

## Concerns and Feelings of Brazilian Nursing Professionals during the First Wave of COVID-19 Pandemic

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### Research Article

**Received:** 03 April, 2022, Manuscript No. jnhs-22-61815; **Editor Assigned:** 05 April, 2022, PreQC No. P-61815; **Reviewed:** 17 April, 2022, QC No. Q-61815; **Revised:** 22 April, 2022, Manuscript No. R-61815; **Published:** 06 May, 2022, DOI:10.4172/2321-8.5.21

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**Keywords:** COVID-19, Coronavirus, Pandemic, Nurses, Health care, Health personnel, Survey.

#### Abstract

**Introduction:** To assess the impact of the COVID-19 pandemic in nursing professionals during the first waves of the pandemic.

**Methods:** Cross-sectional study with a randomly selected sample. Google Forms questionnaire was sent by WhatsApp messenger. The survey comprised questions about jobs, income, and workload, PPE, training for COVID-19 patient care, behavior, and feelings during the pandemic

**Results:** The number of jobs, workload, and monthly income were reduced significantly during the first stages of the pandemic. 90% of the nurses were afraid of being infected in their jobs and infecting family and friends.

**Conclusion:** There was a reduction in the number of jobs, workload, and family income. Nurses reported great concern about getting infected and contaminate family and friends. Nurses showed a high level of stress and anxiety and believed that the pandemic would positively influence their nursing career

### INTRODUCTION

Coronavirus disease 2019 (COVID-19) rapidly spread from Wuhan, capital of Hubei province, China, to all 5 continents, and since then, the whole world has been under the clouds of fear and uncertainty. Worldwide, more than 225 million cases of coronavirus disease and more than 4 million deaths have been reported. Between the end of the first wave and the beginning of the second wave, Brazil was the second country with the highest number of infected patients in the world <sup>[1]</sup>. To date, as of 2021 September 14th, there are 21,006,424 confirmed cases and 587,066 deaths in Brazil <sup>[2]</sup>.

The pandemic has affected people of all nations, continents, races, and socioeconomic groups. The responses required, such as quarantining of entire communities, the closing of schools, social isolation, and shelter-in-place orders, have abruptly changed daily life <sup>[3]</sup>. Besides that, every single day, people are bombarded with overwhelming news about this new disease on TV and internet. The amount of daily information, discoveries and confusing data end up leading to an increase in anxiety and stress to the entire community. The rapid spread of COVID-19 and the severity of symptoms could acutely tax the limits of health care systems <sup>[3]</sup>. This scenario becomes especially worrying in low-and-middle-income countries, like Brazil <sup>[4]</sup>.

At the end of the COVID-19 first wave in Brazil there was still no vaccine or effective pharmaceutical intervention against coronavirus. Therefore, since the end of 2020, vaccines have become a breath of hope with more than 5 billion of doses administered worldwide <sup>[5,6]</sup>. To date again, as of 2021 September 14th, there are more than 212,799,091 total vaccines doses administered in Brazil <sup>[2]</sup>. However, there is enormous pressure on health systems, which are intensifying day by day. According to Adams JG and Walls RM <sup>[7]</sup> this pressure takes two forms. The first is the potentially overwhelming burden of illnesses that stresses health system capacity, and the second is the adverse effects on health care workers, including the risk of infection.

In any emerging infection, health workers are unfortunately at risk due to involvement in the examination and treatment of patients <sup>[8]</sup>. Amid this situation, healthcare workers were challenged by working in a new context, exhaustion due to heavy workloads and protective gear, the fear of becoming infected and infecting others, feeling powerless to handle patients' conditions, and managing relationships in this stressful situation <sup>[9]</sup>. Nurses have always played an important role in infection prevention, infection

control, isolation, containment and public health. Since nurses are in the front line of health and social care in the most extreme circumstances, they are one of the main parts of the infection transmission chain, and their knowledge and concerns about 2019-nCoV prevention and protection procedures can help prevent the transmission of the disease. Besides that, the psychological response of overloaded health care workers is of great importance to the effect of the defence against the epidemic<sup>[10]</sup>.

Several studies have evaluated the perception habits and mental health of health professionals during the coronavirus pandemic<sup>[9,11-14]</sup>. However, few studies conducted only with nurses can be observed, especially in Brazil, mainly during the first stages of the pandemic. This way, the objective of this study was to evaluate the impact of the COVID-19 pandemic in the Brazilian nursing professionals about workload, income, personal protective equipment (PPE), training, behaviour, feelings, and level of anxiety during the first waves of the pandemic.

## MATERIALS AND METHODS

This study obtained approval of the Ethics Research Committee of protocol number and all participants agreed to participate and signed digitally an online informed consent. This cross-sectional survey followed the CHERRIES guidelines<sup>[15]</sup>. The sample size calculation was performed with 95% confidence interval and 5% margin of error, considering the application of a questionnaire, considering the number of nurses in Brazil (2,321,509)<sup>[16]</sup> resulted in the need for 385 participants. A structured questionnaire was developed and previously tested on a pilot population before its administration in this study. The pilot study was undertaken with 30 nursing professionals randomly selected to clarify the questions and the language used and the applicability and reliability of the questionnaire. These participants were not included in the sample. The sample was randomly selected and included nursing professionals in Brazil with at least 20 years of age. Nursing students were excluded from the sample. A Google Forms (Google Inc, Mountain View, CA, USA) questionnaire was prepared and sent by e-mail and WhatsApp messenger (WhatsApp Inc, Mountain View, CA, USA) to 500 nursing professionals. Inclusion criteria were: nursing professionals, above 20 years of age, working in the front line of the pandemic in hospitals, healthcare units and private clinics. The questionnaire was available on the internet from 2020 June 01st to 2020 June 30th. In the introduction of the questionnaire, the informed consent was described, and the subjects were informed about the objectives of the study. The anonymity was ensured to the participants. The survey comprised questions about personal information, jobs, income, and workload before and during the pandemic. Personal protective equipment (PPE), training for COVID-19 patient care and behaviour during the pandemic were also assessed. The levels of concern, anxiety, anger, and impact of the pandemic were evaluated with a numerical rating scale from 0 to 10<sup>[17]</sup>.

### Statistical analysis

One question with yes and no responses was duplicated in the questionnaire and the answers were compared to evaluate the intrarater agreement. The answers to this duplicate question were compared using Kappa statistics. The result showed a coefficient of 0.96, indicating an excellent agreement<sup>[18]</sup>. Descriptive statistics were performed with the distribution of the responses, percentages, means and standard deviations. Multiple comparison analyses and multiple regressions were performed to evaluate the influence of the age, income, workload and time of experience in the levels of concern, anxiety, preparedness to care for patients and impact of the pandemic on the nursing profession. Statistical analysis was performed with SPSS software (version 20, Chicago, IL, USA). The results were considered significant at  $p < 0.05$ .

## RESULTS AND DISCUSSION

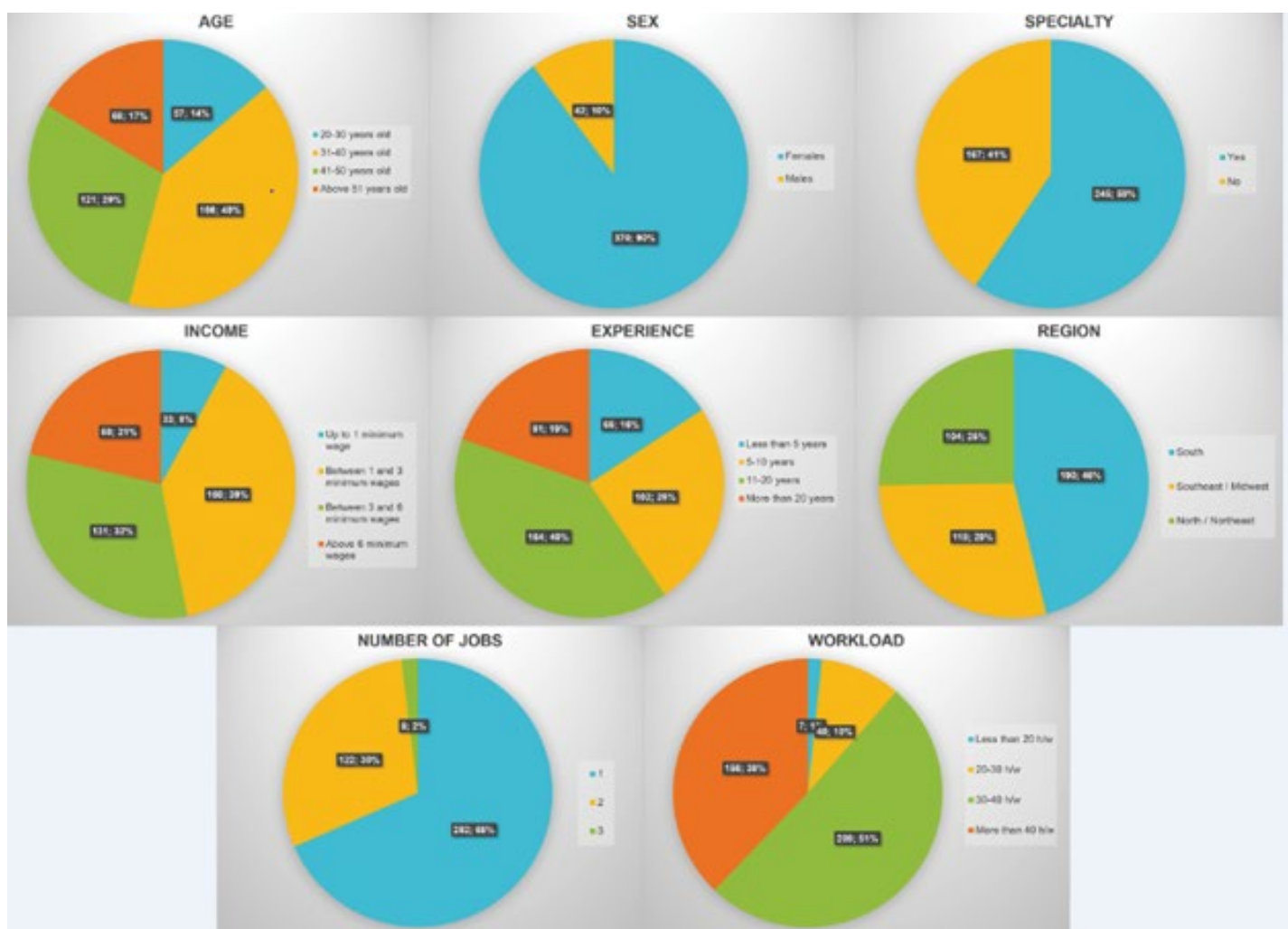
The response rate was 82.4% since a total of 412 nursing professionals answered the questionnaire. Most were female (90%), between 31 and 50 years of age (69%), had a specialty (59%). The family income range was between 1 and 3 minimum wages for 39% of the nurses and between 3 and 6 minimum wages for 32% of them. The experience varied from 11 to 20 years for 40% of the sample and from 5 to 10 years for 25% of the participants. Most nurses had one job before the pandemic (68%) (**Figure 1**) demographics and sample characteristics). The number of jobs, the workload and the monthly income of the nurses were reduced significantly with the pandemic for 30%, 33.5% and 34% of the nurses, respectively.

Almost all nurses (98.8%) were aware of the WHO recommendations concerning the use of PPE, 38.3% of the respondents reported a shortage of PPE in their workplace, and only 40% affirmed that their workplace has PPE following the WHO recommendations. Most nurses (60.9%) are working directly with COVID-19 infected patients, and 57% did not receive training for treating COVID-19 infected patients. Almost all nurses (96.9%) are respecting the social distancing measures and the stay-at-home recommendations; 80.8% believes that their behaviour in facing the pandemic influence people around them. Twenty-six percent of the nurses thought about giving up their jobs or professions after the pandemic began. The great majority (90%) of the nurses reported being afraid of being infected by the novel coronavirus in the clinical or hospital environment, and 97.6% changed their habits, fearing to contaminate their family members and friends. Only 30.1% felt pressured by family members to quit their jobs. Most nurses (83.3%) were feeling more tired than usual, and 67.5% reported trouble sleeping during the pandemic. The level of stress with the pandemic was score 7.54 by the nursing professionals that participated in this research (**Figure 2**). The level of concern about contaminating the family members was the highest, of 8.98 in a 0 to 10 scale. The level of preparedness and confidence to care for COVID-19 patients was 6.14. The influence of the impact on the nursing profession was scored as 7, and the influence of the pandemic experience on your future as a nurse was 7.43. The level of comfort in the work environment was scored 6.92; the level of anxiety when providing patient care during the pandemic was 7.42; the influence of the pandemic on the relationship with patients was 6.34 and on the relationship with work team was 5.52 (**Figure 2**).

There was no relationship of the age, income, workload and time of experience in the levels of anxiety with the pandemic and also on the perception of the impact of the pandemic on the nursing profession. Nurses between 30 and 50 years and with the highest incomes (more than 3 minimum wages) felt more confident to care for COVID-19 infected patients ( $p < 0.001$ ). The nurses with more time of experience in the profession were less afraid of contaminating their family members ( $p < 0.001$ ).

## DISCUSSION

The first point that should be highlighted is that this cross-sectional study was conducted in July 2020 and the discussions reported here were relevant to the time of the study. Several changes have occurred since then, and will be discussed in other study that is also being conducted by our team. Our objective with this study was to create a cutting of nursing professionals which were facing the first waves of COVID-19, so that it can serve as a reference for future studies and comparisons. This research was carried out using web-based questionnaires via e-mail and WhatsApp. In times of pandemic, online questionnaires were the main sources of information for several surveys [10,19, 20]. This type of survey is easy to distribute and in-person contact between the researcher and the interviewee is also avoided. One can say that previously validated questionnaires were not used to conduct this survey, but questionnaires, such as PHQ-9 and GAD-7 take a long time to be answered, which can lead to a greater dropout of respondents. Therefore, we performed a pilot study with 30 nursing professionals to clarify the questions and the language used and its applicability, making the questionnaire more practical and feasible.



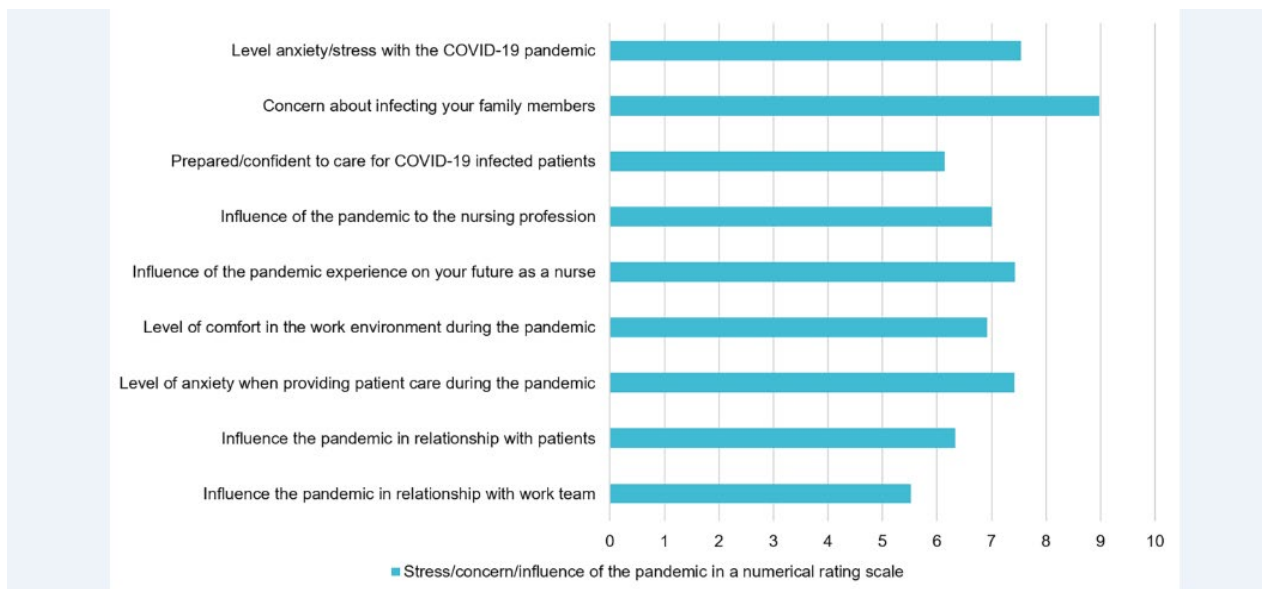
**Figure 1.** Demographics and sample characteristics.

Most of the respondents were female (**Figure 1**). It was expected since nursing is a profession with more women than men in Brazil 16. Besides that, several studies with nurses show similar results [8,10,12,19].

The number of jobs, the workload and the monthly income of the nurses were reduced significantly with the pandemic (**Figure 1**). This result is inconsistent with those found in the literature [8,10,21]. According to Shoja E, et al. [8] it is expected that with the new disease, the increased number of infected patients would bring an increase in the workload. For example, in ITU (intensive therapy unit) in the UK, for instance, staff-patient ratios of one-to-one were changed to ratios of one ITU nurse to six or more patients [21]. It could be speculated that the majority of the respondents in this survey work in the Brazilian Public Health System (SUS), with a pre-defined workload. The reduction of monthly income is probably because unemployment increased in Brazil during the

pandemic [22,23]. Many nurses lost their jobs or had their workload reduced, especially those who worked in private clinics and offices, which due to the partial closure of medical clinics and hospitals, were temporarily unable to attend elective procedures and surgeries during the pandemic. Besides that, some basic health units had a reduced workload to avoid gathering for elective appointments and for caring for outpatients of COVID-19.

Almost all nurses (98.8%) were aware of the WHO recommendations concerning the use of PPE. Besides that, 38.3% of the respondents reported a shortage of PPE in their workplace, and only 40% affirmed that their workplace has PPE following the WHO recommendations. To bring things more complicated, a great part of the nurses (60.9%) are working directly with COVID-19 infected patients, and 57% did not receive proper training for treating these patients. Moreover, the self-reported preparedness and confidence to care for COVID-19 patients were 6.14 (in a 0 to 10 scale).



**Figure 2.** Levels of anxiety/concern/impact of the pandemic evaluated in a numerical rating scale by the nurses.

A recent study showed that having inadequate equipment is significantly associated with poorer mental health and increased reporting of emotional problems [24] (**Figure 2**). A similar study [19] conducted in Iran showed that about 56.5% of the nurses were aware of the sources, transmission, symptoms, signs, prognosis, treatment and mortality rate of COVID-19. The only difference between the two studies is probably due to the period in which the surveys were conducted. The Brazilian survey was conducted in the middle stage of the pandemic, while the Iranian one was conducted in the early stage, so it could be speculated that even in the advanced stages of the pandemic, Brazilian nurses did not feel sufficiently prepared to treat patients with COVID-19, perhaps a reflection of the Brazilian authorities' disregard for the health of their citizens. On the other hand, in a Chinese study [25], 100% of the nurses have been trained in the prevention and control of COVID-19 in their work environment. There were some conflicting results. While the great majority (90%) of the nurses reported being afraid of being infected by the novel coronavirus in the clinical or hospital environment, they were reasonably comfortable in their work environment. So, a great discouragement towards the profession would be expected, including the possibility of quit the profession or change careers. However, only 26% of the nurses thought about giving up their jobs or professions after the beginning of the pandemic, and also only 30.1% felt pressured by family members to quit their jobs. The fear of being infected in the work environment is in agreement with current studies [3,21] and is considered one of the main sources of anxiety in healthcare workers [25]. Feeling comfortable in their work environment, which can currently be considered unwholesome, may be related to the ethical obligations of continuing to provide health care even with a potentially deadly virus [11, 21, 26, 27]. In a 0 to 10 scale, the nurses' self-reported stress and level of concern about contaminating their family members' scores were 7.54 and 8.98, respectively. Nemati M, et al. [19] found lower scores in their study. It means that at the moment that their survey was conducted, the Iranian nurses were less stressed and less worried than their Brazilian counterparts. Once again, it must be highlighted the cross-sectional nature of both surveys and the moment that they were undertaken. To date, while the Iranian survey was conducted in their early stage of the pandemic, the present survey was conducted (2020 June) when Brazil was facing a rising curve of contamination, with more than 1,000 deaths/day, so it was expected that the level of concern and stress of Brazilian nurses would be higher. Almost all respondent nurses (97.6%) reported changes in their habits, fearing to contaminate their family members and friends. The infection of colleagues and family members are the main concerns of healthcare workers [3,10,12]. Most nurses (83.3%) were feeling more tired than usual, and 67.5% reported trouble sleeping during the pandemic. These symptoms probably are related to daily dealing with a high risk of infection, inadequate protection against contamination, frustration, social distance, fear of the unknown and other concerns about the pandemic. Previous experiences during pandemics [27-29] showed that nurses had the highest levels of occupational stress and resulting distress when compared with other health care workers groups. Furthermore, according to Torales J, et al. The current situation is causing mental health problems in the general population, such as stress, anxiety, depressive symptoms, insomnia, denial, anger and fear. Moreover, studies show that working with COVID-19 patients has a negative impact on the mental health of healthcare workers [8,10,20].

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The level of anxiety when providing patient care during the pandemic was 7.42 recent experience<sup>[12]</sup>, with nurses in Wuhan showed that health care workers with a more extensive scope of exposure to infected patients presented a higher level of distress. According to Dai Y, et al.<sup>[10]</sup> this high level could be explained due to the longer periods of contact that nurses have taken care of the patients, thus being more worried about getting infected. Besides that, exposure to infected patients is a risk factor for mental health<sup>[13]</sup>. According to Shanafelt T, et al.<sup>[3]</sup> recognizing the sources of anxiety allows health care leaders and organizations to develop targeted approaches to address these concerns and provide specific support to their health care workforce.

There were some interesting results about nurses and their relationship with the profession. Due to the high level of concerns and anxiety about their work during the pandemic, most nurses could be expected to be pessimistic about their profession. However, they reported a score of 7 (in a 0 to 10 scale) to the influence of the impact on the nursing profession and a score of 7.43 (in a 0 to 10 scale) to the influence of the pandemic experience on their future as a nurse (**Figure 2**). In addition, 80.8% believe that their behaviour in facing the pandemic influence people around them. It is known that nurses have a huge sense of responsibility and collective action<sup>[25]</sup> and the fight against COVID-19 may have highlighted this characteristic. Besides that, it can be speculated that the experience of fighting an unknown disease may open new paths for nursing in the future, such as new jobs and new areas of activity. There was no relationship of the age, income, workload and time of experience in the levels of anxiety with the pandemic and also on the perception of the impact of the pandemic on the nursing profession. This result is in agreement with Nemati M, et al<sup>[19]</sup>. The presented study also found that nurses with more time of experience in the profession were less afraid of contaminating their family members ( $p < 0.001$ ), probably due to the experiences gained from working in previous pandemics and also to the knowledge accumulated over the years.

## CONCLUSION

The number of jobs, workload and monthly income of the Brazilian nurses reduced during the pandemic. Almost all nurses were aware of the WHO recommendations about the use of PPE. Most nursing professionals did not receive training for treating COVID-19 infected patients but did not receive proper training for this. Nurses reported being more tired than usual and having trouble sleeping during the pandemic. A great part of the nurses reported being afraid of getting infected and then contaminating their family and friends. Consequently, they also showed high levels of stress and anxiety. Nurses between 30 and 50 years and with the highest incomes felt more confident to care for COVID-19 infected patients, and nurses with more time of experience in the profession were less afraid of contaminating their family members

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