Quality of life of health personnel during the COVID-19 pandemic: a cross-sectional study

Qualidade de vida dos profissionais da saúde durante a pandemia da COVID-19: estudo transversal

Calidad de vida de los profesionales de la salud durante la pandemia de COVID-19: estudio transversal

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ABSTRACT
Objective: to assess the quality of life of health personnel during the COVID-19 pandemic in Brazil, and to ascertain possible associations between quality of life and sociodemographic and professional characteristics. **Method:** this was a cross-sectional study of a non-probabilistic, convenience sample. The characteristics questionnaire and the World Health Organization Quality of Life instrument–Abbreviated Version (WHOQOL-BREF) were administered online. **Result:** of the 196 health personnel, 78.2% were female, 49.7% white, and 41.1% worked in primary care. Average scores in the WHOQOL ranged from 57.14 to 66.19, with the lowest average of 58.94 (SD = 14.20) in the environment domain. **Conclusion:** during this pandemic period in Brazil, health personnel's quality of life was median, and changed with place of work and profession.
Descriptors: Coronavirus Infections; COVID-19; Health Personnel; Quality of Life.

RESUMO
Objetivo: avaliar a qualidade de vida dos profissionais da saúde, durante a pandemia da COVID-19 no Brasil, e verificar possíveis associações entre a qualidade de vida e as características sociodemográficas e profissionais. **Método:** estudo transversal, com amostragem não probabilística, por conveniência. Os questionários foram administrados na modalidade on-line o questionário de caracterização e o *World Health Organization Quality of Life instrument–Abbreviated Version (WHOQOL-BREF)*. **Resultado:** entre 196 profissionais de saúde, 78,2% eram do sexo feminino, 49,7% da raça branca, 41,1% atuavam na atenção primária. Os profissionais apresentaram média dos escores do WHOQOL variando de 57,14 a 66,19, com menor média no domínio meio ambiente com o valor de 58,94 (DP = 14,20). **Conclusão:** os profissionais de saúde apresentaram uma qualidade de vida mediana com alterações de acordo com o local de trabalho e profissão nesse período de pandemia no Brasil.
Descritores: Infecções por Coronavírus; COVID-19; Pessoal de Saúde; Qualidade de vida.

RESUMEN
Objetivo: evaluar la calidad de vida de los profesionales de la salud durante la pandemia de COVID-19 en Brasil y verificar posibles asociaciones entre la calidad de vida y las características sociodemográficas y profesionales. **Método:** estudio transversal, con muestra no probabilística, por conveniencia. Se administraron los cuestionarios en línea de caracterización y el *World Health Organization Quality of Life instrument–Abbreviated Version* (WHOQOL-BREF). **Resultado:** entre 196 profesionales de la salud, el 78,2% era de mujeres, el 49,7% blanco, el 41,1% trabajaba en la atención primaria. Los profesionales tuvieron un promedio de los escores del WHOQOL que varía de 57,14 a 66,19, con el promedio más bajo en el dominio medioambiental, con un valor de 58,94 (DE = 14,20). **Conclusión:** los profesionales de la salud presentaron una calidad de vida mediana con alteraciones según el lugar de trabajo y la profesión en este período de pandemia en Brasil.
Descriptores: Infecciones por Coronavirus; COVID-19; Personal de Salud; Calidad de Vida.

INTRODUCTION

The disease caused by the type 2 coronavirus (COVID-19) started in China, more specifically in the city of Wuhan, arriving in Brazil on February 26, 2020, in the State of São Paulo. The World Health Organization (WHO) declared the new Coronavirus a pandemic on March 11, 2020. The Brazilian government declared a Public Health Emergency of National Importance (*Emergência de Saúde Pública de Importância Nacional - ESPIN*) due to the human infection of the new Coronavirus on February 3, 2020 by Ordinance No. 188[1].

The first epidemiological wave of cases and synchronized transmission in the country took place between June and August 2020. There was a second wave of transmission from December 2020 to June 2021 which started due to the summer and the end of year festivities, in addition to relaxation in preventive measures by the population. In turn, the peak in the number of cases with a predominance of the Coronavirus Gamma variant occurred in April 2021, with an increase in the number of cases and deaths between March and June 2021, reaching peaks of 3,000 deaths daily[2].

There was a reduction period in the number of cases, severe cases and mortality from July to December 2021 due to the positive impacts of the vaccination campaign, with consequent relief for the health system and a reduction in the occupancy rate of beds. The third wave started in December 2021 with the predominance of the Omicron variant, again due to a relaxation in preventive measures, vacation period and parties[2].

Due to the nature of their work, health professionals move in the opposite direction to social distancing. They deal with an increased demand for work, long working hours, few resources and precarious infrastructure, use of protective equipment that causes discomfort and difficulty breathing, unpreparedness and lack of continuing education proposed by health institutions[3]. This type of large-scale pandemic directly interferes with physical and mental health and quality of life in general, as has been proven in previous epidemics[4].

The WHO defines quality of life as "the individual's perception of their place in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns"[5]. Studies carried out with health professionals who worked in the care of patients with COVID-19 identified a deteriorated quality of life, changes in sleep, high levels of depression, anxiety and stress[6,7].

Health professionals are under an intense workload, in addition to greater exposure compared to the general population, which can generate excessive tiredness and tension and lead to anxiety, depression and feelings of sadness, harm and helplessness. This high level of anxiety resulting from the risk of infection has been directly interfering with the quality of life of health professionals[8].

COVID-19 has not only had a major impact on the mental health of workers, but also on their overall quality of life. An assessment of the impact on the quality of life of workers, work routines, wages and psychological health is necessary. For example, a reduction in the quality of life of some groups of workers was observed in a study in South Korea[9]. A study carried out in Turkey evaluated the levels of anxiety, quality of life and quality of sleep of 140 health professionals and identified that 71% had anxiety problems (38% mild, 20% moderate and 13% severe), in addition to a negative correlation with the WHOQOL-BREF scores, directly interfering in their quality of life[10].

In view of the above, it is understood that the COVID-19 pandemic has been affecting the lives of health professionals globally, and especially health professionals who are on the frontlines in public and private institutions, fighting something new and until then unknown. Thus, there is an interest in evaluating the quality of life of health professionals in coping with the new Coronavirus in Brazil.

The objective of this study was to evaluate the quality of life of health professionals during the COVID-19 pandemic in Brazil and to verify possible associations between quality of life and sociodemographic and professional characteristics.

METHOD

This is a cross-sectional study in which health professionals who worked or work on the frontlines of the COVID-19 pandemic in public and private hospitals, primary care units, private clinics, and field hospitals were included, in addition to professionals who have not had direct contact with the care of patients infected with COVID-19.

The sample was defined using a non-probabilistic technique by convenience. Data collection took place from April to August 2021, online (virtual) and followed the guidelines of the Checklist for Reporting Results of Internet E-Surveys (CHERRIES)[11]. This study was characterized as an open survey, as the questionnaires remained open so that anyone who had access to the link could answer them. In addition, participants could share and invite others to participate in the study. This strategy was chosen because it facilitated access to health professionals during the pandemic, restricted to environments that could not be frequented by researchers, and contributed to non-spread of the virus.

The questionnaires were inserted in Google Forms® and distributed in 15 pages. Before starting to send the invitation, the researchers tested access to the link and the questionnaires. The following questionnaires were used: a sample characterization questionnaire and the WHOQOL-BREF, an instrument for assessing quality of life, consisting of 26 items which measure the following broad domains: physical, psychological, social relationships and environment[12,13]. The higher the score, the better the quality of life[12,13].

The invitation with the research link was initially sent to a contact network of researchers and health professionals by email, in addition to Whatsapp® groups and social media. In cases of no response after seven days, a new email or message was sent. The first professionals invited to participate in the survey were invited to forward the link to their personal professional contacts to expand the sample.

By accessing the link, the participants initially had access to the description of the procedures, inclusion criteria, study objectives and the Informed Consent Form (ICF). When accessing the ICF, the participants should indicate whether or not they accepted to participate in the study. The participants would only have access to the questionnaires if they agreed to participate in the study. Participation was voluntary and, after acceptance, the participants had access to the sociodemographic questionnaire and the WHOQOL-BREF. The participants had the right to not answer any question, without the need for explanation or justification for doing so.

The database was checked after the end of data collection, and 204 responses were identified. However, six were duplicated and two were not completed. After exclusion, there was a total of 196 response records, composing the final sample of the study.

The database was initially stored encrypted in a cloud and without personal information in order to guarantee the integrity of the information. A daily backup was performed during data collection to avoid data loss. After completing the data collection, data storage in the cloud was removed following the regulations of Circular Letter No. 2 of February 24, 202114 and the CHERRIES Checklist guideline[11].

After collection, the data were transferred to a Microsoft Excel® spreadsheet. After checking the database, they were analyzed using the Statistical Package for the Social Sciences (SPSS®) version 21.0 software program.

First, a descriptive analysis was performed using mean, standard deviation, absolute and relative frequencies. Calculations for the descriptive analysis of the WHOQOL-Bref were performed by domains, as well as question 1 and question 2.

After applying the Shapiro-Wilk test and confirming that the variables did not show parametric distribution, comparisons of scores on the WHOQOL-BREF scales between different subgroups of the sample were performed using the Mann-Whitney and Kruskal-Wallis tests. Correlations between continuous variables were investigated using Spearman's coefficient. The following correlation values were considered for analysis of correlation coefficients: <0.30 as weak correlation; between 0.30 and 0.50 as moderate correlation; and above 0.50 as strong correlation[14]. The significance level adopted for the tests was 0.05.

The study protocol was approved by the Human Research Ethics Committee of the institution involved. The ethical aspects defined by Resolution No. 466, of December 12, 2012[15] with regard to ethical principles were contemplated to carry out the study. Circular Letter No. 2 of February 24, 2021 was also included, as it is a study using the virtual environment[16]. The participants had to accept the ICF terms to access and answer the questionnaires.

RESULTS

A total of 196 health professionals participated in the study, of which 78.2% were female. In addition, 49.7% indicated that they were white, 35.5% were brown and 11.7% were black. Regarding the title of this sample of professionals, 48.7% reported having a postgraduate course, 20.3%, complete higher education and 19.8% had a Master's degree. Most participants were from the Northeast region of the country, totaling 66.3%, 25% Southeast region, 4.6% North region, 3.1% South region, 0.5% Midwest region and 0.5% from the Federal District.

Regarding the type of institution where these professionals worked, 41.1% were working in primary healthcare, 21.8% in secondary care, 29.9% in tertiary care. As a result of COVID-19, 33.5% reported that they were reassigned from the sector during this period and 32% had a salary reduction. According to the data collected, 39.6% reported that they had COVID-19 and 48.2% had more than one employment relationship.

The professions represented in the sample are presented by category, with 47.4% being individuals from the nursing team (39.3% nurses, 7.7% nursing technicians and 0.5% nursing assistants). Regarding other professions, 19.9% were physiotherapists, 12.4% were dentists, 6.6% doctors, 5.1% psychologists, 4.1% pharmacists, 1.5% nutritionists, 1.5% social workers, 1% speech therapists and 0.5% occupational therapists.

The means of the WHOQOL-BREF domains is shown in Table 1.

Table 1: WHOQOL-BREF descriptive data (n = 196). Guarulhos, SP, Brazil, 2021.

	Mean	SD[a]	Median	Minimum-Maximum
Q1[b]	66.19	24.72	75.00	0-100
Q2[c]	57.14	26.31	75.00	0-100
Physical domain	65.43	16.58	66.67	28.57-100
Psychological domain	62.09	15.82	65.00	20.00-100
Social relationships domain	62.69	20.14	66.67	8.33-100
Environment domain	58.94	14.20	59.37	18.75-96.88

[a]Standard deviation; [b]Question 1 of the WHOQOL-Bref; [c]Question 2 of the WHOQOL-Bref.

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The mean of the WHOQOL-BREF domains ranged from 57.14 to 66.19, with the lowest mean in the environment domain with a value of 58.94 ($\pm$14.20), the physical domain had a mean of 65.43 ($\pm$16.58), the psychological domain had a mean of 62.09 ($\pm$15.82) and social relationships of 62.69 ($\pm$20.14).

Quality of life was not associated with the following variables related to the professional field: having more than one employment relationship, salary reduction and type of institution. However, the weekly workload showed a significant correlation with the following variables in the WHOQOL-BREF: Q1 (ρ=-0.275, p<0.001), Q2 (ρ=-0.202, p=0.007), domain 1 (ρ=-0.225, p=0.003), domain 2 (ρ=-0.154, p=0.042) and domain 3 (ρ=-0.175, p=0.021).

Differences between sample subgroups in the other WHOQOL-Bref variables can be observed in Table 2. The table shows only the scores in which significant differences were observed between groups.

TABLE 2: Comparison of WHOQOL-BREF scores between sample subgroups divided based on professional aspects (n = 196). Guarulhos, SP, Brazil, 2021.

	Q1[d]				Q2[e]				Physical domain				Psychological domain			
	Mean	SD[f]	Median	p-value	Mean	DP[f]	Median	p-value	Mean	SD[f]	Median	p-value	Mean	SD[f]	Median	p-value
Profession[a,b]				0.089				0.384				0.141				0.408
Dentist	75.00	22.12	75.00		60.42	25.44	75.00		70.39	13.17	67.86		67.29	15.88	70.00	
Nurse	63.31	27.97	75.00		54.87	26.29	50.00		65.34	17.24	66.67		62.21	15.63	65.00	
Physiotherapist	71.15	21.87	75.00		62.18	26.82	75.00		68.41	16.07	71.42		60.51	15.97	60.00	
Doctor	59.61	21.74	75.00		55.77	25.32	50.00		59.61	18.41	57.14		59.23	14.84	60.00	
Psychologist	72.50	14.19	75.00		60.00	24.15	62.50		68.21	16.19	66.07		60.50	18.62	70.00	
Nursing technician	56.67	22.09	75.00		46.67	26.50	50.00		57.38	19.77	53.57		56.67	17.99	55.00	
Level of complexity[b]				0.053				0.025*				0.288				0.125
Primary healthcare	72.18	20.51	75.00		63.38	24.93	75.00		68.36	17.38	67.86		64.29	16.67	70.00	
Secondary care	67.26	24.38	75.00		55.36	24.40	50.00		64.37	17.15	64.29		61.78	14.52	65.00	
Tertiary care	57.89	28.80	75.00		48.25	27.89	75.00		62.47	16.52	57.14		58.25	16.41	60.00	
Was reassigned[c]				0.020*				0.067				0.031*				0.030*
Yes	60.61	28.78	75.00		53.41	26.99	50.00		61.96	17.35	60.71		58.94	16.61	60.00	
No	69.34	22.00	75.00		59.38	25.87	75.00		67.33	15.99	67.86		64.06	14.99	70.00	
Had COVID-19[c]				0.050*				0.026*				0.076				0.269
Yes	63.78	24.72	75.00		53.21	26.22	50.00		62.59	17.11	60.71		60.90	15.97	60.00	
No	67.79	24.70	75.00		59.75	26.16	75.00		67.30	16.01	67.86		62.88	15.74	65.00	

[a]Only professions represented by more than n = 10 participants in the sample were compared; [b]Kruskal-Wallis test; [c]Mann-Whitney test; [d]Question 1 of the WHOQOL-Bref.; [e]Question 2 of the WHOQOL-Bref; [f]Standard deviation; *Statistically significant at p<0.05.

Regarding the comparison of professional characteristics with the WHOQOL-Bref results when evaluating what the participants thought about their quality of life (Q1), dentists indicated the best quality of life with an average of 75.0 ($\pm$22.72), then psychologists with an average of 72.5 ($\pm$14.19) and physiotherapists with 71.15 ($\pm$21.87). All professionals had a median value of 75 in question 1 (Q).

According to the analysis, dentists still had the best quality of life in the WHOQOL-Bref in relation to the physical domain with an average of 70.39 ($\pm$13.17; median=67.86) and in the psychological domain an average of 67.29 ($\pm$16.19; median=66.07). Nursing technicians indicated the worst quality of life with an average of 56.67 ($\pm$22.09; median=75); the average in domain 1 was 57.38 ($\pm$19.77; median=53.57) and the average domain 2 was 56.67 ($\pm$17.99; median=55.0).

There was no significant difference in the level of complexity analysis in relation to quality of life. Professionals working in tertiary care had the lowest mean 57.89 (SD = 28.80; median = 75) in domain 1 and domain 2.

Professionals who were reassigned to another sector had a lower mean and median in domain 1, being 61.96 ($\pm$17.35; median=60.71), as well as a mean of 58.96 in domain 2 ($\pm$16.61; median=60.0). The data related to the evaluation of those who worked (or not) on the frontline against COVID-19 are presented in Table 3.

TABLE 3: Descriptive data and comparison of WHOQOL-Bref scores between professionals who worked and did not work on the frontline against COVID-19 (n = 196). Guarulhos, SP, Brazil, 2021.

| | Did you work on the frontline?[a] | | | | |
| | Yes (n = 105) | | No (n = 90) | | p-value |
	Mean (SD[b])	Median	Mean (SD[b])	Median	
WHOQOL-BREF					
Q1[c]	62.38(27.98)	75.00	71.11(19.07)	75.00	0.083
Q2[d]	54.77(27.32)	62.50	60.28(24.83)	62.50	0.167
Physical domain	64.35(17.72)	64.29	66.81(15.16)	64.29	0.314
Psychological domain	61.52(16.25)	65.00	63.06(15.17)	65.00	0.393
Social relationhips domain	62.90(20.54)	66.67	62.69(19.76)	66.67	0.976
Environment domain	57.61(15.40)	59.37	60.63(12.54)	59.37	0.169

[a]Mann-Whitney test; [b]Standard deviation; [c]Question 1 of the WHOQOL-Bref; [d]Question 2 of the WHOQOL-Bref.

Regarding question 1 of the WHOQOL-Bref, professionals who did not work on the frontline had a higher average score of 71.11 (SD=19.07; median = 75.00), unlike those who worked on the frontline with an average of 62.38 ($\pm$27.98; median=75.00). However, the differences were not statistically significant (p=0.083).

DISCUSSION

This study provided a brief overview of the quality of life of health professionals who worked or not on the frontlines against COVID-19 in Brazil, in addition to identifying possible associations between the characteristics of professionals with quality of life.

No significant difference regarding the obtained results was identified in the quality of life of professionals who worked on the frontline in field hospitals or in other health areas. Dentists, psychologists and physiotherapists had higher quality of life scores, especially in the physical and psychological domains. This result may be related to the high number of participants who provide services in primary and outpatient care. Nursing technicians stood out for presenting worse quality of life scores, possibly due to their attributes such as direct contact with contaminated patients and basic hygiene care or other external factors.

In a study carried out in India with the objective of identifying anxiety, depression and quality of life in nurses, average scores were identified in all domains of the WHOQOL-BREF, demonstrating that the quality of life of nurses was not greatly affected[17]. The marital status variable was an important factor in the study carried out in India, as it contributed to impairment in its psychological domain (P = 0.008) and social domains (P = 0.000)[16]. However, this variable was not evaluated in this study.

A study in Indonesia with health professionals used the WHOQOL-BREF and identified an average of 63.18 for the physical domain and 60.33 for the psychological domain[18]. Similar results were identified in the present study with mean values of 65.43 in the physical domain, 62.09 in the psychological domain, 62.69 in the social relationships domain and 58.94 in the environment domain.

A study carried out with a sample of health professionals in the first days of the pandemic evaluated the quality of life through the WHOQOL-BREF, and identified that the social relationships domain was the most affected right at the beginning of the pandemic[19]. This differs from the results of this study which was carried out in 2021, a period indicated as the second wave of COVID-19 in Brazil, which identified a worse score in the environment domain (mean: 58.94).

A study that evaluated the quality of life of physicians in China also using the WHOQOL-BREF, identified the workload variable (p=0.022) associated with a higher risk of depression[19]. Furthermore, a statistically significant correlation regarding quality of life was identified between the workload variable and the WHOQOL-BREF variables: Q1 (ρ=-0.275, p<0.001), Q2 (ρ=-0.202, p=0.007), domain 1 (ρ=-0.225, p=0.003), domain 2 (ρ=-0.154, p=0.042) and domain 3 (ρ=-0.175, p=0.021)[20].

Diverging from this study, a study carried out in five cities in Saudi Arabia with the objective of documenting the quality of work life (QWL) through the WHOQOL-Bref among health professionals from intensive care units (ICUs) and emergency units during the COVID-19 outbreak from May to June 2020, identified that the quality of life of these professionals during the COVID-19 pandemic was low[21].

When analyzing the professional category, a study carried out in Egypt found that physicians obtained a mean and standard deviation in the WHOQOL-Bref physical domain of 55.2 and 14.5 respectively, as well as a mean of 58.7 and standard deviation of 17.3 in the psychological domain[22]. The physicians in the present study had a mean of 59.61 and

standard deviation of 18.41 in the physical domain, and a mean of 59.23 and standard deviation of 14.84 for the psychological domain.

Health professionals suffer from the impact of the pandemic; the country is experiencing a health crisis, many states have experienced difficulties and demanded wisdom from managers in planning and decision-making. This phase is still worrying even today, with no prediction of the end of the pandemic, and linked to a political, economic and social crisis. Despite this crisis and the increase in demand for health services and the number of patients, vaccination has been preventing hospitalizations and decreasing the number of deaths[2].

A relevant aspect of this study is that data collection began in April 2021 and ended in August 2021. It is noteworthy that the second Coronavirus transmission wave in Brazil reached its apex in April 2021. The number of deaths from COVID-19 reached peaks of up to 3,000 deaths per day during this period, especially from March to June 2021, resulting in a collapse of the health system, equipment and hospital supply shortages, and exhaustion of the workforce[2]. Therefore, the results of this study portray the quality of life of health professionals during the worst period of health system collapse in Brazil.

Study limitations

This study has limitations which deserve to be highlighted. First, the heterogeneity of the sample due to the inclusion of different professional categories and the low sample size make possible comparisons and analyzes difficult. Second, the criterion of including professionals who worked or not on the frontlines of the pandemic and the low sample size may have influenced the obtained results.

CONCLUSION

Health professionals had an average quality of life with changes according to their work and profession location during this pandemic period in Brazil. It is evident that the theme is still new, and further studies are needed regarding the virus and the quality of life of health professionals, especially those who work at the frontlines of a pandemic. In addition, it is important that managers are sensitized and pay attention to the mental health and quality of life of workers in order to create programs and policies directed towards these situations.

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