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Mental health and quality of life of Brazilian healthcare professionals during the COVID-19 pandemic

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Abstract

The COVID-19 pandemic can produce considerable impacts on the mental health of healthcare professionals, as they face several stressors at work. Purpose: This study aims to assess Brazilian healthcare professionals' mental health and quality of life. Method: participants were divided into four groups according to their occupational fields: administrative(n=129), emergency (n=39), primary care (n=257) and specialties (n=51). Participants completed a sociodemographic questionnaire, the World Health Organization Quality of Life-BREF and the Self-Reporting Questionnaire. Data analysis: Data were analyzed with Variance Analysis, Chi-square, and linear and logistic regressions. Results: Results showed that health providers have an average quality of life but presented high rates of mental disorders, especially those working in emergency and primary care. Some risk factors, such as demographic (gender, age, educational attainment, marital status), lifestyle (physical activity, diet, religion, social support, leisure), and labor (job satisfaction, job congruence, presence of deaths at work) were observed. Conclusions: This research shows the importance of designing specific psychological interventions for this population, which seems to be at risk for more severe mental conditions.

1. INTRODUCTION

The COVID-19 virus spread throughout the world, and the first case in Brazil was detected on February 26, 2020, quickly evolving to a large number of cases and deaths (Brazilian Department of Health, 2020). In this scenario, healthcare professionals, who have already faced several stressors in their work, are confronted with more adverse situations, such as exposure to large-scale deaths, intensive working hours and fear of contagion (Cruz et al., 2020).

Latin America has its specificities concerning the spread and actions against the virus. From cultural aspects, such as social aggregations, which hampers social distancing measures, to political instabilities and presidents against vaccines and lockdowns, the pandemic in Latin America has different proportions (Garcia et al., 2020). In Brazil, this situation is aggravated by the lack of hospital supplies, safety equipment and beds and the scarcity of trained human health resources associated with the significant number of cases and hospitalizations. These conditions have often obligated health professionals to make difficult ethical decisions (Oswaldo Cruz Foundation- Fiocruz, 2021; Ribeiro et al., 2020).

Despite the high rates of vaccination in Brazil (almost 80% of the population was fully vaccinated by the end of June 2022), the quantity of cases and deaths remains large,

especially with the emergence of new variants and their combination with other viruses, such the influenza (Brazilian Department of Health, 2022). Also, Latin-American healthcare workers must deal with the population´s reluctance to vaccination, disbelief in healthcare professionals, a precarious health system with a shortage of resources, and low salaries for those who work in the public service (Garcia et al., 2020; Rodriguez-Morales, & Franco, 2021). Therefore, healthcare professionals have been facing a work overload for almost two years, and some studies point out that they present high levels of anxiety, depression, stress, and suicidal thoughts (Fiocruz, 2021; Lai et al., 2020; Moreira et al., 2021; Pan American Health Organization, 2022).

The quality of life of these professionals, understood as a dynamic state of physical, psychological, and social well-being, has also been impacted by the COVID-19 pandemic (WHO, 2020). Prior research reports low levels of quality of life, which can implicate in lower productivity and job satisfaction, more medical errors, turnovers, and absenteeism, as well as increased financial costs for the health system and higher patient mortality (Cruz et al., 2020; Dyrbye et al., 2017; Suryavanshi et al., 2020; Stojanov et al., 2021).

On the other hand, the influence of these stressors on the mental health and quality of life of these individuals varies according to physical, environmental, labor, economic, and lifestyle determinants, among others. Thus, investigating these factors is essential for a contextualized comprehension of the impact of the pandemic on their quality of life (Bircher, 2005; Lund et al., 2018).

Some studies have reported that men (Ioannou et al., 2015; Lai et al., 2020; Stojanov et al., 2021) of older age (Dyrbye et al., 2017), married (Suryavanshi et al., 2020), with higher educational and socioeconomic levels (Temesgen et al., 2018), religious (Vitorino et al., 2021) and with social support (Vafaei et al., 2020; Iqbal, 2020) present a better quality of life. On the other hand, research on lifestyle variables indicate that performing physical activities regularly, having a balanced diet (Ahmad et al., 2015), not smoking, not consuming alcohol (Petrelli et al., 2018; Temesgen et al., 2018) and dedicating time to leisure (Macedo et al., 2009) are associated with a higher overall quality of life.

Labor-related factors also impact the quality of life of healthcare workers. Several studies suggest that job satisfaction has a protective role, as professionals who declare themselves satisfied with their current function report a higher physical and psychological quality of life (Andresen et al., 2017; Ioannou et al., 2015; Yu et al., 2008). In addition, those who work less than 40 hours a week (Ahmad et al., 2015; Macedo et al., 2009), who have been in the current position for less than 15 years (Petrelli et al., 2018), and who only have one job (Fernandes et al., 2012), who do not work with critically ill patients (Austin et al., 2017) and who are not working on the COVID frontline (Stojanov et al., 2021; Zerbini et al., 2020) also refer a better quality of life.

Hence, given the stressful work conditions faced by the professionals in the context of the pandemic and calamity in the Brazilian health system, it is important to investigate possible risk factors on the mental health and quality of life of healthcare providers to enable early identification and development of evidence-based interventions (Kalaitzaki et al., 2020). As far as we know, no Brazilian publications have been dedicated to empirically researching this topic (Ribeiro et al., 2020). Thus, understanding the psychological impacts of COVID-19 in the Latin-American context, together with risk variables, is essential to outline the global dimensions of the pandemic through the identification of risk groups and subsequent design of possible directions for public policies.

Therefore, this study aims to investigate sociodemographic, labor and lifestyle factors that influence Brazilian healthcare professionals' quality of life and mental health during the COVID-19 pandemic. Furthermore, another objective of this research was to compare the quality of life and mental health of four healthcare professionals working in different fields (administrative, emergency, primary care and specialities).

Consequently, the hypotheses of this research were: (1) the exposure to COVID-19 stressors are associated with higher rates of psychopathologies and lower levels of

quality of life; (2) Group 2 (emergency) present the worst mental health and quality of life as compared to the other groups; (3) female, younger professionals, those from minorities, non-partnered, with lower educational and/or socioeconomic status, without religion and social support, present lower quality of life and higher rates of psychological problems; (4) professionals whose work did not have congruence with their field of expertise, who worked in multiple jobs, who worked on the COVID frontline, who witnessed deaths in their work, who had a high weekly workload, who were in the current function for a higher time and who were not satisfied with their work report lower quality of life and greater amount of psychopathologies, and (5) professionals who did not practice regular physical activities, who did not maintain a balanced diet, who did not have leisure activities, who smoked, who consumed alcohol and who were not in psychological and/or psychiatric care present lower levels of mental health and quality of life.

2. METHODOLOGY

2.1 Participants

All the healthcare professionals (1867) who worked in the health system of a city in Sao Paulo State (Brazil) were invited to participate in this study between April and June 2021. Professionals over 18 years old and active in their function were included in the study, and those on vacation, sick or work leave were excluded. The final sample consisted of 476 healthcare professionals, divided into three groups according to their occupational fields: administrative (n=129), emergency (n=39), primary care (n=257) or specialities (n=51).

2.2 Questionnaires

2.2.1 Sociodemographic questionnaire

Sociodemographic data were obtained through a Google Forms questionnaire with objective questions about the following information: gender, age, marital status (with/without a partner), race (white/other), educational attainment (elementary/high school/college) and religious practice (yes/no). Questions referring to labor activity sought to identify: time in the current professional position (up to 10 years/more than 10 years), work in the same field of prior training (job congruence) (yes/no), weekly workload (up to 40 hours a week/more than 40 hours a week), job satisfaction (yes/no), being on the frontline against COVID-19 (yes/no) and presence of deaths at work (yes/no). Leisure activities and lifestyle habits were collected using the following information: regular physical activity (yes/no), adequate diet (yes/no), being a smoker (yes/no), alcohol consumption (less than twice per week/more than twice a week), the existence of leisure activities (yes/no) and presence of support from friends or family (yes/no). Data on the psychological and psychiatric background were obtained through questions referring to being in care currently or in the past (yes/no).

2.2.2 World Health Organization quality of life-BREF questionnaire (WHOQoL-BREF)

Fleck et al. (2000) translated the questionnaire into Portuguese, which consisted of 26 questions on a five-point Likert scale. The first two questions refer to the general quality of life and general health, and the other 24 are subdivided into four domains (physical health, psychological, social relationships and environment). In this study, we analyzed only the first three dimensions (physical, psychological, and social) since they are the ones considered in the WHO´s definition of health (WHO, 2020). The physical domain involves the presence of disabling pain, the need for medical treatment, the ability to work and perform daily tasks, autonomy and sleep. The psychological dimension investigates the meaning of life, memory and concentration, self-satisfaction, the presence of positive and negative feelings, personal beliefs, and spirituality. The social quality of life considers satisfaction with personal relationships, social support and sexual activity (Arôca, 2009). This questionnaire has good psychometric performance, with a total Cronbach coefficient of 0.77, and it is a useful alternative to assessing the quality of life in Brazil (WHOQoL Group, 1998).

2.2.3 *Self-reporting questionnaire (SRQ-20)*

This is a psychological morbidity screening instrument developed by the World Health Organization and adapted for the Brazilian population by Santos et al. (2011). It comprises 20 questions with dichotomic answers (yes/no) that detect psychopathological symptoms. The instrument is suitable for the Brazilian context, with a sensitivity index of 68% and a specificity of 70.7%. The cut-off point adopted in this study was seven positive answers, which suggests the presence of possible common mental disorders, such as depression, anxiety, and stress (Santos et al., 2011; Duarte et al., 2020).

2.3 Data collection

The directors of health units were asked to present the project to their employees after approval by the Research Ethics Committee. Due to the government´s decision to implement measures of social distancing as a strategy to reduce virus contagion, the data was collected through the Google Forms platform, available to the participants through social networks (WhatsApp) and email. The Google Forms questionnaire was divided into three sections, the first related to sociodemographic, lifestyle and labor data, the second dedicated to the WHOQoL BREF, and the third to the SRQ-20. In all sections, the answers were obligatory and organized in a multiple-choice format. To start filling out the questionnaires, participants should accept to participate in the research by reading and accepting the Informed Consent Agreement. Was offered immediate psychological care for participants with scores above seven on the SRQ-20.

2.4 Data analysis

Descriptive analyses were calculated for continuous variables, and frequencies were presented for categorical variables. To explore the differences between the groups, Variance Analysis or Chi-Square tests were conducted. In each ANOVA, homogeneity and equality of variances were assessed using Levene´s test. If the homoscedasticity assumption was not met, Brown-Forsythe correction was applied. In multiple comparisons, Bonferroni post hoc correction was used (α=0.05) and the effect size was calculated (Cohen's d). To determine the association between sociodemographic, lifestyle and job variables with participants´ quality of life, linear regressions were performed considering the total score in each quality-of-life dimension. Relations between these variables and the presence of mental illness (dichotomously configured from the cut-off score of 7 points) were analyzed with binary logistic regression.

2.5 Ethical considerations

The Special Committee approved this research for Evaluation and Monitoring of Research in Public Health of the municipality where it was carried out, as well as by the Research Ethics Committee of Hospital Guilherme Álvaro (number in Plataforma Brasil CAAE 52397721.2.0000.5448).

3. RESULTS

Participants´ sociodemographic characteristics are presented in Table 1, and lifestyle and job variables are presented in Table 2. Expected significant differences between the groups were detected in some characteristics that were congruent with the work fields, such as educational level, multiple jobs, job congruence and weekly workload. G2 (emergency) had more professionals with college education (x^2 (3)= 150.09; p<0.001) and working more than 40 hours a week (x^2 (3)=53.51; p<0.001). G1 (administrative) had more participants working in only one job (x^2 (3)=30.32; p<0.001) and G4 (specialities) had more professionals who were working congruently with their field of expertise (x^2 (3)=26.32; p<0.001).

However, some unexpected features differed significantly between groups, such as marital status, time in the current position, weekly workload and deaths in the workplace. In this sense, G2 (emergency) had more professionals without a partner (x^2 (3)=8.38; p=0.039) and working more than 40 hours a week (x^2 (3)=53.52; p=0.000). Furthermore, this group was not significantly working more in the COVID frontline than

the other groups (x^2 (3)=86.54; p=0.000) but significantly witnessed more deaths in their work (x^2 (3)=90.63; p=0.000).

Table 1. Participants' sociodemographic characteristics (*n* = 476)

Variables	G1		G2		G3		G4		Total	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Gender										
female	95	73.6	35	89.7	228	88.7	43	84.3	401	84.2
male	34	26.4	4	10.3	29	11.3	8	15.7	75	15.8
Age group										
young age (<34 years-old)	40	31.0	18	46.1	73	28.4	11	21.5	142	29.8
middle-age (35-54 years-old)	72	55.8	20	51.3	149	58.0	34	66.7	275	57.8
third age (>55 years-old)	17	13.2	1	2.6	35	13.6	6	11.8	59	12.4
Race										
white	77	59.7	21	53.8	144	56.0	29	56.9	271	56.9
non-white	52	40.3	18	46.2	113	44.0	22	43.1	205	43.1
Educational attainment										
elementary	35	27.1	1	2.5	91	35.4	8	15.7	135	28.4
high school	43	33.4	4	10.3	140	54.5	8	15.7	195	41.0
college	51	39.5	34	87.2	26	10.1	35	68.6	146	30.7
Marital status										
with a partner	74	57.4	15	38.5	152	59.1	23	45.1	264	55.5
without a partner	55	42.6	24	61.5	105	40.9	28	54.9	212	44.5
Religion										
with a religion	105	81.4	30	23.1	209	81.3	44	86.3	388	81.5
without any religion	24	18.6	9	76.9	48	18.7	7	13.7	88	18.5
Social support										
yes	117	90.7	36	92.3	226	87.9	47	92.2	426	89.5
no	12	9.3	3	7.7	31	12.1	4	7.8	50	10.5

Note: G1= administrative; G2= emergency; G3= primary care; G4= specialties. Non-white= black/multiracial/Asian; Without a partner= single/divorced/widowed.

The analysis of participants´ mental health showed that 52.1% presented scores over the cut-off point in the SRQ-20 questionnaire, suggesting that they could be suffering from mental disorders (MD). In relation to their quality of life (QoL), the analysis of the WHOQL-BREF demonstrated that the total mean score was 3.43, which consists of an average QoL.

Significant differences between groups were detected for all variables in relation to their MD and QoL. The same results were obtained when samples of G1 and G3 were reduced to 50 random cases each, a procedure used as a robustness test in the analysis. Therefore, Table 3 demonstrates that G2, G3 and G4 have high means of MD, but significant effects were observed between G1 (administrative) and G3 (primary care), with the latter showing significantly higher levels of MD.

Table 2. Participants´ lifestyle and job variables (*n*=476)

	G1		G2		G3		G4		Total	
Variables	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Physical activity	47	36.4	10	25.6	70	27.2	17	33.3	144	30.3
Adequate diet	76	58.9	19	48.7	134	52.1	29	56.9	258	54.2
Leisure activities	105	81.4	32	82.1	176	68.5	38	74.5	351	73.7
Regular smoking	15	11.6	7	17.9	35	13.6	10	19.6	67	14.1
Alcohol consumption	11	8.5	3	7.7	28	10.9	13	25.5	55	11.6
Psychological/ psychiatric care	57	44.2	18	46.2	129	50.2	36	50.6	240	50.4
Job congruence	65	50.4	33	84.6	187	72.8	37	72.5	322	67.6
Multiple jobs	23	17.8	18	46.2	36	14.0	18	35.3	95	20.0
Working in COVID frontline	78	60.5	30	76.9	215	83.7	11	21.6	334	70.2
Presence of deaths at work	25	19.4	38	97.4	75	29.2	11	21.6	149	31.3
Job satisfaction	91	70.5	22	56.4	153	59.5	33	64.7	299	62.8
Weekly workload										
up to 40 hours a week	99	76.7	13	33.3	208	80.9	31	60.8	350	73.5
more than 40 hours a week	30	23.3	26	66.7	49	19.1	20	39.2	126	26.5
Time in the job position										
up to 10 years	93	72.1	29	74.4	152	59.1	27	52.9	301	63.2
more than 10 years	36	27.9	10	25.6	105	40.9	24	47.1	175	36.8

Note: G1= administrative; G2= emergency; G3= primary care; G4= specialties. Physical activity= regular practice of physical activity; Alcohol consumption= alcohol consumption more than twice a week; Psychological/ psychiatric care= past or current care of a psychologist or psychiatrist.

Table 3 shows that the G3 (primary care) presented the highest mean in physical QoL and G2 (emergency) the worst, with large effect sizes. G1 (administrative) showed significantly better psychological QoL than G2, and better social QoL than G3.

Table 3. Means, standard deviations and one-way analysis of variance in mental disorders and quality of life measures (*n*=476)

Measure	G1		G2		G3		G4		*F*	*p*	Cohen´s *d*	η^2
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*				
Mental disorders	6.12	4.80	7.59	4.39	8.03	4.97	7.18	4.98	4.72*	.002[a]	-0.39	0.03
Physical QoL	3.32	0.58	2.98	0.37	3.39	0.69	3.31	0.62	7.85**	.001[b] .012[c] .025[d]	-0.74-0.70 0.12	0.04
Psychol. QoL	3.44	0.57	3.15	0.48	3.28	0.70	3.33	0.47	3.30*	.008[c]	0.55	0.01
Social QoL	3.59	0.65	3.50	0.72	3.30	0.48	3.53	0.67	5.40**	.002[a]	0.51	0.03

Note. QoL= quality of life. Psychol.= psychological; G1= administrative; G2= emergency; G3= primary care; G4= specialties. [a]Differences between G1 and G3; [b]Differences between G2 and G3; [c]Differences between G1 and G2; [d]Differences between G3 and G4.

*p≤0,05; **p≤0,001.

Furthermore, the logistic and linear regression analysis, described in Table 4, revealed that sociodemographic variables significantly influenced the participants' QoL and MD. In this sense, it was observed that men and older individuals tend to have better physical QoL and a lower tendency for MD. The results also showed that partnered participants tended to have better social relationships. A secondary level of education was associated with a higher physical QoL, and some mixed results regarding the association of this level of education and psychological and social QoL were also found.

Table 4. Logistic and linear regressions of measures of quality of life and mental disorders and sociodemographic, lifestyle and labor variables (n=476)

Variables	Mental disorders	Physical QoL	Psychological QoL	Social QoL
	β[S.E.]	β[S.E.]	β[S.E.]	β[S.E.]
Gender	-.75[.34]*	.22[.07}*	.11[.07]	.08[.09]
Young age	-.23[.29]	.08[.06]	-.06[.06]	.12[.08]
Middle age	RV	RV	RV	RV
Third age	-1.17[.38]**	.16[.08]*	.08[.08]	.04[.10]
Marital status	-.33[.24]	.02[.05]	.08[.05]	.14[.07}*
Race	-.09[.23]	.03[.05]	-.04[.05]	-.07[.07]
Elementary	.05[.28]	-.21[;06}**	-.07[.06]	-.17[.03]*
High school	RV	RV	RV	RV
College	.18[.33]	-.38[.07]**	-.17[.07]*	-.04[.09]
T. position	-.17[.27]	-.07[.06]	-.05[.06]	.11[.07]
J. congruence	-.52[.25]*	.10[.05}*	.10[.06]	-.08[.07]
Multiple jobs	-.16[.18]	-.07[.40]	.03[.04]	.03[.05]
W. workload	-.32[.28]	-.01[.01]	.00[.01]	.00[.02]
C. frontline	.29[.28]	.07[.06]	.00[.06]	-.10[.08]
Deaths	.42[.27]	-.11[.06]*	-.07[.06]	-.04[.07]
J. satisfaction	-1.50[.25]**	.38[.05]**	.38[.05]**	.29[.07]**
Phys. activity	-.55[.26]*	.13[.06]*	.11[.06]*	.05[.07]
Diet	-.73[.24]*	.10[.05]	.25[.05]**	.20[.07]*
Smoking	.00[.34]	.08[.07]	.17[.07}*	.11[.09]
Alcohol	.12[.37]	.00[.08]	-.01[.08]	.03[.11]
Leisure	-.68[.27]*	.12[.06]*	.20[.06]**	.03[.08]
Social supp.	-1.02[.41]*	.15[.08]	.29[.08]**	.58[.11]**
Religion	-.74[.32]*	.06[.06]	.18[.07]*	.14[.09]
Psich. care	.75[.24]*	-.14[.05]*	-.13[.05]*	-.13[.07]
R^2/pseudo	.39	.30	.31	.19

Note. QoL= quality of life. Young age= until 34 years-old; Middle age= from 35 to 54 years-old; Third age= over 55 years-old; T. position= time in the current job position; J. congruence= job congruence; W. workload= weekly workload; C. frontline= working in COVID frontline; Deaths= presence of deaths in the workplace; J. satisfaction= job satisfaction; Phys. activity = regular practice of physical activities; Diet= adequate diet; Alcohol = alcohol consumption more than two times a week; Social supp.= social support; Psich. care= past or current care of a psychologist or psychiatrist. RV= reference value.

Pseudo R^2: Nagelkerke. *p≤0,05; **p≤0,001.

Labour-related variables also showed statistically significant associations with the QoL dimensions and MD indexes (Table 4). The analyses demonstrated that job congruence was related to a lower propensity to MD and to a higher physical QoL. The presence of deaths in the work environment showed a negative association with physical QoL. Being satisfied with the job was significantly related to all dimensions (higher physical, psychological, and social QoL and less tendency to MD). No statistically significant relationships were found between QoL/MD and race, time working in the current job position, multiple jobs, weekly working hours or working on the front line with COVID patients.

Significant relationships between lifestyle habits and self-assessment of QoL were also observed (Table 4). The analysis showed that performing a regular physical activity was related to a higher physical and psychological QoL and a lower tendency for MD. Having a balanced diet, and having social support, showed a positive association with psychological and social QoL and a negative association with MD. Furthermore, it was found that having leisure activities was related to better physical and psychological QoL and to a lower tendency for MD. Having a religion was related to better psychological QoL and better mental health.

Findings also showed that being in psychological or psychiatric care or having a history of such care was associated with worse physical and psychological QoL and a greater tendency to MD. Interestingly, it was also found that smoking frequently was related to a higher psychological QoL.

4. DISCUSSION

The present study aimed to assess Brazilian healthcare professionals' quality of life and mental health during the COVID-19 pandemic. Contrary to the first hypothesis, results show that these individuals had an average quality of life in all domains. Nonetheless, most of the sample presented suggestive signs of mental disorders, a much higher rate than those reported by North American, European and Asian studies (Amin et al., 2020; García-Iglesias et al., 2020; Liu et al., 2020). Therefore, it can be assumed that the highly stressful work context during the COVID-19 pandemic is aggravated in Brazil due to the lack of hospital supplies, a significant number of cases and hospitalizations, political instabilities, and scarcity of trained human health resources, thus leading to higher emotional burden (Garcia et al., 2020; Ribeiro et al., 2020).

Specifically, the results point out that the professionals working in an emergency were the ones with worst physical and psychological quality of life, confirming the second hypothesis. However, this population has presented these results for a long time, given the difficult conditions inherent to their work (Gómez-Urquisa et al., 2017). Hence, there is not enough evidence to ascertain that such prevalence has increased since the pandemic's beginning, as Gualano et al. (2021) discussed. Furthermore, this finding must be contextualized since the emergency group in this study presented more risk factors than the other groups (such as being non-partnered, having a higher workload and witnessing more deaths in their work), which might contribute to their lower levels of quality of life.

On the other hand, another group that appears to be at psychological risk is the one comprehending primary care workers. They presented significant psychopathologies and low social quality of life. Considering that the high rates of COVID cases overload the Brazilian primary care system and that there is a scarcity of financial resources and individual protection equipment, these workers are the most vulnerable to being infected since they are the ones who are in direct contact with patients and their body fluids (Ornell et al., 2020). Yet, as discussed earlier, it is not possible to assume that such findings are caused by the pandemic, as this field has been suffering instabilities and precariousness of labor relations for a large period (Cabral et al., 2020).

Nevertheless, findings also suggest that sociodemographic factors, life habits and labor conditions seem to contribute to these findings, providing empirical support for the third research hypothesis. Thus, regarding sociodemographic variables, it was observed that women tended to have a worse physical quality of life and a higher frequency of mental

disorders, as found in previous studies (Ioannou et al., 2015; Lai et al., 2020; Stojanov et al., 2021). These rates can be explained by considering that women are the majority on the front line against COVID-19 and the ones who are most infected by the virus; yet, in addition to these stressful work conditions, they usually have an extra workload at home and tend to be more exposed to domestic violence (Lotta et al., 2021).

Younger professionals also showed more psychiatric disorders and worse physical quality of life, probably because they have a shorter experience in the area, as suggested by Dyrbye et al. (2017). A younger age also presupposes a smaller range of life experiences, which implies a more limited repertoire of effective coping strategies and greater emotional burden (Chang et al., 2019).

The results also demonstrated that partnered professionals reported a better social quality of life, as shown in previous studies (Suryavanshi et al., 2020). The presence of a partner can alleviate the effects of social isolation during the pandemic as he/she reduces feelings of loneliness and provides greater well-being, thus acting as psychological support (Ben-Zur, 2012). In addition, partnered individuals also benefit from expanding their social network since they can rely on support from their spouse´s family members and friends (Cimete et al., 2003; Ermer, & Prouxl, 2019).

Secondary educational attainment was associated with a higher physical, psychological and social quality of life compared to primary and higher education. Such an inverted U-shaped phenomenon has already been observed in studies on subjective well-being, and it is related to a higher income compared to individuals with elementary education and to fewer self-demands and more free time than professionals with higher education (Aydos et al., 2017; Ferrante, 2009).

Regarding labor-related variables, the analysis confirmed the fourth research hypothesis. Findings showed that job congruence and job satisfaction were related to a lower propensity to mental disorders and higher quality of life, previous corroborating studies (Andresen et al., 2017; Wolniak, & Pascarella, 2005; Yu et al., 2008). Thus, intrinsic motivations at work also seem to play a significant role on the mental health of healthcare professionals, perhaps more important than external factors, as suggested by Dave et al. (2011).

Similarly, witnessing deaths at work was related to a lower physical quality of life, as found by Austin et al. (2017). On the other hand, no significant relationship was detected between professionals' quality of life and working on the COVID frontline. Thus, results suggest that the presence of deaths, regardless of the quantity and context, may significantly impact healthcare professionals. This constant exposure to deaths may produce physical symptoms as a consequence of compassion fatigue and secondary traumatic stress, which can lead to burnout, a decrease in the quality of life, lower job satisfaction and a high turnover rate (De Veer et al., 2013; Klein et al., 2017; Wallace et al., 2020).

In accordance with the fifth research hypothesis, lifestyle variables were related to participants´ mental health and quality of life. Specifically, findings demonstrated that regularly performing physical activity and having a balanced diet were related to a better quality of life and less tendency for mental disorders, as suggested by Ahmad et al. (2015). Such habits protect mental health, the immune system, and disease prevention (American Heart Association, 2021). These effects are significant in improving the immune response against COVID-19 and mitigate the impact of the pandemic restrictions (Razai et al., 2020).

Social support and leisure activities were also related to a better quality of life and a lower tendency for psychiatric disorders, as found by other studies (Iqbal, 2020; Vafaei et al., 2019; Zerbini et al., 2020). Both social support and leisure have an important protective effect on physical and emotional health since they help cope with and control the stressful events imposed by the COVID-19 pandemic (Szkody et al., 2020).

The present research also showed that participants who had religious practices tended to have a better psychological quality of life and better mental health, confirming the findings of Vitorino et al. (2021). Religion may function as a coping strategy to deal with

adversity and to promote quality of life during the pandemic (Cherblanc, 2021; Dein et al., 2020; Peterson, & Webb, 2006). Moreover, religious organizations can contribute to a sense of community and belonging, just as religion can lead to a life purpose, resulting in greater well-being (Ferriss, 2002).

Finally, contrary to the fifth hypothesis of this study, as well as to previous research (Petrelli et al., 2018; Temesgen et al., 2018), results showed that smoking regularly was related to a higher psychological quality of life. Such habits can be used as a coping strategy to deal with the stress and the restrictions imposed by the pandemic (Sun et al., 2020). However, any causality allegations on the increase of smoking behaviors in the current circumstances are not possible.

5. CONCLUSIONS

Overall, the present research results demonstrate that while health professionals have an average quality of life during the COVID-19 pandemic, the majority present suggestive signs of psychopathologies. Among the analyzed groups, professionals working in emergency and primary care were at higher psychological risk.

Considering that healthcare workers are more likely to contract the COVID-19 virus, the presence of common mental disorders may increase the likelihood of more severe disease (Lee et al., 2020). In addition, the intense mental suffering of these individuals can lead to more medical errors, greater absenteeism, a decrease in productivity and higher patient mortality (Dyrbye et al., 2017). Therefore, this study demonstrates the need to develop preventive mental health care services for crisis periods, since health professionals seem at risk for more severe mental conditions.

Such interventions should emphasize normalizing strong emotions and stress, providing social support, and clearly communicating and distributing tasks at work (Petzold, Plag, & Sthröle, 2020). Likewise, the development of future prevention protocols and training of health personnel is crucial to face pandemics or emergency scenarios with these characteristics (Martínez-López et al., 2020).

Fortunately, participants who had worse mental health tended to be those in psychological or psychiatric treatment. However, it seems essential to consider health determinants (demographic, lifestyle, and labor factors) in psychological interventions, work environments, the development of coherent public policies, and the intersectoral articulations of public power (Buss, 2000).

Health directors should look carefully at their employees´ satisfaction at work, since this variable was related to all quality of life and mental health measures. Continuous assessments and promotion of health professionals' job satisfaction and projects to promote well-being and quality of life at work could minimize the psychosocial risks arising during the pandemic (Brida et al., 2020; Melo et al., 2011). Moreover, improving working relations and conditions can enhance patient care and reduce turnovers (Araújo et al., 2002; Ioannou et al., 2015; Yu et al., 2008).

Some limitations of the present research can be pointed out, such as the unequal sample size between groups, the remote data collection and the cross-sectional research design. Therefore, it is not possible to ascertain that the pandemic worsened the health status of health professionals. Future studies should address such causal relationships, which can follow how these variables co-evolve.

The findings must also be generalised with caution since the data collection region has specific cultural, populational and health management characteristics. Future studies should consider different countries of Latin America and longitudinal designs to verify whether the psychological symptoms persist over time, especially after the pandemic is over.

CONFLICT OF INTEREST

This research has not received any grants or funding. There are no conflicts of interest or competing interests. The data is available to reviewers at any time. Authors' contributions – Amanda M. Wechsler contributed to the design of the study, the article´s writing and review. Ana Cristina Z. Rani-Yonamine contributed to the design of the study, data collection and article´s review.

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