

Resilience among Brazilian healthcare professionals during the COVID-19 pandemic*

Resiliência entre profissionais de saúde brasileiros durante a pandemia de COVID-19
Resiliencia de los profesionales de la salud brasileños durante la pandemia de COVID-19

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*Excerpt from the dissertation "Resiliência entre profissionais de saúde Brasileiros durante a primeira onda da pandemia da COVID-19", Graduate Program in Fundamental Nursing, Escola de Enfermagem de Ribeirão Preto - Universidade de São Paulo, 2023.

Abstract

Objective: to analyze resilience levels among Brazilian healthcare professionals during the COVID-19 pandemic and its associated factors. **Method:** a cross-sectional study conducted with 9,445 Brazilian healthcare professionals from October 1 to December 31, 2020, using a virtual questionnaire containing demographic and work-related variables related to the type of care provided, the context of the COVID-19 pandemic, and the Brief Resilient Coping Scale. Descriptive and inferential statistics were used. **Results:** professionals from the Northeast (OR=1.31; 95% CI: 1.02-1.69; p= 0.033) and North (OR=1.34; 95% CI: 1.07-1.69; p= 0.011), psychologists (OR=1.95; 95% CI: 1.22-3.13; p= 0.005) and professionals with children (OR=1.32; 95% CI: 1.15-1.51; p<0.001) presented increased chances for strong resilience. **Conclusion:** the COVID-19 pandemic has resulted in low resilience in most professionals, which may imply behavioral changes, beliefs and mood swings among professionals.

Descriptors: Resilience, Psychological; Health Personnel; COVID-19; Coronavirus Infections; Pandemics

Resumo

Objetivo: analisar os níveis de resiliência entre os profissionais de saúde brasileiros durante a pandemia de COVID-19 e seus fatores associados. **Método:** estudo transversal, realizado com 9.445 profissionais de saúde brasileiros, no período de 01 de outubro a 31 de dezembro de 2020, por meio de questionário virtual contendo variáveis demográficas, laborais, relacionadas ao tipo de assistência prestada, ao contexto da pandemia de COVID-19 e a Escala Breve de *Coping* Resiliente. Utilizaram-se estatísticas descritivas e inferenciais. **Resultados:** profissionais da região Nordeste (OR=1,31; IC 95%: 1,02-1,69; p= 0,033) e Norte (OR=1,34; IC 95%: 1,07-1,69; p= 0,011),

psicólogos (OR=1,95; IC 95%: 1,22-3,13; p= 0,005) e profissionais com filhos (OR=1,32; IC 95%: 1,15-1,51; p <0,001) apresentaram chances aumentadas para forte resiliência. **Conclusão:** a pandemia de COVID-19 inferiu em uma baixa resiliência na maioria dos profissionais, o que pode implicar mudanças comportamentais, crenças e alterações de humor dos profissionais.

Descritores: Resiliência Psicológica; Pessoal de Saúde; COVID-19; Infecções por Coronavírus; Pandemias

Resumen

Objetivo: analizar los niveles de resiliencia de los profesionales de la salud brasileños durante la pandemia de COVID-19 y sus factores asociados. **Método:** estudio transversal, realizado con 9.445 profesionales de la salud brasileños, del 1 de octubre al 31 de diciembre de 2020, utilizando un cuestionario virtual que contiene variables demográficas y laborales, relacionadas con el tipo de asistencia brindada, en el contexto de la pandemia de COVID-19. Se utilizó estadística descriptiva e inferencial.

Resultados: profesionales de la región Nordeste (OR=1,31; IC 95%: 1,02-1,69; p= 0,033) y Norte (OR=1,34; IC 95%: 1,07-1,69; p= 0,011), psicólogos (OR=1,95; IC 95%: 1,07-1,69; p= 0,011); IC 95%: 1,22-3,13; p= 0,005) y profesionales con niños (OR=1,32; IC 95%: 1,15-1,51; p <0,001) mostraron mayores posibilidades de una fuerte resiliencia. **Conclusión:** la pandemia de COVID-19 resultó en baja resiliencia en la mayoría de los profesionales, lo que puede implicar cambios de comportamiento, creencias y cambios de humor entre los profesionales.

Descriptores: Resiliencia Psicológica; Personal de Salud; COVID-19; Infecciones por Coronavirus; Pandemias

Introduction

COVID-19 has emerged as a stressor, especially when considering the measures to contain and prevent the disease, with emphasis on social distancing, as well as the impacts on the economic, social and political fields. The impact on people's mental health was and is highly relevant, given the emotional, behavioral and cognitive changes that are being observed in human beings.¹

Thus, faced with the scenario of fear, concerns and uncertainties, in addition to the changes and consequences, attention turns to healthcare professionals, especially those who worked on the "front line" in direct patient care. Given that this group cannot follow the recommendation, advocated by the World Health Organization, to remain in isolation, they constitute a group with a high risk of contamination due to the high viral load to which they were exposed,² being affected in several ways, mainly psychological.³

The overload of healthcare professionals in caring for COVID-19 victims has ended up turning them into second-order victims of the disease. Pressure and worries can increase emotional stress, whereas fear and anguish are potential triggers. Furthermore, the disease causes changes in individuals' daily lives, which can elicit feelings of vulnerability.⁴

Thinking about the stress faced by healthcare professionals, it is necessary to talk about resilience.¹ According to a theoretical study, it was investigated and conceptualized in two possibilities, not only as recovery and overcoming processes, but also as resistance to stress. The first exposes individuals to small risks and strengthens protective factors, with the aim of blocking threats, in order to direct the mental health prevention and promotion process. The second points out individuals' suffering when exposed to vulnerable environments of high risk, but with the possibility of recovery in the face of the adversities experienced, which guides treatment.⁵

In epidemic situations, more people may be affected psychologically than by the infection itself. There is a high prevalence of negative psychological aspects, such as low mood and irritability, anger, fear and insomnia, often lasting a long time, also mentioning the possibility of experiencing another type of pandemic, which is called a "pandemic of fear and stress".⁶

Resilience is considered a factor in preventing mental health problems in new and experienced healthcare professionals. The availability of a subjective and objective support network appears as a factor in preventing mental health problems in new teams. It is also worth noting that individuals with no experience in public health emergency care present greater psychological changes in terms of lower resilience. The lack of a social support network predisposes to symptoms of depression and anxiety.⁷

Therefore, given the pandemic scenario we are experiencing, it is necessary to think about the psychological consequences for healthcare professionals, which often lead to physical and mental inference, aiming to return the focus of care to these professionals, as well as to estimate protective factors for individuals' biopsychosocial functioning to prepare them in the future for experiences of unexpected stressful events.

Thus, the research aimed to analyze resilience levels among Brazilian healthcare professionals during the COVID-19 pandemic and its associated factors.

Method

This is a cross-sectional study, developed according to an online survey in all regions of Brazil. The Strengthening the Reporting of Observational studies in Epidemiology for RDS Studies (STROBE-RDS) recommendations were followed.⁸

The study included healthcare professionals from Brazil who provided direct care to individuals during the first wave of the COVID-19 pandemic. Professionals who provided direct care to individuals with suspected or confirmed COVID-19 in any state in Brazil, in different healthcare settings, in public and/or private services, for at least the last six months prior to the start of data collection, with access to the internet and a mobile device via a cell phone, were included. Professionals who were on leave from work in the six months prior to the data collection period were excluded.

Based on a literature review and a meeting with researchers, a questionnaire was developed, validated in terms of its face and content by 15 experts. A pilot study was conducted using the instrument, and a committee of five judges was set up to assess it and make suggested adjustments. The questionnaire included multiple-choice questions divided according to demographic variables related to professional category, type of care provided and the context of the COVID-19 pandemic.

Furthermore, the questionnaire included the Brief Resilient Coping Scale (BRCS), an instrument validated for Portuguese and composed of four items, namely: 1. I look for creative ways to alter difficult situations; 2. Regardless of what happens to me, I believe I can control my reaction to it; 3. I believe I can grow in positive ways by dealing with difficult situations; 4. I actively look for ways to replace the losses I encounter in life.⁹

Response options are distributed on a Likert-type scale with the following alternatives: 5 – Almost always; 4 – Very often; 3 – Often; 2 – Occasionally; 1 – Almost never. Resilience levels are interpreted according to the following score: a score below 13 indicates low resilience; and a score above 17 indicates strong resilience.⁹ Therefore, the outcome variable was resilience.

Professionals were recruited by a trained team, using an adaptation of the Respondent Driven Sampling (RDS) method to the virtual environment. In this method, participants are responsible for recruiting other individuals in the same category as theirs, through social networks.¹⁰ Previously trained researchers from all regions of Brazil carried out online data collection during the COVID-19 pandemic.

The RDS method, based on snowball sampling and developed for HIV prevention studies, weights individuals according to their social relationships, reducing selection bias and providing reliable estimates in hard-to-reach populations.¹⁰ Participants, initially

selected randomly (seeds), could nominate up to ten people, managing this data in Excel® spreadsheets. Nominees who responded via WhatsApp® were interviewed and trained to make new nominations, continuing the cycle.

Due to COVID, the method used digital communication instead of physical communication. The sampling plan did not consider the national region, treating it as a domain of interest, not as a stratum with a planned sample.

Data collection was carried out from October 1 to December 31, 2020. The survey form and the Informed Consent Form (ICF) were made available online through a Survey Monkey® link.

Data were analyzed using the Statistical Package for the Social Sciences for Windows® (SPSS) version 20.0. Descriptive analyses were performed, including absolute (n) and relative (%) frequencies. The nonparametric Mann-Whitney and Kruskal-Wallis tests were used to assess the difference between groups in the overall resilience score, since data normality assumptions were not met, assessed using the Shapiro-Wilk test. All variables that presented a p-value <0.05 were considered statistically significant.

To investigate the possible sociodemographic factors associated with strong resilience, a bivariate analysis was first performed using the chi-square test. To estimate the Odds Ratio (OR) and generate the OR with a 95% Confidence Interval (95%CI), initially, a logistic regression model was performed and, based on this adjustment, variables with p-value < 0.20 were included in a new adjustment using the stepwise method. In the final model, variables that presented a statistically significant association with $p \leq 0.05$ were considered.

The project to which this study is linked was approved by the Research Ethics Committee of the *Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo*, under Opinion 4,258,366 on September 4, 2020, and was conducted in accordance with the ethical standards required by Resolution 466/2012. Participants' consent was obtained online by confirming their agreement to the ICF, by selecting the option "I have read and agree to participate in the research". It is important to note that Circular Letter 2/2021 guidelines, which deals with guidelines for procedures in research with any stage in a virtual environment, were followed.¹¹

Results

A total of 9,445 healthcare professionals from all regions of Brazil participated in the study, the majority of whom were from the Northeast (2,809; 29.7%) and nursing professionals (7,076; 74.9%). There was a predominance of female professionals (7,637; 80.9%), aged 31 to 50 years (5,153; 54.6%), married or in a common-law marriage (4,874; 51.6%), without children (4,956; 52.5%) and with some religion (8,252; 87.4%). As for the context of the COVID-19 pandemic, 6,409 (67.9%) did not need to leave their families to practice their profession; 6,341 (67.1%) did not live with older adults or people in the risk group; 6,432 (68.1%) were diagnosed with COVID-19; and 6,713 (71.1%) did not provide care in a field hospital.

Table 1 shows bivariate analyses of sociodemographic, clinical and occupational characteristics and their association with resilience levels. It is possible to observe that sex ($p<0.001$), age group ($p<0.001$), Brazil region ($p=0.04$), professional category ($p=0.001$) and children ($p<0.001$) were statistically associated with resilience levels.

Table 1 - Association between sociodemographic, clinical and occupational variables and healthcare professionals' resilience levels in Brazil during the COVID-19 pandemic (n=9,445). Brazil, 2020

Variables	Resilience		p-value*
	Low n (%)	Strong n (%)	
Sex			< 0.001
Male	1,490 (82.4)	318 (17.6)	
Female	6,565 (86.0)	1,072 (14.0)	
Age group			< 0.001
18 to 30 years	3,259 (88.2)	435 (11.8)	
31 to 50 years	4,323 (83.9)	830 (16.1)	
51 years and older	473 (79.1)	125 (20.9)	
Brazil region			0.04
Northeast	2,355 (83.8)	454 (16.2)	
Southeast	2,385 (85.9)	390 (14.1)	

Center-West	1,450 (86.8)	220 (13.2)	
North	1,129 (83.6)	222 (16.4)	
South	736 (87.6)	104 (12.4)	
Professional category			0.001
Nursing professional	6,092 (86.1)	984 (13.9)	
Doctor	822 (81.9)	182 (18.1)	
Physiotherapist	446 (84.0)	85 (16.0)	
Dentist	151 (83.9)	29 (16.1)	
Psychologist	108 (76.1)	34 (23.9)	
Speech therapist	38 (88.4)	5 (11.6)	
Occupational therapist	27 (79.4)	7 (20.6)	
Other	371 (85.3)	64 (14.7)	
Marital status			0.111
Married/common-law relationship	4,123 (84.6)	751 (15.4)	
Single/divorced	3,890 (86.1)	630 (13.9)	
Widowed	42 (82.4)	9 (17.6)	
Has any religion			0.755
Yes	7,034 (85.2)	1,218 (14.8)	
No	1,021 (85.6)	172 (14.4)	
Children			< 0.001
Yes	3,714 (82.7)	775 (13.3)	
No	4,341 (87.6)	615 (12.4)	
Had to leave their family to pursue their profession			0.794
Yes	2,585 (85.1)	451 (14.9)	
No	5,470 (85.3)	939 (14.7)	
There are older adults or people in the risk group living with you			0.271
Yes	2,665 (85.9)	439 (14.1)	
No	5,390 (85.0)	951 (15.0)	
COVID-19 diagnosis			0.179
Yes	5,507 (85.6)	925 (14.4)	
No	2,548 (84.6)	465 (15.4)	

Assistance in field hospital			0.997
Yes	5,725 (85.3)	988 (14.7)	
No	2,330 (85.3)	402 (14.7)	

*Chi-square test

Table 2 shows the logistic regression model performed to evaluate the variables associated with strong resilience.

Table 2 - Logistic regression analysis for strong resilience among healthcare professionals in Brazil during the COVID-19 pandemic (n=9,445). Brazil, 2020

Variables	Resilience				
	Low n (%)	Strong n (%)	p-value	OR*	95%CI [†]
Sex					
Male	1,490 (15.8)	318 (3.4)		1	
Female	6,565 (69.5)	1,072 (11.3)	<0.001	0.76	0.66-0.87
Age group					
18 to 30 years	3,259 (34.5)	435 (4.6)	<0.001	1.43	1.27-1.62
31 to 50 years	4,323 (45.8)	830 (8.8)	<0.001	1.98	1.58-2.47
51 years and older	473 (5.0)	125 (1.3)		1	
Brazil region					
Northeast	2,355 (24.9)	454 (4.8)	0.008	1.36	1.08-1.71
Southeast	2,385 (25.5)	390 (4.1)	0.216	1.15	0.91-1.45
Center-West	1,450 (15.4)	220 (2.3)	0.576	1.07	0.83-1.37
North	1,129 (12.0)	222 (2.4)	0.010	1.39	1.08-1.78
South	736 (7.8)	104 (1.1)		1	
Professional category					
Nursing professional	6,092 (64.5)	984 (10.4)	0.638	0.93	0.71-1.23
Doctor	822 (8.7)	182 (1.9)	0.115	1.28	0.94-1.75
Physiotherapist	446 (4.7)	85 (0.9)	0.579	1.10	0.77-1.57
Dentist	151 (1.6)	29 (0.3)	0.660	1.11	0.69-1.79
Psychologist	108 (1.1)	34 (0.4)	0.012	1.82	1.14-2.91
Speech therapist	38 (0.4)	5 (0.1)	0.584	0.76	0.28-2.01
Occupational therapist	27 (0.3)	7 (0.1)	0.360	1.50	0.62-3.59
Other	371 (3.9)	64 (0.7)		1	

Marital status

Married/common-law relationship	4,123 (43.7)	751 (8.0)	0.660	0.85	0.41-0.75
Single/divorced	3,890 (41.2)	630 (6.7)	0.449	0.75	0.36-1.56
Widowed	42 (0.4)	9 (0.1)		1	

Religion

Yes	7,034 (74.5)	1,218 (12.9)	0.755	1.02	0.86-1.22
No	1,021 (10.8)	172 (1.8)		1	

Children

Yes	3,714 (39.3)	775 (8.2)	<0.001	1.47	1.31-1.65
No	4,341 (46.0)	615 (6.5)		1	

Had to leave their family to pursue their profession

Yes	2,585 (27.4)	451 (4.8)	0.794	1.01	0.90-1.14
No	5,470 (57.9)	939 (9.9)		1	

There are older adults or people in the risk group living with you

Yes	2,665 (28.2)	439 (4.6)	0.271	0.93	0.82-1.05
No	5,390 (57.1)	951 (10.1)		1	

COVID diagnosis

Yes	5,507 (58.3)	925 (9.8)	0.179	0.92	0.81-1.03
No	2,548 (27.0)	465 (4.9)		1	

Assistance in field hospital

Yes	5,725 (60.6)	988 (10.5)	0.997	1.00	0.88-1.13
No	2,330 (24.7)	402 (4.3)		1	

*unadjustedOR= unadjusted Odds Ratio; [†]95%CI= 95% Confidence Interval

In the final logistic regression model, as shown in Table 3, it is observed that female healthcare professionals (OR = 0.77; 95% CI: 0.67-0.89; p = 0.001) and in the age

group of 18 to 30 years (OR = 0.62; 95% CI: 0.48-0.80; $p < 0.001$) have a lower chance of presenting strong resilience. Meanwhile, healthcare professionals from the Northeast (OR=1.31; 95% CI: 1.02-1.69; $p=0.033$) and the North (OR=1.34; 95% CI: 1.07-1.69; $p=0.011$), psychologists (OR=1.95; 95% CI: 1.22-3.13; $p=0.005$) and healthcare professionals who have children (OR=1.32; 95% CI: 1.15-1.51; $p<0.001$) have increased odds of showing strong resilience during the COVID-19 pandemic.

Table 3 - Final logistic regression model for strong resilience among Brazilian healthcare professionals during the COVID-19 pandemic (n=9,445). Brazil, 2020

Variables	^a OR*	95%CI [†]	p-value
Female sex	0.77	0.67-0.89	0.001
Age group (18 to 30 years)	0.62	0.48-0.80	< 0.001
Northeast	1.31	1.02-1.69	0.033
North	1.34	1.07-1.69	0.011
Professional category (Psychologists)	1.95	1.22-3.13	0.005
Children	1.32	1.15-1.51	< 0.001

*^aOR: adjusted Odds Ratio; [†]95%CI: 95% Confidence Interval

Discussion

This study resulted in the observation that female healthcare professionals, aged 18 to 30, are less likely to demonstrate strong resilience. Meanwhile, healthcare professionals from the Northeast and North regions, psychologists and healthcare professionals who have children are more likely to demonstrate strong resilience during the COVID-19 pandemic.

Research¹²⁻¹³ that applied the BRCS showed that women had lower resilience levels, presenting a greater risk of psychological problems, such as stress, anxiety and depression in the face of COVID-19. Meanwhile, males report higher resilience scores and lower frequency of depressed mood and perceived stress than females.¹⁴ Furthermore, females reported greater concerns about COVID-19 than males.¹⁵ Such data support the current study, since, given stressful individual and group experiences in the context of the pandemic, being female was indicative of weaker resilience levels.

It was found in the present analysis that there is a correlation between age stages and resilience, as workers between 18 and 30 years old had a lower chance of strong resilience. It was examined that, in relation not only to longer job tenure, but also to individual growth in terms of age, the resilience process occurs to a greater extent, suggesting an emphasis on protective factors.¹⁶

In contrast, research¹⁷ that used the BRCS to understand the difficulties associated with caring for a group of informal family caregivers of dependent older adults found that older men (62 and 75 years old) had lower resilience levels. In contrast, women aged 59 to 89 showed average resilience levels. COVID-19 has shown its effects most profoundly in older people and individuals with complex health problems.

The results showed that healthcare professionals in the North and Northeast have increasing opportunities for strong resilience during the COVID-19 pandemic. According to special epidemiological bulletin,¹⁸ the number of deaths in the North was 267, and in the Northeast, 803, contrasting with 2,430 in the Southeast and 1,339 in the South.

Social distancing was quickly adopted in the Northeast, following the first deaths. It was implemented in March 2020. The region established preventive measures that affected the social dynamics of its inhabitants, according to the epidemiological context. Thus, most northeastern states maintained high and satisfactory social isolation. The region characterized by poverty and heterogeneity, according to socioeconomic and demographic indicators, had a severe impact, since, with social distancing implemented, it allowed to explore its effectiveness, mainly municipal.¹⁹ These data point to emphatic attention to public health in the Northeast and may be predictors of higher resilience levels, as highlighted in this study, in which healthcare professionals from the North and Northeast have strong chances for high resilience.

Psychologists are also involved in developing the original approach to the challenges generated by the COVID-19 pandemic, with the possibility of adapting to the new scenario dominated by online services.²⁰ Research²¹ conducted in Australia, prior to the COVID-19 pandemic, indicated that psychology students had distress and stress scores indicative of greater psychological distress and lower resilience levels. Current findings with healthcare professionals during the COVID-19 pandemic indicate that trained psychologists are more likely to have strong resilience.

Resilience is associated with human phenomena that occur in organizations and at work. The relationship between workers and results expected by the company is inseparable, a variable that implies the process of resilient coping.²² The topic focuses on the process of adaptive overcoming of stressors that allow developmental growth. Thus, social relationships and family and emotional support networks help promote a sense of belonging, which appears as a protective factor and strengthens coping with difficulties.²³

When studying the relationship between higher resilience levels in healthcare professionals who have children, it is necessary to focus attention on how parental relationships are established. A family environment in which dynamics are built in a positive way, compared to a negative or neutral family environment, seemed to correlate with good resilience, as well as organizational behaviors in family routine, expressive and independent family context indicated higher resilience levels, different from a controlling family environment and the occurrence of punitive events during the lockdown, which indicates a propensity for less resilience.²⁴

When studying the relationship between higher resilience levels in healthcare professionals who have children, it is necessary to focus attention on how parental relationships are established. Higher parental distress levels, conflict situations between parents and children, and difficulties in domestic interpersonal relationships are associated with higher dysfunctional behavior levels. The COVID-19 pandemic, which has disrupted some daily life activities, is more closely associated with children's difficulties. Parental figures emerge as mediators for children's maladjustment and disruptions in the opening and maintenance of social relationships.²⁵ Parents reported more positive than negative parenting in terms of their relationship with their children, in a more empathetic, welcoming and less aggressive manner.²⁶

Families that established strong antecedent bonds of emotional security and family beliefs demonstrated greater coping and resilience during the pandemic.²⁷ High depression levels were associated with hopelessness, lack of resilient coping and not having children, a factor that supports the results of this study, in which healthcare professionals with children have a greater chance of strong resilience.¹³

Psychological resilience is an important and effective coping strategy for dealing with stressful events. This is evident in studies²⁸⁻²⁹ that highlighted results in worsening

mental health as well as rates of depression, suicidal ideation, anxiety, burnout and concerns about the COVID-19 crisis and lower resilience.

The present research has as a limitation participant recruitment, since it was developed online. Therefore, the lack of quality mobile internet network as well as the ability to use electronic devices necessary for participation may involve the representation of professionals with skills in the use of computers and social networks. However, they did not harm the results and discussions established, given the high number of participants.

The results of this study contribute to the academic environment and society as a way of highlighting the attention to healthcare professionals' mental health in the care provided to the population during the COVID-19 pandemic, with a focus on tackling the pandemic context based on individuals' resilience levels at a national level, identifying this population group's real needs in combating the pandemic or future emerging and re-emerging diseases. For public health, based on the findings, it becomes possible to develop proposals for intervention strategies to prevent aggressive symptoms and promote the mental health of healthcare professionals working on the front line of care, preparing them for future adverse contexts.

Conclusion

The COVID-19 pandemic has affected healthcare professionals' resilience levels, favoring a lower chance of presenting strong resilience among female professionals and those aged 18 to 30 years, whereas professionals from the Northeast and North, psychologists and those with children showed increased chances of strong resilience during the COVID-19 pandemic.

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Funding / Acknowledgements: *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (CNPq (Brazilian National Council for Scientific and Technological Development)/Brazil).

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Chief Scientific Editor: Cristiane Cardoso de Paula

Associate Editor: Rosângela Marion da Silva

How to cite this article

Leoni PHT, Sousa LRM, Santos AST, Silva ACO, Reis RK, Gir E. Resilience among Brazilian healthcare professionals during the COVID-19 pandemic. Rev. Enferm. UFSM. 2024 [Access at: Year Month Day]; vol.14, e17:1-17. DOI: <https://doi.org/10.5902/2179769286465>