Prevalence of depression and anxiety and factors related to these disorders among nursing professionals working in the surgical center

Prevalência de depressão e ansiedade e fatores relacionados a esses distúrbios entre trabalhadores de enfermagem atuantes em centro cirúrgico

Prevalencia de depresión y ansiedad y factores relacionados con estos trastornos entre trabajadores de enfermería que actúan en un centro quirúrgico

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ABSTRACT: Objective: To investigate the prevalence of depression and anxiety and factors associated with these disorders among nursing professionals working in surgical centers, in the southwest of the state of Paraná, Brazil. **Methods:** This is a cross-sectional study, conducted from April to July 2025, with 75 professionals. A sociodemographic-occupational questionnaire and the Hospital Anxiety and Depression Scale were applied. Descriptive, $\chi 2$, and binary logistic regression analyses were performed, adopting $p<0.05$. **Results:** Women (77.3%) and nursing technicians (63.2%) predominated. For anxiety, 22.7% were "likely" and 32.0% were "probable" cases; for depression, 25.3% were "likely" and 12.0% were "probable." In the bivariate analysis, anxiety was associated with workload (p=0.041), relationship with the team (p=0.010) and conflicts (p=0.036); depression was associated with relationship with the team (p=0.009) and conflicts (p=0.035). As for regression, ≥12 h/day increased the odds of anxiety (OR=5.07; p=0.047), "excellent" relationship with the team was a protective factor (OR=0.23; p=0.044), and absence of conflicts reduced anxiety symptoms (OR=0.34; p=0.029). For depression, working in a private institution was a protective factor (OR=0.27; p=0.031) and "neutral" relationship increased its risk (OR=24.00; p=0.008). **Conclusion:** Anxiety symptoms were more frequent than depression symptoms and were related to workload of ≥12 h and unfavorable relational/organizational contexts. Interventions on workload, communication, and conflict management are a priority.

Keywords: Surgical center. Mental health. Mental disorders. Perioperative nursing. Nursing staff.

RESUMO: Objetivo: Investigar a prevalência de depressão e ansiedade e os fatores associados a esses distúrbios entre trabalhadores de enfermagem atuantes em centros cirúrgicos, no sudoeste do Paraná, Brasil. **Métodos:** Estudo transversal, realizado de abril a julho de 2025, com 75 profissionais. Aplicaram-se questionário sociodemográfico-ocupacional e a Escala Hospitalar de Ansiedade e Depressão. Realizaram-se análises descritivas, $\chi 2$ e regressão logística binária, adotando $p<0,05$. **Resultados:** Predominaram mulheres (77,3%) e técnicos de enfermagem (63,2%). Para ansiedade, 22,7% foram "possíveis" e 32,0% "prováveis"; para depressão, 25,3% "possíveis" e 12,0% "prováveis". Na análise bivariada, ansiedade associou-se à carga horária (p=0,041), relação com a equipe (p=0,010) e conflitos (p=0,036); depressão associou-se à relação com a equipe (p=0,009) e conflitos (p=0,035). Na regressão, ≥12 h/dia elevou a chance de ansiedade (OR=5,07; p=0,047), relação "excelente" com a equipe foi protetora (OR=0,23; p=0,044) e ausência de conflitos reduziu os sintomas de ansiedade (OR=0,34; p=0,029). Para depressão, atuar em instituição privada foi protetor (OR=0,27; p=0,031) e relação "neutra" elevou o

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risco (OR=24,00; p=0,008). **Conclusão:** Os sintomas de ansiedade foram mais frequentes que os de depressão e relacionaram-se a jornadas ≥12 h e a contextos relacionais/organizacionais desfavoráveis. Intervenções sobre carga de trabalho, comunicação e gestão de conflitos são prioritárias.
Palavras-chave: Centro cirúrgico. Saúde mental. Transtornos mentais. Enfermagem perioperatória. Trabalhadores de enfermagem.

RESUMEN: Objetivo: Investigar la prevalencia de depresión y ansiedad y los factores asociados a estos trastornos entre trabajadores de enfermería que laboran en centros quirúrgicos, en el suroeste de Paraná, Brasil. **Métodos:** Estudio transversal, realizado de abril a julio de 2025, con 75 profesionales. Se aplicaron cuestionario sociodemográfico-ocupacional y la Escala Hospitalaria de Ansiedad y Depresión. Se realizaron análisis descriptivos, $\chi 2$ y regresión logística binaria, adoptando p<0,05. **Resultados:** Predominaron mujeres (77,3%) y técnicos de enfermería (63,2%). Para ansiedad, el 22,7% fueron "posibles" y el 32,0% "probables"; para depresión, un 25,3% "posibles" y un 12,0% "probables". En el análisis bivariante, la ansiedad se asoció con la carga horaria (p=0,041), la relación con el equipo (p=0,010) y los conflictos (p=0,036); la depresión se asoció con la relación con el equipo (p=0,009) y los conflictos (p=0,035). En la regresión, ≥12 h/día aumentó la probabilidad de ansiedad (OR=5,07; p=0,047), la relación "excelente" con el equipo fue protectora (OR=0,23; p=0,044) y la ausencia de conflictos redujo los síntomas de ansiedad (OR=0,34; p=0,029). Para la depresión, trabajar en institución privada fue protector (OR=0,27; p=0,031) y la relación "neutral" incrementó el riesgo (OR=24,00; p=0,008). **Conclusión:** Los síntomas de ansiedad fueron más frecuentes que los de depresión y se relacionaron con jornadas ≥12 h y con contextos relacionales/organizacionales desfavorables. Las intervenciones sobre la carga de trabajo, la comunicación y la gestión de conflictos son prioritarias.
Palabras clave: Centro quirúrgico. Salud mental. Trastornos mentales. Enfermería perioperatória. Personal de enfermería.

INTRODUCTION

The mental health of nursing professionals working in the surgical center of hospitals is a topic of great relevance and concern, given the challenging and stressful nature of the work environment. These professionals play a key role in the health team, ensuring the safety and well-being of patients during surgical procedures. However, pressure and emotional demands related to this role significantly impact the mental health of these workers[1].

Nursing is at the forefront when it comes to caring for the patient and family, dealing with suffering, pain, and death on a daily basis. These professionals deal with exposure to physical, chemical, and biological agents in the work environment, which can cause fear and tension, among the various factors that can negatively affect the lives of individuals. Occupational stress is related to the excessive burden of tasks, causing a decrease in productivity and quality of the service provided, increased absenteeism, and work-related accidents as well as contributing to the high turnover of professionals in the area[2].

The environment of a surgical center is determined by the fast pace and long working hours, as well as exposure to emergency situations and technical complexity, contributing to the emergence of stress, anxiety, and burnout of nursing professionals[3,4]. In addition, changes in the world of work, such as technological advances, have impacted the health of health professionals, generating concerns about job safety and inadequate working conditions, which can result in mental health problems[5].

It is worth noting that the mental health of nursing professionals working in the surgical center does not only affect the individual well-being, but it can also lead to significant consequences for the safety and quality of care provided to patients. Researchers indicate that nurses with mental health problems are more likely to make mistakes at work and have less involvement with the care provided to patients[1].

Authors of a national survey conducted with 56 perioperative nursing professionals identified the prevalence of 36.8% of moderate anxiety, showing the influence of multiple factors related to the work environment itself, such as task overburden, insufficient interprofessional collaboration, limited autonomy on the routines of the department, and tension resulting from the dichotomy management of macro processes and daily care practice[6].

In turn, authors of a multicenter study developed with perioperative nurses from the United States, England, Australia, Turkey, India, and Israel, among other countries, identified the prevalence of 63% anxiety associated with variables such as age, total time of professional activity, years working in the surgical center, and daily or weekly workload. Furthermore, a 71.5% prevalence of depression was verified, which showed a statistically significant association

with high levels of anxiety, evidencing the interdependence of these problems and the complexity of psychosocial factors related to the perioperative work[7].

Taking this into consideration, it is essential to investigate more deeply the factors that influence the mental disorders of these professionals as well as the consequences for individuals and the work environment. Better understanding these aspects enables the development of interventions and policies aimed at the promotion of mental health of these professionals, thus improving the well-being and consequently the quality of care provided to patients. Thus, this study represents a contribution to developing knowledge of the health of nursing professionals working in the surgical center. Therefore, the following research objective was established: To investigate the prevalence of depression and anxiety and the factors related to these disorders among nursing workers working in the surgical center.

OBJECTIVES

To investigate the prevalence of depression and anxiety and the factors related to these disorders among nursing professionals working in the surgical center of hospitals located in the southwest of the state of Paraná, Brazil.

METHODS

Study design and location

This is a cross-sectional study conducted with 87 professionals from the nursing team of surgical centers and 15 operating rooms of public and private hospitals in southwestern Paraná, references in neurology, traumatology, and surgeries (general, vascular, obstetric, and neonatal).

Sample

The study involved 75 nursing professionals working in the surgical center for at least four months. Participants were selected by convenience — those who agreed to participate in the research constituted the sample. Three nursing professionals were excluded for working in the surgical center for less than four months; two for being interns; two workers were on leave of absence; and one on maternity leave. One professional was excluded for reporting to help with some tasks, not working exclusively in the department, and three professionals refused to participate in the study.

Procedures for data collection

Data were collected by researchers themselves in the workplace (public and private hospitals located in southwestern Paraná), from April to July 2025. The nursing professionals of the surgical center who agreed to participate in the study filled out two questionnaires: the first consisted of 18 close-ended questions about sociodemographic characteristics, including sex, age, and workload; and the second consisted of 14 close-ended questions, a validated and self-applied questionnaire (Hospital Anxiety and Depression Scale – HADS). This instrument evaluates the severity of anxiety and depression, whose score for each item ranges from 0 (absent) to 3 (very frequent). In turn, the total scores per subscale (HADS-Anxiety and HADS-Depression) range from 0 to 21. Overall, scores between 0 and 7 indicate absence of clinical case; 8 and 10 suggest a possible case (borderline); and 11 and 21 indicate a probable case of anxiety or depression[8].

Data analysis

In the present study, the outcome variable was the presence of anxiety and depression, evaluated considering HADS, operationalized dichotomously in "absence of case" (0–7 points) and "possible/probable case" (8–21 points). As predictive variables, sociodemographic, professional, and relational characteristics of nursing workers were considered, including academic training, role performed, time working in health care and in the surgical center, daily workload, work shift, types of institution (public, private or both), multiple employment relationships, quality of the relationship with the multiprofessional team, occurrence of conflicts in the workplace, current or previous psychological follow-up, and use of medications for anxiety or depression.

To characterize the educational, professional, relational variables and possible conflicts among nursing workers, absolute and relative frequencies were used. The bivariate analysis was conducted by the χ^2 test for independent samples, and Fisher's exact test was applied when the expected frequencies were below 5. Subsequently, multivariate analysis was performed using binomial logistic regression. The selection of the model was based on the Akaike Information Criterion (AIC). The presence of multicollinearity was investigated using the Variance Inflation Factor (VIF), considering 4 as a cutoff point.

Variables with statistical significance of $p<0.20$ in the bivariate analysis were inserted in the final model, and the adjusted odds ratio (OR) and respective 95% confidence intervals (95%CI) were estimated. The enter method was applied, in which all independent variables are included in the model at once, without considering specific order of entry. A significance level of $p<0.05$ was adopted. All analyses were performed using the Jamovi software, version 2.3[9].

Ethical aspects

Initially, the management of the selected hospitals was contacted in order to obtain authorization for the research, clarifying the nature and way in which the study would be conducted to the responsible authorities. Furthermore, the authors clarified that the ethical and legal aspects would be preserved and the employees and the name of the hospital would remain confidential. In addition, the study was approved by the Ethics Committee on Research Involving Human Beings of Universidade Paranaense (Unipar), according to Opinion No. 7.555.127, with prior consent of the investigated hospital.

RESULTS

The study included 75 nursing professionals working in the surgical center of public and private institutions in southwestern Paraná. Among the results, we verified that most professionals were women, accounting for 77.3% (n=58), followed by 22.7% men (n=17). Moreover, individuals aged between 32 and 50 years old prevailed, totaling 62.7% (n=47). Among races, white (68.0%/51) was predominant, followed by mixed-race (25.3%/19). Regarding level of education, most professionals had a high school degree, totaling 38.7% (n=29), and only 20.0% (n=15) had a university degree.

Concerning academic training, as demonstrated in Table 1, nursing technician prevailed, accounting for 63.2% (n=55), followed by nursing degree, accounting for 23.0% (n=20). As for the role performed by professionals, most of them worked as circulating nurses (48.0%), followed by nurses, 23.0% (n=20).

Furthermore, we observed the nursing professionals' time since working directly in the health area, with a predominance of 73.3% (n=55) in individuals with more than three years of activity. Regarding the time working in the surgical center, most of them had been working for more than five years, totaling 40.0% (n=30).

Table 1. Educational and professional characterization of nursing professionals who worked in the surgical center. Francisco Beltrão, 2025.

Variables	n	%
Academic training[a]		
Nurse	20	23.0
Nursing technician	55	63.2
Nursing assistant	1	1.2
Surgical technician	11	12.6
Role performed		
Technical manager	4	5.3
Nurse	15	20.0
Anesthesiologist assistant	4	5.3
Circulating nurse	36	48.0
Surgical technician	15	20.0
Other	1	1.4
Professional activity time (years)		
1	5	6.7
2	13	17.3
3	2	2.7
+3	55	73.3
Time in the surgical center		
2 months	5	6.7
3 months	6	8.0
5 months to 1 year	15	20.0
2 to 5 years	19	25.3
>5 years	30	40.0
Workload (hours)		
6	8	10.7
8	4	5.3
12	50	66.7
>12	13	17.3
Work shift*		
Morning	61	43.9
Afternoon	56	40.3
Night	22	15.8
Institution		
Public	39	52.0
Private	24	32.0
Both	12	16.0
More than one employment relationship		
Yes	35	46.7
No.	40	53.3

*Participant has chosen more than one answer option.

As for the workload, a considerable part of the professionals, 66.7% (n=50), reported a 12-hour shift, while 17.3% (n=13) reported working for more than 12 hours a day. In addition, we found that 43.9% (n=61) worked in the morning shift, 40.3% (n=56) in the afternoon shift, and 15.8% (n=22) in the night shift. Moreover, 52.0% of nursing professionals working in the surgical center reported working in a public institution, while 46.7% (n=35) had more than one employment relationship, according to research data.

In Table 2, we show the interpersonal relationship of the professionals regarding the other members of the multidisciplinary team, in which 66.7% (n=50) reported having a good relationship; and 49.3% (n=37) reported having experienced conflicts with some team member, most of these episodes involving medical professionals, among them surgeons and anesthesiologists, corresponding to 28.9% (n=26).

Table 2. Interpersonal relationship of nursing professionals working in the surgical center and possible conflicts with other members of the multiprofessional team. Francisco Beltrão, 2025.

Variables	n	%
Relationship with other team members		
Excellent	13	17.3
Good	50	66.7
Neutral	12	16.0
Conflicts		
Yes	37	49.3
No	38	50.7
Role of the professional with whom the conflict occurred*		
Physician (surgeon and anesthesiologist)	26	28.9
Technical manager	7	7.8
Nurse	14	15.6
Surgical technician	12	13.3
Circulating nurse	19	21.1
Nursing assistant	2	2.2
Anesthesiologist assistant	8	8.9
Nursing student	1	1.1
Nursing technician	1	1.1
Were undergoing or had already undergone psychological follow-up		
Yes	20	26.7
No	55	73.3
Take medications for anxiety		
Yes	13	17.3
No	62	82.7
Take medications for depression		
Yes	5	6.7
No	70	93.3

*Participant has chosen more than one answer option.

According to our data, few nursing professionals working in the surgical center were undergoing or had already undergone psychological follow-up, corresponding to 26.7% (n=20). However, 17.3% (n=13) of them reported taking medications for anxiety and 6.7% (n=5), for depression.

In Table 3, we demonstrate the stratification of nursing professionals according to the HADS Scale. Regarding anxiety, 45.3% (n=34) were unlikely; 22.7% (n=17) were likely; and 32.0% (n=24), probable. Regarding depression, 62.7% (n=47) were unlikely; 25.3% (n=19), likely; and 12.0% (n=9), probable.

In Table 4, we present the bivariate analysis of the factors related to the presence of anxiety and depression among nursing professionals working in the surgical center. We observed significant associations for weekly workload (p=0.041), in the case of anxiety, with greater vulnerability in professionals who worked long hours. The relationship with other team members proved to be a relevant factor for both anxiety (p=0.010) and depression (p=0.009), showing that positive interpersonal relationships work as a protective factor. Finally, the presence of conflicts in the workplace was significantly associated with higher levels of anxiety (p=0.036) and depression (p=0.035), reinforcing the impact of organizational conditions on the professionals' mental health.

In logistic regression models (Table 5), anxiety was independently associated with workloads >12 h (OR 5.07; 95%CI 1.01–25.29; p=0.047), while "excellent" relationships with other team members were protective factors (OR 0.23;

Table 3. Stratification of nursing professionals, according to the Hospital Anxiety and Depression Scale.

Variables	n	%
Anxiety symptoms profile (HADS – Anxiety)		
Absence of case (score from 0 to 7)	34	45.3
Possible case (score from 8 to 10)	17	22.7
Probable case (score from 11 to 21)	24	32.0
Profile of depressive symptoms (HADS – Depression)		
Absence of case (score from 0 to 7)	47	62.7
Possible case (score from 8 to 10)	19	25.3
Probable case (score from 11 to 21)	9	12.0

HADS: Hospital Anxiety and Depression Scale.

Table 4. Factors related to the presence of anxiety or depression among nursing professionals.

Variables	Anxiety		p-value	Depression		p-value
	Absence of case	Possible/ probable case		Absence of case	Possible/ probable case	
Academic training						
Nursing assistant and nurse	0	1	0.553*	0	1	0.210 *
Nurse	6	10		8	8	
Nursing technician	20	24		31	13	
Surgical technician	1	1		1	1	
Surgical technician and nurse	0	1		0	1	
Nursing technician and nurse	1	2		1	2	
Nursing technician and surgical technician	6	2		6	2	
Role performed						
Technical manager	1	1	1.000*	1	1	1.000 *
Nurse	5	9		7	7	
Anesthesiologist assistant	1	2		1	2	
Circulating nurse	16	16		26	6	
Surgical technician	5	8		4	9	
Anesthesiologist assistant, circulating nurse	1	0		1	0	
Circulating nurse, Surgical technician	2	0		2	0	
Technical manager, nurse	1	0		1	0	
Technical manager, circulating nurses	0	1		0	1	
Other	2	4		4	2	
Professional activity time (years)						
1	2	3	0.642*	4	1	0.330 *
2	5	8		8	5	
3	0	2		0	2	
>3	26	28		35	20	
Time in the surgical center						
2 months	2	3	0.077*	5	0	0.069 *
3 months	4	2		4	2	
5 months to 1 year	3	12		6	9	
2 to 5 years	7	12		10	9	
>5 years	18	12		22	8	
Workload (hours)						
6	6	2	0.041*	7	1	0.256 *
8	2	2		2	2	
12	24	26		32	18	
>12	2	11		6	7	

Continue...

Table 4. Continuation.

Variables	Anxiety		p-value	Depression		p-value
	Absence of case	Possible/ probable case		Absence of case	Possible/ probable case	
Work shift						
Morning	4	2	0.152*	5	1	0.206 *
Afternoon	4	0		4	0	
Night	4	3		5	2	
Morning and night	2	3		4	1	
Morning and afternoon	18	24		26	16	
Morning, afternoon, and night	1	7		2	6	
Afternoon and night	1	1		1	1	
Institution						
Public	16	23	0.371†	20	19	0.152†
Private	14	10		19	5	
Both	4	8		8	4	
More than one employment relationship						
Yes	14	21	0.335†	21	14	0.483†
No	20	20		26	14	
Relationship with other team members						
Excellent	10	3	0.010*	12	1	0.009*
Good	22	28		31	19	
Neutral	2	10		4	8	
Conflicts						
Yes	12	25	0.036†	18	19	0.035†
No	22	16		29	9	
Were undergoing or had already undergone psychological follow-up						
Yes	7	13	0.497†	13	7	0.793†
No	27	28		34	21	
Take medications for anxiety						
Yes	6	7	0.892†	9	4	0.756*
No	28	34		38	24	
Take medications for depression						
Yes	0	5	0.060*	2	3	0.356*
No	34	36		45	25	

*Fisher's exact test; †χ^2.
Numbers in bold indicate that the association was statistically significant.

95%CI 0.05–0.96; p=0.044), and the absence of conflicts reduced the odds of the outcome (OR 0.34; 95%CI 0.13–0.89; p=0.029) For depression, working in a private institution was associated with a lower odds of the outcome (OR 0.27; 95%CI 0.08–0.89; p=0.031), while maintaining a "neutral" relationship with the team substantially increased the risk (OR 24.00; 95%CI 2.25–255.93; p=0.008). We found no statistical significance (p>0.05) for other comparisons of time working in surgical center, work shifts, and other categories of workload.

DISCUSSION

In the present study, we verified that anxiety symptoms are prevalent in nursing professionals with a workload of more

Table 5. Logistic regression of factors related to depression and anxiety among nursing professionals working in the surgical center.

Variables	Adjusted odds ratio (OR)	Confidence interval (95%CI)	p-value*	VIF†	AIC‡
Factors related to anxiety					
Time in surgical center					
2 months vs. >5 years	0.33	0.02–3.93	0.383	1.00	105
3 months vs. >5 years	2.66	0.29–23.86	2.667		
5 months to 1 year vs. >5 years	1.14	0.15–8.59	1.143		
2 years to 5 years vs. >5 years	0.44	0.06–3.07	0.444		
Workload					
6 hours vs. 12 hours	0.30	0.05–1.67	0.173	1.00	103
8 hours vs. 12 hours	0.92	0.12–7.08	0.939		
>12 hours vs. 12 hours	5.07	1.01–25.29	**0.047**		
Work shift					
Morning vs. morning and afternoon	0.37	0.06–2.28	0.287	1.00	106
Morning and night vs. morning and afternoon	1.12	0.17–7.45	0.903		
Morning, afternoon, night vs. morning and afternoon	4.50	0.49–40.75	0.181		
Night vs. morning and afternoon	0.56	0.11–2.83	0.486		
Afternoon vs. morning and afternoon	<0.001	0.00–0.00	0.993		
Afternoon, night vs. morning and afternoon	0.75	0.04–12.82	0.843		
Relationship with other team members					
Excellent vs. Good	0.23	0.05–0.96	**0.044**	1.00	99.5
Neutral vs. Good	3.92	0.77–19.80	0.097		
Conflicts					
No vs. yes	0.34	0.13–0.89	**0.029**	1.00	102
Take medications for depression					
No vs. yes	<0.001	0.00–0.00	0.992	1.00	101
Factors related to depression					
Time in surgical center					
2 months vs. >5 years	<0.001	0.00–0.001	0.992	1.00	98.9
3 months vs. >5 years	0.55	0.08–3.80	0.549		
5 months to 1 year vs. >5 years	1.66	0.42–6.56	0.465		
2 to 5 years vs. >5 years	0.40	0.12–1.36	0.142		
Institution					
Private vs. public	0.27	0.08–0.89	**0.031**	1.00	99.9
Both vs. public	0.52	0.13–2.03	0.353		
Relationship with other team members					
Excellent vs. Good	7.35	0.88–61.17	0.065	1.00	94.7
Neutral vs. good	24.00	2.25–255.93	**0.008**		
Conflicts					
No vs. yes	0.29	0.11–0.78	**0.294**	1.00	96.9

*Binomial logistic regression, with analysis of the multicollinearity assumption; †Variance Inflation Factor; ‡Akaike Information Criterion.
Numbers in bold indicate that the association was statistically significant.

than 12 hours a day. In addition, the "excellent" relationship with the multidisciplinary team became a protective factor, and the more "neutral" the relationship, the greater the symptoms of anxiety were. Furthermore, working in a private institution minimized the risks of developing depression symptoms.

The surgical center of a hospital is a challenging environment in which highly specialized professionals deal with complex procedures and delicate materials. This atmosphere requires well-trained staff capable of facing constant pressures and stress[5]. In addition, mental disorders — such as anxiety and depression — present symptoms such as fatigue, irritability, and concentration problems, whose occurrence is significant, with about 28.8% for lifelong anxiety disorders and 15 to 18% for major depression. These disorders are linked to psychological distress and work-related stress, according to models such as stress-adaptation, demand-control, and burnout[10].

According to data from the Nursing Profile in Brazil Survey, developed by Fundação Oswaldo Cruz (Fiocruz)/Federal Council of Nursing (Cofen), 85.1% of nursing professionals are women[11]; when compared to the present study, we also verified a predominance of women in nursing. The origin of nursing was linked to religion and military context, caring for the poor and wounded, with an emphasis on female work, whose professional recognition was consolidated in the 19th century with Florence Nightingale — who, during the Crimean War, encountered prejudices and voluntarily worked in the army. As stated by the World Health Organization, about 90% of the 28 million health workers are women[12]. Besides, the age group of 32 to 50 years prevailed, which is similar to the data of the Fiocruz/Cofen survey, according to which 60.3% of nursing professionals are in this age group[11].

As for level of education, most of the sample had a high school degree and only 20.0% had a university degree; conversely, in a survey with a sample of 43 participants, 20.0% reported having a high school degree and 65.1% had a university degree[13].

According to Cofen data, currently, there are 3,234,553 nursing professionals in Brazil, among them, 463,995 are nursing assistants; 1,980,740 are nursing technicians; and 789,392, nurses[14]. In our study, we also evidenced that most professionals were nursing technicians, followed by nurses.

Regarding the time working in health care, the vast majority reported performing the activity for over three years, which is similar to the data of the Nursing Profile in Brazil Survey, carried out by Fiocruz/Cofen, in which most nursing professionals reported having between two and 20 years of professional activity, totaling 70.1%[11].

Concerning the time working in the surgical center, we verified that most of these professionals had been in the surgical center for over five years, while few professionals had been working for less than one year in the department. These results were similar to another study with a sample of 77 participants, of whom 9.0% worked in the surgical center for less than one year; 46.8%, between one and five years; and 37.6%, between 6 and 20 years[15].

Among the roles of the nursing team in the surgical center, we found that most of the professionals were circulating nurses. As evidenced in the literature, the attributions of circulating nurses are: check the appointed surgeries and organize the respective rooms with the necessary materials; apply the check-in list together with the patient and the team; assist the anesthesiologist, when necessary, as well as in the surgical positioning; support the surgical team in gowning and opening of sterilized materials; keep the room organized and clean during and after the surgical procedure; replace the material used; and register exams, among others[16].

Regarding the daily workload, most nursing professionals reported working in a 12-hour shift, similar to a survey conducted in the United States with a sample of 80 nurses[17]. In addition, regarding the work shift, 81.3% worked in the morning shift; 74.7%, in the afternoon shift; and 29.3%, in the night shift, in accordance with results obtained in another study, in which 76.7% worked during the day and 23.3%, at night[13]. As for the number of employment relationships, the minority reported having more than one, similar to a study in which 25.6% of nursing professionals reported being linked to more than one organization and 74.4% had no other employment relationship[13].

Regarding the interpersonal relationship of the nursing team with other members of the multidisciplinary team, most reported having a good relationship. However, when it comes to conflicts with other team members, we verified that most of the divergences were related to medical professionals, including surgeons and anesthesiologists, both due to direct coexistence with anesthesiologists and the tension of the surgical procedure.

Authors of a study developed in a philanthropic hospital located in northwestern Paraná, with 19 participants, showed that in the surgical center the relationship between nursing professionals and medical staff is marked by conflicts. According to the nursing staff, working together with physicians is a daily challenge, often permeated by behaviors

of superiority and imposition. This scenario contributes to work overload, discouragement, and professional dissatisfaction of the nursing staff. Even with the numerous advances in relation to the valorization of multiprofessional care, medical hegemony prevails in this department, hindering the construction of a collaborative and balanced environment[18].

Moreover, we evaluated the level of anxiety and depression of nursing professionals in the surgical center, using the HADS Scale, in which 24.8% of possible cases and 28.0% of probable cases for anxiety were found. In a national survey, researchers verified a frequency of 36.8% of workers with anxiety symptoms[6]. Regarding depression, 25.3% were considered possible cases and 12.0%, probable cases. In turn, the prevalence of depression was lower than that found in an international multicenter study[7].

In addition, in another study carried out in a university hospital in southern Brazil, using the Depression Anxiety Stress Scales (DASS-21), with 76 nursing professionals, 53.8% presented some level of anxiety and 38.4% displayed some degree of depression, while 40.3% showed some level of stress. Occupational stress has been a worrying factor for health workers, being associated with anxiety and depression, especially in the face of the high emotional burden caused by deaths, long working hours, and complex demands in patient care[19].

According to our results, there were important associations between work environment factors and mental health aspects of nursing professionals in the context of a surgical center. Anxiety has been significantly influenced by the workload and interpersonal relationships of the team. The independent association of anxiety with working hours of over 12 hours is aligned with the literature, according to which long working hours and overburden are pointed out as important stressors for nursing professionals, which may result in exhaustion, stress, and psychiatric diseases[1].

The high performance required in dynamic, complex, and often unpredictable environments, such as surgical centers, exposes these professionals to significant psychosocial risks[1]. The maintenance of long standing hours during surgeries and the need for immediate decision-making, characteristics inherent in the work in surgical centers, can negatively and substantially impact the quality of life and well-being of these professionals, favoring the emergence of anxiety[13].

Conversely, we identified relevant protective factors related to the social work environment. "Excellent" relationships with other team members were protective factors against anxiety, and the absence of conflicts reduced the odds of anxiety. These results reinforce the fundamental importance of interpersonal support and harmonious work environment for mental health. The poor interdisciplinary relationship of professionals is, in fact, a factor recognized for negatively impacting the mental health of perioperative nurses, possibly being one of the main factors of turnover[1].

Conflicts in communication, perception of being subordinates, and inadequate treatment among the team, often accompanied by emotional or verbal violence, contribute to stress and failures in communication[1]. Thus, an environment that promotes teamwork, with pleasant interpersonal relationships and absence of conflicts, can be an effective strategy to prevent stress and intensify the quality of life at work[2].

For depression, the results also indicated significant influences of organizational and interpersonal factors. The fact that working in a private institution was associated with lower odds of the outcome differs from the literature. Researchers demonstrated a higher occurrence of anxiety among workers in private institutions, attributing this to factors such as resource scarcity, low wages, job instability, and accumulation of tasks, which would be less prevalent in public/philanthropic institutions due to employment stability [20]. This result may be related to the complexity of factors that influence mental health and suggests that, although private institutions may present certain challenges, they are able, in other contexts, to offer conditions that mitigate the risk of depression, such as, perhaps, better wages, infrastructure, or management that contribute to professional satisfaction[13].

The result to be highlighted for depression was the fact that maintaining a "neutral" relationship with the team substantially increased the risk of this disease. This result critically emphasizes that the absence of positive interpersonal relationships or open conflicts is not enough; an active and positive relationship is essential. A "neutral" relationship may indicate lack of social support, isolation or indifference, factors known to compromise mental health. Thus, the support of colleagues is an important factor for the development of work and communication is essential, requiring good relationships with the entire nursing team. It is emphasized that pathogenic suffering and psychological damage can be exacerbated by the lack of adequate support and healthy interpersonal relationships[20].

Given the results of this study, it is essential that health institutions implement policies that improve organizational, structural, and support factors for nursing professionals, aiming at patient safety and psychosocial well-being of workers. The creation of positive work environments, which encourage healthy interdisciplinary relationships, effective communication,

and conflict reduction, is an essential action to mitigate the risk of anxiety and depression. Furthermore, workload management and the provision of adequate resources and personnel are important to combat professional burnout[1,13].

This study has some limitations. As it is a local investigation, with a small sample size, the generalization of the findings to other contexts should be made with caution. In addition, self-reporting collection in private institutions may have implied social desirability bias (omission or smoothing of information), due to the possibility of fear in exposing the organization. Finally, low adherence to the questionnaires may have led to non-response bias, affecting the representativeness of the group of participants.

CONCLUSION

In this study, anxiety symptoms were more prevalent (54.7%) than those of depression (37.3%) among nursing professionals working in the surgical center. In the adjusted analysis, work shifts of ≥12 hours increased the odds of anxiety, while "excellent" relationships with the team and the absence of conflicts were protective factors. Regarding depression, working in private institutions reduced the risk, while "neutral" relationships with the team substantially increased it. These results reinforce the hypothesis that organizational and relational aspects, not only individual characteristics, are determinant for mental health in the surgical environment.

It is recommended to prioritize interventions of workload management, improvement of communication and teamwork, conflict mediation, and structured psychosocial support, combined with the recognition of work and protocols that promote a collaborative and safe working environment.

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CONFLICT OF INTERESTS

The authors declare there is no conflict of interests.

AUTHORS' CONTRIBUTION

JR: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Validation, Visualization. AKAD: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Validation, Visualization. MSG: Formal analysis, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Visualization. MTFV: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Validation, Visualization. YEPD: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Validation, Visualization. GTT: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Validation, Visualization. FCR: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Validation, Visualization. JCC: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Validation, Visualization. CHCS: Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Validation, Visualization. LDC: Project administration, Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Funding acquisition, Writing – original draft, Writing – review & editing, Supervision, Validation, Visualization.

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