Prevalence and Factors Associated with Work-Related Stress and Burnout Syndrome among Nursing Professionals Working in Oncology

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Prevalência e Fatores associados ao Estresse Relacionado ao Trabalho e à Síndrome de Burnout entre Profissionais de Enfermagem que Atuam em Oncologia

Prevalencia y Factores Asociados al Estrés Laboral y al Síndrome de Burnout en Profesionales de Enfermería que Actúan en Oncología

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ABSTRACT

Introduction: Nursing professionals are exposed to situations that can trigger work-related stress and burnout syndrome. **Objective**: To assess the prevalence and factors associated with work-related stress and burnout syndrome among nursing professionals who work in oncology. **Method**: Cross-sectional study carried out with 231 nursing professionals who worked in a High Complexity Oncology Center in Rio de Janeiro, Brazil. Work-related stress was assessed by means of the work stress scale and burnout syndrome by the Maslach Burnout Inventory. The association between outcomes and independent variables was performed through Poisson Regression with robust variance. *p* values < 0.05 were considered statistically significant. **Results**: The prevalence of moderate/intense work-related stress was 75.8%, and 38.9% for the professionals who presented burnout syndrome. Age, work accident history, and verbal and physical aggression were positively associated with work-related stress and burnout syndrome. In addition, self-reported stress was a risk factor for burnout syndrome. **Conclusion:** There was a high prevalence of work-related stress and burnout syndrome, and these outcomes were associated with age, history of work accidents, and workplace violence.

Key words: occupational stress; burnout, professional; oncology nursing; occupational health.

RESUMO

Introdução: Os profissionais de enfermagem, ao considerarem o processo relacionado às condições de trabalho, estão expostos a situações que podem desencadear estresse relacionado ao trabalho e síndrome de *burnout*. **Objetivo:** Avaliar a prevalência e os fatores associados ao estresse relacionado ao trabalho e à síndrome de *burnout* entre profissionais de enfermagem atuantes em oncologia. **Método:** Estudo transversal realizado com 231 profissionais de enfermagem que atuavam em Centro de Alta Complexidade em Oncologia do Rio de Janeiro, RJ, Brasil. O estresse relacionado ao trabalho foi avaliado por meio da escala de estresse no trabalho e a síndrome de *burnout* pelo *Maslach Burnout Inventory*. A associação entre os desfechos e as variáveis independentes foi realizada por meio da Regressão de Poisson com variância robusta. Consideraram-se estatisticamente significativos valores de *p*<0,05. **Resultados**: A prevalência de estresse moderado/intenso relacionado ao trabalho foi de 75,8%, e de 38,9% para os profissionais que apresentaram síndrome de *burnout*. A idade, o histórico de acidente de trabalho e a agressão verbal e física estiveram positivamente associados ao estresse relacionado ao trabalho e à síndrome de *burnout*. Além disso, o estresse autorreferido foi fator de risco para essa síndrome. **Conclusão:** Observou-se alta prevalência de estresse relacionado ao trabalho e à síndrome de *burnout*, cujos desfechos estiveram associados à idade, ao histórico de acidente de trabalho e à violência laboral.

Palavras-chave: estresse ocupacional; esgotamento profissional; enfermagem oncológica; saúde do trabalhador.

RESUMEN

Introducción: Los profesionales de enfermería, considerando el proceso ligado a las condiciones de trabajo, están expuestos a situaciones que pueden desencadenar el estrés laboral y el síndrome de *burnout*. **Objetivo**: Evaluar la prevalencia y los factores asociados al estrés laboral y el síndrome de *burnout* entre profesionales de enfermería que trabajan en oncología. **Método:** Se trata de un estudio transversal realizado con 231 profesionales de enfermería que actuaban en un Centro Oncológico de Alta Complejidad en la ciudad de Río de Janeiro, Brasil. El estrés laboral se evaluó mediante la escala de estrés laboral y el síndrome de *burnout* mediante el *Maslach Burnout Inventory*. La asociación entre los resultados y las variables independientes se realizó mediante Regresión de Poisson con varianza robusta. El valor de p<0,05 se considera estadísticamente significativo. **Resultados**: La prevalencia de estrés laboral de intensidad moderada/intensa fue del 75,8%, y del 38,9% de los profesionales que presentaron síndrome de *burnout*. La edad, los antecedentes de accidentes laborales y las agresiones verbales y físicas se asociaron positivamente con el estrés laboral y el síndrome de *burnout*. Además, el estrés declarado por los propios profesionales de enfermería fue un factor de riesgo para el síndrome de *burnout*. **Conclusión**: Hubo una alta prevalencia de estrés laboral y síndrome de *burnout*, y estos resultados se asociaron con la edad, antecedentes de accidentes laborales y violencia laboral.

Palabras clave: estrés laboral; agotamiento profesional; enfermería oncológica; salud laboral.

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INTRODUCTION

Work-related stress and burnout syndrome are frequent phenomena occurring with nursing professionals often quoted in the national and international literature; regardless of the consensus that work-related stress precedes this syndrome[1-5], the comprehension of the relation these phenomena hold is scarce[1,2,5], particularly with professionals working in specialized care as oncology.

Studies conducted in Brazil evaluate separately the outcomes of work-related stress and burnout syndrome[6-8], but, how these phenomena occur concomitantly in oncology nurse professionals was not addressed in any study. In addition, it is believed that screening and interventions to control these phenomena are not appropriate[6-8].

This type of stress is defined by inappropriate physical, psychological and emotional changes arising from occupational activities, related or not with off-working environment disturbances[9,10].

Burnout is a syndrome conceptualized as resulting from chronic workplace stress and exposure to stressor agents, a consequence of undetected and poorly managed stress. It usually appears as psychological and emotional changes of emotional exhaustion and depersonalization[11,12].

The syndrome occurs more frequently in those who work in direct contact with the public as teachers, health professionals, law enforcement agents and firemen. Therefore, nursing professionals have the fourth higher prevalence of this alteration[1] possibly justified by the characteristics of the job[13] – level of difficulty and severity of patients and/or work overload – and unfavorable working conditions – understaffing, lack of equipment, no autonomy, low salaries and poor professional worth, among others[14].

Due to the peculiarities of the pathology itself, oncology nursing professionals work with highly complex patients in severe conditions, living constantly and close to suffering and finitude[15]. Because of the overload these professionals experience[6-8] and the estimates of the oncologic disease in Brazil[16], it is possible to infer that the number of nursing professionals who will work in oncology will increase, being necessary to screen the manifestations of the work-related stress and burnout syndrome that can compromise the quality of the job and safety of the worker and the patient.

Therefore the identification and understanding of work-related factors and burnout syndrome in specific populations will allow the creation of patient-centered interventions that may reduce the sickening, discontinuation of work processes and even avoid the death of these professionals.

The objective of the present study was to evaluate the prevalence, work-related stress and burnout syndrome in oncology nursing professionals.

METHOD

Analytical, observational and cross-sectional study according to Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)[17] guidelines, conducted in a High Complexity Oncology Center (Cacon) in Rio de Janeiro, RJ, Brazil from December 2013 to June 2015.

The study population consisted in 534 oncology nursing professionals working in the admission of a Cacon. Through simple randomization, a final sample of 231 participants who should be working in admission for at least one year was obtained. Nurses on leave of absence (n=11) and pregnant (n=1) were excluded.

The Institutional Review Board of "*Escola de Enfermagem da Universidade de São Paulo*" and of the National Cancer Institute (INCA) approved the study (CAAE (submission for ethical review): 13329513.3.0000.5392), reports number 320.343/13 and 46/13, respectively in compliance with Resolution 466/2012[18] of the National Health Council. The nurses who accepted to join the study signed the Informed Consent Form and received one signed copy.

A pilot-study with 22 nurses randomly selected was conducted before the study to evaluate the instrument of data collection, but those were not included in the final sample. The questionnaires applied during the main study were not changed.

The study team consisted in the Principal Investigator and four male nurses. Data collection followed a standard, the investigators were trained in advance to avoid information bias and ensure the impartiality and reliability of the data.

The study participants randomized were contacted by e-mail or approached at their working places to be briefed about the objectives and procedures to collect the data. Cacon's Human Resources provided their e-mails.

An in-person interview was held in a secluded room to respond to a 5-sections questionnaire after inclusion criteria were applied and acceptance to join the study. The sections consisted in: 1 – sociodemographic data (sex, age, education, race/color, marital status and month income); 2 – work-related variables (professional occupation, specialty, work hours per week, number of labor relationships and work shift); 3 – habits, life style (tobacco and alcohol use, physical inactivity, stress and leisure); for the last two sections, the instruments of work-related stress were applied – Job Stress Scale (JSS)[19]

– and Maslach Burnout Inventory (MBI) for burnout syndrome .

JSS is a literature-based 23-items unifactorial instrument validated to Brazil[11], about psychosocial organizational stressors and psychological reactions to occupational stress. The instrument addresses one emotional reaction and one stressor for each item. The emotional reaction is expressed through an agreement scale from one to five points: 1 – fully disagree; 2 – disagree; 3 – partially agree; 4 – agree; and 5 – fully agree. The total score ranges from 23 to 115, as high the score, higher is the intensity of the stress perceived. The cutoffs are based in tercile: low (23.00-51.00), moderate (52.00-70.00) and high (>70.00)[15].

The MBI, version Human Services Survey (HSS) consists in 22 items distributed in three subscales: emotional exhaustion, depersonalization and poor personal accomplishment. The 1-5 scores system reflects the categories of frequency: 1 – never; 2 – sometimes a year; 3 – sometimes a month; 4 – sometimes a week, and 5 – daily. The presence of the burnout syndrome was characterized by high scores in emotional exhaustion and depersonalization and low scores for professional incompetence concomitantly. The cut-off were ≥ 27 for emotional exhaustion, ≥ 10 for depersonalization and ≤ 33 for professional accomplishment[14].

The statistical analysis was developed in four stages: descriptive, bivariate, multiple and residual with the software *R* version 3.2.1. The dependent variables were moderate and intense work stress (yes/no) and burnout syndrome (yes/no).

The descriptive analysis was expressed in absolute (n) and relative (%) frequency of the categorial variables and mean and standard deviation (SD) for quantitative variables.

For the bivariate analysis, the association between the outcomes moderate/severe work stress (yes/no) and burnout syndrome (yes/no) and the qualitative variables was evaluated through Pearson's chi-square test, likelihood rate or Fisher's exact test, depending on the characteristics of the variable. The Mann Whitney U or Student *t* test was utilized for the quantitative variables according to the normality of the variables investigated.

The prevalence rate (PR) and respective confidence intervals (CI 95%) through Poisson regression with robust variation were calculated for the work-related and burnout syndrome associated factors with the outcomes: moderate/intense work stress (yes/no) and burnout syndrome (yes/no). The library sandwich of the statistical software *R* 3.2.1 was utilized for the analyzes.

Stepwise regression with step-by-step iterative construction of independent variables was performed to adjust the potentially confounding variables. The independent variables with critical level $p \leq 0.20$ in the univariate analysis were eligible to be included in the final model. The plausible interactions were tested after the simultaneous inclusion of main effects.

The Akaike Information Criteria (AIC), the residual analysis by graphic observation and epidemiological significance were adopted to reach the final model. Values of $p < 0.05$ were considered significant.

RESULTS

The mean age of the professionals was 39.6 years (SD=8.3), 82.7% were women, 54.5%, non-White and 70.6% of them lived with spouse. Mean family income was approximately nine thousand Reais. 51.9% of the nurses completed residency and/or specialization and/or master's degree and 33.7%, were licensed practitioners. 63.6% of the sample were nurses who worked in clinical oncology or surgical oncology in day-shifts (53.2%) with mean of 16 years (SD=7.8) of professional formation and mean of eight years working in the institution where the study was conducted.

56.2% of the professionals had only one employment relationship, 59.7% worked in alternate shifts with mean of 53 hours per week. 54.1% were tired "sometimes", 56.2% were psychologically tired "frequently" and 49.7% had reduced concentration "sometimes" during shift. 50.6% had work accidents while working at the hospital and 61.5% had history of physical or verbal aggression in the last year (Table 1).

The JSS presented satisfactory reliability (Cronbach's alpha=0.92), similar to the instrument with good reliability for all the items (Cronbach's alpha=0.73) and the three subscales emotional exhaustion (Cronbach's alpha=0.88), depersonalization (Cronbach's alpha=0.67) and professional incompetence (Cronbach's alpha=0.73).

The prevalence of moderate/intense work-related stress was 75.8% (CI 95%: 70.3%-81.3 %), and 38.9% (CI 95%:36.5-41.4%) for professionals with burnout syndrome.

Professionals with moderate/intense stress were younger than those with mild stress (390 years; SD=8.0 *vs.* 41.7 years; SD=9.0), worked in night shifts (43.4% *vs.* 25.0%), had reduced concentration during work shift (15.4% *vs.* 3.6%) and has history of physical or verbal aggression (65.7% *vs.* 48.2%) while working in the last year (Table 1).

Individuals with burnout syndrome had higher mean age (40.9; SD=8.4 *vs.* 37.7; SD=8.0), concentrated in the age ranges of 40-49 years and > 50 years, worked tired (60.3% *vs.* 44.4%) and felt psychologically tired

"sometimes" during work shift (34.8% *vs.* 24.4%). They had more prevalence of burnout syndrome and high prevalence of physical or verbal aggression (Table 1).

It was identified that 69.7% of the participants reported they had leisure time, but 34.6% did not perform any physical activity, 7.4% used tobacco, 29.9%, alcohol, 44.5% reported stress and the daily mean of sleep hours was 6.0 (Table 2).

The most frequent comorbidities were lumbar pain (81.0%), lower limbs pain (77.1%), varicose veins (64.0%), gastric problems (49.0%), upper limbs pain (36.4%) and urinary infection (31.2%). Of these, 38.5% were in health treatment, one reported the use of sleep inhibiting drugs and 17, depression medicines (Table 2).

Professionals with moderate/intense stress had more prevalence of leisure activity (74.3 % *vs.* 55.4%), low dyslipidemia (24.6% *vs.* 39.3%) and systemic arterial hypertension (21.7% *vs.* 37.5%). Those with burnout syndrome had high prevalence of reported stress and current health treatment (Table 2). 34.6% (CI 95%: 28.5-40.8%) of nursing professionals with work-related moderate/intense stress had burnout syndrome (Table 3).

The multiple analysis revealed that as older the participants are, high is the prevalence of moderate/intense stress and burnout syndrome. Similarly, a history of work accident increased 29.0% the likelihood of moderate/intense stress and 11.0% of burnout syndrome, while physical or verbal aggression increased the odds of this morbidity in 50.0% and 14.0%, respectively. The perception the participant has of being stressed increased the odds (PR=1.14) of burnout syndrome (Table 4).

DISCUSSION

High prevalence of moderate and severe work-related stress and burnout syndrome was found for the study patients who worked at oncology admission whose outcomes were associated with ageing, history of work accidents and physical/verbal aggression; the increase of prevalence of burnout syndrome was connected to self-reported stress.

The bivariate analysis revealed work-related stress and burnout syndrome in younger participants, however, the adjustment of this predictor to other independent variables showed more odds of these comorbidities in 40 years or older nurse professionals.

Younger individuals can be more predisposed to stress and burnout syndrome because of new or first job, insecurity, little professional experience, anxiety, physical, emotional and mental exhaustion. However, older professionals with more experience tend to have been exposed more to stressor agents, as oncology health professionals who may potentially develop burnout syndrome[20]. Given this, an investigation with 665 nurse professionals, utilizing odds ratio (OR) revealed more prevalence of burnout syndrome in those who were able to identify stressor agents in the work environment as impatience with co-workers (OR=3.99; p = 0.007) and melancholy (OR=2.84; p = 0.021)[6].

In that direction, a study with 77 oncology nurse professionals identified death of the patient (28.6%), emergencies (16.9%) and relationship problems with the nurse staff (15.5%) as main stressor agents[8].

The predominance of females reflects the profile of Brazilian nursing[21] and despite this variable was not statistically different than the findings analyzed, women perform multiple social roles (household tasks, mother, wife among others) and attempting to conciliate these functions with work, they tend to compromise habits and lifestyles (leisure, feeding, physical activity, sleep and rest)[22-25]. This fact associated with high work load, unfavorable working conditions, intense demands and low control of work process can cause extreme tiredness and health problems and development of psycho-emotional comorbidities[26-29]. The findings corroborate this affirmation because the participants with burnout syndrome reported health treatments more than those without this syndrome.

The study participants living with spouse had more prevalence of high/moderate stress than those without spouse but in counterpart, these presented burnout syndrome more frequently.

These findings concur with the literature showing that relationships can be a positive coping strategy for stress, meaning social, emotional and network support, but also may create physical and emotional demands because the individual will have to dedicate to work and family equally[27,28].

The prevalence of moderate/intense stress was higher in night shift professionals, a finding associated with less time for leisure activities, insufficient sleep hours and altered sleep pattern[29]. This result is potentially attributed to week work load which, although barely different among the professionals, can be considered high[30] and a triggering factor for occupational stress mainly in oncology with strong aspects of death and support to family and caretakers[31].

Despite the small statistically significant difference, the proportion of individuals with high/moderate stress was higher for those with two or more jobs (45.1% *vs.* 39.3%), a common reality for nursing professionals due to low salaries, mental and physical tiredness and compromise of the quality of care[31].

Table 1. Sociodemographic and work-related characteristics of oncology nursing professionals according to work-related stress and burnout syndrome. Rio de Janeiro, RJ, Brazil, 2023

Sociodemographic characteristics	JSS					MBI				
	Mild		Moderate/ Intense		Value of *p*	Yes		No		Value of *p*
	n	%	n	%		n	%	n	%	
Sex										
Female	48	85.7	143	81.7	0.491*	75	83.3	116	82.3	0.835*
Male	8	14.3	32	18.3		15	16.7	25	17.7	
Age: Mean (SD)	41.7 (9.0)		39.0 (8.0)		0.057†	37.7 (8.0)		40.9 (8.4)		
20-29	5	8.9	20	11.4		15	16.7	10	7.1	
30-39	18	32.1	81	46.3	0.109**	44	48.9	55	39.0	**0.015****
40-49	19	33.9	51	29.1		21	23.3	49	34.8	
>50 years	14	25.0	23	13.1		10	11.1	27	19.1	
Race/color										
White	20	35.7	85	48.6	0.093*	46	51.1	80	56.7	0.402*
Non-white	36	64.3	90	51.4		44	48.9	61	43.3	
Marital Status										
With spouse	39	69.6	124	70.9	0.862*	22	24.4	46	32.6	0.183*
Without spouse	17	30.4	51	29.1		68	75.6	95	67.4	
Education Completed										
Technical level	22	39.3	56	32.0		27	30.0	51	36.2	
Undergraduate	8	14.3	25	14.3	0.580**	13	14.4	20	14.2	0.607**
Residency/Specialization/ Master	26	46.4	94	53.7		50	55.6	70	49.6	
Month Income (R$): Mean (SD)	8,405.30 (3,905.5)		9,250.9 (4,559.7)		0.268†	9,4190.5 (4,151.9)		8,810.0 (4,577.2)		
Occupation										
Nurse	38	67.9	109	62.3	0.451*	56	62.2	91	64.5	0.721*
Assistant/Licensed nurse practitioner	18	32.1	66	37.7		34	37.8	50	35.5	
Work area										
Surgical Oncology	16	28.6	68	38.9		35	38.9	49	34.8	
Clinical oncology	20	35.7	50	28.6	0.196**	26	28.9	44	31.2	0.937**
Surgical and clinical oncology	10	17.9	17	9.7		10	11.1	17	12.1	
Intensive Care Unit	10	17.9	40	22.9		19	21.1	31	22.0	
Work shift										
Day on-duty	35	62.5	88	50.3		53	58.9	70	49.6	
Night on-duty	14	25.0	76	43.4	**0.029****	32	35.6	58	41.1	0.316**
Day worker	7	12.5	11	6.3		5	5.6	13	9.2	
Alternate work-shifts	28	50.0	110	62.9	0.088*	34	37.8	59	41.8	0.539
Week working hours: Mean (SD)	49.3 (13.6)		52.8 (16.0)		0.222†	51.6 (16.1)		52.2 (15.1)		
Employment relationship										
1	34	60.7	96	54.9	0.442*	53	58.9	77	54.6	0.523*
≥2	22	39.3	79	45.1		37	41.1	64	45.4	

to be continued

Table 1. continuation

Sociodemographic characteristics	JSS					MBI				
	Mild		Moderate/ Intense		Value of *p*	Yes		No		Value of *p*
	n	%	n	%		n	%	n	%	
Working years: Mean (SD)	17.5 (7.7)	15.9 (7.8)	0.126u	15.2 (7.0)	16.9 (8.2)		7,0	16,9	8,2	0,164†
Time of institutional work (years): Mean (SD)	9.3 (7.8)	8.4 (7.4)	0.517†	7.4 (6.5)	9.4 (8.0)	0,070†	6,5	9,4	8,0	0,070†
Works tired										
Frequently	16	28.6	72	41.1		43	47.8	45	31.9	
Occasionally	35	62.5	90	51.4	0.232**	40	44.4	85	60.3	0.046**
Rarely/Never	5	8.9	13	7.4		7	7.8	11	7.8	
Psychologically tired during shift										
Frequently	26	46.4	104	59.4		61	67.8	69	48.9	
Occasionally	19	33.9	52	29.7	0.145**	22	24.4	49	34.8	**0.013****
Rarely/Never	11	19.6	19	10.9		7	7.8	23	16.3	
Concentration diminishes during shift										
Frequently	2	3.6	27	15.4		15	16.7	14	9.9	
Occasionally	33	58.9	82	46.9	**0.026****	49	54.4	66	46.8	0.058**
Rarely/Never	21	37.5	66	37.7		26	28.9	61	43.3	
Work accident	29	51.8	88	50.3	0.845*	37	41.1	80	56.7	**0.021***
Aggression during work	27	48.2	115	65.7	**0.019***	69	76.7	73	51.8	**<0.001***

Captions: JSS = Job Stress Scale; MBI = Maslach Burnout Inventory; SD = standard-deviation.
(*) Pearson's chi-square test.
(**) Likelihood rate.
(†) Mann-Whitney U test.

Physical or verbal violence from patients and/or family and companions in work environments is common[32,33]. Studies indicate that, at least, one quart of them happens within health institutions and most of them with nursing professionals[32-34]. Work-related violence can manifest as physical and/or psychological violence, sexual harassment, abuse, bullying, gender, race or class discrimination directly impacting the professional health and quality of their job[6,34].

61.4% of the study participants claimed having suffered any type of verbal and/or physical violence at work in the last year, which are quite concerning because they often go beyond work activities, affecting their emotional and social health and well-being, causing stress, insomnia, insecurity, fear, anxiety, depression, among others[33].

The current investigation corroborates these affirmations which is associated with the outcomes analyzed, increasing 50% the odds of moderate/high stress and 14.0% of burnout syndrome.

The study participants with high/moderate stress reported high proportion of leisure activities (74.3% *vs.* 55.4%; $p = 0.007$) compared with those with mild stress. These activities are connected to entertainment, pleasure, physical and emotional well-being performed frequently by individuals with elevated stress and considered as coping strategies[35,36].

Individual or collective coping with stress is possible in or out of the work environment, focused to the problem – decision taking, guidance or support – self-control or emotional manifestation. It diminishes the risk of other comorbidities as the burnout syndrome, for instance[35,36]. It is possible to infer that the study nurses dedicated themselves to leisure as coping strategies and consequence of high/moderate stress to improve emotional and mental health.

Some professions which involve not only direct contact with the population in providing some type of assistance, but also emotional attachment can potentially expose the professionals to stressors and work-related stress[31,37]. Long-

Table 2. Habits and lifestyles of oncology nursing professionals: work-related stress and burnout syndrome. Rio de Janeiro, RJ, Brazil, 2023

Habits, lifestyles and history	JSS					MBI						
	Mild		Moderate/ Intense		Value of *p*	Yes		No		Total		Value of *p*
	n	%	n	%		n	%	n	%	n	%	
Smoking	6	10.7	11	6.3	0.288*	5	5.6	12	8.5	17	7.4	0.402*
Alcohol use	22	39.3	47	26.9	0.077*	22	24.4	47	33.3	69	29.9	0.150*
Physical inactivity	17	30.4	63	36.0	0.440*	28	31.1	52	36.9	80	34.6	0.369*
Leisure	31	55.4	130	74.3	**0.007***	62	68.9	99	70.2	161	69.7	0.831*
Stress	19	33.9	84	48.0	0.065*	53	58.9	50	35.5	103	44.6	**<0.001***
Hours of sleep (in 24 hours): Mean (SD)	6.0 (1.7)		6.3 (1.5)		0.225†	6.3 (1.4)		6.2 (1.6)		6.3 (1.5)		0.471†
Personal history												
Dyslipidemia	22	39.3	43	24.6	**0.033***	24	26.7	41	29.1	65	28.1	0.691*
Arterial hypertension	21	37.5	38	21.7	**0.018***	17	18.9	42	29.8	59	25.5	0.064*
Angina pectoris	6	10.7	12	6.9	0.391*	8	8.9	10	7.1	18	7.8	0.619*
Diabetes mellitus	5	8.9	10	5.7	0.367*	6	6.7	9	6.4	15	6.5	0.932*
Acute myocardial infarction	0	0.0	2	1.1	1.000‡	1	1.1	1	0.7	2	0.9	1.000‡
Brain stroke	1	1.8	0	0.0	0.242‡	0	0.0	1	0.7	1	0.4	1.000‡
Varicose veins	36	64.3	111	63.4	0.908*	59	65.6	88	62.4	147	63.6	0.628*
Lumbar pain	45	80.4	142	81.1	0.896*	74	82.2	113	80.1	187	81.0	0.695*
Upper limbs pain	20	35.7	64	36.6	0.908*	28	31.1	56	39.7	84	36.4	0.185*
Lower limbs pain	41	73.2	137	78.3	0.432*	73	81.1	105	74.5	178	77.1	0.242*
Gastric problems	23	41.1	90	51.4	0.177*	51	56.7	62	44.0	113	48.9	0.060*
Renal problems	9	16.1	37	21.1	0.408*	19	21.1	27	19.1	46	19.9	0.716*
Urinary infection	15	26.8	57	32.6	0.416*	34	37.8	38	27.0	72	31.2	0.083*
Health treatment	19	33.9	70	40.0	0.416*	43	47.8	46	32.6	89	38.5	**0.021***

Captions: JSS = Job Stress Scale; MBI = Maslach Burnout Inventory; SD = standard-deviation. (*) Pearson's chi-square.
(**) Likelihood ratio.
(†) U Mann-Whitney test.
(‡) Fisher's exact test.

Table 3. Work and burnout syndrome-related stress of oncology nurses. Rio de Janeiro, RJ, Brazil, 2023

	JSS				
	Mild		Moderate/ Intense		Value of *p*
Burnout syndrome (MBI)	n	%	n	%	
Yes	10	17.9	80	45.7	**<0.001***
No	46	82.1	95	54.3	

Captions: JSS = Job Stress Scale; MBI = Maslach Burnout Inventory.
(*) Pearson's chi-square test.

term exposure to poorly coped and controlled stressors tend to provoke the burnout syndrome[38,39].

The prevalence of stress found in the study participants was similar to the experienced by nurses working in intensive care units[35] and higher than surgery nurses[36]. The burnout syndrome, on its turn, was higher than nurses working in primary attention[37] and similar to those in emergency care[27].

Work is challenging to the professional but is also rewarding since it provides means to live in society, achievements, values and recognition, in addition to the identity itself within a given setting. Stressors, when present, can bring changes and damages not only in working practices but also emotional unbalance, fear,

Table 4. Variables associated with work-related stress and burnout syndrome of oncology nursing professionals. Rio de Janeiro, RJ, Brazil, 2023

Variables associated with work-related stress	Raw PR (CI 95%)	Adjusted PR (CI 95%)
Age-range		
20-29		1
30-39	1.39(0.83-2.32)	1.31 (0.82-2.09)
40-49	1.75 (1.06-2.90)	1.61 (1.01-2.55)
≥ 50	1.82 (1.09-3.06)	1.78 (1.10-2.90)
Work accident		
No		1
Yes	1.27 (1.04-1.58)	1.29 (1.06-1.60)
Aggression during work		
No		1
Yes	1.48 (1.22-1.81)	1.50 (1.24-1.82)
Variables associated with burnout syndrome	**Raw PR (CI 95%)**	**Adjusted PR (CI 95%)**
Age-range		
20-29		1
30-39	1.11(0.95-1.29)	1.09(0.96-1.24)
40-49	1.21 (1.04-1.41)	1.19 (1.04-1.36)
≥ 50	1.23 (1.05-1.45)	1.21 (1.05-1.40)
Work accident		
No		1
Yes	1.10 (1.01-1.18)	1.11 (1.04-1.19)
Aggression during work		
No		1
Yes	1.16(1.08-1.25)	1.14 (1.07-1.123)
Self-reported stress		
No		1
Yes	1.15(1.06-1.25)	1.14 (1.05-1.23)

Captions: PR = prevalence rate; CI 95% = confidence interval 95%.

insecurity, reduced concentration, low self-esteem and other negative aspects[9].

Among nurse professionals, the most frequent reported stressors are understaffing, causing work overload, lack of autonomy, poor team communication, unhealthy environment, among others[2,6,8]. In addition to these, it is possible to identify in oncology nursing, the profile of patients assisted and abrupt changes in their clinical conditions, oncologic emergencies and cure-driven biomedical model, further to pain, death and mourning[27]. Possibly, the study nurses present aggravated work-related stress and burnout syndrome.

Work-related stress impacts the professional psychologically and physically, interfering in selfcare, feeding, sleep patterns, physical activities and leisure, potentially increasing health problems as obesity, diabetes *mellitus* and arterial hypertension. Chronic stress is associated with hyperactivation of the adrenal pituitary-hypothalamus adrenocortical axis (HPA), affecting the autonomous and neuroendocrine nervous system. This stimulation favors the increased liberation of cortisol in the blood stream and insulin sensitivity, contributing to glucose intolerance which changes blood pressure and facilitates weight gain. That alteration can also be associated with high intake of carbohydrates related to the decrease of the serotonergic system[3,4].

Unlike what was anticipated, there was higher prevalence of dyslipidemia and arterial hypertension among professionals with mild stress. This finding may be related to insufficient time of exposure to stressors for the individuals to perceive themselves as stressed or the instruments utilized[14] were unable to capture the phenomena investigated. The tools adopted to measure the outcomes of interest presented satisfactory psychometric properties and as expected, association between the self-reported stress and prevalence of burnout syndrome was observed[10,14].

The occurrence of work accidents at the hospital may also be associated with the consequences of physical stress or burnout syndrome related depersonalization[10,14]. This variable deserves attention because it is connected either with work-related stress or burnout syndrome, increasing the odds of the occurrence of these outcomes. The incidence of accidents may be related to lack of attention, somnolence, tiredness, poor staff communication, work overload and alteration of the environment, as luminosity, among others[40].

The comorbidity moderate/intense stress and the presence of burnout syndrome was high due to the relation between these two outcomes, supported by the theoretical reference of chronic stress which suggests the occurrence of stress as condition to the onset of burnout syndrome, which, on its turn, is an evolution of inappropriately coped and continuous chronic stressors[6-8].

Nearly 17.9% of the study nurses with mild work-related stress presented burnout syndrome, a finding related to the fact that these individuals were living this experience intensely when possibly the acute reaction of stress is no longer perceived or captured by self-report instruments as those utilized in this study.

The cross-sectional design does not allow to determine cause and effects relations, which is a limitation of the study.

CONCLUSION

The study sample consisting in nurses working at a Cacon had high prevalence of work-related stress (moderate and severe) and burnout syndrome. The factors associated positively with these comorbidities were age-range from 40 years of age onward, history of physical or verbal violence and occurrence of hospital work accidents in the last year. The nurses perceived themselves as stressed, with great odds of manifesting burnout syndrome.

CONTRIBUTIONS

All the authors contributed substantially to the study design, acquisition, analysis and interpretation of the data, wording and critical review. They approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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REFERENCES

1. Silva KKM, Cordeiro JJ, Paiva JDM, et al. Fatores desencadeantes da síndrome de burnout em enfermeiros. Rev Enferm UFPE on line. 2019;13(2):483-90. doi: https://doi.org/10.5205/1981-8963-v13i2a235894p483-490-2019
2. Batista KOB, Santos JFS, Santos SDS, et al. Síndrome de burnout em enfermeiros: consequências na atividade profissional. ReBIS. 2019;1(4):61-5.
3. Roberts RK, Grubb PL. The consequences of nursing stress and need for integrated solutions. Rehabil Nurs. 2014;39(2):62-9. doi: https://doi.org/10.1002/rnj.97
4. McTiernan K, MacDonald N. Occupational stressors, burnout and coping strategies between hospital and community psychiatric nurses in a Dublin region. J Psychiatr Ment Health Nurs. 2015;22(3):208-18. doi: https://doi.org/10.1111/jpm.12170
5. Hetzel-Riggin MD, Swords BA, Tuang HL, et al. Work engagement and resiliency impact the relationship between nursing stress and burnout. Psychol Rep. 2020;123(5):1835-53. doi: https://doi.org/10.1177/0033294119876076
6. Paiva BSR, Mingardi M, Valentino TCO, et al. Prevalence of burnout and predictive factors among oncology nursing professionals: a cross-sectional study. São Paulo Med J. 2021;139(4):341-50. doi: https://doi.org/10.1590/1516-3180.2020.0606.R1.1202021
7. Camargo GG, Saidel MGB, Monteiro MI. Psychological exhaustion of nursing professionals who care for patients with neoplasms. Rev Bras Enferm. 2021;74(Suppl 3):e20200441. doi: https://doi.org/10.1590/0034-7167-2020-0441
8. Rodrigues AB, Chaves EC. Stressing factors and coping strategies used by oncology nurses. Rev Latino-Am Enfermagem. 2008;16(1):24-8. doi: https://doi.org/10.1590/S0104-11692008000100004
9. Almeida AMO, Lima AKG, Vasconcelos MGF, et al. Estresse ocupacional em enfermeiros que atuam em cuidados ao paciente crítico. Rev Enferm UFPE on line. 2016;10(5):1663-71. doi: https://doi.org/10.5205/reuol.9003-78704-1-SM.1005201612
10. Rodrigues CCFM, Alves KYA, Oliveira LV, et al. Estratégias de enfrentamento e coping do estresse ocupacional utilizadas por profissionais de enfermagem no ambiente hospitalar: scoping review. Online Braz J Nurs. 2020;19(4):1-15. doi: https://doi.org/10.17665/1676-4285.20206408
11. Nogueira LS, Sousa RMC, Guedes ES, et al. Burnout e ambiente de trabalho de enfermeiros em instituições

públicas de saúde. Rev Bras Enferm. 2018;71(2):336-42. doi: https://doi.org/10.1590/0034-7167-2016-0524

12. Cavalcanti IL, Lima FLT, Souza TA, et al. Burnout e depressão em residentes de um programa multiprofissional em oncologia: estudo longitudinal prospectivo. Rev Bras Educ Med. 2018;42(1):190-8. doi: https://doi.org/10.1590/1981-52712018v42n1RB20170078
13. Vasconcelos EM, De Martino MMF. Preditores da síndrome de burnout em enfermeiros de unidade de terapia intensiva. Rev Gaúcha Enferm. 2017;38(4):e65354. doi: https://doi.org/10.1590/1983-1447.2017.04.65354
14. Nascimento JOV, Santos J, Meira KC, et al. Trabalho em turnos de profissionais de enfermagem e a pressão arterial, burnout e transtornos mentais comuns. Rev Esc Enferm USP. 2019;53:e03443. doi: https://doi.org/10.1590/S1980-220X2018002103443
15. Luz KR, Vargas MAO, Barlem ELD, et al. Estratégias de enfrentamento por enfermeiros da oncologia na alta complexidade. Rev Bras Enferm. 2016;69(1):67-71. doi: https://doi.org/10.1590/0034-7167.2016690109i
16. Santos MO, Lima FCS, Martins FLL, et al. Estimativa da incidência de câncer no Brasil, 2023-2025. Rev Bras Cancerol. 2023;69(1):e-21370. doi: https://doi.org/10.32635/2176-9745.RBC.2023v69n1.3700
17. Cuschieri S. The STROBE guidelines. Saudi J Anaesth. 2019;13(Suppl 1):S31-S34. doi: https://doi.org/10.4103/sja.SJA_543_18
18. Conselho Nacional de Saúde (BR). Resolução nº 466, de 12 de dezembro de 2012. Aprova as diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Diário Oficial da União, Brasília, DF. 2013 jun 13; Seção 1:59.
19. Paschoal T, Tamayo A. Validação da escala de estresse no trabalho. Estud Psicol. 2004;9(1):45-52. doi: https://doi.org/10.1590/S1413-294X2004000100006
20. Ortega-Campos E, Vargas-Román K, Velando-Soriano A, et al. Compassion fatigue, compassion satisfaction, and burnout in oncology nurses: a systematic review and meta-analysis. Sustain. 2020;12(1):72. doi: https://doi.org/10.3390/su12010072
21. Machado MH, Oliveira E, Lemos W, et al. Mercado de trabalho da enfermagem: aspectos gerais. Enferm Foco. 2016;7(ESP):35-53. doi: https://doi.org/10.21675/2357-707X.2016.v7.nESP.691
22. Tavares AD, Barbosa RB. A mulher e a tripla jornada de trabalho: como esta mulher vivencia as atividades profissional, familiar e doméstica? Rev Psicol Foco. 2015;5(1):1-10.
23. Velloso ISC, Ceci C, Alves M. Reflexões sobre relações de poder na prática de enfermagem. Rev Gaucha Enferm. 2010;31(2):388-91. doi: https://doi.org/10.1590/S1983-14472010000200026
24. Spíndola T. Mulher, mãe e... trabalhadora de enfermagem. Rev Esc Enferm USP. 2000;34(4):354-61. doi: https://doi.org/10.1590/S0080-62342000000400006
25. Jesus JC, Turra CM, Wajnman S. An empirical method for adjusting time use data in Brazil. Dados Rev Ciênc Sociais. 2023;66(4):e20210093. doi: https://doi.org/10.1590/dados.2023.66.4.289
26. Palhares VC, Corrente JE, Matsubara BB. Association between sleep quality and quality of life in nursing professionals working rotating shifts. Rev Saúde Pública. 2014;48(4):594-601. doi: https://doi.org/10.1590/s0034-8910.2014048004939
27. Oliveira E, Gallasch C, Silva Junior P, et al. Estresse ocupacional e burnout em enfermeiros de um serviço de emergência: a organização do trabalho. Rev Enferm UERJ. 2017;25:e28842. doi: https://doi.org/10.12957/reuerj.2017.28842
28. Santos NAR, Santos J, Silva VR, et al. Estresse ocupacional na assistência de cuidados paliativos em oncologia. Cogit Enferm. 2017;22(4):e50686. doi: https://doi.org/10.5380/ce.v22i4.50686
29. Silva AP, Carvalho ES, Cardim A. Trabalho noturno na vida dos enfermeiros. Rev Enferm Contemp. 2017;6(2):177-85. doi: https://doi.org/10.17267/2317-3378rec.v6i2.1292
30. Oliveira EB, Barros PM, Perez Junior EF, et al. Precarização do trabalho em serviço de emergência e dimensionamento de pessoal: um desafio para a gerência de enfermagem e a qualidade do serviço. In: Unicovsky MA, Waldman BF, Spezani RS, organizadores. Programa de atualização em enfermagem. Porto Alegre (RS): Artmed Panamericana Editora; 2016.
31. Ueno LGS, Bobroff MCC, Martins JT, et al. Occupational stress: stressors referred by the nursing team. J Nurs UFPE on line. 2017;11(4):1632-38.
32. Bordignon M, Monteiro MI. Analysis of workplace violence against nursing professionals and possibilities for prevention. Rev Gaúcha Enferm. 2021;42:e20190406. doi: https://doi.org/10.1590/1983-1447.2021.20190406
33. Pai DD, Sturbelle ICS, Santos C, et al. Violência física e psicológica perpetrada no trabalho em saúde. Texto Contexto Enferm. 2018 27(1):e2420016. doi: https://doi.org/10.1590/0104-07072018002420016
34. Ayala ALM, Felicio ACR, Pachão J. Sofrimento dos profissionais que atuam no setor de oncologia em um hospital público de Joinville, SC. Rev Atenção Saúde. 2017;15(51):106-17. doi: https://doi.org/10.13037/ras.vol15n51.4376
35. Teixeira LB, Veloso LUP, Ribeiro IAP, et al. Estresse ocupacional na enfermagem atuante na unidade de terapia intensiva. Investig Enferm Imagen Desarr. 2017;19(2):195-211. doi: http://doi.org/10.11144/Javeriana.ie19-2.eoea
36. HaGani N, Yagil D, Cohen M. Burnout among oncologists and oncology nurses: a systematic review and meta-analysis. Health Psychol. 2022;41(1):53-6. doi: http://doi.org/10.1037/hea0001155

37. Lima AS, Farah BF, Bustamante-Teixeira MT. Análisis de la prevalencia del síndrome de burnout en profesionales de la atención primaria en salud. Trab Educ Saúde. 2018;16(1):283-304. doi: https://doi.org/10.1590/1981-7746-sol00099

38. Graça CC, Zagonel IPS. Estratégias de coping e estresse ocupacional em profissionais de enfermagem: revisão integrativa. Espac Saúde. 2019;20(2):67-77. doi: https://doi.org/10.22421/15177130-2019v20n2p67

39. Challinor JM, Alqudimat MR, Teixeira TOA, et al. Oncology nursing workforce: challenges, solutions, and future strategies. Lancet Oncol. 2020;21(12):e564-74. doi: https://doi.org/10.1016/S1470-2045(20)30605-7

40. Ribeiro RP, Marziale MHP, Martins JT, et al. Prevalence of metabolic syndrome among nursing personnel and its association with occupational stress, anxiety and depression. Rev Latino-Am Enfermagem. 2015;23(3):435-40. doi: https://doi.org/10.1590/0104-1169.0383.2573

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