

Analysis of the association between levels of compassion fatigue and work engagement with COVID-19 in nursing professionals

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Abstract *This article examines the association between levels of compassion fatigue and work engagement with COVID-19 in nursing professionals. A longitudinal, before-and-after study was conducted with nursing professionals working in the frontline in the pre-pandemic and pandemic periods. Our study applied the Brazilian versions of the Professional Quality of Life Scale and the Utrecht Work Engagement Scale. High levels of compassion satisfaction (≥ 43.0), low levels of burnout (< 23.0) and secondary traumatic stress (< 23.0), as well as high levels of vigor (≥ 4.0 and ≤ 4.99), absorption (≥ 4.0 and ≤ 4.99), and overall score (≥ 4.0 and ≤ 4.99) were observed. Moderate, negative, and significant correlations of burnout with vigor ($r: -0.505$; p -value: < 0.001), in the pre-pandemic period; and with overall score, in the pre-pandemic ($r: -0.543$; p -value: < 0.001) and pandemic periods ($r: -0.458$; p -value: < 0.001), were also observed. No changes in levels of work engagement were found. Professionals with compassion fatigue showed decreased vigor, absorption, and overall score, rated as medium in the pandemic period (≥ 2.0 and ≤ 3.99), and an increased dedication, which was low (≥ 1.0 and ≤ 1.99) in the pre-pandemic period. It was concluded that there is no harmful association between compassion fatigue and work engagement with COVID-19 in nursing professionals.*

Key words Working Conditions, Mental Health, Work Engagement, Nurse Practitioners, COVID-19

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Introduction

In Brazil, nursing care is provided by nurses (higher education professionals), nursing technicians, and nursing assistants (mid-level/technical professionals). The category represents 50% of the Health Workforce in the country and has more than two million professionals, of which 23% are nurses, 57% are technicians, and 20% are nursing assistants¹⁻³.

The working conditions associated with the provision of complex care in the health-disease-care processes, inherent to the profession's work practice, make nursing one of the categories most prone to suffer from work overload, favoring the development of anxiety, depression, and stress. Often, professionals in this care area have difficulties in managing the individual emotions experienced in care practice⁴⁻⁸.

During the COVID-19 pandemic, the vulnerability of nursing professionals was enhanced. The lack of infrastructure (beds, equipment, and medicine) to combat the disease, coupled with the high risk of death, increased the suffering of the frontline nursing teams, who began to live with situations of pain, loss of patients and mourning of family members⁹. The complexity of patient care in intensive care units involved high emotional tension and physical and mental exhaustion, especially if the working conditions were unfavorable, with inadequate structure, inadequate sizing, or a lack of staff and material resources^{5,6,10,11}.

During the pandemic, due to such conditions as anxiety about work, the constant presence of death, and the mourning of family members, rigid and inflexible routines were intensified. Other factors requiring nursing care, especially as regards the exercise of their functions in the sanitary and epidemiological context of a pandemic, also contributed to an increase in suffering at work^{6,11-14}.

The constant presence of suffering in the work environment can trigger compassion fatigue, understood as the deep involvement of the professional with traumatic situations, whether known or experienced, generating negative behaviors and emotions stemming from the stress generated by the desire to help the traumatized patient, at the moment of pain and suffering¹⁵⁻¹⁷. In Brazil, the literature on compassion fatigue in nursing is still scarce, especially in the hospital context. A study carried out in the state of Paraná, with nurses working in Primary Health Care (PHC), showed that, even with high levels

of compassion satisfaction, professionals showed signs of exhaustion¹⁸.

On the positive side, there is work engagement, which is linked to a positive and fulfilling state of mind, related to work and characterized by vigor (energy and resilience), dedication (involvement and enthusiasm for work), and absorption (concentration and connection with work)^{19,20}. The multiple factors that influence work engagement are related to the organizational climate, work and professional resources, and work demands²⁰⁻²³.

Work engagement can help in coping with the health crisis, which causes a difficult and stressful situation for health professionals, as it is a protective factor against psychological disorders in all their dimensions. Professionals with high levels of work engagement have less moral distress, avoiding the emotional discomfort of not achieving their goals²².

This study was based on the assumption that Brazilian nursing professionals who worked in hospitals, in the frontlines of COVID-19 care, may have suffered changes in the levels of compassion fatigue and work engagement, due to work overload, and the increase in physical and emotional exhaustion, caused by the sanitary and epidemiological situation of the disease.

In this light, the present study aimed to analyze the association between levels of compassion fatigue and work engagement with COVID-19 among nursing professionals.

Methods

This is a longitudinal, before-and-after study, following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) protocol. This study was carried out with nursing professionals at a university hospital in the state of Rio Grande do Sul, Brazil. This hospital has 221 beds, distributed in the areas of ICU (adult, neonatal, and pediatric); surgical and clinical specialties, obstetrics, and pediatrics; in addition to the Emergency Care Service (ECS). This institution has been part of the care network of the Brazilian Company of Hospital Services (*Empresa Brasileira de Serviços Hospitalares* - EBSERH) since July 2015, and was a reference for the care of severe cases of COVID-19 in the extreme south of that state, an aspect that motivated the choice of location for this study. At the time of the study, the institution's nursing team consisted of 497 nursing professionals, 146 (29.4%) nurses, 218

(43.9%) nursing technicians, and 133 (26.7%) nursing assistants.

This study contemplated a population of 81 nursing professionals (20 nurses and 61 nursing assistants/technicians) who worked at the Hospital's Emergency Service, providing care to patients with COVID-19, considering the following inclusion criteria: having worked at least six months in the institution and having worked during both the pre-pandemic and the pandemic periods, between March 2019 and April 2022. Professionals who were reassigned to other hospital sectors after the onset of the pandemic (March 2020), as they belonged to risk groups, and professionals hired to be part of the workforce on a temporary basis were excluded from the study. The sample was constructed by convenience, with all professionals invited to participate in the study. A total of 73 professionals were recruited, 20 (27.4%) nurses and 53 (72.6%) nursing assistants/technicians.

Data collection was carried out in two moments, the first between September and December 2019 (M1) and the second between February and April 2022 (M2), by the same researcher, male, nurse, who had a Master's degree, and who had been previously trained by the coordinators of the research project. The research participants were approached in their own work environment and, after clarifying the objective of the research, they signed the Informed Consent Form. The participants then received three printed instruments, in an unmarked envelope, and were instructed to answer calmly and in the place they deemed most appropriate. A period of seven days was available for the return of the envelopes and the professionals contacted the research nurse to collect them. In both moments (M1 and M2), the approach to the study participants took place in person, with the completion of the same instruments, without the intervention of the researcher regarding the clarification of questions.

The first instrument was a structured questionnaire, prepared by the researchers themselves and pre-tested with a similar population, which did not participate the final sample of the study. This questionnaire included sociodemographic variables (gender, age group, education, marital status, family income, and practice of physical activity) and professional variables (professional category, work shift, time working at the hospital, and whether or not the participant had another paid activity).

As a second instrument, the Professional Quality of Life Scale - BR (ProQoL-BR) was

used, validated for Brazil by Lago and Codo²⁴. This scale assesses the quality of professional life, based on three subscales: Compassion Satisfaction (SC), Burnout (BO), and Secondary Traumatic Stress (ETS)^{24,25}.

The ProQoL-BR has 30 questions related to the individual's experience with compassion for the people he helps. The responses are Likert-type, on a scale of 0 to 5, where: 0 = Never, 1 = rarely, 2 = sometimes, 3 = often, 4 = very often and 5 = almost always. Each ProQoL-BR subscale consists of 10 items, as follows: SC - items 3, 6, 12, 16, 18, 20, 22, 24, 27, 30; BO - items 1, 4, 8, 10, 15, 17, 19, 21, 26, 29; and ETS - items 2, 5, 7, 9, 11, 13, 14, 23, 25, 28. The total value of each subscale is obtained by adding the scores of each of the 10 corresponding items, considering that the values of items 1, 4, 15, 17, and 29 must be reversed. Compassion fatigue is the result of high burnout and high secondary traumatic stress²⁵.

The third instrument was the short version of the Utrecht Work Engagement Scale (UWES-9), translated and validated in Brazil^{26,27}. This instrument consists of nine items that assess the level of engagement in the professional's work, manifested in feelings of vigor, absorption, and dedication to work. Answers are given on a seven-point Likert scale, as follows: 0 = never; 1 = almost never; 2 = sometimes; 3 = regularly; 4 = frequently; 5 = almost always; 6 = always. The scores are calculated from the arithmetic mean of the professionals' answers to the questions that make up each dimension, ranging from zero to six²⁸.

Vigor is measured by items related to the energy, effort, resilience, and persistence of professionals: "In my work, I feel replete (full) of energy"; "At work, I feel strong and vigorous (vitality)"; and "When I get up in the morning, I want to go to work". Measurement of absorption is based on questions related to the professional's immersion in his/her work: "I feel happy when I work intensely"; "I feel involved with the work I do"; and "I get carried away by my work". To measure dedication, questions related to feelings of enthusiasm, inspiration, and pride for work are considered: "I am enthusiastic about my work"; "My work inspires me"; and "I am proud of the work I do". The UWES-9 also enables the calculation of a general score, which corresponds to the arithmetic mean of the answers to all the questions in the scale^{26,28}.

The data obtained were entered twice into a Microsoft Excel® spreadsheet and checked using the Data Compare® tool in order to monitor any inconsistencies or errors. Subsequently, these data were imported into the Statistical Pack-

age for Social Sciences (SPSS) program, version 23.0. To check the normality of data distribution, the Kolmogorov-Smirnov test was applied. The analysis of the reliability of the measures of the constructs showed Cronbach's Alpha Coefficient values ranging from 0.70 to 0.86, indicating the reliability of the results²⁹.

The evaluation of compassion fatigue was carried out based on the calculation of the general scores of the subscales of the professional's quality of life, considering compassion fatigue results from high burnout and high secondary traumatic stress²⁵.

The values obtained were classified according to the guidelines of The Concise ProQOL Manual, as follows: SC and ETS = scores <23 - low level, scores ≥23 and <43 - moderate level and scores ≥43 - high level; BO = scores <23 - low level, scores ≥23 and <41 - moderate level and scores ≥41 - high level²⁵.

The cutoff points of the ProQol-BR scale were then calculated, transforming the primary values of the subscales concerning compassion satisfaction, burnout, and secondary traumatic stress into Zscores and then into tscores, applying the formula [$t\text{score} = (Z\text{score} \times 10) + 50$]. This conversion of the primary values allows for the comparison between the values of the three dimensions and the literature²⁵.

To assess work engagement, the scores of the UWES scale dimensions were calculated according to the statistical model proposed in the UWES Preliminary Manual, showing the mean and standard deviation for each dimension of the scale. After calculating the scores, the values obtained were classified according to the manual decoding, as follows: 0 to 0.99 = Very Low; 1 to 1.99 = Low; 2 to 3.99 = Medium; 4 to 4.99 = High; 5 to 6 = Very High²⁸.

To verify the difference between the scores of the subscales that make up the quality of professional life and the dimensions of work engagement, in the two moments of the study (M1 - pre-pandemic period and M2 - pandemic period), the t test was applied, considering significance level of 5% ($p \leq 0.05$).

Pearson's correlation test (r) was applied to analyze the correlation between the subscales of the professional's quality of life and the dimensions of work engagement, in the two moments of the study. A weak correlation was considered for r values up to 0.399, moderate for values between 0.400 and 0.699, and strong for values equal to or greater than 0.700¹⁹. The significance level of 5% ($p \leq 0.05$).

Finally, the levels of work engagement among professionals with compassion fatigue, during the pre-pandemic and pandemic periods, were analyzed. The t test was used, considering a significance level of 5% ($p \leq 0.05$).

The study was approved by the Research Ethics Committee, under Opinion No. 2,896,620.

Results

The study participants were mostly females (72.6%), aged between 18 and 39 years (66.3%), with higher education (41.1%), married (58.9%), income household earning two to five minimum wages (61.6%), who worked during the day (54.8%), and who had no other employment relationship (90.4%) (Table 1).

In the evaluation of the professional quality of life subscales, scores compatible with a high level of Compassion Satisfaction (≥ 43.0) and low levels of Burnout (< 23.0) and Secondary Traumatic Stress (< 23.0) were observed in both evaluation times. A significant reduction in the level of Burnout during the pandemic period, in relation to the pre-pandemic period ($p = 0.042$), stood out. As for work engagement, high levels of vigor (≥ 4.0 and ≤ 4.99), absorption (≥ 4.0 and ≤ 4.99), and general score (≥ 4.0 and ≤ 4.99) were identified in both evaluation times. However, there was a significant decline in dedication levels during the pandemic period ($p = 0.040$) (Table 2).

The analysis of the professional quality of life subscales, according to the professional category, showed that, in the pandemic period, nurses showed a slight decrease in compassion satisfaction and a significant increase in secondary traumatic stress. Nursing assistants and technicians, on the other hand, showed a slight increase in compassion satisfaction, accompanied by a slight decrease in burnout and secondary traumatic stress, compared to the pre-pandemic period (Figure 1).

No changes were found in the levels of work engagement of nurses and nursing technicians/assistants between the two evaluation moments. The correlation between the subscales of quality of professional life and the dimensions of work engagement showed moderate, negative, and significant correlations between burnout and the vigor dimension ($r: -0.505$; $p\text{-value}: < 0.001$), in the pre-pandemic, and with the general score dimension in the pre-pandemic ($r: -0.543$; $p\text{-value}: < 0.001$) and pandemic ($r: -0.458$; $p\text{-value}: < 0.001$) periods. Other weak correlations were

Table 1 Sociodemographic and professional characteristics of nursing workers. Rio Grande (RS), Brazil, 2022 (n=73).

Variables	n	%
Professional Category		
Nurse	20	27.4
Nursing Assistant/Technician	53	72.6
Sex		
Male	20	27.4
Female	53	72.6
Age Group (years)		
18 to 39	44	60.3
40 to 59	24	32.9
Did not answer	5	6.8
Education		
Elementary	18	24.7
Secondary	25	34.2
Complete Higher Education	30	41.1
Marital Status		
Married	43	58.9
Single	21	28.8
Separated	9	12.3
Household Income (minimum salaries)		
From 2 to 5	45	61.2
From 6 to 10	20	27.4
More than 10	7	9.6
Did not answer	1	1.4
Work Shift		
Day	40	54.8
Night	33	45.2
Time working in this hospital		
Up to 2 years	34	46.6
>2 and ≤5 years	14	19.2
>5 and ≤10 years	12	16.4
More than 10 years	10	13.7
Did not answer	3	4.1
Practices Physical Activity		
Yes	29	39.7
No	43	58.9
Did not answer	1	1.4
Has another paid activity		
Yes	6	8.2
No	66	90.4
Did not answer	1	1.4

Source: Authors.

identified, pointing to a slight downward trend in levels of dedication, as there is an increase in compassion satisfaction (or vice versa), in addition to a slight tendency to increase dedication when there is an increase in burnout and secondary traumatic stress (Table 3).

The analysis of the dimensions of work engagement in professionals who had compassion fatigue (association between high burnout and secondary traumatic stress) showed that these professionals had reduced levels of vigor, absorption, and general score, classified as high (≥ 4.0 and ≤ 4.99) in the pre-pandemic period and as average in the pandemic period (≥ 2.0 and ≤ 3.99). By contrast, they showed increased levels of dedication, which were low (≥ 1.0 and ≤ 1.99) in the pre-pandemic period (Figure 2).

Discussion

The nursing professionals evaluated in this study maintained good levels of satisfaction with compassion during the pandemic period, despite all the physical and emotional strain imposed by caring for people affected by COVID-19. These results demonstrate that these professionals have positive feelings about their ability to be effective at work and are highly satisfied with carrying out their work activities, contributing to the team and the work environment^{17,18}.

However, in the pandemic period, the professionals of our study showed a significant reduction in the level of burnout, in addition to a small decrease in secondary traumatic stress, in relation to the previous assessment. These results may be related to the high levels of work engagement shown by nursing professionals, with emphasis on concentration (absorption), energy, and high resilience (vigor). This evidence is reinforced by the moderate, negative and significant correlation between burnout and the dimensions of vigor and the general score of work engagement, found in the study.

High levels of work engagement act as psychological protection factors for workers who, due to their commitment to the profession and positive relationship with the environment and work practice, tend to have less emotional discomfort and suffering when they do not achieve success care practices^{22,29,30}. Work engagement is, therefore, an excellent parameter to analyze the well-being, motivation and levels of satisfaction of professionals with their working conditions^{31,32}.

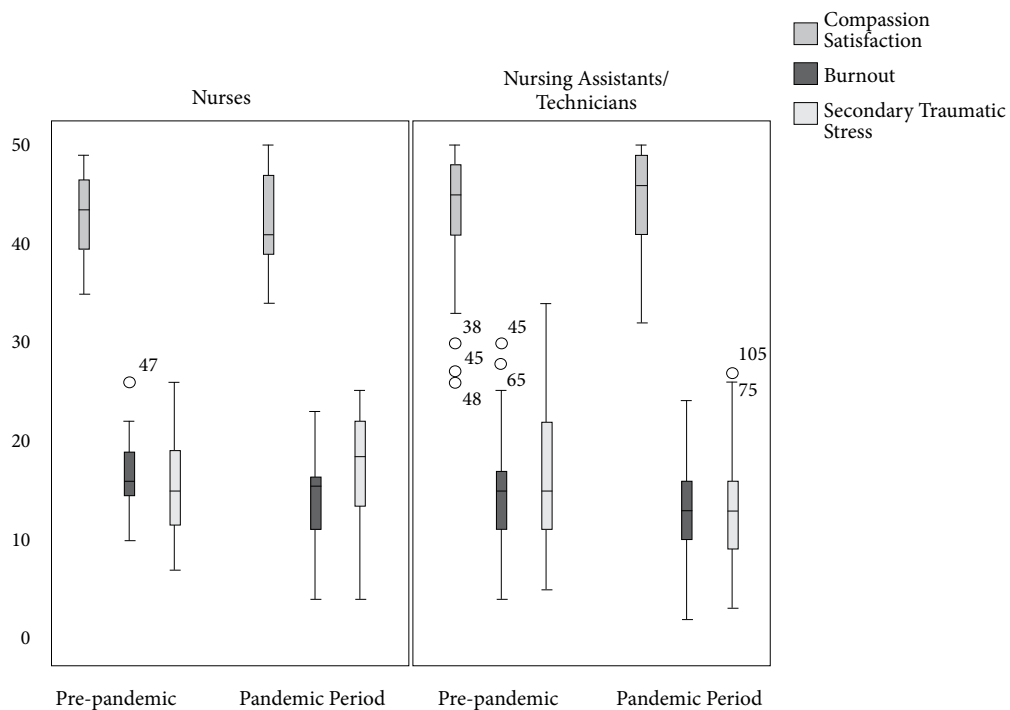
The temporal aspect may also have influenced the maintenance of high levels of satisfaction with compassion and work engagement, with a decrease in burnout and secondary traumatic stress in nursing professionals, in the two evaluation times. In addition to high levels of

Table 2. Analysis of subscales of the quality of life and dimensions of work engagement of nursing professionals. Rio Grande (RS), Brazil, 2022 (n=73).

	Average (95%CI)		p-value (t test)
	Pre-pandemic	Pandemic	
Professional's Quality of Life			
Compassion Satisfaction	43.4 (42.1-44.6) ^a	43.9 (42.7-45.9) ^a	0.546
Burnout	15.1 (16.9-16.2) ^c	13.4 (12.3-14.5) ^c	0.042
Secondary Traumatic Stress	15.9 (14.3-17.4) ^c	14.3 (12.9-15.7) ^c	0.128
Work Engagement			
Force	4.8 (4.6-5.0) ^a	4.8 (4.7-5.0) ^a	0.723
Dedication	2.0 (1.8-2.1) ^b	1.7 (1.6-1.9) ^c	0.040
Absorption	4.4 (4.2-4.7) ^a	4.5 (4.3-4.8) ^a	0.601
Overall Score	4.8 (4.6-5.0) ^a	4.8 (4.7-5.0) ^a	0.512

^aHigh level; ^bMedium level; ^cLow level.

Source: Authors.

**Figure 1.** Analysis of professional's quality of life, according to professional category and time of assessment. Rio Grande (RS), Brazil, 2022.

Source: Authors.

compassion commitment and satisfaction being predisposed to work engagement, the development of compassion fatigue also depends on a prolonged exposure to traumatic situations³³. In this context, the professionals' high level of energy and resilience (vigor) may have delayed the

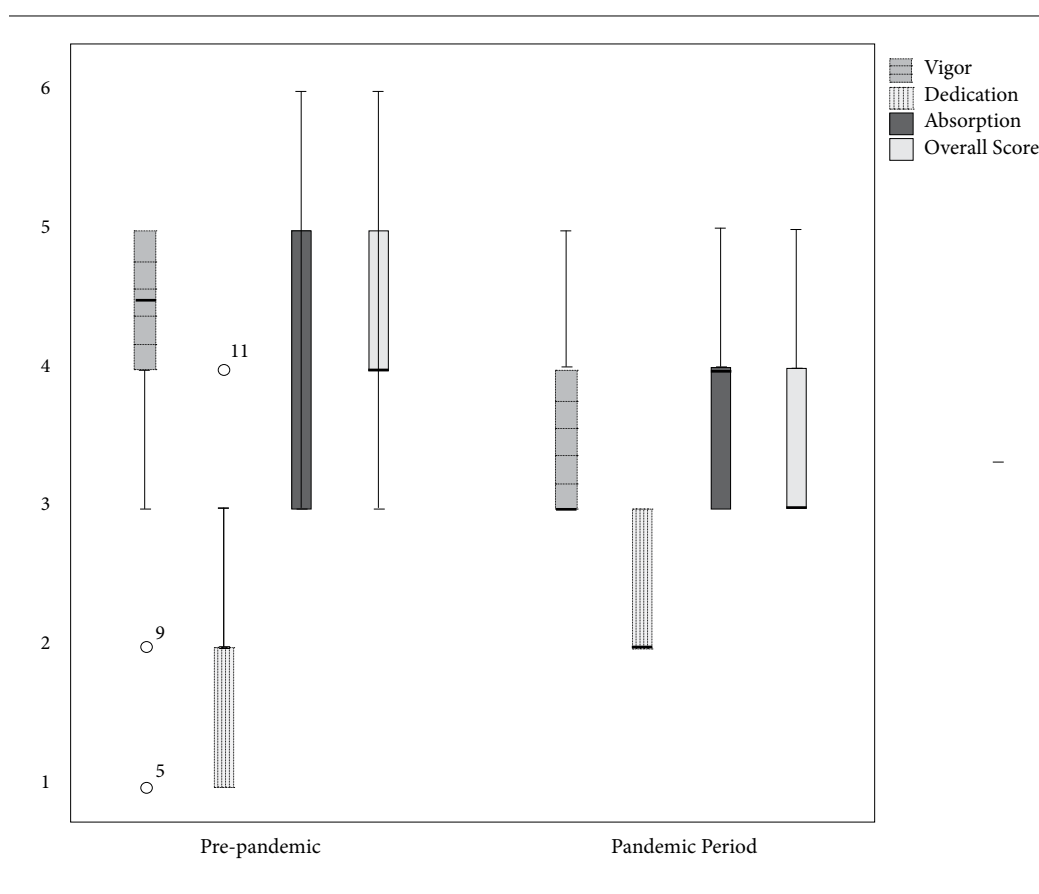
perception of emotional exhaustion among the professionals in this study, who preserved the positive conditions so as to act in coping with the pandemic^{22,34}.

However, it is true that the COVID-19 pandemic has aggravated the problems experienced

Table 3. Correlations between the subscales of the professional's quality of life and the dimensions of work engagement. Rio Grande (RS), Brazil.

Moment of the study	Compassion Satisfaction	Burnout	Secondary Traumatic Stress
Pre-pandemic			
Vigor	0.307 (0.009)	-0.505 (<0.001)	-0.313 (0.007)
Dedication	-0.276 (0.019)	0.375 (0.001)	0.171 (0.152)
Absorption	0.263 (0.025)	-0.371 (0.001)	-0.256 (0.030)
Overall score	0.390 (0.001)	-0.543 (<0.001)	-0.322 (0.006)
Pandemic Period			
Vigor	0.336 (0.004)	-0.389 (0.001)	-0.263 (0.026)
Dedication	-0.097 (0.416)	0.204 (0.083)	0.318 (0.006)
Absorption	0.239 (0.043)	-0.296 (0.012)	-0.083 (0.489)
Overall score	0.391 (0.001)	-0.458 (<0.001)	-0.289 (0.014)

Source: Authors.

**Figure 2.** Analysis of the dimensions of work engagement among professionals with compassion fatigue. Rio Grande (RS), Brazil.

Source: Authors.

by health workers in the hospital environment and this has had an impact, in one way or another, on the health conditions and relationships

of these workers with their work practice. The uncontrolled increase in demand for hospital care has greatly aggravated the precariousness of

the physical structure of health services, in addition to forcing professionals to increase working hours, causing heightened exhaustion and suffering^{35,36}. The working conditions imposed by the pandemic had an impact on the physical and mental health of the professionals and, although the high level of work engagement associated with the temporal issue (evaluated exposure time) may have interfered with the perception of the studied professionals, the COVID-19 care sectors are considered work environments conducive to the development of compassion fatigue³⁷.

In this study, this impact was observed among nurses, who showed a tendency towards a reduction in levels of compassion satisfaction and an increase in secondary traumatic stress during the pandemic period. This result may be related to the nature of the work of nurses who, in addition to care activities, are responsible for administrative and managerial activities, in addition to the supervision of nursing technicians and assistants¹. In a scenario of great pressure and excessive exhaustion, assignments that demand great responsibilities, technical capacity, and immediate decision-making tend to have a faster impact on the emotional and mental conditions of professionals, making them feel exhausted and less satisfied^{37,38}.

It is also important to note that many professionals do not share and do not show what they are feeling. With this, the symptoms of burnout and secondary traumatic stress, which lead to compassion fatigue, can develop unconsciously, and almost invisibly. Therefore, it is necessary for managers and team leaders to pay attention to unexpected emotional reactions demonstrated by nursing professionals, as they can be an indicator of compassion fatigue³⁹.

Another relevant aspect evidenced in this study was the negative impact of compassion fatigue on the nursing professionals' levels of work engagement during the pandemic period, illustrated by the reduction in vigor, absorption, and overall score levels. These findings reinforce that the exhaustion resulting from the professionals' long exposure to traumatic situations, which can trigger biological, psychological, and social disruptions, which can place the quality of care and patient safety at risk, since a decrease in vigor leads to loss of capacity of the professional to overcome the difficulties present in the work environment^{19,32,40}. In addition, the presence of compassion fatigue reduces the ability and interest of professionals to be empathetic and compas-

sionate with the suffering of patients and families, causing professionals to develop defense mechanisms, such as the denial of the importance of the patient, distancing, the postponement of decisions, the denial of feelings, and a decrease in the sense of professional responsibility, which may cause iatrogenic events^{26,41}.

Compassion fatigue can be frequent among professionals who work in disaster and pandemic care environments, with a high presence of pain and human suffering⁴². Nursing professionals are identified as an important risk group that often end up at the forefront of health care in critical environments and are the first to respond and alleviate the suffering of patients and families. With this, they become exposed to a form of secondary traumatic stress that, if prolonged, can trigger a state of psychic exhaustion that characterizes compassion fatigue^{39,43}.

Compassion fatigue may be related to decreased general well-being, an inability to cope with exposed conditions, and an intense absorption of patient suffering^{15,17}, in addition to triggering problems with alcohol and drug consumption, increased turnover and a high number of absences and doctor's excuses, as well as reduced productivity and increased risks to patient safety⁴⁴. To avoid these negative impacts, it is necessary to implement therapeutic actions aimed at emotional health and an increase in the resilience of professionals, in addition to support structures that encourage and strengthen the capacity of nursing professionals to adopt positive strategies to cope with and solve the problems occurring in the work environment^{8,31,45,46}.

This study stands out due to its analysis of the association between levels of compassion fatigue and work engagement with COVID-19 among frontline nursing professionals. This study does have limitations, such as the sample size and its performance in a single hospital institution. However, the results are relevant, as it is the first study of its kind in scientific literature. Our study also shows that there was no harmful association between compassion fatigue and work engagement with COVID-19 among the studied professionals, who remained engaged and with a high compassion satisfaction, not did it demonstrate an increase in burnout or secondary traumatic stress.

We emphasize the need to develop new studies on the subject, applying multivariate analyses, along with other approaches that include broader samples of professionals in different health institutions in order to investigate factors associated

with possible late impacts suffered by these professionals, in the frontline, as well as analyze therapeutic possibilities when compassion fatigue is identified. In addition, it is essential to insert this theme into the continuing education of profes-

sionals so as to make them aware of the signs and symptoms of compassion fatigue, together with the search for support to avoid complications and improve health conditions, wellbeing, and quality of life for these workers.

Collaborations

LG Lourenção, JGM Penha and VF Nascimento contributed to the conception and formulation of the project; data acquisition, analysis and interpretation; and the write-up and final approval of the article. FRG Ximenes Neto, BMP Santos, VJC Pantoja, JN Ribeiro and LMR Cunha contributed to the write-up and final approval of the article.

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