

Quality of Life of Health Professionals During the COVID-19 Pandemic

Amanda Muglia Wechsler¹  & Ana Cristina Zordan Rani-Yonamine² 

¹*Pontifícia Universidade Católica de Campinas, Campinas/ SP, Brasil*

²*Secretaria de Saúde Pública de Praia Grande, Praia Grande/ SP, Brasil*

ABSTRACT – The work demands and restrictions imposed by the COVID-19 pandemic can produce several impacts on health professionals. This study aimed to assess the mental suffering and quality of life of 315 professionals working in primary health care. Participants completed a sociodemographic questionnaire, the World Health Organization Quality of Life-Bref, and the Self-Reporting Questionnaire. The results showed that the professionals had a reasonable quality of life, but high rates of mental suffering. Some risk factors related to demographic, job, and lifestyle variables were observed. Conclusions highlight the importance of designing and applying specific psychological interventions for this population, which seems to be at risk of developing more severe mental conditions.

KEYWORDS: *mental health; health professionals, quality of life, pandemic.*

Qualidade de Vida de Profissionais de Saúde Durante a Pandemia de COVID-19

RESUMO – As demandas de trabalho e as restrições impostas pela pandemia de COVID-19 geraram diversos impactos nos profissionais de saúde. Este estudo visou avaliar o sofrimento mental e a qualidade de vida de 315 profissionais que trabalham na atenção primária de saúde. Os participantes completaram um questionário sociodemográfico, o Questionário de Qualidade de Vida da OMS-Bref e o Índice de Bem-Estar-5 da OMS. Os resultados mostraram que os profissionais tinham uma qualidade de vida razoável, mas altos níveis de sofrimento mental. Alguns fatores de risco relacionados a variáveis demográficas, laborais e de estilo de vida foram observadas. As conclusões mostram a importância sobre o delineamento e aplicação de intervenções psicológicas específicas para esta população, que parece estar em risco de desenvolver condições mentais mais severas.

PALAVRAS-CHAVE: *saúde mental, profissionais da saúde, qualidade de vida, pandemia.*

INTRODUCTION

In March 2020, the World Health Organization (WHO) declared a global COVID-19 pandemic. In response, government representatives from several countries proposed implementing social distancing measures to control the spread of the new coronavirus. These resolutions, along with misinformation about the disease and uncertainty about infection or the possibility of infecting others, adversely

affected the mental health of the general population (Faro *et al.*, 2020; Lima, 2020).

Healthcare professionals are not immune to the effects of the pandemic and may develop emotional issues and psychiatric symptoms such as anxiety, depression, and stress, among others (Moreira *et al.*, 2021). These workers, who were already dealing with numerous occupational stressors, faced even more challenging circumstances in this context,

including exposure to widespread death, work overload, and an increased risk of infection, illness, and mortality (Dyrbye *et al.*, 2017; Schmidt *et al.*, 2020). In Brazil, this situation was exacerbated by a lack of hospital supplies, safety equipment, and beds, along with a significant number of cases and hospitalizations. This scenario forced healthcare professionals to make difficult and immediate decisions, further overburdening them emotionally (Ribeiro *et al.*, 2020).

This entire context can impact the health of healthcare professionals, where health is understood as quality of life (Minayo *et al.*, 2000). Quality of life is thus defined as a dynamic state of overall well-being and life satisfaction, which affects the likelihood of developing mental disorders (Bircher, 2005; Santos *et al.*, 2017).

Thus, it is evident that the quality of life for healthcare professionals, which was already compromised, has deteriorated (Dyrbye *et al.*, 2017; Ribeiro *et al.*, 2020). During the COVID-19 pandemic, high rates of anxiety, depression, stress, and insomnia, along with poor quality of life, were reported in China, India, and Serbia (Lai *et al.*, 2020; Stojanov *et al.*, 2021; Suryavanshi *et al.*, 2020). These levels are alarming due to the increased likelihood of medical errors, low job satisfaction, absenteeism, decreased productivity, and higher turnover. This situation can result in higher costs for the healthcare system, lower patient satisfaction, and even higher mortality rates among patients treated by these professionals (Dyrbye *et al.*, 2017).

On the other hand, the impact of stressors on the health of healthcare professionals varies based on biological, environmental, occupational, economic, lifestyle, and other factors. Investigating these determinants is essential for a comprehensive and contextual understanding of their quality of life (Bircher, 2005; Lund *et al.*, 2018). Regarding occupational factors, numerous studies have shown that job satisfaction plays a significant role. Professionals who reported being satisfied with their current job also reported higher physical and psychological quality of life (Andresen *et al.*, 2017; Ioannou *et al.*, 2015; Yu *et al.*, 2008). Additionally, those who worked fewer than 40 hours per week (Ahmad *et al.*, 2015; Macedo *et al.*, 2009), had been in their current job for less than 15 years (Petrelli *et al.*, 2018), had only one job (Fernandes *et al.*, 2012), did not work with critically ill patients (Austin *et al.*, 2017), and were not on the front lines treating COVID-19 patients (Stojanov *et al.*, 2021) also reported better quality of life.

Sociodemographic variables also influence a higher quality of life among healthcare professionals. It has been observed that male workers (Ioannou *et al.*, 2015; Lai *et al.*, 2020; Stojanov *et al.*, 2021), older age (Dyrbye *et al.*, 2017), married status (Suryavanshi *et al.*, 2020), higher educational

and socioeconomic levels (Temesgen *et al.*, 2018), having a religion (Vitorino *et al.*, 2021), and social support (Iqbal, 2020; Vafaei *et al.*, 2020) are associated with a better quality of life.

Lifestyle habits also play a protective role in the quality of life of healthcare professionals. Some studies have indicated that engaging in regular physical activities, maintaining a balanced diet (Ahmad *et al.*, 2015), not smoking, not consuming alcohol (Petrelli *et al.*, 2018; Temesgen *et al.*, 2018), and having time for leisure activities (Macedo *et al.*, 2009) are linked to a higher overall quality of life.

Given that work situations can be stress-inducing, particularly during a pandemic, and amidst the Brazilian crisis healthcare system's crisis, it is crucial to investigate the impact of potential risk factors on the mental health and quality of life of healthcare professionals. However, to date, there are no Brazilian publications that have empirically studied this topic (Ribeiro *et al.*, 2020). Identifying variables that may be related to quality of life and act as potential health determinants is essential for identifying risk groups, preventing the development of mental disorders, improving quality of life and job satisfaction, and reducing absenteeism and turnover, as well as developing evidence-based interventions (Kalaitzaki *et al.*, 2020).

Thus, this study aimed to evaluate factors that influence the quality of life and mental distress of healthcare professionals. The research investigated sociodemographic, occupational, and lifestyle determinants that might be related to greater mental distress and lower quality of life during the COVID-19 pandemic. Additionally, it aimed to measure the quality of life and the level of mental distress among healthcare professionals working in primary care.

The research hypotheses were: (1) exposure to stressors during the pandemic would be associated with higher levels of mental distress and lower levels of quality of life; (2) female professionals, younger age, minority ethnicities, single status, lower educational and/or socioeconomic levels, lack of religion, and lack of social support would be associated with lower quality of life and higher levels of mental distress; (3) professionals who did not engage in regular physical activities, did not maintain a balanced diet, did not have leisure activities, smoked, consumed alcohol, and were not receiving psychological and/or psychiatric care would have higher levels of mental distress and lower quality of life; and (4) professionals not working in their field of degree, working multiple jobs, working on the front line with COVID patients, witnessing deaths at work, having a high weekly workload, having been in their current job for a longer period, and being dissatisfied with their job would report lower quality of life and higher mental distress.

METHOD

Participants

This was a cross-sectional, quantitative, and exploratory study conducted with healthcare professionals in a large municipality of the Baixada Santista region, in Brazil. The study included municipal public servants who were over 18 years old and actively working in their roles. Professionals who were on vacation, on medical leave, or temporarily away from their original duties were excluded. All healthcare professionals working in public primary care were invited to participate, a total of 1,190 individuals. However, the final sample consisted of 315 healthcare professionals who consented to complete the questionnaires via an online platform.

Instruments

Sociodemographic Questionnaire

Sociodemographic data were obtained through a questionnaire with six objective questions, collecting the following information: gender, age, marital status (with/without partner), race (white/others), educational level (elementary/high school/university), and religious practice (yes/no). Six additional questions were designed to gather work-related data, including time in the professional role (up to 10 years/more than 10 years), working in the field of degree (yes/no), total working hours (up to 40 hours per week/more than 40 hours per week), job satisfaction (yes/no), working on the front line against COVID-19 (yes/no), and witnessing deaths at work (yes/no). Leisure activities and lifestyle habits were collected through six questions covering: regular physical activity (yes/no), adequate diet (yes/no), smoking (yes/no), alcohol consumption (less than twice a week/more than twice a week), existence of leisure activities (yes/no), and social support ¹(yes/no). Data on psychological and psychiatric history were obtained through a question about current or past psychological or psychiatric treatment (yes/no). All these variables were included as they are important determinants of health and quality of life, according to the American Centers for Disease Control and Prevention (CDC, 2022).

World Health Organization Quality of Life Bref (WHOQoL-Bref)

This instrument, developed by the World Health Organization (WHO), was translated into Brazilian Portuguese by Fleck *et al.* (2000). It consists of 26 questions, with the first two addressing overall quality of life and general health, and the remaining 24 divided into four domains (physical,

psychological, social relationships, and environment). The physical domain covers issues such as the presence of incapacitating pain, the need for medical treatment, the ability to work and perform daily tasks, autonomy, and sleep. The psychological domain examines emotional aspects, life satisfaction, memory and concentration, self-satisfaction, the presence of positive and negative feelings, personal beliefs, and spirituality. The social relationships domain considers satisfaction with personal relationships, social support, and sexual activity. The environment domain involves physical safety, environmental health, financial resources, health and social care, opportunities to acquire new information and leisure, as well as access to health services and transportation (Arôca, 2009). Responses are given on a five-point Likert scale, ranging from 1 (total disagreement) to 5 (total agreement). The instrument demonstrates good psychometric performance, with a total Cronbach's alpha of 0.77 and it is a useful tool for assessing quality of life in studies conducted in Brazil (WHOQoL Group, 1998).

Self-Reporting Questionnaire (SRQ-20)

This screening instrument for psychiatric morbidity was developed by the World Health Organization and adapted for the Brazilian population by Santos *et al.* (2011). It consists of 20 yes/no questions that serve as a screening tool for detecting symptoms suggesting the presence or absence of common mental disorders such as depression, anxiety, and stress. The instrument is suitable for use in national studies, with a sensitivity of 68% and a specificity of 70.7%. In this study, the cutoff point was set at seven positive responses, which indicates a likelihood of depressive or anxious states, as suggested by other studies (Santos *et al.*, 2011; Duarte *et al.*, 2020).

Procedure

Data Collection

Health unit directors were asked to present the project to municipal employees in their units during April and May 2021. Due to the government's decision to implement social distancing measures to reduce virus transmission, data was collected entirely through the Google Forms platform and made available to participants via social media (WhatsApp) and email. The Google Forms survey was divided into three sections: the first related to sociodemographic data, the second dedicated to the WHOQoL-Bref, and the third to the SRQ-20. In each section, responses were organized in a multiple-choice format, and participants had to answer each question to proceed to the next. To start the questionnaires, participants had to agree to participate in the study by reading and accepting the informed consent form. Immediate psychological support was offered to participants with high scores on the SRQ-20.

¹ Social support as the subjective evaluation of receiving help from family and/ or friends (Dour *et al.*, 2014).

Data Analysis

For univariate analysis, frequency, mean, and standard deviation were used. The normality and skewness of the sample were evaluated with the Shapiro-Wilk test, considering a significance level of $\alpha \leq 0.05$. The Student's t-test was used to compare the group with mental disorders to the group without these psychopathologies, testing the homoscedasticity of variances with the Levene test, also considering $\alpha \leq 0.05$. To determine the association between sociodemographic, lifestyle, and work variables with participants' quality of life (measured by the WHOQoL-Bref), linear regressions were performed using the total score in each quality-of-life dimension, presented in continuous format. Associations of these variables with the presence of mental distress were analyzed with logistic regression, as this variable is dichotomous. In the regressions, the

assumptions of normality (examined through standardized residuals histograms), homoscedasticity (through residuals analysis), independence of residuals (Durbin-Watson test), and absence of multicollinearity (variance inflation factors) were tested. In each univariate or multivariate analysis, outliers were removed based on standardized residuals and graphs. Additionally, categorical variables were binarized in all analyses, and a significance level of $\alpha \leq 0.10$ was adopted, using SPSS software version 22.

Ethical Considerations

This research was approved by the Special Committee for the Evaluation and Monitoring of Public Health Research in the municipality where it was conducted, as well as by the Research Ethics Committee of Hospital Guilherme Álvaro (CAAE No.52397721.2.0000.5448).

RESULTS

The sociodemographic characteristics of the participants are described in Table 1. The sample predominantly consisted of middle-aged, white women with an intermediate level of education, who had a partner, practiced a religion, and had social support. Regarding lifestyle habits, most participants reported having a balanced diet, engaging in leisure activities, not exercising regularly, not smoking, not consuming alcohol frequently, and having a history of or currently receiving psychological or psychiatric care (see Table 2).

In terms of current employment, most participants reported being in their current position for less than 10 years and working up to 40 hours per week. Most primary healthcare professionals also reported being satisfied with their work, working in their field of degree, having only one job, working on the front line with COVID-19 patients, and not witnessing deaths in their workplace (see Table 2).

The normality analysis revealed that the dependent variables did not follow a normal distribution (SRQ –

Table 1
Sociodemographic Characteristics of Participants (N=315)

Variables	n	%
Gender		
female	272	86,3
male	43	13,7
Age group		
youth (<34 years-old)	91	28,9
middle-age (35-54 years-old)	181	57,5
older adults (>55 years-old)	43	13,6
Ethnicity		
white	173	54,9
non-white (Black/Multiracial/Asian)	142	45,1
Educational level		
elementary	113	35,9
high school	177	56,2
university	25	7,9
Marital status		
with a partner	184	58,4
without a partner (single/divorced/widow)	131	41,6
Religion		
religious	259	82,2
not religious/not reported	56	17,8
Social support		
yes	281	89,2
no	34	10,8

Note: n= number of cases; % = percentage.

Table 2
Lifestyle and Work Characteristics of Participants (N=315)

Variables	n	%
Engages in physical activities regularly	86	27,3
Maintains a balanced diet	166	52,7
Engages in leisure activities	222	70,5
Smokes	44	14,0
Consumes alcohol more than twice a week	35	11,1
In current or has previously received psychological or psychiatric treatment	166	52,7
Works in his/her field of degree	210	66,7
Works multiple jobs	44	14,0
Works in the front line with COVID	263	83,5
Witnesses deaths in his/her work environment	81	25,7
Feels satisfied with the job	190	60,3
Total work hours		
Up to 40 hours per week	256	81,3
More than 40 hours per week	59	18,7
Time in the current position		
Up to 10 years	197	62,5
More than 10 years	118	37,5

Note: n= number of cases; % = percentage.

the presence of mental distress: S-W = 0.63, $p < 0.001$; physical QoL: S-W = 0.99, $p = 0.01$; psychological QoL: S-W = 0.98, $p = 0.001$). Only the environmental dimension showed a normal distribution (S-W = 0.99, $p = 0.58$). Despite this limitation, the study's sample size suggests the results should be interpreted cautiously but remain valid (Pek *et al.*, 2018).

The analysis of the applied instruments revealed that participants had a reasonable quality of life across all WHOQL-Bref dimensions (Physical: M = 3.42, SD = 0.68; Psychological: M = 3.32, SD = 0.72; Social Relationships: M = 3.36, SD = 0.76; Environment: M = 3.21, SD = 0.57). However, 55.23% of participants showed signs of mental disorders (scores above 7.0 on the SRQ-20). The average SRQ-20 score was 7.80 (SD = 4.88).

Participants with scores indicative of mental disorders (55.23% of the sample with SRQ-20 scores above 7) reported poor quality of life in the psychological and environmental dimensions (M = 2.92 and 2.98, SD = 0.63 and 0.50, respectively) and borderline reasonable quality of life in the physical and social relationships dimensions (M = 3.06 and 3.07, SD = 0.59 and 0.75, respectively). This group had an average SRQ-20 score of 11.44 (SD = 3.16).

Conversely, participants without signs of mental disorders scored low on the SRQ-20 (M = 3.32, SD = 2.07) and showed reasonable quality of life in all dimensions (Social Relationships: M = 3.73, SD = 0.61; Environment: M = 3.50, SD = 0.53), with some dimensions nearing the threshold for good quality of life (Physical: M = 3.88, SD = 0.50; Psychological: M = 3.81, SD = 0.44). SRQ-20

scores were significantly correlated with WHOQL-Bref scores in all dimensions (Physical: $r = -0.71$, $p < 0.001$; Psychological: $r = -0.74$, $p < 0.001$; Social Relationships: $r = -0.49$, $p < 0.001$; Environment: $r = -0.53$, $p < 0.001$).

When comparing participants with and without signs of mental disorders, the analysis revealed statistically significant differences in quality of life between the two groups. The group with signs of mental disorders had worse quality of life in the physical ($t(313) = 13.20$, $p < 0.001$, Cohen's $d = 1.47$), psychological ($t(313) = 14.66$, $p < 0.001$, Cohen's $d = 1.62$), social relationships ($t(313) = 8.61$, $p < 0.001$, Cohen's $d = 0.96$), and environmental dimensions ($t(313) = 8.97$, $p < 0.001$, Cohen's $d = 1.00$).

Logistic regression analysis (see Table 3) showed that older age was associated with a lower likelihood of mental disorders ($\beta = -1.29$, $p = 0.004$). Having a balanced diet ($\beta = -0.68$, $p = 0.02$) and social support ($\beta = -1.16$, $p = 0.03$) were negatively associated with psychiatric disorders. Regular physical activity was associated with a lower tendency toward mental disorders ($\beta = -0.55$, $p = 0.10$), while receiving or having a history of psychological or psychiatric care was associated with a higher likelihood of mental distress ($\beta = 0.73$, $p = 0.01$).

Working in the same area of degree ($\beta = -0.83$, $p = 0.01$) and job satisfaction ($\beta = -1.42$, $p < 0.001$) were negatively related to psychological disorders. No significant relationships were found between mental distress and ethnicity ($\beta = -0.02$, $p = 0.50$), duration in the current position ($\beta = -0.34$, $p = 0.31$), weekly work hours ($\beta = -0.21$, $p = 0.67$), or working on the front line with COVID-19 patients ($\beta = -0.21$, $p = 0.62$).

Table 3

Logistic Regressions of Mental Suffering Measure and Sociodemographic, Lifestyle and Work Variables (N=315)

Variables	Mental suffering - β [standard error] and p^{***}
Gender	-0,30[0,44]
Youth	0,05[0,38]
Middle age	RV
Older adults	-1,29[0,45]**
Marital status	-0,04[0,29]
Ethnicity	-0,02[0,29]
Elementary educational level	0,20[0,31]
High school educational level	RV
University educational level	0,03[0,53]
Time in current position	-0,34[0,33]
Working in the field of degree	-0,83[0,32]**
Multiple jobs	-0,15[0,56]
Total work hours	-0,21[0,49]
Working in COVID front line	-0,21[0,41]
Witnesses deaths at work	0,49[0,34]
Feels satisfied with the job	-1,42[0,31]***
Regular physical activity	-0,55[0,33]*
Balanced diet	-0,68[0,31]**
Smoking	-0,15[0,45]
High alcohol consumption	0,43[0,49]
Leisure activities	-0,84[0,33]**
Social support	-1,16[0,53]**
Religion	-1,02[0,42]**
Psychiatric or psychology treatment	0,73[0,29]**
Pseudo R^2 Nagelkerke	0,39***

Note. Youth = up to 34 years-old; Middle-age = 35 to 54 years-old; Older adults = more than 55 years-old; High alcohol consumption = consuming alcohol more than twice a week; Psychiatric or psychology treatment = history of or in current psychiatric or psychological treatment. RV = reference value. * $p < 0,10$; ** $p < 0,05$; *** $p < 0,001$.

Linear regression analysis (see Table 4) revealed that sociodemographic variables significantly influenced participants' quality of life. Men tended to have better physical quality of life and environmental dimensions (standardized $\beta = 0.11, p = 0.02$; standardized $\beta = 0.10, p = 0.05$, respectively). Being married or being in a stable union was associated with better social relationships (standardized $\beta = 0.09, p = 0.09$), and high school education was linked to higher quality of life in physical, psychological, and environmental dimensions compared to elementary and higher education levels.

Linear regression analyses showed that regular physical activity was related to better physical quality of life (standardized $\beta = 0.11, p = 0.04$). A balanced diet was positively associated with all dimensions of quality of life (Physical QoL: standardized $\beta = 0.11, p = 0.03$; Psychological QoL: standardized $\beta = 0.21, p < 0.001$; Social Relationships:

standardized $\beta = 0.21, p < 0.001$; Environment: standardized $\beta = 0.12, p = 0.02$). Social support positively correlated with all dimensions of quality of life (Physical QoL: standardized $\beta = 0.10, p = 0.05$; Psychological QoL: standardized $\beta = 0.16, p = 0.002$; Social Relationships: standardized $\beta = 0.29, p < 0.001$; Environment: standardized $\beta = 0.18, p < 0.001$). Religion was associated with higher psychological quality of life (standardized $\beta = 0.13, p < 0.01$) and better social relationships (standardized $\beta = 0.12, p < 0.03$).

Receiving or having a history of psychological or psychiatric care was linked to lower physical and psychological quality of life (standardized $\beta = -0.15, p = 0.002$; standardized $\beta = -0.12, p = 0.01$, respectively). Interestingly, smoking was related to higher psychological quality of life (standardized $\beta = 0.11, p = 0.02$), and frequent

alcohol use was associated with better social relationships (standardized $\beta = 0.09$, $p = 0.09$).

Some work-related variables also showed significant associations with quality-of-life dimensions (see Table 4). Working in the field of degree was linked to better physical and psychological quality of life (standardized $\beta = 0.09$, $p = 0.09$; standardized $\beta = 0.10$, $p = 0.06$, respectively), as well as a better environment (standardized $\beta = 0.15$, $p = 0.005$). Having multiple jobs was related to higher physical and psychological quality of life (standardized $\beta = 0.18$, $p = 0.01$; standardized $\beta = 0.12$, $p = 0.07$, respectively). Witnessing deaths in the workplace was negatively associated with

physical quality of life (standardized $\beta = -0.09$, $p = 0.10$). Job satisfaction was significantly related to all evaluated dimensions of quality of life (Physical QoL: standardized $\beta = 0.31$, $p < 0.001$; Psychological QoL: standardized $\beta = 0.30$, $p < 0.001$; Social Relationships: standardized $\beta = 0.15$, $p = 0.006$; Environment: standardized $\beta = 0.30$, $p < 0.001$).

No significant relationships were found between quality of life and ethnicity (standardized $\beta = -0.01$, $p = 0.82$), work on the COVID-19 frontline (standardized $\beta = -0.02$, $p = 0.70$), or time in the current position (standardized $\beta = -0.01$, $p = 0.84$).

Table 4

Linear Regressions of Quality-of-Life Measures and Sociodemographic, Lifestyle and Work Variables (N=315)

Variables	Standard β [standard error] and p^{***}			
	Physical QoL	Psychological QoL	Social relationships	Environment
Gender	0,11[0,10]**	0,03[0,10]	0,06[0,12]	0,10[0,09]**
Youth	0,08[0,09]	-0,08[0,09]	0,02[0,10]	0,03[0,08]
Middle age	RV	RV	RV	RV
Older adults	0,06[0,10]	0,03[0,10]	0,00[0,12]	0,01[0,08]
Marital status	-0,02[0,07]	0,07[0,07]	0,09[0,08]*	0,03[0,06]
Ethnicity	0,00[0,07]	-0,03[0,07]	-0,02[0,08]	-0,02[0,06]
Elementary educ.	-0,13[0,07]**	-0,05[0,07]	-0,07[0,09]	-0,18[0,06]**
High school educ.	RV	RV	RV	RV
University educ.	-0,05[0,13]	-0,10[0,13]**	-0,04[0,15]	0,08[0,11]
Time cur. position	-0,07[0,08]	-0,04[0,08]	0,07[0,09]	-0,05[0,07]
Work in the field	0,09[0,08]*	0,10[0,09]*	0,03[0,09]	0,15[0,06]**
Multiple jobs	0,18[0,14]**	0,12[0,14]*	0,11[0,16]	0,03[0,11]
Total work hours	-0,09[0,12]	-0,02[0,12]	-0,06[0,15]	0,05[0,10]
COVID front line	0,03[0,09]	-0,02[0,09]	-0,06[0,11]	-0,06[0,08]
Deaths	-0,09[0,08]*	-0,05[0,08]	-0,04[0,10]	-0,07[0,07]
Work satisfaction	0,31[0,07]***	0,30[0,07]***	0,15[0,08]*	0,30[0,06]***
Physical activity	0,11[0,08]**	0,05[0,08]	0,01[0,10]	0,04[0,07]
Balanced diet	0,11[0,07]**	0,21[0,07]***	0,21[0,09]***	0,12[0,06]**
Smoking	0,07[0,10]	0,11[0,10]**	0,04[0,12]	0,02[0,08]
High alcohol	0,03[0,11]	-0,02[0,11]	0,09[0,13]*	0,04[0,09]
Leisure	0,09[0,08]*	0,14[0,08]**	-0,01[0,09]	0,06[0,06]
Social support	0,10[0,11]**	0,16[0,11]***	0,29[0,13]***	0,18[0,09]***
Religion	0,03[0,09]	0,13[0,09]**	0,12[0,11]**	-0,04[0,08]
Psych. Treatment	-0,15[0,07]***	-0,12[0,07]**	-0,05[0,08]	-0,07[0,06]
R ²	0,32***	0,35***	0,24***	0,31***

Note. Youth = up to 34 years-old; Middle-age = 35 to 54 years-old; Older adults = more than 55 years-old; Elementary educ. = elementary educational level; High school educ. = high school educational level; University educ. = university educational level; Time cur. position = time in the current position; Work in the field = working in the field of degree; Deaths = witnesses deaths at work; Physical activity = practices physical activities regularly; High alcohol = consuming alcohol more than twice a week; Psych. treatment = history of or in current psychiatric or psychological treatment. RV = reference value. * $p < 0,10$; ** $p < 0,05$; *** $p < 0,001$.

DISCUSSION

This study aimed to evaluate the quality of life and mental distress among Brazilian healthcare professionals during the COVID-19 pandemic. Contrary to the initial hypothesis that these individuals would have a low quality of life, the results revealed that they had a reasonable quality of life across all domains. However, healthcare professionals experiencing psychopathological symptoms reported lower psychological and environmental quality of life, as well as moderately low quality of life in the physical and social domains. These findings corroborate previous studies suggesting that individuals with mental disorders tend to have a lower quality of life due to the impact of psychopathologies on daily tasks, occupational functioning, social interactions, and overall health perception (Evans *et al.*, 2007; Shumye *et al.*, 2019).

Conversely, the analysis of the overall sample showed that more than 55% of participants exhibited signs and symptoms of common mental disorders such as anxiety, depression, and stress – rates higher than those reported in international studies conducted during the pandemic (Amin *et al.*, 2020; Liu *et al.*, 2020). This suggests that the highly stressful work environment during the COVID-19 pandemic might be exacerbated in Brazil due to shortages of medical supplies, safety equipment, and hospital beds, as well as a high number of cases and hospitalizations. This situation forces professionals to make difficult and immediate decisions, leading to emotional overload (Dyrbye *et al.*, 2017; Ribeiro *et al.*, 2020; Schmidt *et al.*, 2020). However, this hypothesis should be further investigated in future research that tracks the psychological adjustment of Brazilian healthcare professionals over time.

Therefore, the results suggest that, in the context of the current pandemic, healthcare professionals are experiencing significant mental distress, which is associated with a poorer quality of life and, consequently, lower overall health (Buss, 2000; Lai *et al.*, 2020; Santos *et al.*, 2017; Stojanov *et al.*, 2021; Suryavanshi *et al.*, 2020). Some sociodemographic factors, lifestyle habits, and working conditions appear to contribute to these findings, as outlined in the second hypothesis of this study.

Regarding sociodemographic variables, it was observed that female professionals tended to have poorer physical quality of life and worse environmental conditions, consistent with previous research (Ioannou *et al.*, 2015; Lai *et al.*, 2020; Stojanov *et al.*, 2021). These findings can be explained by the fact that women are the majority on the COVID frontlines, they are more frequently infected by the virus, and face additional burdens related to caregiving and household responsibilities, as well as increased exposure to gender-based violence (Lotta *et al.*, 2021).

Younger professionals also reported greater mental distress, confirming previous studies that found higher levels of burnout among younger professionals due to their lesser experience in the field (Dyrbye *et al.*, 2017). Younger

age typically implies a narrower range of life experiences, which limits effective coping strategies, potentially leading to greater emotional distress as the pandemic requires managing various stressful situations (Chang *et al.*, 2019).

The results also indicated that being married or in a stable partnership was associated with better social relationships, which is consistent with previous studies (Suryavanshi *et al.*, 2020). Having a partner can mitigate the effects of social isolation during the pandemic, reducing feelings of loneliness and providing greater well-being, functioning as a psychological support in the current scenario (Ben-Zur, 2012). Additionally, married individuals or those in stable partnerships benefit from an expanded support network, leveraging the support from their partner's family and friends (Cimete *et al.*, 2003; Ermer & Proulx, 2020).

Having a high school education (up to full secondary education) was associated with better quality of life in the physical, psychological, and environmental dimensions. On one hand, this study found that professionals with a high school education (primarily community health agents, nursing assistants, and unit managers in this study) had better quality of life compared to those with primary education. They were also more satisfied with their lives compared to higher education professionals. This U-shaped phenomenon has been observed in studies on subjective well-being, where a positive life perception is more prevalent among individuals with a high school education (Aydos *et al.*, 2017). This result can be attributed to their higher income compared to those with elementary education and to having fewer self-imposed demands and more free time compared to higher education professionals (Ferrante, 2009).

Professionals who engaged in regular physical activity reported better physical and psychological quality of life, and those who maintained a balanced diet showed improved quality of life across all analyzed dimensions, as well as a lower tendency toward mental distress, in line with the findings of Ahmad *et al.* (2015). Given the protective role of these variables in mental health, disease prevention, and immune system enhancement (American Heart Association, 2021), these habits also enhance social interaction and exposure to different environments. These effects are particularly important for improving immune response to potential COVID-19 infection and mitigating the impact of various pandemic restrictions, considering the high exposure of healthcare professionals to the virus and its consequences (Razai *et al.*, 2020; Schmidt *et al.*, 2020).

Professionals with social support also reported better quality of life across all dimensions and a lower tendency toward mental disorders, as noted in other research (Vafaei *et al.*, 2020; Iqbal, 2020). Social support plays a crucial protective role in physical and emotional health by helping to cope with and manage stressful events (Szkody *et al.*, 2020). With the additional limitations imposed by the COVID-19 pandemic,

the role of social support has intensified, particularly for healthcare professionals dealing with daily stressors in their professional routine (Schmidt *et al.*, 2020).

This study also found that participants with religious affiliation tended to have higher psychological quality of life and better social relationships, confirming results found by Vitorino *et al.* (2021). Religion serves as a coping strategy for dealing with adversities and promoting quality of life, even during the pandemic (Cherblanc *et al.*, 2021; Dein *et al.*, 2020; Peterson & Webb, 2006). In this regard, religious organizations can provide a sense of community and belonging, and religion can help develop a sense of purpose, leading to greater well-being (Ferriss, 2002).

Contrary to the third hypothesis of this study and previous research (Petrelli *et al.*, 2018; Temesgen *et al.*, 2018), the results showed that smoking was associated with higher psychological quality of life, and frequent alcohol use was linked to better social relationships. These habits significantly increased among the general population during the pandemic, as they were used as coping strategies to manage stress and current restrictions. However, substance abuse can have physical and psychological consequences that may, in the long term, negatively affect quality of life and longevity (Sun *et al.*, 2020). These effects should be explored in future research with longitudinal designs.

This study also found that work-related variables were associated with healthcare professionals' quality of life, confirming the fourth hypothesis. Thus, working outside one's field of degree was linked to poorer physical and psychological quality of life and worse environmental conditions, as well as greater mental distress. Consequently, a mismatch between one's field of degree and their job can lead to lower job satisfaction and, consequently, a lower personal and professional quality of life (Andresen *et al.*, 2017; Wolniak & Pascarella, 2005). On the other hand, according to Gondim (2002), a poorly defined professional profile can contribute to professional insecurity, affecting job-market integration and quality of life.

Witnessing deaths in the work environment was associated with lower quality of life among healthcare professionals,

consistent with findings by Austin *et al.* (2017). Caring for patients who die involves dealing with the anxiety and frustration of ineffective treatments, as well as managing the various griefs involved in the situation (Embriaco *et al.*, 2007). These conditions can lead to lower quality of life and may evolve into burnout, neglect of patient care, lower job satisfaction, and high turnover rates (De Veer *et al.*, 2013).

Conversely, no significant relationship was found between quality of life and working on the front lines of COVID-19. Excessive contact with deaths may lead to adaptation, similarly to the general population's habituation to COVID-19 death statistics (Naz *et al.*, 2021). Thus, it is possible that COVID-19 deaths do not significantly impact healthcare professionals' quality of life due to psychological adaptation mechanisms to extreme situations, as these workers may view excessive exposure to such losses as part of their job (Marcella & Kelley, 2015).

In contrast to the fourth hypothesis of this study and existing literature (Fernandes *et al.*, 2012), the results showed that professionals with multiple jobs tended to have better quality of life. However, it is important to note that weekly work hours or time in the current job were not related to quality of life. Thus, it is hypothesized that holding multiple jobs may mitigate the negative effects of focusing on a single job by providing greater flexibility in work arrangements, reducing stress related to a specific workplace, and increasing income (Russo *et al.*, 2018).

Finally, the data from this study demonstrated that job satisfaction was related to all dimensions of quality of life and mental distress, confirming results from previous studies (Andresen *et al.*, 2017; Yu *et al.*, 2008). This result underscores that work can influence healthcare professionals' physical and mental health. Thus, it is essential to improve both the working conditions that cause distress and the relationships among healthcare professionals to enhance their quality of life. Such improvements could help reduce excessive turnover and improve patient care (Araújo *et al.*, 2002; Ioannou *et al.*, 2015; Yu *et al.*, 2008).

CONCLUSIONS

The results of this study indicate that healthcare professionals working in primary care have a moderate quality of life during the COVID-19 pandemic, even though most of them show suggestive signs of psychopathologies. Given their higher risk of contracting COVID-19, the presence of symptoms of mental disorders increases the likelihood of more severe outcomes from the disease (Lee *et al.*, 2020). Moreover, the intense mental distress experienced by these professionals may lead to more medical errors, increased absenteeism, decreased productivity, and even higher patient mortality rates (Dyrbye *et al.*, 2017).

The theoretical implications of this study are primarily related to identifying risk factors for mental illness among healthcare professionals during the pandemic. The results suggest that certain subgroups (women, younger individuals, those with higher education, those without religion, and those lacking social support) who are at risk for more severe mental health issues, may benefit from targeted psychological interventions. Additionally, this research contributes by identifying specific lifestyle habits (such as physical activity and diet) and work conditions (such as working in areas unrelated

to their degree and witnessing deaths in the workplace) that are associated with lower job satisfaction, poorer quality of life, and diminished mental health. These findings are crucial for developing evidence-based interventions for these subgroups to prevent absenteeism and frequent turnover. Furthermore, the results underscore the need for future research to track these individuals over time and consider including control groups or employing different methodological designs.

On a positive note, individuals who exhibited signs of mental disorders were often those receiving psychological or psychiatric support. However, it is essential to address health determinants (demographic factors, lifestyle habits, and work conditions) in psychological interventions, workplace environments, public policy development, and intersectoral coordination (Buss, 2000).

Practical implications involve managing healthcare professionals to prevent or mitigate mental health issues. Managers should prioritize job satisfaction, as it is related to all measures of quality of life and mental distress. Continuous evaluation and enhancement of job satisfaction among healthcare professionals are necessary, along with initiatives aimed at improving well-being and quality of life, to reduce psychosocial risks associated with working during the pandemic (Brida *et al.*, 2020; Heleno *et al.*, 2020; Melo *et al.*, 2011).

Psychological interventions are also vital for this population, particularly those addressing intense emotions and stress, expanding social support, and establishing support groups within hospitals, as well as ensuring clear communication and task distribution at work (Petzold, Plag, & Sthröle, 2020). These interventions are crucial both during and after the pandemic, as mental health issues among

professionals can lead to severe, temporarily incapacitating conditions (Heleno *et al.*, 2020). Similarly, developing future prevention protocols and training healthcare personnel is essential for managing future pandemics or emergency situations with similar characteristics (Martínez-López *et al.*, 2020).

Some limitations of this study include the sample size, as many staff members did not participate due to their own overload or pandemic-related absences. Another limitation is that data collection was conducted remotely, preventing direct observation of participants. Additionally, because the participants worked in primary care, they may not have had frequent contact with COVID-19 patients, which could have affected the results. The generalization of the findings should be approached with caution, as the data collection region has specific cultural, demographic, and public health management characteristics.

Finally, it is important to note that the study design does not allow us to conclude that the COVID-19 pandemic has worsened the psychopathological conditions or quality of life of healthcare professionals, as there was no pre-pandemic psychological assessment due to its unprecedented and unpredictable nature. Furthermore, data collection occurred in 2021, a year in which individuals were more accustomed to the pandemic and its effects. By then, there was more accurate information about COVID-19 transmission, and vaccines were available, with healthcare professionals being prioritized. These factors may have mitigated pandemic-related symptoms, and the results may reflect more the psychopathological manifestations associated with the profession itself. Future longitudinal studies could be valuable in assessing whether these symptoms persist over time, especially after the pandemic ends.

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Conflict of interest

The authors have no conflicts of interest to declare.

Data availability statement

The data supporting the findings of this study can be requested from the corresponding author upon reasonable request

Editor-in-chief

Tiago Jessé Souza de Lima

Associate Editor

Nuno Rebelo dos Santos

Corresponding author

Amanda Muglia Wechsler

Email: amanda.wechsler@puc-campinas.edu.br

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