analysed were: (1) adherence to social distancing and repercussions at work; (2) personal feelings and emotions; (3) feeling and emotions towards the clients and institutional support; (4) consumption of PAS and (5) which reasons influenced the perceptions of the professional regarding their mental health (addressed through the open-ended qualitative question).

The data were collected using the Google Forms platform and the spreadsheet was generated. The spreadsheet was then converted into a file for analysis in the SPSS V.28 software. The sensitivity analysis was carried out using the SPSS based on the data entered. The quantitative data were described in absolute and relative frequencies (percentages). Pearson's χ^2 test was used to verify the difference in the distribution of the proportion of responses in the different variables according to the region. The level of significance adopted was 5%.

For the qualitative analysis regarding the open-ended question, the content analysis method guided by Bardin was adopted.[26] The steps followed were preanalysis, material exploration and treatment of results—inference and interpretation. In the preanalysis phase, the material was organised and all the participants' answers were gathered, constituting the corpus of the research. This initial contact with the documents is called 'floating reading.' Next, the choice of indexes or categories was performed from the guiding question *'Which reason(s) do you consider to be most influential for the change in your perception regarding your mental health?*,' considering the hypothesis that PHC professionals who work in regions with greater socioeconomic vulnerability have more mental health problems than those who work in less vulnerable contexts and were organised into themes.[27] In the material exploration phase, also known as coding, the choice of registration units, the selection of counting rules and the choice of categories were made. Thus, the text of the open-ended question was cut into registration units (sentences and paragraphs) and thematically grouped into categories. The treatment, inference and interpretation results correspond to the data interpretation phase. In a complementary way, the nodes, called themes, were created using the NVivo software version 10 based on the answers to the open-ended question, and the results were represented in 'word clouds' with the words that had the highest occurrence in the analysed texts.

After obtaining the quantitative and the qualitative data, a triangulation strategy was carried out; a perspective that guides studies in which quantitative and qualitative data are collected concurrently and then compared with determine convergences, differences and combinations (convergent parallel design).[27 28] Triangulation was performed by identifying the most pertinent themes in the discourses and the most relevant data in the statistical analysis. As a result, triangulation was achieved by directly comparing the statistical results of the quantitative questions with the qualitative findings. In the process of scrutinising the findings, two different sets of data were extracted, examined independently and then juxtaposed.[29] The flow of analysis used in the present research is shown in online supplemental figure S1.

Patient and public involvement

None

RESULTS

The sample was composed of 138 PHC professionals and was representative of the two HR analysed. Most of the participants were female (80.40%), aged between 40 and 49 years old (27.3%), declared themselves as black (58.7%; black and pardo), were married (53.60%), lived with a spouse or partner (62.30%) and worked in family healthcare teams (47.80%; table 1).

Adherence to social distancing and repercussions at work

Overall, 50% of the PHC professionals tried to be careful regarding the social restrictions measures but continued working and/or going out, and 62.30% of the sample stayed 2 months or more in social isolation. The vast majority (89.10%) reported that they continued working outside the home during the pandemic with 55.10% identifying that they worked much more than usual, feeling overloaded. No association was identified between the variables of adherence to social distancing and repercussions at work among the two HRs (table 2).

Personal feelings and emotions

Overall, most participants (78.30%) reported that they felt isolated many times or always from family and close friends, and 86.20% evaluated that the pandemic affected their mental health. No association was identified between the two HRs (p=0.955 and p=0.672, respectively).

Regarding fear, 68.10% of the PHC professionals reported feeling afraid of COVID-19, 60.80% said they felt depressed, and 78.20% felt anxious many times or always. For these variables, there was no association between the two HRs (p=0.599; p=0.811; p=0.401, respectively). Other personal emotions were reported by the PHC professionals (yes/no/maybe); such as hopelessness (30.40%; p=0.503); no empathy as a personal feeling (77.50%; p=0.962); anger (13.80%; p=0.529); stress (76.80%; p=0.537); sadness (47.10%; p=0.512) and general fear (47.10%; p=0.943). In addition, no association between the two HRs was identified regarding these personal emotions and feelings (table 3).

Feeling and emotions towards the clients

Overall, 76.80% of the PHC professionals reported changing their relationship with their clients, but no association was found between the two HRs (p=0.512). The participants reported feelings and emotions towards the clients such as indifference (3.60%; p=0.719); empathy (59.40%; p=0.785); affection/care (27.50%, p=0.805); fear (31.90%, p=0.301) and mistrust/suspicion (18.80%; p=0.492). Anger was associated with being a professional working in the Western HR (p=0.043), where 8.60% of the participants reported this feeling and none (0%) were reported in the Central HR (table 4).

Most participants (65.20%) reported not receiving training to deal with the COVID-19 pandemic with no association between the two HRs (p=0.894). Furthermore, except for one, all participants (99.30%) reported that they knew a colleague who had been (or was suspected) infected with COVID-19, and no association was identified between the two HRs (p=0.485; table 4).

The sensitivity analysis was carried out for the feelings and emotions (personal and towards the clients) presented in tables 3 and 4, and Cronbach's alpha reached 0.689.

Consumption of PAS

Even though the majority of the PHC participants reported that they maintained the same alcohol consumption pattern as before the pandemic (29.70%), in addition to those who said they did not use alcoholic beverages

Table 1 Sociodemographic characteristics of the PHC professional participants, the HR where they worked and the professional status (n=138)

	General	Western	Central
Gender	N (%)	N (%)	N (%)
Female	111 (80.4%)	75 (80.6)	36 (80)
Male	27 (19.6)	18 (19.4)	9 (20)
Age group	N (%)	N (%)	N (%)
20–29 years old	32 (23.2)	19 (20.43)	13 (28.89)
30–39 years old	37 (26.8)	27 (29.03)	10 (22.22)
40–49 years old	38 (27.5)	26 (27.96)	12 (26.67)
50 years or older	28 (20.3)	18 (19.35)	10 (22.22)
Not Informed	3 (2.2)	3 (3.23)	–
Race (self-declared)	N (%)	N (%)	N (%)
Black (black and pardo*)	81 (58.7)	59 (58)	22 (42.2)
White	53 (38.4)	38 (40.9)	15 (33.3)
Yellow/Asian	4 (2.9)	1 (1.1)	3 (6.7)
Marital status	N (%)	N (%)	N (%)
Single/not married	42 (30.4)	25 (29.9)	17 (37.8)
Married/spouse/stable union	74 (53.6)	53 (57)	21 (46.7)
Widowed/divorced/separated	22 (15.9)	15 (16.2)	7 (15.6)
Living with spouse or partner	N (%)	N (%)	N (%)
Yes	86 (62.3)	63 (67.7)	23 (51.1)
No	50 (36.2)	29 (31.2)	21 (46.7)
Not informed	2 (1.5)	1 (1.1)	1 (2.2)
Which health region do you work in?	N (%)	N (%)	N (%)
Western	93 (67.4)	–	–
Central	45 (32.6)		
Professional status	N (%)	N (%)	N (%)
Family healthcare teams	66 (47.8)	45 (48.4)	21 (57.7)
Health specialist	63 (45.7)	41 (44.1)	22 (48.9)
Management/admin	7 (5.1)	5 (5.4)	2 (4.4)
Others	2 (1.4)	2 (2.1)	0

FDB, 2021–2022.
*Brazilians with varied ethnic ancestry.
FDB, Federal District of Brazil; HR, health region; PHC, primary healthcare.

during the pandemic (44.20%), 14.50% of respondents reporting increased alcohol consumption, and 2.20% reporting having stopped drinking but had returned to a drinking routine during the pandemic. Regarding the other PAS, besides those who reported they did not use any (65.90%), the majority said they consumed more often than they used to (14.50%), and 12.30% reported that they had stopped using other PAS but had returned to using during the pandemic. No associations were identified between the two HRs in any of these alcohol/other PAS parameters (table 5).

Among the consumed PAS, 34.80% reported consuming medications from the psychotropic class such as tranquillisers, antidepressants, stimulants, mood stabilisers or sleeping pills, while cannabis was used by 5.80%. No respondents reported using the other substances listed in the study (crack, cocaine, inhalants and/or synthetics). No associations were found between these variables and the two HRs (table 5).

This question was asked for each of these drugs: crack, cocaine, inhalants and synergetic drugs (ecstasy, LSD)—separately and the answer was 'no' for all of them.

In the qualitative data from the open-ended question, '*Which reason(s) do you consider to be most influential for the change in your perception regarding your mental health?*' three thematic categories emerged based on the frequency of reports: work overload; the federal government's

Table 2 Frequency distribution of the PHC professional participants in the variables of adherence to social distancing and repercussions at work during the COVID-19 pandemic in general and according to the HR (n=138)

		General		HR where the professionals worked				
				Western		Central		
		n	%	n	%	n	%	P value
During the COVID-19 pandemic, how intensely did you (or are you still) restrict contact with people?	I did nothing, led a normal life	3	2.20	2	2.20	1	2.20	
	I tried to be careful, but I kept working and going out	69	50.00	44	47.30	25	55.60	0.929
	I stayed at home, only going out to the supermarket, pharmacy and shopping	56	40.60	39	41.90	17	37.80	
	I stayed strictly at home, leaving only for healthcare needs	10	7.20	8	8.60	2	4.40	
So far, how long have you been in social distancing or isolation? Or if you have broken off, how long have you been in social isolation?	Less than 1 week	14	10.10	9	9.70	5	11.10	
	Between 1 and 2 weeks	15	10.90	11	11.80	4	8.90	0.707
	15 days to 1 month	11	8.00	8	8.60	3	6.70	
	1–2 months	12	8.70	6	6.50	6	13.30	
	2 months or more	86	62.30	59	63.40	27	60.00	
How has the pandemic affected your work?	I continued working outside	123	89.10	83	89.20	40	88.90	
	I continued working, but at a home office setting	7	5.10	6	6.50	1	2.20	0.338
	I had paid vacation/ leave of absence	8	5.80	4	4.30	4	8.90	
During the Pandemic:	I worked more than usual	37	26.80	27	29.00	10	22.20%	
	I worked much more than usual, I felt overloaded	76	55.10	54	58.10	22	48.90	0.163
	I worked the same way I used to	12	8.70	7	7.50	5	11.10	
	I worked less than usual	11	8.00	4	4.30	7	15.60	
	I worked much less than usual	2	1.40	1	1.10	1	2.20	

FDB, 2021–2022.
FDB, Federal District of Brazil; HR, health region; PHC, primary healthcare.

disregard for the pandemic and distance from family and friends.

For the first thematic category work overload, the participants reported fear, insecurity and difficulty in dealing with the news brought by the pandemic period. There was a high occurrence of words such as 'work,' 'overload,' 'fear, ' 'anxiety,' 'lack' and 'changes' (online supplemental figure S2). These words were evidenced in statements such as: worsening of the scenario all the time; dealing with the stress of colleagues; fear of what was going to happen; fear of losing loved ones; fear of getting infected; lack of encouragement by the government; lack of working conditions and lack of human resources:

'The scenario is getting worse all the time. I am dealing with the stress of colleagues. We spent much time attending; […] many times, unrelated to our routine; […] tasks that before was not part of my function' (P.92);

'Fear of what was going to happen' (P.60);

'Fear of losing loved ones' (P.122);

'Lack of security in the future to plan new goals' (P.46);

'Many of my colleagues left. There was a time when I was the only one who attended the patients from the dentistry department at the health unit. It was also necessary to make adaptations in order to continue dental procedures safely… everything became more difficult and difficult. Getting out

Table 3 Frequency distribution of the PHC professional participants in the psychosocial variables—personal feelings and emotions—during the COVID-19 pandemic in general and according to the HR (n=138)

Personal feelings and emotions		HR where the professionals worked						
		General		Western		Central		
		n	%	n	%	n	%	P value
During the pandemic period, how often did you feel isolated from your family or close friends?	Never	7	5.10	5	5.40	2	4.40	
	A few times	23	16.70	15	16.10	8	17.80	0.955
	Many times	92	66.70	63	67.70	29	64.40	
	Always	16	11.60	10	10.80	6	13.30	
Do you believe that your mental health has been affected by the pandemic?	Yes	119	86.20	81	87.10	38	84.40	
	No	19	13.80	12	12.90	7	15.60	0.672
	Maybe	0	0.00	0	0.00	0	0.00	
Fear of COVID-19	Yes	94	68.10	62	66.70	32	71.10	
	No	44	31.90	31	33.30	13	28.90	0.599
	Maybe	0	0.00	0	0.00	0	0.00	
Depressed	Never	9	6.50	6	6.50	3	6.70	
	A few times	45	32.60	30	32.30	15	33.30	0.811
	Many times	78	56.50	54	58.10	24	53.30	
	Always	6	4.30	3	3.20	3	6.70	
Anxiety	Never	7	5.10	6	6.50	1	2.20	
	A few times	23	16.70	14	15.10	9	20.00	0.401
	Many times	90	65.20	63	67.70	27	60.00	
	Always	18	13.00	10	10.80	8	17.80	
Hopelessness	Yes	42	30.40	30	32.30	12	26.70	
	No	96	69.60	63	67.70	33	73.30	0.503
	Maybe	0	0.00	0	0.00	0	0.00	
Empathy	Yes	31	22.50	21	22.60	10	22.20	
	No	107	77.50	72	77.40	35	77.80	0.962
	Maybe	0	0.00	0	0.00	0	0.00	
Anger	Yes	19	13.80	14	15.10	5	11.10	
	No	119	86.20	79	84.90	40	88.90	0.529
	Maybe	0	0.00	0	0.00	0	0.00	
Stress	Yes	106	76.80	70	75.30	36	80.00	
	No	32	23.20	23	24.70	9	20.00	0.537
	Maybe	0	0.00	0	0.00	0	0.00	
Sadness	Yes	65	47.10	42	45.20	23	51.10	
	No	73	52.90	51	54.80	22	48.90	0.512
	Maybe	0	0.00	0	0.00	0	0.00	
General fear	Yes	65	47.10	44	47.30	21	46.70	
	No	73	52.90	49	52.70	24	53.30	0.943
	Maybe	0	0.00	0	0.00	0	0.00	

FDB, 2021–2022.
FDB, Federal District of Brazil; HR, health region; PHC, primary healthcare.

of bed to drink water, feed and go to the toilet also became a problem.' (P.11)

Other words were frequently cited by professionals referring to the second thematic category: federal government's disregard for the pandemic, that is; 'government,' 'pandemic,' 'lack,' 'work,' 'federal,' 'handling,' 'situation' and 'neglect' (online supplemental figure S3); exposed in speeches such as despair with the political situation and the confrontation with COVID; absence of hope with the current political situation of the country, stress, tiredness:

'People's paranoia and politicking undermining community treatment' (P.39);

Table 4 Frequency distribution of the PHC professional participants in the psychosocial variables—feeling and emotions towards the clients and institutional support—during the COVID-19 pandemic in general and according to the HR (n=138)

Feeling and emotions towards the clients		General		HR where the professionals worked				P value
				Western		Central		
		n	%	n	%	n	%	
Has the pandemic of COVID-19 changed the way you relate to the clients?	Yes	106	76.80	72	77.40	34	75.60	
	No	16	11.60	9	9.70	7	15.60	0.512
	Maybe	16	11.60	12	12.90	4	8.90	
Indifference	Yes	5	3.60	3	3.20	2	4.40	
	No	133	96.40	90	96.80	43	95.60	0.719
	Maybe	0	0.00	0	0.00	0	0.00	
Empathy	Yes	82	59.40	56	60.20	26	57.80	
	No	56	40.60	37	39.80	19	42.20	0.785
	Maybe	0	0.00	0	0.00	0	0.00	
Anger	Yes	8	5.80	8	8.60	0	0.00	
	No	130	94.20	85	91.40	45	100.00	0.043*
	Maybe	0	0.00	0	0.00	0	0.00	
Affection/care	Yes	38	27.50	25	26.90	13	28.90	
	No	100	72.50	68	73.10	32	71.10	0.805
	Maybe	0	0.00	0	0.00	0	0.00	
Fear	Yes	44	31.90	27	29.00	17	37.80	
	No	94	68.10	66	71.00	28	62.20	0.301
	Maybe	0	0.00	0	0.00	0	0.00	
Mistrust/suspicion	Yes	26	18.80	19	20.40	7	15.60	
	No	112	81.20	74	79.60	38	84.40	0.492
	Maybe	0	0.00	0	0.00	0	0.00	
Have you received training to deal with COVID-19?	Yes	48	34.80	32	34.40	16	35.60	
	No	90	65.20	61	65.60	29	64.40	0.894
	Maybe	0	0.00	0	0.00	0	0.00	
Do you know any co-workers who have been diagnosed with COVID-19 or are suspected of being infected?	Yes	137	99.30	92	98.90	45	100.00	
	No	1	0.70	1	1.10	0	0.00	0.485
	Maybe	0	0.00	0	0.00	0	0.00	

FDB 2021–2022.
*p<0.05; $\chi 2$ test.
FDB, Federal District of Brazil; HR, health region; PHC, primary healthcare.

'Patients are suspicious of our work and judge us all the time. The constant filming of videos and photos stresses us out'. There is no support from the government (P.29);

'Hopelessness with the political situation and the confrontation with COVID-19' (P. 102);

'Lack of encouragement from the government, lack of working conditions, lack of human resources, lack of hope with the current political situation of the country ' (P.21).

Finally, the words 'isolation,' 'social,' 'distancing,' 'people,' 'friends' and 'family' emerged referring to the third thematic category distance from family and friends during the COVID-19 pandemic (online supplemental figure S4):

'Social distancing as a feeling of family abandonment' (P.42);

'Isolation, illness' (P.59);

'Isolation from people, even though I was living with my family; I missed other social spaces' (P.46);

'Because I work on the front line, many people stayed away for fear that I would transmit the virus. I felt rejected and felt that people were very prejudice' (P.109).

Table 5 Frequency distribution of the PHC professional participants in the psychosocial variables—consumption of alcohol and/or other PAS—during the COVID-19 pandemic in general and according to the HR (n=138)

		General		HR where the professionals worked				
				Western		Central		
		n	%	n	%	n	%	P value
Before the pandemic, how many days a week did you used to drink alcohol?	Never or less than once a week.	108	78.30	76	81.70	32	71.10	
	1–2 days	27	19.60	16	17.20	11	24.40	0.243
	3 or 4 days	3	2.20	1	1.10	2	4.40	
	5 or more days	0	0.00	0	0.00	0	0.00	
Before the pandemic, on the day you drank, how many doses of alcoholic beverages did you usually consume? (1 dose of alcoholic beverage is equivalent to 1 can of beer, 1 glass of wine or 1 dose of cachaça, whiskey or any other distilled alcoholic beverage)?	1	39	28.30	20	21.50	19	42.20	
	2	15	10.90	11	11.80	4	8.90	
	3	15	10.90	11	11.80	4	8.90	0.424
	4	5	3.60	3	3.20	2	4.40	
	5	4	2.90	3	3.20	1	2.20	
	6	3	2.20	2	2.20	1	2.20	
	7 or more	11	8.00	8	8.60	3	6.70	
	Did not use	46	33.30	35	37.60	11	24.40	
During the pandemic:	I did not consume alcoholic beverages.	61	44.20	43	46.20	18	40.00	
	I continued drinking/drinking with the same frequency.	41	29.70	23	24.70	18	40.00	0.326
	I am drinking/was drinking more than I used to.	20	14.50	15	16.10	5	11.10	
	I am drinking/was drinking less than I used to.	13	9.40	9	9.70	4	8.90	
	I had stopped drinking, but started drinking again.	3	2.20	3	3.20	0	0.00	
During the pandemic:	I have not consumed any other psychoactive substance (PAS).	91	65.90	63	67.70	28	62.20	
	I continued consuming PAS with the same frequency.	8	5.80	7	7.50	1	2.20	0.337
	I am consuming more PAS than I used to.	20	14.50	11	11.80	9	20.00	
	I am consuming less PAS than I used to.	2	1.40	2	2.20	0	0.00	
	I had stopped using, but started using again.	17	12.30	10	10.80	7	15.60	

Continued

Table 5 Continued

		General		HR where the professionals worked: Western		Central		P value
		n	%	n	%	n	%	
During the pandemic, did you consume psychotropic medication (sleeping pills, tranquillisers, antidepressants, stimulants, mood stabilisers)?	Yes	34.80	29	31.20	19	42.20		
	No	65.20	64	68.80	26	57.80		0.202
	Maybe	0.00	0	0.00	0	0.00		
During the pandemic, did you use marijuana?	Yes	5.80	7	7.50	1	2.20		
	No	94.20	86	92.50	44	97.80		0.211
	Maybe	0.00	0	0.00	0	0.00		
During the pandemic did you use any other PAS*?	Yes	0.00	0	0.00	0	0.00		
	No	100.00	93	100.00	45	100.00		NA**
	Maybe	0.00	0	0.00	0	0.00		

FDB, 2021–2022.
*This question was asked for each of these drugs – Crack, cocaine, inhalants, and synergetic drugs (ecstasy, LSD) – separately and the answer was "no" for all of them.
**NA: Not Applicable
FDB, Federal District of Brazil; HR, health region; NA, not applicable; PAS, psychoactive substance; PHC, primary healthcare.

Triangulation of the quantitative and qualitative data strengthened the findings to identify which factors were most related to the psychosocial aspects of the PHC professionals during the COVID-19 pandemic. For example, more than 55% of the professionals reported that they worked much more than usual, feeling overloaded, which is related to some of the statements described in the first thematic category. In addition, 65.20% of the professionals reported that they had not received training to deal with COVID-19 which is related to the 'irresponsibility' of the federal government in managing the pandemic, as highlighted by statements in the second thematic category. Finally, 78.30% of the professionals felt isolated from family or friends many times/always which is related to the speech reported in the third thematic category.

DISCUSSION

Overall, the study results showed no association among professionals working during the COVID-19 pandemic in PHC facilities located in the most vulnerable HR of FDB and presenting psychosocial issues compared with the least. In addition, even with the efforts undertaken by the team to increase the number of participants in the study—with face-to-face visits to health facilities and systematic sending of text messages to professionals encouraging their participation—adherence was lower than expected even though the sample was representative of the two HRs. One of the reasons that may explain the low adherence to the study was the sudden increase in research conducted during this period by sending links via email, as well as the overabundance of activities conducted virtually (eg, conferences call, meetings and courses). Such virtual activities may have influenced people's lack of interest in participating in the study.[30]

The frequency of the word 'lack' identified in the qualitative data—lack of human resources, lack of working conditions and lack of government support—combined with work overload and distance from friends and family, seem to provide a context for the negative psychosocial aspects manifested by PHC professionals regardless of the HR where they worked. Similarly, although the regions also had a different morbidity and mortality profile, this did not seem to affect the psychosocial aspects of the PHC professionals. In other words, the scenario of fear and suffering caused by the pandemic was so widespread that it mattered little whether the context where healthcare was provided was more or less vulnerable. The open-ended qualitative question offered important information to guide the interpretation of these results.

The feeling of anger towards clients was the only one associated with working in the most vulnerable region. Anger and other negative feelings were reported by nursing professionals[31] and the general population[32] regarding the context of COVID-19, showing perceptible stress and work overload related to the disease. Being depressed, anxious and stressed were feelings reported by most of the participants, which is in agreement with other studies[33 34] that have identified increased rates of mental health symptoms, such as anxiety and stress, and mental disorders, such as post-traumatic stress, especially among nurses and doctors. Another study exposes the highest risk of burn-out and mental health decline in healthcare workers; that is, nearly 30% demonstrate a risk of burn-out, and over 50% experience symptoms of anxiety

and insomnia.[35] It showed that healthcare professionals who worked directly with COVID-19-infected/suspected clients were more likely to experience depression, stress and burn-out than those who were not personally involved in this fieldwork.[36] Insomnia is one of the main factors associated with PAS use in this population group,[37 38] which has been a general increase in the consumption of prescription psychotropic drugs[39] as observed in the prevalence of psychotropic medication use identified in the study. A systematic review[39] demonstrated significant changes in PAS use among healthcare professionals during the COVID-19 pandemic that correlates with findings in the present study regarding the use of alcohol and other PAS. Alcohol was the most used substance with an increase of almost 14% in binge drinking, 1.3% in new alcohol users and a relationship between the alcohol use with the context generated by the pandemic, such as exposure to stressful environments, risk of contagion, neuropsychological conditions and high professional demands. The study also states that Latin America may be more susceptible to mental and substance use disorders, especially alcohol use because it is a region that has been hard affected by health problems generated by the pandemic, and Brazil particularly, had the pandemic condition aggravated by the disastrous conduction by the federal government,[40 41] as pointed out in the qualitative data.

The study hypothesis was not confirmed, although it has already been demonstrated that territories with socioeconomic vulnerability are more exposed to the clinical and social risks generated by the COVID-19 pandemic. Homes and residences with overcrowding, lack of materials for proper hygiene, basic sanitation structure and precarious drinking water supply are some examples of inequities to which people in vulnerable sociodemographic regions are exposed, putting this population in a state of precariousness, leading to illness and death.[42] These people face a complex historical and cultural reality, exposing them to several social situations such as discrimination and prejudice, in addition to the state's violence generated by inequalities in the supply of the welfare state.[43]

Relevant findings were identified in the personal healthcare professional's feelings and those towards the clients, especially related to how they deal with their clients and the feeling of empathy and affection/care. Empathy is the ability to put yourself in the other's shoes to be emotionally touched by the needs experienced by the other so that one becomes responsible for the other, strengthening psychic comfort, aiding and contributing to building social relationships and serving as a stress controller.[44] This is an essential feeling for human connections in healthcare.[45] According to a study conducted by Dal Pai and Luatert,[46] while working conditions become more precarious and the professional is 'between life and death, ' they use defence mechanisms, and no empathy becomes a strategy of emotional regulation with the risk of creating a 'robotised' healthcare professional when facing the emotional needs of the clients.[47] No empathy can also signify high stress and professional burn-out,[48 49] as evidenced by the qualitative data.

Social distancing also affected the relationships between healthcare professionals and their families and friends. This is a paradox of the pandemic in healthcare professionals; they are overburdened with caring for people while the dynamics of social distancing weaken their support network; the professionals deliver care for others but do not offer care for themselves.[50] This context becomes even more challenging when you know coworkers who have been contaminated by COVID-19, as reported by almost all participants; the fear of being infected is present in the professionals' routine. This negative feeling can evolve into psychosocial issues, including critical emotional reactions such as anger, insomnia, unhealthy habits, that is, problematic use of alcohol and other PAS, stress-related mental disorders (post-traumatic stress disorder, anxiety disorder, depression disorder) and a decreased perception of one's health,[51] which may even lead to a more severe situation such as self-injury or suicide attempt.[52] Previous studies[53 54] in the context of the COVID-19 pandemic already stated that the perception of risk was the main factor of mental disorders (including the main risk of burn-out syndrome) and negative changes in alcohol or other PAS use.

Strengths and limitations

The present study presents some limitations that must be mentioned. The online survey was based entirely on a self-administered questionnaire. Although valid and widely used, people are often biased when they report on their own experiences, and screening questionnaires can overestimate the prevalence of psychosocial aspects relative to structured diagnostic interviews. Even though we accessed the target population and had a significant sample size for both regions studied, we had planned to offer the possibility of answering the questionnaire face to face for those who might have internet access difficulties and even to encourage and stimulate the participation of those who started to 'ignore' emails with links to participating in online surveys. However, this strategy did not prove feasible, and people were not interested in this face-to-face participation, restricting the study to responses obtained online. A strength of the study was the mixed method (quantitative and qualitative data) applied which can provide confirmation and enhance understanding of the findings and the identification of new aspects that are not captured only by quantitative data. An additional strength has to do with the object of the study which considers the role of socioeconomic and epidemiological vulnerability in the providers' psychosocial aspects during the COVID-19 pandemic regarding that is, work overload, social distancing, personal and clients-related feelings and emotions; and PAS use, also giving the opportunity for all participants to answer the open-ended qualitative question and not only a subsample.

CONCLUSIONS

The PHC professionals who provided care in the most vulnerable region of the FDB, and those who did in the least, had their psychosocial aspects impacted by the COVID-19 pandemic almost identically. In this sense, it is concluded that the psychosocial aspects presented by the PHC professionals do not seem to be influenced by the more or less vulnerable socioeconomic context; by the sociodemographic profile of the population served or by the morbidity and mortality profile of the HR. What seems to have had an impact was the atypical context caused by the pandemic with important consequences on work overload. In addition, the lack of support and leadership from the federal government in managing the health crisis, and the distancing of friends and family, contributed to the negative manifestation of the psychosocial aspects of the PHC professionals, regardless of where they were working.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Consent obtained directly from patient(s).

Ethics approval This study involves human participants and was approved by the Institutional Review Board (IRB) of the *Universidade de Brasília*, and of the Foundation for Teaching and Research in Health Sciences of the FDB (*Fundação de Ensino e Pesquisa em Ciências da Saúde do Distrito Federal*) by the certificate numbers CAAE No. 47189521.5.0000.8093 and CAAE No 47189521.5.3001.5553, respectively (both are available to consult at (https://plataformabrasil.saude.gov.br/login.jsf). All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants for being included in the study. Participants gave informed consent to participate in the study before taking part.

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REFERENCES

1 World Health Organization. OMS Afirma que COVID-19 É Agora Caracterizada Como Pandemia. OPAS; 2020. Available: https://www.paho.org/bra/index.php?option=com_content&view=article&id=6120 :oms-afirma-que-COVID-19-e-agora-caracterizada-como-pandemia&Itemid=812
2 World Health Organization. WHO health emergency dashboard. OMS. 2020. Available: https://covid19.who.int/ [Accessed 21 Dec 2022].
3 Hale T, Webster S. Oxford COVID-19 government response Tracker. data use policy: creative Commons Attribution CC BY standard. 2020. Available: https://www.bsg.ox.ac.uk/research/covid-19-government-response-tracker [Accessed 14 Dec 2022].
4 Aquino EML, Silveira IH, Pescarini JM, *et al*. Medidas de Distanciamento social no Controle DA Pandemia de COVID-19: Potenciais Impactos E Desafios no Brasil. *Ciênc Saúde Coletiva* 2020;25(suppl 1):2423–46.
5 Bezerra ACV, Silva CEM da, Soares FRG, *et al*. Fatores Associados Ao Comportamento DA População Durante O Isolamento social NA Pandemia de COVID-19. *Ciênc Saúde Coletiva* 2020;25(suppl 1):2411–21.
6 PorsseAA, SouzaKB, Carvalho TS, *et al*. *Impactos Econômicos do COVID-19 no Brasil. Nota Técnica NEDUR-UFPR No 01-2020*. Curitiba: Núcleo de Estudos em Desenvolvimento Urbano e Regional (NEDUR) da Universidade Federal do Paraná, 2020. Available: http://www.nedur.ufpr.br/portal/wp-content/uploads/2020/04/nota-tecnica-nedur[1]ufpr-01-2020-impactos-economicos-da-COVID-19-no-brasil.pdf [accessed 14 Apr 2020].
7 Gallassi AD, Nakano EY, de Miranda KG, *et al*. The increased alcohol and marijuana use associated with the quality of life and Psychosocial aspects: a study during the COVID-19 pandemic in a Brazilian University community. *Int J Ment Health Addict* 2022:1–21.
8 Brooks SK, Webster RK, Smith LE, *et al*. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020;395:912–20.
9 Daumas RP, Silva GA e, Tasca R, *et al*. O Papel DA Atenção Primária NA Rede de Atenção À Saúde no Brasil: Limites E Possibilidades no Enfrentamento DA COVID-19. *Cad Saúde Pública* 2020;36. 10.1590/0102-311x00104120 Available: https://doi.org/10.1590/0102-311X00104120
10 Brasil. Lei Nº 8.080, De 19 de Setembro de 1990. Dispõe Sobre as Condições para a Promoção, Proteção E Recuperação DA Saúde, a Organização E O Funcionamento dos Serviços Correspondentes E Dá Outras Providências. 1990. Available: https://www.planalto.gov.br/ccivil_03/leis/l8080.htm
11 Bozdağ F, Ergün N. Psychological resilience of Healthcare professionals during COVID-19 pandemic. *Psychol Rep* 2021;124:2567–86.
12 Mishra J, Samanta P, Panigrahi A, *et al*. Mental health status, coping strategies during COVID-19 pandemic among undergraduate students of Healthcare profession. *Int J Ment Health Addict* 2023;21:562–74.
13 Dennis D, Radnitz C, Wheaton MGA. Perfect storm? health anxiety, contamination fears, and COVID-19: lessons learned from past Pandemics and current challenges. *Int J Cogn Ther* 2021;14:497–513.
14 Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Res* 2020;288:112954.
15 Lai J, Ma S, Wang Y, *et al*. Factors associated with mental health outcomes among health care workers exposed to Coronavirus disease 2019. *JAMA Netw Open* 2020;3:e203976.
16 Distrito Federal do Brasil. Boletim Epidemiológico de Transtornos Mentais E Comportamentais em Servidores Públicos do Distrito Federal. 2021.
17 Hernandez Montaño A, González Tovar J. Modelo Explicativo del Autocuidado, La Regulación Emocional Y El burnout en Psicólogas

en Condición de Aislamiento Por COVID-19. *Acta Colomb Psicol* 2022;25:90–103.
18 Brasil. Regiões de Saúde. Ministério da Saúde. Available: https://www.gov.br/saude/pt-br/composicao/saps/programa-cuida-mais-brasil/regioes-de-saude [Accessed 21 2022].
19 Brasil. Pesquisa Distrital Por Amostra de Domicílio, Companhia de Planejamento do Distrito Federal. Available: https://www.codeplan.df.gov.br/wp-content/uploads/2020/06/Destaques_PDAD_revisado.pdf [Accessed 21 2022].
20 Brasil. Boletim Epidemiológico N° 889, Secretaria de Estado de Saúde do Distrito Federal. Available: https://www.saude.df.gov.br/documents/37101/0/Boletim_Covid_889.pdf [Accessed 21 2022].
21 de FF, Pinto IC. n.d. Percepção DA Equipe de Saúde DA Família Sobre a Utilização do Sistema de Informação DA Atenção Básica-SIAB. *Rev Latino-Am Enfermagem*:547–54.
22 Brasil. Gabinete do Ministro. Portaria N 2.488, De 21 de Outubro de 2011. Aprova a Política Nacional de Atenção Básica, Estabelecendo a Revisão de Diretrizes E Normas para a Organização DA Atenção Básica, para a Estratégia Saúde DA Família - ESF E O Programa de Agentes Comunitários de Saúde - PACS. Diário Oficial DA República Federativa do Brasil, Brasília, DF, 24 out. Ministério da Saúde; 2011. Available: https://bvsms.saude.gov.br/bvs/saudelegis/gm/2011/prt2488_21_10_2011.html
23 Szwarcwald CL, Viacava F. Pesquisa Mundial de Saúde: Aspectos Metodológicos E Articulação com a Organização Mundial DA Saúde. *Rev Bras Epidemiol* 2008;11(suppl 1):58–66.
24 Fundação Oswaldo Cruz (FIOCRUZ). Convid-Pesquisa de Comportamentos. Rio de Janeiro. FIOCRUZ; 2020. Available: https://convid.fiocruz.br/arquivos/QuestionarioConVidPesquisaDeComportamentos.pdf
25 Szwarcwald CL, Souza Júnior P de, Damacena GN, *et al*. Convid-pesquisa de comportamentos pela internet durante a pandemia de COVID-19 no Brasil: concepção E metodologia de aplicação. *Cad Saúde Pública* 2021;37.
26 dos SF. Análise de Conteúdo: a Visão de Laurence Bardin. *Reveduc* 2012;6:383–7.
27 Santos JLG dos, Erdmann AL, Meirelles BHS, *et al*. Integração entre dados quantitativos E qualitativos em uma pesquisa de métodos mistos. *Texto Contexto - Enferm* 2017;26.
28 Creswell JW, Plano Clark VL. *Designing and conducting mixed methods research*3rd ed. Thousand Oaks, CA: SAGE Publications, 2017.
29 Demir SB, Pismek N. A CONVERGENT parallel mixed-methods study of controversial issues in social studies classes: A clash of ideologies. *Edu Sci: Theory Pract* 2018;18:119–49. Available: https://eric.ed.gov/?id=EJ1179818
30 Moradi Y, Baghaei R, Feiz A, *et al*. Challenges of the sudden shift to asynchronous virtual education in nursing education during the COVID-19 pandemic: a qualitative study. *Nurs Midwifery Stud* 2022;11:44–50.
31 Barbosa DJ, Pereira Gomes M, Souza F, *et al*. Fatores de estresse NOS profissionais de enfermagem no combate À pandemia DA COVID-19: síntese de evidências. *Com Ciências Saúde* 2020;31:31–47.
32 Costa G da, Ribeiro AMN, Ferreira MTA, *et al*. Enfermagem: atualidades do século XXI. In: *Editora Omnis Scientia*. 2021.
33 Kang L, Li Y, Hu S, *et al*. The mental health of medical workers in Wuhan, China dealing with the 2019 novel Coronavirus. *Lancet Psychiatry* 2020;7.
34 Huang JZ, Han MF, Luo TD, *et al*. Mental health survey of medical staff in a tertiary infectious disease hospital for COVID-19. *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi* 2020;38:192–5.
35 Babamiri M, Bashirian S, Khazaei S, *et al*. Burnout and mental health of COVID-19 frontline Healthcare workers: results from an online survey. *Iran J Psychiatry* 2022;17:136–43.
36 Ulfa M, Azuma M, Steiner A. Burnout status of Healthcare workers in the world during the peak period of the COVID-19 pandemic. *Front Psychol* 2022;13:952783.
37 Que J, Shi L, Deng J, *et al*. Psychological impact of the COVID-19 pandemic on healthcare workers: a cross-sectional study in China. *Gen Psychiatr* 2020;33:e100259.
38 Walton M, Murray E, Christian MD. Mental health care for medical staff and affiliated healthcare workers during the COVID-19 pandemic. *Eur Heart J Acute Cardiovasc Care* 2020;9:241–7.
39 Moya-Salazar J, Nuñez E, Jaime-Quispe A, *et al*. Substance use in healthcare professionals during the COVID-19 pandemic in Latin America: a systematic review and a call for reports. *Subst Abuse* 2022;16:11782218221085592.
40 Ferigato S, Fernandez M, Amorim M, *et al*. The Brazilian government's mistakes in responding to the COVID-19 pandemic. *Lancet* 2020;396.
41 Neiva MB, Carvalho I, Costa Filho EDS, *et al*. Brazil: the emerging epicenter of COVID-19 pandemic. *Rev Soc Bras Med Trop* 2020;53:e20200550.
42 Pereira MD, Oliveira L de, Costa CFT, *et al*. A Pandemia de COVID-19, O Isolamento social, consequências NA saúde mental E estratégias de enfrentamento: uma revisão integrativa. *RSD* 2020;9:e652974548.
43 Duarte AEB, Munhoz DJ, Marques VRS. Pandemia: Caminhos para Aprendizagem. In: *Pedro & João Editores*. 2021.
44 Fernandes M, Araújo A. Empatía Y salud mental en El contexto de la pandemia por COVID-19. *Revista Cubana de Enfermería* 2020;36:1–3. Available: https://revenfermeria.sld.cu/index.php/enf/article/view/3773
45 Souza W de O. Empatia, Compaixão E O Profissional de Saúde. PEBMED. Available: https://pebmed.com.br/empatia-compaixao-e-o-profissional-de-saude/ [Accessed 20 Dec 2019].
46 Dal Pai D, Lautert L. Estratégias de enfrentamento do adoecimento: um estudo sobre O trabalho DA enfermagem. *Acta Paul Enferm* 2009;22:60–5.
47 Lazarus RS, Miyar MV, Folkman S. *Estres y procesos cognitivos*. Barcelona: Ediciones Martínez Roca, 1986.
48 Santos A de O, Cardoso CL. Profissionais de Saúde mental: manifestação de stress E burnout. *Estud Psicol (Campinas)* 2010;27:67–74.
49 Mangas MD, Fernandes CP, Cardoso AB, *et al*. O burnout dos profissionais de saúde NA pandemia COVID-19: como prevenir E tratar. *RPMGF* 2022;38:226–30.
50 Lewis S, Willis K, Bismark M, *et al*. A time for self-care? frontline health workers' strategies for managing mental health during the COVID-19 pandemic. *SSM Ment Health* 2022;2:100053.
51 Shigemura J, Ursano RJ, Morganstein JC, *et al*. Public responses to the novel 2019 Coronavirus (2019-nCoV) in Japan: mental health consequences and target populations. *Psychiatry Clin Neurosci* 2020;74:281–2.
52 Xiang Y-T, Yang Y, Li W, *et al*. Timely mental health care for the 2019 novel Coronavirus outbreak is urgently needed. *Lancet Psychiatry* 2020;7:228–9.
53 Barros-Delben P, Cruz RM, Trevisan KRR, *et al*. Saúde mental em Situação de Emergência: COVID-19. *Debates Em Psiquiatria* 2020;10:18–28.
54 Taylor S, Paluszek MM, Rachor GS, *et al*. Substance use and abuse, COVID-19-related distress, and disregard for social distancing: a network analysis. *Addict Behav* 2021;114:106754.