Burnout and Compassion Fatigue among Medical and Nursing Teams in Palliative Care: Cross-Sectional Study

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Burnout *e Fadiga por Compaixão entre Equipes Médica e de Enfermagem em Cenários do Itinerário Terapêutico de Pacientes Oncológicos em Cuidados Paliativos: Estudo Transversal*

Burnout y Fatiga por Compasión en Equipos Médicos y de Enfermería en Escenarios del Itinerario Terapéutico de Pacientes Oncológicos en Cuidados Paliativos: Estudio Transversal

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ABSTRACT

Introduction: Healthcare workers, such as doctors, nurses and licensed practical nurses may be subjected to physical or emotional stress related to work for several reasons: organizational factors, lack of skills or competencies and low social support at work, in addition to internal issues, such as frequent exposure to caring for people with intense suffering. **Objective:** To evaluate the factors related to burnout syndrome (BS) and compassion fatigue (CF) among medical and nursing teams in scenarios of the therapeutic itinerary of oncology patients in palliative care. **Method:** This was a cross-sectional study with palliative care medical and nursing teams, emergency, clinical oncology, and intensive care services at a referral center for oncology in Recife, Pernambuco (Brazil). Sociodemographic data were collected, and the Oldenburg Burnout Inventory and Professional Quality of Life Scales were used to assess BS and CF, respectively. **Results:** Physicians exhibited characteristics more prone to suffering, with lower compassion satisfaction (CS) (45.67 ± 10.55) and greater disengagement from work (2.28 ± 0.66). Palliative care professionals demonstrated more positive characteristics compared to others, with lower disengagement from work (1.86 ± 0.38; $p = 0.04$) and greater CS (53.63 ± 10.33). Intensive care and emergency presented higher risk illness profile with reduced CS and high levels of disengagement from work. **Conclusion:** Physicians and emergency and intensive care teams were more likely to suffer from BS and CF, while licensed practical nurses and the palliative care team presented healthier indicators. These data can support institutional approaches to identify risk factors for BS and CF among workers and develop effective solutions for them.

Key words: Health Personnel/psychology; Burnout, Psychological; Compassion Fatigue.

RESUMO

Introdução: Trabalhadores da área da saúde podem estar sujeitos a estresses físicos ou emocionais relacionados ao trabalho por: fatores organizacionais, falta de habilidades ou competências e baixo suporte social, além de questões internas, como exposição frequente no cuidado de pessoas com sofrimentos intensos. **Objetivo:** Avaliar fatores relacionados à síndrome de *burnout* (SB) e à fadiga por compaixão (FC) entre equipes do itinerário terapêutico de pacientes oncológicos. **Método:** Estudo transversal com equipes médicas e de enfermagem de cuidados paliativos, emergência, oncologia clínica e terapia intensiva de um centro de referência em Recife, Pernambuco. Foram coletados dados sociodemográficos, e utilizadas as escalas *Oldenburg Burnout Inventory* e *Professional Quality of Life Scale* para avaliar SB e FC, respectivamente. **Resultados:** Os médicos exibiram características mais propensas ao sofrimento, com menor satisfação por compaixão (SC) (45,67 ± 10,55) e maior desligamento do trabalho (2,28 ± 0,66). Profissionais dos cuidados paliativos demonstraram caracteres mais positivos em comparação aos demais, com menor desligamento do trabalho (1,86 ± 0,38; $p = 0,04$) e maior SC (53,63 ± 10,33). Os setores de terapia intensiva e emergência apresentaram perfil de risco de adoecimento maior, com reduzida SC e elevado desligamento do trabalho. **Conclusão:** Médicos e equipes de emergência e de terapia intensiva estiveram mais propensos ao sofrimento pelas SB e FC, enquanto técnicos e equipe de cuidados paliativos apresentaram indicadores mais salutares. Esses dados podem subsidiar abordagens institucionais para identificar fatores de risco para SB e FC entre trabalhadores e desenvolver soluções efetivas direcionadas.

Palavras-chave: Pessoal de Saúde/psicologia; Esgotamento Psicológico; Fadiga de Compaixão.

RESUMEN

Introducción: Los trabajadores de la salud, como médicos, enfermeras y técnicos de enfermería, pueden estar sujetos a estrés físico o emocional relacionado con el trabajo por varias razones: factores organizacionales, falta de habilidades o competencias y bajo apoyo social en el trabajo, además de cuestiones internas, como la exposición frecuente al cuidado de personas con intenso sufrimiento. **Objetivo:** Evaluar los factores relacionados con el síndrome de *burnout* (SB) y con la fatiga por compasión (FC) entre los equipos médicos y de enfermería en escenarios del itinerario terapéutico de pacientes oncológicos en cuidados paliativos. **Método:** Se trata de un estudio transversal con equipos médicos y de enfermería de cuidados paliativos, urgencias, oncología clínica y cuidados intensivos de un centro de referencia en oncología de Recife, Pernambuco (Brasil). Se recopilaron datos sociodemográficos y se utilizaron el Inventario de Burnout de Oldenburg y las Escalas de Calidad de Vida Profesional para evaluar el SB y la FC, respectivamente. **Resultados:** Los médicos exhibieron características que los hicieron más proclives al sufrimiento, con menor satisfacción por compasión (SC) (45,67 ± 10,55) y mayor desconexión con el trabajo (2,28 ± 0,66). Los profesionales del sector de cuidados paliativos demostraron características más positivas en comparación con otros, con menor desconexión del trabajo (1,86 ± 0,38; $p = 0,04$) y mayor satisfacción debido a la compasión (53,63 ± 10,33). Los sectores de cuidados intensivos y emergencias presentaron un mayor perfil de riesgo de enfermedad, con menor SC y altos niveles de desconexión laboral. **Conclusión:** Los médicos y los equipos de urgencias y cuidados intensivos presentaron mayor probabilidad de padecer SB y FC, mientras que los técnicos de enfermería y el equipo de cuidados paliativos presentaron indicadores más saludables. Estos datos pueden respaldar los enfoques institucionales para identificar los factores de riesgo del SB y el síndrome de CF entre los trabajadores y desarrollar soluciones eficaces dirigidas a ellos.

Palabras clave: Personal de Salud/psicología; Agotamiento Psicológico; Desgaste por Empatía.

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INTRODUCTION

Healthcare professionals may be subject to occupational stress due to organizational factors, lack of skills and low social support which may lead to suffering, burnout, loss of quality of life and compromise of the quality of work[1-3]. In addition to unprecedented levels of stress, dissatisfaction due to poor balance between work and personal life has increased in recent years, further to psychoactive substances, difficulties to choose a carrier and coexistence with mood disorders, including strong depression[4,5]. Professionals with developed social skills tend to face these challenges with resilience, a healthier attitude and continued work focus[6].

Palliative care, a key part of a patient-centered health system have singular characteristics: they are an approach for persons with severe and life-threatening diseases, symptoms control-driven (physical, emotional, social and spiritual) and preservation of the quality of life with interdisciplinary perspective and including family in the process of care[7].

Care for individuals and families with complex demands can expose health professionals to intense suffering because of management of symptoms difficult to control, communication of dismal news, exposure to death and dying, team work, uncertainties and absorption of conflicting feelings for several conditions (organic disorders, cancer, dementia, among others) and their demands can appear in different assistance scenarios[9].

Because of patients and family demands and assistance resources, health professionals in the therapeutic scenario of oncologic patients in palliative care can be exposed to intense stress. At a High Complex Oncology Center (Cacon), this itinerary includes prompt care, clinical oncology and palliative care wards and intensive therapy. Physical and emotional overload resulting from care to these patients can lead to negative outcomes as burnout syndrome (BS) and compassion fatigue (CF)[10].

OUTSIDE IN: THE BURNOUT EXPERIENCE

BS is a work-related complex condition formed by emotional exhaustion (feeling of depleted mental energy), depersonalization (progressive disengagement from work) and low personal accomplishment (feeling of incompetence or low efficacy)[11]. These manifestations of BS suffering compromise the quality of the work[12] and of the care delivered by health professionals to the patients[13,14].

The World Health Organization (WHO) has recently included BS in the 11th revision of the International Classification of Diseases (ICD-11)[15], defining it as a "syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed". It is characterized by exhaustion, feelings of negativism related to one's job and reduced professional efficacy.

A systematic review of physicians' BS with 182 articles (1991-2018) in 45 countries and 109,628 individuals[16] indicated mean prevalence of 67% (range 0%-80.5%), with emotional exhaustion and depersonalization present in 72% and 63.2%, respectively[17]. Another research with 80 physicians and 102 nurses of an oncological center revealed significant levels of BS in both categories associated with discrepancies of personal values of workers and service administration (long work-shifts, overload, lack of recognition)[18].

The Maslach Burnout Inventory (MBI)[11] is the most utilized instrument to evaluate BS (90% of the evaluations)[18], although there are others[19,20]. However, psychometric fragilities have been detected in MBI and a reductionist vision of the syndrome to a single dimension in other instruments[21,22]. Therefore, this study utilized the Oldenburg Burnout Inventory (OLBI)[23] validated to Brazilian Portuguese[24] to circumvent these limitations.

More than 80 factors contribute to the etiopathogeneses of BS[25], divided in individual and external factors[26]. Internal factors include perfectionism, high self-expectations, suppression of own needs and always wanting to please other people and externals, problems of leadership, pressure from superiors and lack of freedom to make decisions[26]. Although BS is connected to suffering in difficult work conditions, health care professions can experience other dimensions of suffering rooted in caring for patients with intense suffering.

INSIDE OUT: EXPERIENCING COMPASSION FATIGUE

Care is a complex experience involving compassionate perception and response to the vulnerabilities of the other[27]. Patients wish care, listening and compassionate relation with the caretaker[28]. Compassion is a complex process (affectionate, somatic, cognitive) which develops through relations and recognition of the suffering of the other[28]. It is a willingness to help in face of unnecessary suffering translated as a proactive and respectful attitude to care[29].

CF was initially described to explain the loss of caring skills of emergency nurses who presented symptoms as low efficacy, fatigue, sadness, anger and organic alterations as a result of continuous care to complex patients and work overload[30]. In 1995, CF began to be referred as "cost of care" for the professionals[31].

It is equivalent to secondary traumatic stress, manifested as intrusive thoughts, patients avoidance, hyper-surveillance,

irritability and traumatic memories, resulting in continuous compassion for insolvable suffering[31]. Despite the recent scientific production[32-34], the relation between BS and CF is controversial[35,36], with discrepancies whether CF is a natural consequence of care[32], guilty of the caretaker, a unique phenomenon[37], or whether BS is a dimension of CF[38]. The mean prevalence of CF among health professionals ranges between 25% and 45%[34].

The objective of this study is to evaluate the factors related to BS and CF among clinicians and nurses who take part in the therapeutic itinerary of oncologic patients in palliative care at a Brazilian Cacon.

METHOD

Exploratory, cross-sectional and quantitative study following the guidelines STROBE (Strengthening the Reporting of Observational Studies in Epidemiology)[39] conducted in Recife (PE), Brazil, at the "*Instituto de Medicina Integral Prof. Fernando Figueira (IMIP)*". It is defined as a Cacon which delivers oncologic diagnosis and therapeutic care (adult and pediatric), including chemotherapy, surgery, radiotherapy and palliative care in addition to formation of human resources.

The participants worked at clinical oncology wards (32 beds), palliative care (14 beds), intensive care units (ICU) (10 beds) and prompt care unit (PCU) (12 beds). Inclusion criteria were: (1) physicians, nurses or licensed practical nurses; (2) palliative care, oncology, intensive therapy or emergency team member. Professionals in legal leave or who did not complete the questionnaires have been excluded.

The study sample with 96 participants was calculated, given 50% of prevalence of BS in palliativists, variation of 5%, power of 80% and alpha error of 5%. Electronic questionnaires were sent to 144 professionals, considering a response rate of 25% (50% increase) to offset losses. Questionnaires were sent through messages app with mean response time of ten minutes. To facilitate the engagement, the investigator intervened briefly with explanations about the importance of the study. Sociodemographics were exported from SurveyMonkey[40] to Microsoft Excel 2016. Data were collected from October to December 2019.

Professional and sociodemographic data were obtained. OLBI[24] was utilized to evaluate BS and Professional Quality of Life Scale (ProQol-IV)[37] for CF, both validated to Brazilian Portuguese. OLBI is an 8-item Likert scale in two subscales (emotional exhaustion and disengagement from work), where high values indicate great BS suffering and its validation to Brazil showed good match[24]. ProQol-IV is a 28-item Likert scale in three subscales (CF, burnout and CS), being CF and burnout indicative of suffering and CS, a protective factor. The validation of ProQol-IV to Brazil occurred in two phases (semantic, with 37 professionals and psychometric with 203 respondents), resulting in an instrument with compatible semantic and psychometric qualities equivalent to the original[37].

Sociodemographic and professional questionnaire included sex, marital status, children, color/race, religion, pets, time and area of occupation, work regimen, work load at the institution and elsewhere and dedication to education.

Sociodemographic data and questionnaires were analyzed by frequency and percentage (categorical variables) and mean and standard deviation (continuous variables). Shapiro-Wilks[41] tested the normality of the data. Non-parametric tests were applied for inferential analyzes because the distribution of the data were not normal: Mann-Whitney (2 independent groups), Kruskal-Wallis (three or more independent groups) and Spearman[41] correlation. The analyzes were conducted with SPSS-IBM[42] 22.0, with level of significance of $p \leq 0.05$. Twenty three incomplete questionnaires were excluded.

The Ethics Committee of IMIP approved the study, report number 3631850 (CAAE submission for ethical review 21626619.2.0000.5201) in compliance with Directive 466/12[43] of the National Health Council (CNS). Eligible participants voluntarily agreed to join the study by signing the Informed Consent Form (ICF).

RESULTS

Considering a sample of 144 individuals, the final response rate was 57.63%, 83 forms were fully completed. Sociodemographics and professional data are shown in Table 1.

BURNOUT SYNDROME AND COMPASSION FATIGUE FOR PROFESSIONAL CATEGORIES

Lower statistically significant CF rates (45.67± 10.55) were found for clinicians compared to nurses (52.22 ± 9.35) or licensed practical nurses (52.18 ± 8.98), in addition to highest index of disengagement from work (2.28 ± 0.66) compared to others (Table 2). Nurses were more propense to present CF (53.98 ± 8.14) and emotional exhaustion (3.04 ± 0.74) than other categories (Table 2).

BURNOUT SYNDROME AND COMPASSION FATIGUE AT WORK

CS was higher in palliative care followed by oncology, intensive care and emergency (53.63 ± 10.33; 51.64 ± 8.64; 50.13 ± 10.00; 43.90 ± 11.25; $p = 0.02$) (Table 3). For BS, palliative care had the lowest scores (1.86 ± 0.38; $p = 0.04$) than oncology (2.06 ± 0.64), emergency (2.33 ± 0.73) and intensive care (2.52 ± 0.64) (Table 3).

Table 1. Sociodemographics and professional characteristics of clinicians and nurses at a Cacon in Recife-PE, 2019

Variables		N	%
Sex	Male	22	26.50
	Female	61	73.50
Marital status	Single	40	48.20
	Legally married	29	34.90
	Stable union for more than six months	11	13.30
	Separated or divorced	02	2.40
	Widow/widower	01	1.20
Children	Yes	42	50.60
	No	41	49.40
Color/Race	White	34	41.00
	Brown	42	50.60
	Black	07	8.40
Religion	Yes	70	84.30
	No	13	15.70
Type of religion	Catholic	40	48.20
	Spiritualist	10	12.00
	Evangelic	26	31.30
	Others	07	8.50
Pets	Yes	30	36.10
	No	53	63.90
Professional category	Medicine	28	33.70
	Nursing	21	25.30
	Licensed practical nurse	34	41.00
Working time	< 5 years	27	32.50
	> 5 < 10 years	35	42.20
	> 10 < 20 years	19	22.90
	20 or more years	02	2.40
Sector	Palliative care	16	19.30
	Oncology adults	38	45.80
	PCU	20	24.10
	Clinical ICU	09	10.80
Working time at the sector	< 5 years	49	59.00
	> 5 < 10 years	28	33.80
	> 10 < 15 years	06	7.20
Work regimen	Daily worker	39	47.00
	On-duty	44	53.00
Work load at the institution	12 hours	27	32.50
	24 hours	06	7.20
	30 hours	11	13.30
	40 hours	26	31.30
	More than 40 hours	13	15.70

To be continued

Table 1. Continuation

Variables		N	%
Works elsewhere	Yes	39	47.00
	No	44	53.00
Workload elsewhere	12 hours	10	25.60
	20 hours	02	5.10
	24 hours	06	15.40
	30 hours	04	10.30
	40 hours	10	15.60
	More than 40 hours	07	17.90
Currently studying?	Yes	30	36.10
	No	53	63.90
Dedication to studies	Not applicable	53	63.90
	6 hours week	10	12.00
	From 7 to 12 hours week	08	9.60
	More than 12 hours week	12	14.00

Captions: PCU: prompt care unit; ICU: intensive care unit.

DISCUSSION

The present study highlights the rising relevance of psychological well-being of health professionals, a group vulnerable to suffering[44]. 57.6% of the participants responded, a high rate for electronic forms[45], mostly women (73.50%).

Clinicians exhibited high propension to suffering, lower CS and high disengagement from work, indicating that enhancing CS is crucial to mitigate wear and stimulate professional resilience, corroborating the core hypothesis of this investigation. A study with more than 15,800 physicians (25 specialties) revealed highest rates of BS in intensive therapy, urology and emergency medicine (55%), followed by family medicine, community and clinical medicine (54%)[46].

Nurses presented highest rates of CF and emotional exhaustion, however, they have also presented CS among the categories, indicating a possible resignification of the negative characteristics in their experience. In 2018, a study in the United Kingdom with 1,651 physicians of several specialties (through questionnaires of BS, CF and resilience) showed that emergency professionals had high BS ($p = 0.001$) and low CS ($p < 0.001$), while palliativists presented high CS and low CF and BS than intensive therapy or oncology[47].

Table 2. Relation of the variables BS and CF among professional categories at a Cacon, Recife-PE, 2019

Variables	Clinician			Nursing			Licensed Practical Nurse			*p*
	Mean	SD	MD	Mean	SD	MD	Mean	SD	MD	
ProQOL-IV										
CS	45.6	10.55	45.65	52.22	9.35	55.06	52.18	8.98	54.30	0.02
Burnout	51.11	8.82	54.04	51.87	11.02	51.25	47.91	10.16	47.52	0.29
CF	49.04	9.89	46.85	53.98	8.14	54.51	48.32	10.70	46.46	0.03
OLBI										
DW	2.28	0.66	2.36	2.19	0.70	2.36	1.99	0.59	1.86	0.19
EE	2.68	0.68	2.83	3.04	0.74	3.17	2.46	0.76	2.25	0.02

Captions: ProQOL-IV: Professional Quality of Life Scale, version IV; OLBI: Oldenburg Burnout Inventory; CS: compassion satisfaction; DW: disengagement from work; EE: emotional exhaustion; SD: standard deviation; MD: median; CF: compassion fatigue.

Note: Kruskal-Wallis tests were utilized for *p* values since the assumption for normality of the data did not hold to compare means/medians among professional characteristics.

Table 3. Relation between the variables BS and CF according to assistance provided by medical and nurse teams at a Cacon, Recife-PE, 2019

Variables	Palliative care			Oncology adult			PCU			Clinical ICU			*p*
	Mean	SD	MD	Mean	SD	MD	Mean	SD	MD	Mean	SD	MD	
ProQOL-IV													
CS	53.63	10.33	57.35	51.64	8.64	53.53	43.90	11.25	49.59	50.13	10.00	48.95	0.02
Burnout	46.13	11.25	44.73	49.78	10.62	50.32	53.48	8.41	55.90	50.01	6.11	51.25	0.17
CF	48.85	10.77	47.55	49.64	9.07	48.25	52.08	12.18	50.33	48.94	7.65	48.94	0.81
OLBI													
DW	1.86	0.38	1.71	2.06	0.64	2.07	2.33	0.73	2.29	2.52	0.64	2.71	0.04
EE	2.39	0.80	2.25	2.74	0.82	2.75	2.77	0.59	2.83	2.78	068	3.00	0.37

Captions: ProQOL-IV: Professional Quality of Life Scale, version IV; OLBI: Oldenburg Burnout Inventory; CS: compassion satisfaction; DW: disengagement from work; EE: emotional exhaustion; SD: standard deviation; MD: median. CF: compassion fatigue; PCU: prompt care unit; ICU: intensive care unit.

Note: Kruskal-Wallis tests were utilized for *p* values since the assumption for normality of the data did not hold to compare means/medians among professional characteristics.

Considering a study[48] that indicated moderate to elevated (43%) levels of resilience among nurses and understanding resilience[49] as a construct with spirituality, creation of bonds, mood, self-esteem and creativity dimensions (factors connected to positive caring experiences) it is possible to infer mechanisms for high CS and low emotional exhaustion of the professionals investigated in the present study.

Palliative care professionals presented a more positive profile with least disengagement of work and high CS than other sectors. A recent systematic review about the prevalence of BS among palliativists physicians and nurses found rates from 3% to 66% of BS among the 13,485 participants in 59 articles (2008-2020)[50]. Another MBI-based study with 1,357 North-American palliativists identified 38.7% of BS without significant difference among physicians (41.9%) and other professionals (37.1%; $p = 0.17$). Emotional exhaustion was the most important aspect, working in small institutions, younger than 50 years of age, work in week-end and long shifts were associated with higher BS rates[44]. A systematic review (15 articles, 1999-2009) with palliative care professionals revealed lower BS rates in palliativists clinicians (if compared to oncologists) and that one quarter of the nurses evaluated presented high levels of BS[51].

The moral conflict between the high demand and low offer of palliative care is a known factor in the genesis of BS[51], more evident in non-universal health systems whose access is limited and financially mediated. Palliativists face the bioethical dilemma of the individual autonomy of the patients and, collectively, profitable procedures to expand the access to more patients[52,53].

Intensive therapy and emergency have exhibited a higher risk of sickening with reduced CS and high disengagement from work revealed in the present analysis. A study with nurses (evaluated with ProQOL-IV for CF) indicated moderate levels of CF and BS for most of them, but also high levels of CS in 78%. Specialized emergency nurses were a predictor for high CS[54].

The findings of a systematic review[31] with 31 studies (1998-2018)[55] revealed significant levels of BS rates between 18% and 49% for intensivists physicians in intensive therapy. Despite methodological differences, the authors noticed that even low levels of BS in physicians are higher than other intensive care professionals[55].

The approach to BS and CF requires individual, collective and organizational strategies. As some studies have shown an inverse relation between BS and empathy, an effective strategy is to develop mechanisms to support and elevate empathy among health professionals[56,57].

Palliativists are powerful and vulnerable instruments[45], they need to manage losses and recurrent griefs and deliver support and compassive care to patients and families[58]. According to Balint, they are the "therapist as medicine" and should self-care[59]. Self-care, vital to prevent BS or CF involves knowing the "psychological capital" – resources of coping as empowerment, resilience and resistance[60]. These elements corroborate other studies[61] that indicate holistic practices of self-care as critical to support health professionals and self-care practices[62] associated with high CS and low BS and CF.

The enablement of ICD-11 in 2022, which describes burnout as an occupational phenomenon, changed the perspective of the syndrome, shifting the focus from individual resilience to accountability of the organizations that are responsible for delivering healthier work environments[15]. The COVID-2019 pandemic has also brought new sources of occupational stress, eroding the boundaries between personal/professional life and creating

triggers for BS[63]. In addition, it boosted studies on CF while exposing secondary traumatic stress due to scarce resources, exhaustion and continued exposure to others' suffering[64].

This study innovates while analyzing BS and CF in clinicians and nursing teams of a Brazilian Cacon based on validated OLBI. It confirmed the vulnerability of health professionals to occupational stress (high risk for physicians and emergency teams/ICU; improved indicators for palliativists) aligned to global literature. The research delivered detailed understanding of risk factors/protection per category and sector and can steer interventions and mental health policies in Brazil.

There was a 21% loss of patients between the beginning and conclusion of the questionnaire, explained by work overload, lack of time, volume of messages or disinterest/stress, which is a limitation of the study[14]. The experience of the investigator as a resident, reminders and periodical visits may have improved the response rate[62]. In addition, the study was conducted in a single Brazilian oncology site based on a sociodemographic and professional questionnaire developed by the authors and unvalidated.

CONCLUSION

Physicians, emergency and intensive therapy professionals exhibited profiles of high risk of suffering by BS and CF. Licensed practical nurses and palliativists presented healthier indicators with high CS. These data can help institutional approaches to identify risk factors for BS or CF among professionals and develop effective solutions for them.

CONTRIBUTIONS

All the authors contributed substantially to the study design, acquisition, analysis and interpretation of the data, writing and critical review. They approved the final version for publication.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

DATA AVAILABILITY STATEMENT

Given ethical and anonymity restrictions, data can be requested to the corresponding author with reasonable justification.

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