


PREVALENCE AND ASSOCIATION BETWEEN STRESS AND ANXIETY IN PERIOPERATIVE NURSING PROFESSIONALS: MIXED METHODS RESEARCH


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ABSTRACT

Objective: to analyze prevalence and association between stress and anxiety among perioperative nursing professionals.

Method: this is mixed methods explanatory sequential research. Data were collected between October 2022 and March 2023. Cross-sectional quantitative stage was developed with 56 perioperative nursing professionals, who answered a sociodemographic questionnaire, the List of Signs and Symptoms of Stress and General Anxiety Disorder 7-item (GAD-7). Qualitative data obtained from eight semi-structured interviews. Data mixing occurred per connection.

Results: professionals with moderate anxiety (n=21; 36.8%) and high stress (n=24; 42.1%) prevailed. An association was found between anxiety and stress (r=0.827; p=0.01). Qualitative data supported aspects of the perioperative work context that predispose to stress and anxiety, such as work overload, little interprofessional collaboration, limited governance over routines and dichotomy between macroprocess management and care practice.

Conclusion: an association was evidenced between high stress and anxiety present in the professionals investigated, injuries related to aspects of the work carried out in perioperative care contexts.

DESCRIPTORS: Occupational health. Anxiety. Occupational stress. Perioperative nursing. Perioperative care.

HOW CITED: Munhoz OL, Morais BX, Luz EMF, Greco PBT, Ilha S, Magnago TSBS. Prevalence and association between stress and anxiety in perioperative nursing professionals: mixed methods research. Texto Contexto Enferm [Internet]. 2024 [cited YEAR MONTH DAY]; 33: e20230347. Available from: <https://doi.org/10.1590/1980-265X-TCE-2023-0347en>

PREVALÊNCIA E ASSOCIAÇÃO ENTRE ESTRESSE E ANSIEDADE EM PROFISSIONAIS DE ENFERMAGEM PERIOPERATÓRIA: ESTUDO MISTO

RESUMO

Objetivo: analisar a prevalência e associação entre estresse e ansiedade de profissionais de enfermagem perioperatória.

Método: estudo sequencial explanatório de método misto. Os dados foram coletados entre outubro de 2022 e março de 2023. Etapa quantitativa transversal desenvolvida com 56 profissionais de enfermagem perioperatória, que responderam questionário sociodemográfico, a Lista de Sinais e Sintomas de Estresse e o GAD 7 – Transtorno de Ansiedade Geral. Dados qualitativos obtidos com oito entrevistas semiestruturadas. Mixagem de dados por conexão.

Resultados: prevaleceram profissionais com ansiedade moderada (n=21;36,8%) e alto estresse (n=24;42,1%). Constatou-se associação entre ansiedade e estresse ($r=0,827$; $p=0,01$). Dados qualitativos corroboraram com aspectos do contexto de trabalho perioperatório que predispoem ao estresse e à ansiedade, como sobrecarga de trabalho, pouca colaboração interprofissional, limitada governabilidade sobre as rotinas e a dicotomia entre gestão de macroprocessos e prática assistencial.

Conclusão: evidenciou-se associação entre alto estresse e ansiedade presente nos profissionais investigados, agravos relacionados a aspectos do trabalho desenvolvido em contextos de cuidado perioperatório.

DESCRITORES: Saúde do trabalhador. Ansiedade. Estresse ocupacional. Enfermagem perioperatória. Assistência perioperatória.

PREVALENCIA Y ASOCIACIÓN ENTRE ESTRÉS Y ANSIEDAD EN PROFESIONALES DE ENFERMERÍA PERIOPERATORIA: ESTUDIO MIXTO

RESUMEN

Objetivo: analizar la prevalencia y asociación entre estrés y ansiedad entre profesionales de enfermería perioperatoria.

Método: estudio secuencial explicativo de método mixto. Los datos se recopilaron entre octubre de 2022 y marzo de 2023. Se desarrolló una etapa cuantitativa transversal con 56 profesionales de enfermería perioperatorios, quienes respondieron un cuestionario sociodemográfico, el Listado de Signos y Síntomas de Estrés y GAD 7 (Trastorno de Ansiedad General). Datos cualitativos obtenidos de ocho entrevistas semiestruturadas. Se produjo una mezcla de datos por conexión.

Resultados: predominaron los profesionales con ansiedad moderada (n=21;36,8%) y alto estrés (n=24;42,1%). Se encontró asociación entre ansiedad y estrés ($r=0,827$; $p=0,01$). Los datos cualitativos corroboraron aspectos del contexto laboral perioperatorio que predisponen al estrés y la ansiedad, como la sobrecarga de trabajo, la poca colaboración interprofesional, la gobernanza limitada de las rutinas y la dicotomía entre la gestión de macroprocesos y la práctica asistencial.

Conclusión: hubo asociación entre el alto estrés y la ansiedad presentes en los profesionales investigados, problemas relacionados con aspectos del trabajo realizado en contextos de atención perioperatoria.

DESCRIPTORES: Salud laboral. Ansiedad. Estrés laboral. Enfermería perioperatoria. Atención perioperatoria.

INTRODUCTION

The context of workers' health is interdisciplinary, multi-institutional and complex. Among other aspects, it aims at promotion, prevention and care, with workers being leading actors of changes in their work processes¹. Despite advances in the area, there are work environments in which factors permeate that interfere with workers' biopsychosocial-spiritual health¹⁻³.

With regard to healthcare environments, nursing professionals are vulnerable to work-related mental illness²⁻⁴. Their actions are dependent on their work objects, such as management, care and health education, which are influenced by an exhausting work routine, material and staff limitations and intense and conflicting interpersonal relationships³⁻⁴.

Given the different healthcare environments, perioperative units are among the places that cause psychological exhaustion among nursing professionals⁴⁻⁵. This is due, among other aspects, to the high complexity of patients and the need for competence and autonomy specific to these scenarios⁴.

In this regard, national and international literature reveals that anxiety⁶ and stress^{4,6} are among the problems experienced by perioperative nursing professionals. In a study carried out in Malaysia⁶, a prevalence of 44% of anxiety and 14.3% of stress was found in professionals in these contexts. In southern Brazil, 64.5% of those investigated experienced high psychological demands, a condition that was associated with burnout⁴. When professional categories are verified, a prevalence of 56.8% of anxiety and 35.1% of stress is identified in nursing technicians and 50% of both conditions in nurses⁵. Furthermore, a Chinese multicenter study demonstrated that, even after the Covid-19 pandemic, hospital workers maintained a strong and sustained negative psychological impact⁷.

Considering the above, there is a complex relationship between work in perioperative care units and prevalence of stress and anxiety among nursing professionals⁴⁻⁶. Furthermore, the assessment of both conditions in the perioperative context, concomitantly, is limited. These gaps in knowledge justify carrying out this investigation. Thus, we aimed to analyze prevalence and association between stress and anxiety among perioperative nursing professionals.

METHOD

This is mixed methods research, with a sequential explanatory strategy (QUANT → Qual), in which quantitative data are collected and analyzed first, and the results obtained guide qualitative data collection⁸. As for weight attribution, the priority was quantitative research. Data combination took place by connection⁹.

The quantitative stage was cross-sectional in nature, reported according to the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE)⁹. The qualitative stage had a descriptive-exploratory nature and was guided by the COnsolidated criteria for REporting Qualitative research (COREQ)¹⁰. In the mixed methods research, the Mixed Methods Appraisal Tool (MMAT) was used to assist in writing transparency¹¹.

The research was carried out at a teaching hospital in Rio Grande do Sul in the intra-hospital sectors as follows: operating room (BC), Anesthetic Recovery Room (ARS), Surgical Clinical Unit (SCU) and Material and Sterilization Center (MSC), which provide assistance to patients who require surgical interventions, in the pre-, trans- and post-operative periods, from different specialties and different care profiles.

Nursing professionals who were working in the aforementioned perioperative units during the period investigated and who had worked in a perioperative unit for at least three months were included. Those absent during the data collection period due to vacation or extended leave were excluded from both stages.

Thus, in the quantitative stage, a non-probabilistic convenience sample of 56 nursing professionals was constituted. For qualitative investigation, eight professionals who previously participated in the quantitative stage and were experiencing anxiety (≥ 10 points, according to the General Anxiety Disorder 7-item (GAD-7)¹²) and with at least an average level of stress (≥ 29 points, based on the List of Signs and Symptoms of Stress (LSS – *Lista de Sinais e Sintomas de Estresse*)¹³) were included. The eligible study population was 146 professionals. There were 26 refusals in quantitative collection and none in qualitative collection.

Quantitative data were collected between October 2022 and March 2023. Previously, the data collection team was trained in the necessary care at this stage, being presented with the collector manual, and carried out a pilot test. The following were used: an instrument to identify the profile of participants, with variables related to sex, date of birth, marital status, having children, work unit, position, highest level of education, time since graduation and experience in the profession and sector; GAD-7, an instrument that assesses individuals' anxiety over the last two weeks and has seven items on a Likert scale, with a score from 0 to 3 for each question (0 corresponds to "not at all", 1, to "several days", 2, to "more than half the days", and 3, to "nearly every day")¹²; and LSS, composed of 60 items, which indicates the frequency with which each stress symptom is perceived or felt, using the options: 0 (never); 1 (rarely); 2 (often); and 3 (always)¹³.

Qualitative data production took place from January to March 2023. Participants were invited, personally and individually, to participate in a semi-structured interview at their workplace so that they could be absent from their work activities without harm. A specific script was subjected to a previous pilot test developed by the authors with the following questions: Do you feel anxious and/or stressed in your work environment? If yes, for what reasons? Do you identify situations in your daily work that generate anxiety and stress?

The interviews were carried out by a nursing researcher with experience in this technique, using a voice recording device, and lasted an average of 23 minutes. They took place in health education rooms in the investigated scenarios, private places, free from noise and which favored information privacy. Afterwards, the interviews were transcribed in full, literally, using Microsoft Office Word®, signaling hesitations, laughter and silence. Two research team members reviewed the audio responses, making adjustments to language errors when necessary. Theoretical saturation was considered when the repetitiveness of aspects related to stress and anxiety of those investigated was verified as well as factors that generated these problems¹⁴.

Quantitative data were entered into Microsoft Excel® spreadsheets by two trained independent typists, with subsequent checking for inconsistencies and typing errors. Afterwards, they were processed by the Statistical Package for the Social Sciences (SPSS) version 18.0. Categorical variables were analyzed and presented with absolute (n) and relative (%) frequencies.

GAD-7 and LSS analysis was based on the sum of the response points, with subsequent categorization according to each instrument. Anxiety was dichotomized into ≥ 10 = present and < 10 = absent and categorized as: 0 to 4 = minimal anxiety; 5 to 9 = mild anxiety; 10 to 14 = moderate anxiety; and from 15 to 21 = severe anxiety¹³. Stress was classified as no stress (0 to 11 points), low (12 to 28), moderate (29 to 60), high (61 to 120) and very high (above 120 points)¹⁴.

The correlation between quantitative variables was performed using Spearman's $R\hat{o}$ (asymmetric data). We used values of: $|r| = 1$ perfect correlation; $0.80 \leq |r| < 1$, very high correlation; $0.60 \leq |r| < 0.80$, high correlation; $0.40 \leq |r| < 0.60$, moderate correlation; $0.20 \leq |r| < 0.40$, low correlation; $0 < |r| < 0.20$, very low correlation; and, $r = 0$, no correlation¹⁵. To identify the association between anxiety and stress, the chi-square test with correction was used. The significance level adopted for all tests was 5%.

In the qualitative stage, statements were analyzed according to discursive textual analysis¹⁶, which was developed from a self-organized process in which understandings emerge based on the recursive sequence of three components: unitarization, establishment of relationships and communication¹⁶. Thus, it was possible to construct a central category, and, from this, a base unit and three categories of analysis emerged. These were discussed and validated by three authors, ensuring the study reliability.

When mixing the data, qualitative analysis was carried out based on the quantitative findings at which point the interviews sought to understand the significant findings of the first stage of research^{8,17}. Afterwards, it was interpreted to what extent and in what way qualitative results would explain and add insights to quantitative results^{8,17}. As an analytical resource, joint display diagrams of the results of the two approaches were used as well as meta-inferences resulting from the combination of both (joint display)¹⁷⁻¹⁸. Figure 1 shows the joint display of the design of this research.

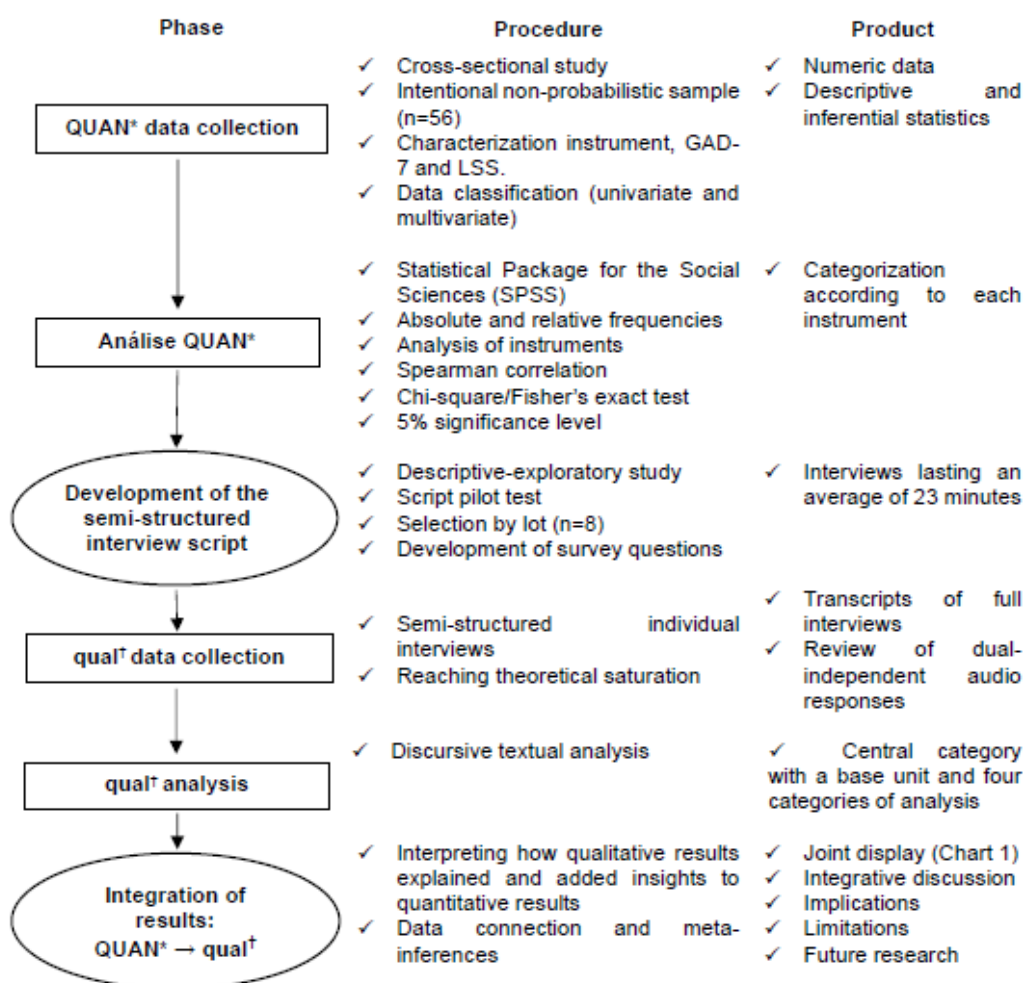


Figure 1 – Joint display representative of study design, adapted¹⁷.

*QUAN = Quantitative; †Qual = Qualitative

Ethical recommendations involving investigations with human beings were followed, in accordance with Resolutions 466 of 2012 and 510 of 2016. This research was approved by the institution's Research Ethics Committee, and obtained Opinion 3,897,861 in March 2020. Participation took place after acknowledgment, acceptance and signing of an Informed Consent Form (ICF). To guarantee participant anonymity, they were assigned the letter "P", for participant, followed by a number.

RESULTS

Of the 57 participants, the majority were female (n=52; 91.2%), married (n=28; 49.1%), with children (n=47; 82.5%), between 37 and 44 (n=20; 35.1%) and 45 and 63 (n=20; 35.1%) years old, and who worked in the surgical unit (n=30; 52.6%). Nursing technicians (n=38; 66.7%) and professionals who had a degree as the highest degree of complete training (n=18; 31.6%) prevailed. Furthermore, 20 participants had between 16.5 and 35 years of experience in the category, and 23, between 8 and 32 years (40.4%) of job tenure. As for the respondents in the qualitative stage, seven (87.5%) were female.

Through dichotomous analysis, it was found that, of the 57 (100%) nursing professionals, 29 (50.9%) did not have generalized anxiety disorder and 28 (49.1%) had it. When stratifying by category, nine (52.9%) nurses did not have anxiety and eight (47.1%) had anxiety; 19 (50.0%) nursing technicians did not have anxiety; and 19 (50.0%) nursing technicians had anxiety. As for stress, six (35.3%) nurses presented moderate stress; seven (41.2%) presented high stress; and one (5.9%) presented very high stress. Furthermore, there were 16 (42.1%) nursing technicians with moderate stress, another 16 (42.1%) with high stress and two (5.3%) with very high stress.

Table 1 presents categorical data related to prevalence of stress and anxiety.

Table 1 – Prevalence of anxiety and stress among nursing professionals in perioperative units. Santa Maria, RS, Brazil, 2023. (n=57)

Complications		n	%
Anxiety	Minimal	14	24.6
	Mild	15	26.3
	Moderate	21	36.8
	Severe	7	12.3
	No stress	4	7.0
Stress	Low	4	7.0
	Moderate	22	38.6
	High	24	42.1
	Very high	3	5.3

Table 2 shows the correlations between stress and categorical variables. A large portion of perioperative nursing professionals was exposed to moderate (n=22; 38.6%) and high (n=24; 42.1%) stressors, such as deficit of human resources and lack of mutual support among co-workers, which caused work overload and moderate symptoms of anxiety that resulted in psychosomatic symptoms such as skin lesions and increased food intake, as illustrated in the statements:

[...] *I had skin lesions due to anxiety, on the abdomen, lower limbs, cervical region, at the height of anxiety and stress. [...] anxious, stressed, I arrived here on a busy shift [...] there were days when we had 12 patients, due to lack of a co-worker, a certificate. So, it was adding up, increasing (P4).*

[...] *very angry because I was overwhelmed with things and no one helped me in the area I was in. I'm going to ask for help because I can see, then you go inside and help, but no one can come here to help you. And also the food issue, right? I was eating a lot, anxiously in the last few days [...]* (P5).

Correlations were evident between very high and positive between anxiety and stress ($r=0.827$; $p=0.01$), moderate and positive between time since graduation and age ($r=0.519$; $p=0.01$), moderate and positive between job tenure and age ($r=0.465$; $p=0.01$) and between operation time and age ($r=0.305$; $p=0.05$) and job tenure ($r=0.330$; $p=0.01$).

Table 2 – Spearman correlations between stress and categorical variables. Santa Maria, RS, Brazil, 2023.

Variables	Stress	Anxiety	Age	Time since graduation	Operating time	Job tenure
1. Stress	1					
2. Anxiety	0.827*	1				
3. Age	-0.200	-0.149	1			
4. Time since graduation	-0.244	-0.188	0.519*	1		
5. Operating time	0.167	0.026	0.465*	0.209	1	
6. Job tenure	0.090	0.046	0.305†	0.061	0.330*	1

*Correlation is significant at the 0.01 level (two-tailed); †Correlation is significant at the 0.05 level (two-tailed)

Through bivariate analysis, it was identified that participants with no (n=4; 100%) and low stress (n=4; 100%) did not have anxiety, whereas those with very high (n=3; 100%) and high (n=17; 70.8%) stress had anxiety present ($p < 0.001$). Based on this finding, we sought to understand, in the qualitative stage, what was the perception of work aspects in perioperative units that elucidated this association. Therefore, in the analysis of the empirical material produced by the interviews, daily professional life was considered a severe/high stressor for the outcome of anxiety symptoms. With this, the central category emerged: “Everyday professional life as a generator of anxiety and stress”. From this, a base unit was created, entitled “Exposure to stressors in daily professional life and symptoms of generalized anxiety”, and three categories of analysis.

In the first category, called “Sometimes we can’t handle it: work overload”, nursing professionals mentioned characteristics experienced in the work process that predisposed them to anxiety and stress. In the second, “Weaknesses in teamwork”, inconsistencies in daily work are presented that resulted in stress for those investigated. And, in the third, “Stress and anxiety symptoms: environment and work routine repercussions”, stressors from the environment and the work process that generate anxiety are presented.

“Sometimes we can’t handle it”: work overload

The work process in perioperative care units has characteristics that contribute to work overload and, consequently, to generate anxiety and stress, such as the deficit in staffing, the demand/need for agility or performance, and the lack of standardization of schedules for the admission of patients, mostly, as illustrated in the statements:

[...] sometimes we are working and can’t handle the job and that ends up bothering me. It seems that we are not caring for patients properly. This makes me very frustrated, exhausted (P7).

[...] sometimes on the scale there are nine, then something happens and one goes into a certificate, we are at eight, and there are a lot of patients, there are 10 patients to care for, a lot of details, care, and sometimes we are not able to give that special care that we would like. It brings anxiety and stress [...] (P1).

[...] in the work environment, everything has to be very agile, we work with not as many employees as would be ideal, it ends up overloading [...] especially at the end of the shift, here we don’t have a time limit to receive patients, at sometimes it’s 6:30 pm, 6:40 pm and we’re receiving patients, and we have to go through the shift, this ends up creating anxiety and stress (P3).

[...] few people for a lot of activity, it seems that more is being added. Not long ago the stretcher bearers went down alone, now we have to go down together. But we don’t have the staff and time for that. There are days when there are ten, eleven patients for each one. In some shifts, unstable patients. It ends up overloading, it’s very stressful (P4).

The work process' self-reported characteristics have an impact on work overload and, consequently, on the high correlation between anxiety and stress ($r=0.827$; $p=0.01$). The high prevalence of these diseases can impact the safety of patients receiving care, predisposing to the occurrence of incidents and a reduction in quality of care:

[...] work overload leads to some mistakes, which certainly cause anxiety, nervousness, worry [...] the lack of staff is also another situation that generates stress, which you end up, in addition to being responsible for your area, being responsible for others, and this causes a little more anxiety and exhaustion (P8).

Weaknesses in teamwork

In light of participants' voices, weaknesses in daily work relate to little interprofessional collaboration in teamwork. This was present in the demands that could be met by co-workers, but which, if not done, predispose to overload, irritability and stress:

[...] sometimes some co-workers end up annoying you a little [...] sometimes it's a simple thing you can do just go and get up and do it, and the person stalls and doesn't do it, or complains about patient, but no puts themselves in patients' shoes, and then it makes me angry [...] he doesn't want to work, he's just there for the wage (P7).

[...] sometimes we don't get help from our co-workers, but they keep demanding that we have to help, so there are a lot of complaints, there's a lot of gossip, which stresses you out [...] we get stressed out a lot (P5).

[...] there is a lack of collaboration or vision by nurses, because there are things that the technician doesn't just need to do, that the nurse can do and that makes work faster, putting less burden on them (P3).

Stress and anxiety symptoms: environment and work routine repercussions

In addition to supporting the findings of the correlation between exposure to stress and anxiety symptoms, statements elucidated characteristics of the perioperative environment and work process as causes of these injuries, as follows:

[...] it gives me a lot of anguish. As I smoke, I even feel like smoking [...] (P7).

[...] yes, it generates anxiety, stress and exhaustion, because the demand is so great [...] (P5).

[...] stress is the most violent. It makes me very irritable. A loss of patience. I feel stressed about not being able to give the attention that I need, that patients and family members need. I get anxious about wanting to be able to handle everything. Then I feel sick, I get irritated with everyone, with co-workers, with the phone ringing, with people calling. Irritability is quite great at this moment [...] I end up responding more calmly, harshly, louder [...] it ends up blocking me from a better dialogue with patients and co-workers [...] I know I'm stressed, distressed, anxious, so I avoid some contacts [...] when it's a shift that stresses me out, I leave with heavy energy, less tolerant, with less enthusiasm to get home, to do things, I arrive exhausted, without energy, but personal life continues (P4).

Furthermore, there are self-reported situations that allude to little governance over work routines and dichotomy that exists between the management of macro processes and on-site care practice. These situations are perceived as important daily stressors and predispose to the occurrence of anxious symptoms, as seen below:

[...] situations with which we cannot resolve, we find ourselves tied [...]. In general, these are the ones that bother me the most, they cover almost 100% of my stress triggers here. These are things that management decides are comfortable for the progress of the service, but that we understand are not the most appropriate for patient treatment (P2).

[...] *the things that we see and that do not depend on us. You're there doing your best and things don't go well, not because of you or the team, and that stresses me out [...] the patient waiting for a bed in the Intensive Care Unit after fifth, sixth, fifteenth post-surgery periods [referring to the sector that is not suitable for this patient profile] [...] you do everything because you want to see the patient well. Sometimes it ends up being a routine, which I think is really bad. There's no way not to give you anguish, not to be stressed, it's hard (P6).*

A joint display was created (Chart 1), with meta-inferences derived from participants' statements regarding quantitative results:

Chart 1 – Joint display representing the mixing of data and meta-inferences. Santa Maria, RS, Brazil, 2023.

QUAN* results	Qual† results	Metainferences
80.7% of perioperative nursing professionals with moderate to high stress.	Base unit: "Exposure to stressors in daily professional life and symptoms of generalized anxiety".	In the perception of those investigated, moderate and high stressors include the deficit of human resources and the lack of mutual support between co-workers, which causes work overload.
49.1% of perioperative nursing professionals with generalized anxiety present: 36.8% with moderate anxiety and 12.3% with severe anxiety.	Base unit: "Exposure to stressors in daily professional life and symptoms of generalized anxiety".	A significant portion of the professionals investigated had moderate anxiety. This outcome can lead to psychosomatic symptoms such as skin lesions and also an increase in food intake.
Strong and direct correlation between high level of stress and generalized anxiety disorder ($r=0.827$; $p^\ddagger=0.001$).	Central category: "Everyday professional life as a generator of anxiety and stress". Base unit: "Exposure to stressors in daily professional life and symptoms of generalized anxiety". Three categories of analysis: "Sometimes we cannot handle it: Work overload"; "Weaknesses in teamwork" and "Symptoms of anxiety and stress: environment and work routine repercussions".	In the statements, daily professional life was considered a severe/high stressor for the outcome of anxiety symptoms. Work overload was highlighted as a possible key factor related to stress and anxiety. There is a work scenario with factors that contribute to this overload, such as deficits in staffing, high demands for agility or performance and lack of standardization. Professionals find themselves stressed and anxious in the face of adversities and self-reported weaknesses in the perioperative work environment. These include little interprofessional collaboration and governance over work routines, and dichotomy between management and care practice. These weaknesses directly influence the work practice carried out by them. Nursing professionals working in perioperative units, stressed and anxious, can have an impact on patient safety, with occurrence of incidents. There is negative feedback between working conditions and patient safety. The lack of human resources for a high demand for work in the investigated units is a stressor that causes anxiety.
Professionals with very high ($n=3$; 100%) and high ($n=17$; 70.8%) stress had anxiety ($p<0.001$).		

*QUAN = Quantitative; †Qual = Qualitative; ‡p = p-value.

DISCUSSION

The present study showed a moderate and positive correlation between operation time/job tenure/activity and age. Although this relationship is expected, it is inferred from the fact that older professionals tend to have graduated longer and, therefore, have worked at the institution for longer. In this regard, they can acquire more confidence about their work activities, which is a protective factor against stress².

Regarding the severity of emotional disorders, it was identified that almost 50% of the professionals investigated presented symptoms of anxiety (36.8% with moderate symptoms and 12.3% with severe ones). This result was similar in nursing professionals in the hospital context who obtained a prevalence of 49.61% of anxiety². A study points out that work overload may be associated with illness, such as depression, stress, especially in nurses¹⁹, intensified, especially during the COVID-19 pandemic⁵⁻²⁰.

Similar evidence, however, with slightly smaller magnitudes, was obtained from 2,996 professionals working in health units. In this study, 29.6% of those investigated were classified as having severe anxiety symptoms and 17.9% with moderate anxiety. Hence, the severity of the symptoms was associated with the history linked to women, single/separated people who took care of children/elderly people and who worked more than 40 hours/week²⁰.

The findings of 80.7% of perioperative nursing professionals with moderate to high stress confirm that mental exhaustion can occur and, consequently, situations harmful to workers' health. A study in perioperative units observed that professionals presented high psychological demands and low control over them, which is characterized by highly demanding work and, therefore, can have adverse effects on workers' mental health⁴.

In the present research, the prevalence of stress and anxiety was similar among nurses and nursing technicians, which differs from the study in which these conditions were more prevalent in mid-level professionals²⁰. However, it is known that professional categories have different functions and workload, aspects that, consequently, have different impacts on their mental health.

The specific activities of the work environment in perioperative units are characterized by the need to master high-tech devices and equipment as well as the performance of complex procedures. In view of this, it must also be considered that, when it comes to a surgical unit, for instance, integrated work is necessary, which, in turn, demands from the team the ability to face situations arising from the closed environment, full of technologies complex²¹. Moreover, elective as well as emergency care is provided. These conditions require commitment from the nursing team, emotional balance, knowledge and specific skills in the technical and human relations areas²¹.

Qualitative results supported quantitative results and also provided contextual meanings of work, that is, aspects of perioperative care such as the environment and work process that predispose to the occurrence of stress and anxiety. These included work overload, weaknesses related to little interprofessional collaboration, little governance over work routines and the dichotomy between the management of macro processes and on-site care practice. Such aspects are related to the emotional disorders investigated.

It is understood that the occurrence of work overload in the perioperative nursing team can develop a state of overstimulation among professionals who, as a result, suffer in relation to this situation, since the demands on their performance exceed their capabilities. to process and comply with them. Such a context can cause damage to professionals' physical and mental health²².

A study on management challenges in perioperative care showed that the lack of human resources is one of the management difficulties and results in overload for workers²². However, a scoping review showed that the nurse's management activity, especially in the Surgical Center, is not disconnected from direct patient care, which gives this professional a strategic leadership position by articulating different knowledge and practices in this scenario. Furthermore, this professional goes from "aseptic isolation", inherent to operative care, to taking a leading role in the management of human and physical resources, aiming for patient-centered care. Therefore, the nursing team's work constitutes support for the processes that include surgical treatment implementation²³.

Furthermore, the professionals surveyed linked work overload with little interprofessional collaboration. The difficulty in working as a team may be associated with some barriers, such as lack of recognition of the work by the team, limited collaboration between professionals, which leads to dissatisfaction and distance between the team, conflicts generated in daily life and divergence between individual and collective objectives²⁴. Therefore, it is essential to overcome difficulties and promote teamwork, as its development among nursing professionals helps speed up the execution of activities, encourages effective communication, promotes safe care and qualifies the care provided²⁴.

In addition to this, it was noticed that professionals were stressed and anxious when facing adversities and weaknesses in the work environment, such as in the interface between management and assistance. It is worth highlighting that nursing management is related to the purposes of nursing work with the aim of planning, developing and coordinating activities²⁵. Based on this, management has an essential function to contribute and favor adequate and desirable conditions for the development of activities, promoting the well-being of patients and professionals as well as developing safe and quality care²⁵.

It is worth mentioning that perioperative nursing professionals were experiencing anxiety and stress, outcomes that can result in psychosomatic symptoms, such as skin lesions²⁶. In this case, the development of skin diseases may be linked to an increase in psychological burden, which suggests the need to understand this relationship. Thus, when the immune system is in imbalance resulting from stress, it can reflect on the interaction between immune cells and inflammatory mediators in the skin, resulting in dysregulation and increased susceptibility to skin diseases²⁶.

Furthermore, it was noticed that anxiety was related to increased food consumption for some participants. This is justified, since dysregulation of the hypothalamic-pituitary-adrenal axis can influence appetite imbalances. In addition to increasing appetite, it can encourage the intake of foods with excess fat, salt and sugar²⁷. Furthermore, a recent review of clinical studies suggests that excessive eating and unhealthy eating behaviors are associated with emotional eating, i.e., eating in response to emotional situations²⁸. From this perspective, they suggest that a balanced and healthy diet can promote health promotion and help reduce the risk of psychological disorders²⁸.

It was possible to observe that, while nursing professionals working in perioperative care are stressed and anxious, there may be negative repercussions on the safety of the patients they care for, which may lead to the occurrence of incidents. From this perspective, a study shows that higher prevalences of stress among nursing professionals increase the chances of incidents occurring⁴. It is understood that conditions such as stress and anxiety cause wear and tear on professionals and may interfere with the team's performance during care provision⁴⁻⁵.

Thus, the need to expand the relationship between satisfaction and quality of life at work and workers' health stands out, mainly because their physical and psychological conditions directly impact the quality of nursing care⁴ and, consequently, patient safety.

Given the results obtained, it is necessary to highlight the impact that the high prevalence of stress and anxiety can have on the hospital health system, which can increase absenteeism²⁹⁻³⁰, which is also among the factors that can compromise patient safety at an organizational level, predisposing to the loss of management quality and financial resources for the institution. Added to this, it is worth mentioning that, during the Covid-19 pandemic, absenteeism reached higher rates, with repercussions to this day²⁹⁻³⁰.

Because quantitative and qualitative methods were used, it became possible to minimize the inherent weaknesses of both, as the positive points of one approach compensated for the weaknesses of the other⁸. Limitations concern sample size and use of self-report measures. In the cross-sectional design, causalities cannot be inferred. Furthermore, the results obtained must be interpreted with caution and cannot be generalized, as they portray the context experienced by perioperative nursing professionals at a teaching hospital.

In summary, this study provides an in-depth understanding of the complex nature of the relationship between stress, anxiety and perioperative nursing professionals as well as subsidies for managers of health institutions to develop effective strategies to promote nursing teams' mental health and well-being of nursing teams. Furthermore, the study highlights the need for health institutions to adhere to management models with emotional support policies, especially strategies for managing and coping with stressors and anxiety triggers.

CONCLUSION

Mixed methods research was promising in that it analyzed the association between stress and anxiety, in the specific sample of the perioperative nursing team, in an in-depth and comprehensive way, revealing a relevant situational diagnosis and providing support for coping strategies for these problems. are developed and implemented. Thus, a higher prevalence of nursing professionals with moderate and severe generalized anxiety disorder was observed. Another alarming result is the prevalence of moderate to high stress, as well as the strong and significant correlation between anxiety and stress.

These findings are corroborated through testimonies, which revealed that the professionals investigated were stressed and anxious regarding aspects of the context such as the environment and work process, with a predisposition to the occurrence of stress and anxiety. Summing up, these included work overload, weaknesses related to interprofessional collaboration, little governance over work routines and the dichotomy between the management of macro processes and on-site care practice. Such situations are related to the emotional disorders investigated, and these directly influence the work practice carried out by them. Therefore, the results of this research demonstrate the complex relationship between stress, anxiety and perioperative nursing professionals.

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FUNDING INFORMATION

Financial support from the Brazilian National Council for Scientific and Technological Development (CNPq – *Conselho Nacional de Desenvolvimento Científico e Tecnológico*), Process 311451/2020-9, Brazil.

This work was carried out with the support of the Coordination for the Improvement of Higher Education Personnel (CAPES – *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*) – Financing Code 001, Brazil.

Financial support from the Institutional Program for Scientific Initiation Scholarships/FAPERGS, Process 21/2551-0000987, *Universidade Federal de Santa Maria*, Santa Maria, RS, Brazil.

APPROVAL OF ETHICS COMMITTEE IN RESEARCH

Approved by the *Universidade Federal de Santa Maria's* Research Ethics Committee, Opinion 3.897.861/2020, Certificate of Presentation for Ethical Consideration (*Certificado de Apresentação para Apreciação Ética*) 22328819.8.0000.5346.

CONFLICT OF INTEREST

There is no conflict of interest.

EDITORS

Associated Editors: José Luís Guedes dos Santos, Ana Izabel Jatobá de Souza.

Editor-in-chief: Elisiane Lorenzini.

TRANSLATED BY

Letícia Belasco

HISTORICAL

Received: 05 de outubro de 2023.

Approved: 08 de abril de 2024.

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