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Nursing workloads in the care provided to critically-ill patients

Cargas de trabalho da enfermagem no cuidado ao paciente crítico

Cargas de trabajo de enfermería en el cuidado del paciente crítico

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ABSTRACT

Objective: to characterize the profiles of the Nursing professionals working in the care provided to critically-ill patients, as well as to describe and typify their workloads. **Method:** a qualitative study developed with 30 participants between May and July 2024 at two intensive care units from a public hospital in southern Brazil. Laurell and Noriega's framework and Bardin's content analysis were used. The protocol was approved by a Research Ethics Committee. **Results:** there was predominance of women (70%), nursing technicians (86.7%) and temporary employment contracts (66.7%). The psychological loads were more evident, followed by the physiological and mechanical ones, reflecting emotional overload, musculoskeletal disorders and physical wear out. The biological, chemical and physical loads proved to be naturalized in the routine. **Final considerations:** the psychological loads constitute the core axis of these professionals' distress, revealing the impact exerted by work organization and by hierarchical relationships on mental health. There is an evident need for institutional policies targeted at health promotion and at work sustainability in intensive care.

Descriptors: Nursing; Intensive Care Units; Workload.

RESUMO

Objetivo: caracterizar o perfil dos profissionais de enfermagem que atuam no cuidado ao paciente crítico, descrever e tipificar suas cargas de trabalho. **Método:** estudo qualitativo, desenvolvido em duas unidades de terapia intensiva de um hospital público do sul do Brasil, com 30 participantes entre maio e julho de 2024. Utilizou-se o referencial de Laurell e Noriega e a análise de conteúdo de Bardin. Protocolo aprovado pelo Comitê de Ética em Pesquisa. **Resultados:** predominaram mulheres (70%), técnicas de enfermagem (86,7%) e vínculos temporários (66,7%). As cargas psíquicas foram mais evidentes, seguidas das fisiológicas e mecânicas, refletindo sobrecarga emocional, distúrbios osteomusculares e desgaste físico. As cargas biológicas, químicas e físicas mostraram-se naturalizadas no cotidiano. **Considerações finais:** as cargas psíquicas configuram o eixo central do sofrimento desses profissionais, revelando o impacto da organização do trabalho e das relações hierárquicas na saúde mental. Evidencia-se a necessidade de políticas institucionais voltadas à promoção da saúde e à sustentabilidade do trabalho em terapia intensiva.

Descritores: Enfermagem; Unidades de Terapia Intensiva; Carga de Trabalho.

RESUMEN

Objetivo: caracterizar el perfil de los profesionales de enfermería que prestan servicios en el cuidado de pacientes críticos, y describir y clasificar sus cargas de trabajo. **Método:** se realizó un estudio cualitativo en dos unidades de cuidados intensivos de un hospital público del sur de Brasil, con 30 participantes entre mayo y julio de 2024. Se utilizó el marco de Laurell y Noriega y el análisis de contenido de Bardin. El protocolo fue aprobado por el Comité de Ética en Investigación. **Resultados:** predominaron las mujeres (70%), seguidas de los técnicos de enfermería (86,7%) y el empleo temporal (66,7%). Las cargas de trabajo psicológicas fueron las más evidentes, seguidas de las cargas de trabajo fisiológicas y mecánicas, lo que refleja sobrecarga emocional, trastornos musculoesqueléticos y agotamiento físico. Se demostró que las cargas de trabajo biológicas, químicas y físicas se normalizan en las rutinas diarias. **Consideraciones finales:** las cargas de trabajo psicológicas constituyen el eje central del sufrimiento de estos profesionales y relevan el impacto de la organización del trabajo y las relaciones jerárquicas en la salud mental. Es evidente la necesidad de implementar políticas institucionales dirigidas a promover la salud y la sostenibilidad del trabajo en cuidados intensivos.

Descriptores: Enfermería; Unidades de Cuidados Intensivos; Carga de Trabajo.

INTRODUCTION

Nursing is present in all health care levels, which allows its professionals to perform in the most various contexts and complexity levels. In this scenario, Intensive Care units (ICUs) are devoted to high-technology density care, as they are targeted at individuals in critical conditions, requiring continuous assistance and pieces of equipment that ensure maintenance of their life and, eventually, presenting an imminent risk of death[1,2].

This article derives from the MSc Dissertation entitled "Nursing workloads in the care provided to critically-ill patients in intensive care units", presented at the Nursing Graduate Program of *Universidade Federal de Santa Catarina* (2024).

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High-complexity care requires a multiprofessional team that needs to be in line with the actual needs both of critically-ill patients and of the team itself, which demands effective and constant communication[3]. Although this means the involvement of various professionals, Nursing teams stand out for providing uninterrupted direct and indirect care, respecting the legal prerogatives set forth in the Law of Professional Practice, which determines the competencies inherent to each category, namely: Nurses, Nursing Technicians and Nursing Assistants.

However, the routine in a sector like an ICU is constant; nothing seems to come to an end, as the flow involves evaluating and re-evaluating patients. Concomitantly, there are the invasive and high-complexity procedures performed in the sector itself, in addition to external tests where mechanically ventilated patients need to be transported, for example. Thus, the existing demand for Nursing teams in terms of the assistance provided to critically-ill patients is chaotic. Given this, there are instruments such as the *Nursing Activity Score (NAS)* that quantify the workload to which these teams are subjected to; in other words, they assess the amount of work related to the number of hours required to perform those tasks[4].

However, a work time or volume indicator cannot reveal the complexity inherent to Nursing teams' work process by itself; it can neither determine the subjective and organizational impacts imposed on the professionals by the ICU routines. Therefore, a broader understanding about the work process can be used in order to bridge and expose this gap. This understanding is provided by the "Workloads" framework produced by Laurell and Noriega, where there is a semantic difference in addition to a spelling one, as it presents elements that interact dynamically with each other and with the workers' body, triggering adaptive processes that can culminate in wear out, understood as a reduction in a person's functional and psychosocial capacities[5].

This panorama is repeated in the academic productions that emphasize the quantitative aspect of Nursing care targeted at critically-ill patients, as workforce reductions exert impacts on these indicators and usually reflect the reality experienced. However, more than numbers, the Workloads approach deepens on the repercussion of ICU work in the professionals, encompassing the cognitive, emotional, physical and organizational dimensions and witnessing the work process from these professionals' perspective, allowing reflections about a situation that needs to be changed.

In order to contribute to the situation, this study aims at answering the following research question: "How do ICU Nursing professionals perceive workloads in the care provided to critically-ill patients?", with the objectives of characterizing the profile of the professionals working in the assistance provided to critically-ill patients at a general hospital from the South of the country and of describing and typifying the Nursing professionals' workloads in the care of critically-ill patients.

THEORETICAL FRAMEWORK

The term "workloads" was proposed by Laurell and Noriega; it considers workers' health as a social process, as well as the health-disease process in this context. During the period in which they created this model, workers' health was conceptualized according to the biomedical model, a consequence of the actions by specific agents (the risks) and their solution, centered on healing actions[5:7].

As the risks were represented by physical, chemical, biological and mechanical agents, actions of a preventive nature were implemented in companies and anything impossible to be encompassed in those actions was indemnified. Thus, the authors defined the historically-specific biopsychological connection, whose scientific objective is the relationship between the work process and health, based on Historical Materialism, as the Marxist view had defined the work process as a core category in the analysis of the social production of the biopsychological-human connection[5].

Therefore, workloads allow highlighting in the work process analysis those elements that interact dynamically with each other and with the workers' body, generating adaptation processes that are translated into wear out [...][5:110]. These elements were divided according to the materiality external to the workers' body (physical, chemical, biological and mechanical loads) and to their internal materiality (physiological and psychological loads)[5].

The authors defined them as follows:

The physical loads can be exemplified as noise and heat, which can be detected and even measured without involving the human body and, thus, they present external materiality to it. By acting on the body, [...] and interacting with it, they undergo a quality change, as they cease to be classified as "noise" or "heat" and become complex intrabody processes. [...][5:110]

The chemical (powders, smoke, fibers, vapors, liquids, etc.) and the biological (microorganisms) loads possess similar characteristics since, on the one hand, they have external materiality to the body and, on the other, they gain importance not by themselves but by the transformations they trigger in their interactions with bodily processes[5:110]

In a way, the mechanical loads are the most visible, as they turn into an instantaneous continuity break in the body: contusions, wounds, fractures, etc.[5:111].

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Although not tangible, the physiological and psychological loads gain existence through the human body, materializing themselves by means of "transformed bodily processes"[5]: The physiological loads, [...] For example [...] heavy physical efforts or uncomfortable positions cannot but be manifested if not through the body, [...]. Increased caloric consumption, blood redistribution, tissue expenditure and hypertrophy, etc. are examples of heavy physical efforts [...] Shift rotations [...], likewise, breaks in the basic physiological rhythms (Circadian cycles) and desynchronization[5:111].

Especially thought based on their somatic manifestations and not so much on the psychodynamic ones, the physical loads can preliminary be grouped into two large sets: one encompassing everything that generates psychological overload (in other words, prolonged tension); and another one referring to psychological underloads (in other words, impossibility to develop and make use of psychological abilities)[5:112].

Consequently, the authors reconstructed the workloads by analyzing their interactions in the work process global logic framework[5:113]. However, the need emerged to include the concept of wear out, which is the negative result of the intertwined actions of the workloads, conceptualized as a loss in the effective and/or potential, biological and psychological capacities[5:115] and taking place dynamically in the biopsychological process.

METHOD

This is a qualitative study of the interpretive exploratory type, linked to the theoretical framework about workloads proposed by Laurel and Noriega. The recommendations proposed in the *Consolidated Criteria for Reporting Qualitative Research* (COREQ) were followed during its conduction, as well as the *Sex and Gender Equity in Research* (SAGER) and Diversity, Equality, Inclusion and Accessibility (DEIA) guidelines.

Data collection was conducted in two intensive care centers that account for a total of forty beds at a public institution that is a reference in Cardiology, Cardiovascular/General/Bariatric Surgery, Medical Clinic and Psychiatry. In that place, the employees' activities are organized in two shifts (day and night), with an hour load of thirty weekly hours.

The participants were selected by means of intentional non-probability sampling, including the Nursing team (nursing assistants/technicians and nurses). A sensitization process was carried out through conversations with the team in the day and night periods for three days, encompassing all of the personnel's timetables.

The Nursing professionals included were those that had worked for at least one year in the ICU in both shifts; in turn, the professionals excluded were those that were away from work for any reason (including holidays). The sample universe was comprised by two nursing assistants, one hundred and six nursing technicians and twenty-three nurses; however, only six nurses, thirty-two nursing technicians and two nursing assistants were eligible.

Data collection took place between May and July 2024, in person, during the work shifts or remotely. The face-to-face interviews were conducted in a meeting room, with the sole presence of the interviewer and the participant, thus providing privacy to both of them. In the remote modality, the interviewer was alone with her webcam open, ensuring privacy to the interviewee.

The lead author, a nurse with professional experience in ICUs, led the interviews with the participants. As she works in the same context that was the research *locus*, she already knew the professionals, which favored approaching them and gaining their agreement to take part in the study. However, in order to minimize interpretation biases, this existing familiarity was analytically reflected during the research period, with notes in a field diary that was subsequently used for data triangulation and a discussion with the co-authors. The topic of the concerns experienced in the routine emerged. After the literature review, it was in fact evidenced that there was a gap regarding the impact of a broader understanding about the work process and the potentialities of the framework chosen to explain them.

A semi-structured script was used. It contained questions that favored constructing a sociodemographic profile of the professionals, in addition to open and closed questions about their work and related to the workloads. The interviews lasted a mean of 22.78 minutes, were conducted at a single moment, recorded in an electronic device (*smartphone*) and transcribed in full into Microsoft Word® by the lead author, identifying each participant with the NA, NT and NUR acronyms for assistants, technicians and nurses, respectively, followed by a number indicating the corresponding interview (NT1, NUR1).

The transcriptions were returned to the participants for validation; when necessary, adjustments were made for such validation, and notes about the interviews were made once this process had ended. The interviews were closed after due discussions with the co-authors evidenced data saturation, as no new information was added. The non-participant observation was conducted in the same period, totaling 35 days; the records that were initially made in a notebook were fully transcribed into Microsoft Word®.

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Data analysis followed the stages proposed by Bardin's Content Analysis as linked to Laurell and Noriega's theoretical framework, with coding in charge of the lead author and reviewed by a co-author with more experience in qualitative research, in order to ensure analytical reliability. Initially, the exhaustive reading of the transcriptions corresponding to the interviews and the observation records resulted in units of meaning referring to the perceptions about workloads. Subsequently, the codes were inductively organized into dimensions that reflected the macro-categories represented by the theoretical framework. Then the codes were grouped into subcategories that dealt with the direct relationship between the loads and the testimonies presented or the observation data. Finally, in the data interpretation stage, code groups were created and regrouped when necessary to better characterize the loads and the corresponding observation testimonies/excerpts.

Data triangulation allowed each category to synthesize the participants' perceptions linked to their work process by means of the interviews, confronting them with the observations made and with the conceptual categories.

The operationalization process was performed in the Atlas.ti® software (web version), allowing systematization, traceability and visualization of the codes emerging from the testimonies and grouping them into categories validated by an expert in the software.

The research protocol was approved by the Research Ethics Committee of a university from the region and was granted a favorable opinion on February 28th, 2024. All the participants signed a Free and Informed Consent Form.

RESULTS

Three nurses, twenty-six nursing technicians and one nursing assistant agreed to take part in the study. The refusals were due to insufficient time and to disinterest in the topic in the case of three nurses, six nursing technicians and one nursing assistant.

The discrepancy between nursing technicians and nurses resulted from the predominance of fixed-term employment contracts, which limited the number of nurses suitable to be included in the study and, consequently, this may affect the perception about workloads according to their role.

In the analysis of the interviews, the units were grouped into nineteen initial codes that represented ideas from the testimonies, such as overload, night shift, exhaustion and demands. The macro-categories gave rise to the chemical, physical, physiological, mechanical, biological and physical loads, constituting elements of the study interpretive core. Among others, the categories included physical load related to heavy pieces of equipment.

In the data triangulation stage, the conceptual categories went against the information obtained from the interviews at specific moments, as they contradicted the participants' testimonies for not acknowledging the existence of certain workloads.

The presentation of the results stage was organized according to the profile of the workers that comprise the Nursing team and to the description and typification of the workloads according to their perceptions. The origin of the categories comes from the deductive analysis of the codes in order to reflect Laurell and Noriega's workloads framework.

Profile of the workers that comprise the ICU Nursing team

Table 1 presents the characterization data corresponding to the 30 nursing professionals.

Among the nursing assistants/technicians and nurses, 70% self-declared as women in the open question with free reference as for sex or gender. As several employment contracts had ended before the data collection period, there was certain discrepancy in the participation of nurses, as they only represented 10% of the professionals, whereas the nursing technicians accounted for 86.7% of the interviewees. Predominantly, the most frequent schooling level corresponds to this category, with Complete Technical Education (40%); however, 20% of the participants had Complete Higher Education. Fixed-term employment contracts were mentioned by 66.7% of the interviewees, representing the ICU most common regime.

The participants' hour load is thirty weekly hours; however, 23.7% work between 49 and 60 hours during the same period, and only 20% of the interviewees stated having another employment contract. Regarding their time in Nursing, 50% of the interviewees stated having worked for more than ten years, specifically in the ICU, whereas 70% have worked for one to five years.

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Table 1: Sociodemographic characteristics of the Nursing team (n=30). Florianópolis, SC, 2024.

Variable		n	f(%)
Gender/Sex	Women	21	70%
	Men	9	30%
Age (years old)	20 – 30	11	36.7%
	31 – 40	8	26.7%
	41 – 50	7	23.3%
	51 – 60	4	13.3%
Profession	Nurse	3	10%
	Nursing Technician	26	86.7%
	Nursing Assistant	1	3.3%
Highest schooling level	Complete High School	1	3.3%
	Complete Technical Education	12	40%
	Complete Higher Education	6	20%
	Incomplete Higher Education	7	23.3%
Type of employment contract	Fixed-term	20	66.7%
	Statutory	10	33.3%
	Hour load in the institution		
	30 weekly hours	30	100%
Weekly work schedule (hours)	12 – 24	4	13.3%
	25 – 36	4	13.3%
	37 – 48	2	6.7%
	49 – 60	7	23.3%
	61 – 72	2	6.7%
	73 – 84	1	3.3%
	Flexible	2	6.7%
Another employment contract	Yes	6	20%
	No	24	80%
Time active in the profession (years)	1 – 5	6	20%
	6 – 10	9	30%
	10+	15	50%
Time working in the ICU (years)	1 – 5	21	70%
	6 – 10	4	13.3%
	10+	5	16.7%

Description and typification of the workloads

According to Laurell and Noriega's view, workloads are elements that interact with each other and gain materiality in the workers' body, translating themselves into processes that generate adaptation and wear out. They can be external or internal, varying according to each person's work process. Table 2 presents the workloads as perceived by the professionals.

Table 2: Distribution of instances corresponding to workloads as perceived by the ICU Nursing professionals (n=30). Florianópolis, SC, Brazil, 2024.

Loads	Examples from the codes	Instances (n)	f (%)	Examples from the excerpts
Psychological	Anxiety, exhaustion, demands, overload	159	72.6	*It's because the issue of the environment, like I said, that mental overload of you sometimes not having support from your peers to do what needs to be done and also about dealing with that issue of the patients' health and diseases. (NT13)*
Physiological	Tiredness, night shift	42	19.2	*The working conditions, sometimes, it's somewhat exhausting. Even during the day, when I was there, I mean, it's kinda inhuman sometimes, do you understand? (NT21)*
Mechanical	Weight	16	7.3	*I know that a peer of mine... he got hurt, the spine, the shoulder, the arm. (NT11)*
Biological	Sharps	1	0.5	*I ended up having an accident involving sharps here in the hospital. I opened a CAT, made all the tests and yesterday I learned that the patient has Hepatitis C. (NT13)*
Physical	Noise	1	0.5	*Have you already noticed that you knock, knock here, and look?, nobody cares [...]. (NT25)*
Chemical	-	0	0	*The professionals are in direct contact with the most varied medications: antibiotics, antineoplastics (Observation note).*

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The external loads are biological (microorganisms), chemical (powder, smoke, vapor, liquids), mechanical (contusions, fractures, wounds) and physical (heat, noise, measurable phenomena that become complex intrabody processes due to the workers' continuous exposure). The internal loads are physiological (heavy physical efforts, shift rotation) and psychological, which are subdivided into overload (prolonged tension) and underload (limited development of the workers' psychological capacity and creativity).

Nineteen initial codes emerged from the analysis. These codes were grouped according to the dimensions proposed by Laurell and Noriega. The instances were distributed as per Table 2, with predominance of the physical loads according to the participants' perceptions.

Biological loads

For being a high-complexity sector, biological loads are constantly found in the ICU; however, only one participant perceived them:

> *I ended up having an accident involving sharps here in the hospital. I opened a Work-related accident report (Comunicação de Acidente de Trabalho, CAT), made all the tests and yesterday I learned that the patient had Hepatitis C. And my results were negative [...] I'm exposed to many risks. (NT13)*

Despite the low incidence regarding the biological loads, the ICU everyday practice evidences the professionals' exposure through their work process. This was verified both in the observations, with direct contact with secretions and liquids when washing surgical wounds, tracheostomies, central catheter punctures, hemodialysis catheters, low-back punctures, IAP punctures, drain placements, dressings and small and large surgical approaches in the sector (of an emergency nature) and in direct Nursing care, such as aspiration in patients using open and closed systems, drain debit disposal and emesis, among others, so as to reinforce this dimension.

Chemical loads

The professionals stated not perceiving the chemical loads to which they are exposed; however, the care routines materialize direct contact with the preparation and administration of antimicrobials of the most varied spectra without using gloves or masks to ensure due protection for the professionals.

Physical loads

The ICU has various pieces of high-technology equipment, both for procedures and for continuously monitoring the patients; the professionals' exposure to the endless noise from monitors, infusion pumps and mechanical ventilators was constant. However, only one professional identified noise as a workload and, consequently, the discomfort it meant to him, as indicated in the excerpt below:

> *Have you already noticed that you knock, knock here, and look?, nobody cares. (NT25)*

The invisibility of the physical loads emitted by mobile X-ray devices also stood out, even when such device is frequently used in the sector.

Mechanical loads

The professionals perceived the mechanical loads as a result of the physiological ones (weight and complexity of the critically-ill patients under their care) due to the harms they caused to their health. The intertwined actions of these loads evidence the adaptation and wear out process they are subjected to:

> *I also think it's due to excess weight, you lift and carry and then, spine problems, shoulder problems. I've already had a surgery, already broke a tendon here in the hospital, I broke a tendon, where I have two nails. I also had Carpal tunnel decompression. [...] A spine hernia too. And it's all related to work itself. (NT12)*

> *It's mostly shoulder or wrist. And it's in the low back in my case, a hernia. Developed... for pulling, at that time, when I worked in the other ICU up there, the patients weighted 180 kg, 150 kg. (NT26)*

Thus, the work process culminates in musculoskeletal disorders, a factor that was corroborated during the work routines, as the demand of critically-ill patients is high (most of them are obese) and care measures such as decubitus change every two hours, bed baths, repositioning (seating the patients down at the bedside or in a chair), among others, generate daily physical efforts in the Nursing team members. In addition to that, the beds have immobilizers (pieces of equipment comprised by a column and two arms with two joints) that are disproportionate to the space available and prevent the professionals from moving in a natural way, resulting in contusions and lacerations during direct assistance to the patients.

Physiological loads

The physiological loads emerged in relation to the shift regime, the night period and the unavoidable physical efforts required to assist critically-ill patients:

> *It's physical then, because the patients are very heavy. [...] the issue of force. (NT4)*

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> *I can't sleep, I have insomnia, I go to bed at three o'clock in the morning. [...] I began to have more insomnia when I started working more shifts, more PHs. (NT24)*
>
> *Of course that what they did here, it's the counter that turned out to be too low for me, for the medications and for the computers, placing that step like that, I can't push much. It's the same in the cafeteria, the chairs are too close to each other. (NT25)*

Some of the interviewees emphasize lack of ergonomics in the sector and it was noticed how this affects the professionals during their work activities, as the Nursing station counter are disproportionate for most of them and there is a step on the computer tables that prevents them from getting close to the keyboards to type or to use the electronic medical charts system.

Psychological loads

The psychological loads were frequently perceived by the interviewees, with overload as a result of prolonged exposure to tensions and the uninterrupted and accelerated pace inherent to the ICU standing out, as presented in Figure 1.

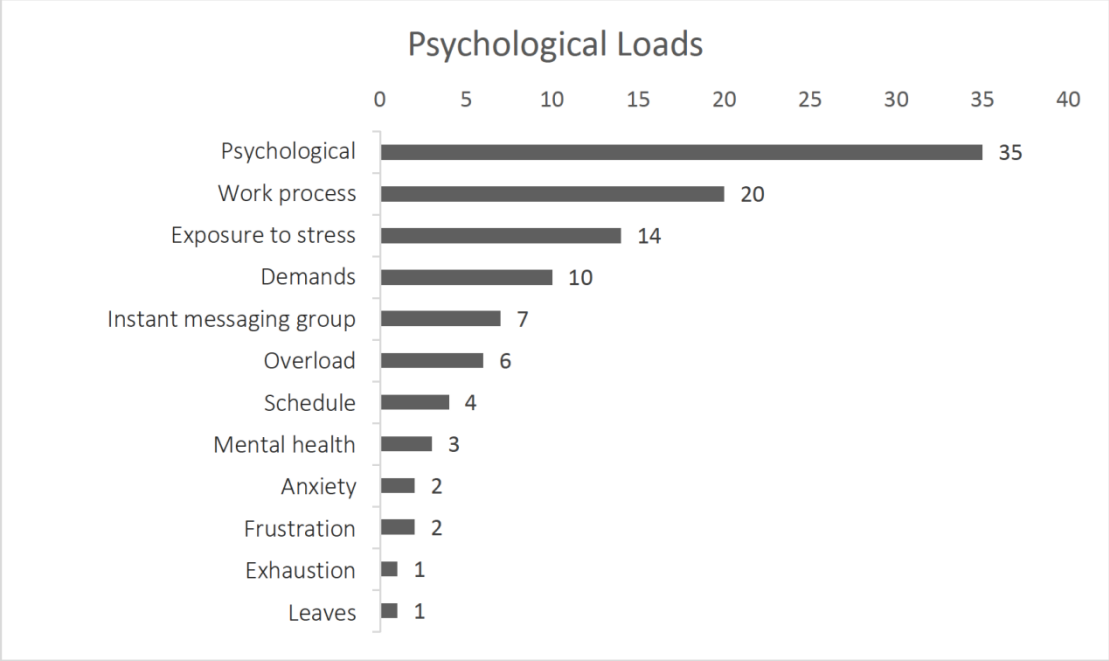

Figure 1: Frequency corresponding to the instances related to psychological loads as perceived by the ICU Nursing professionals. Florianópolis, SC, Brazil, 2024.

Thirteen initial codes emerged in this dimension; they encompass the psychological impact, the routines inherent to the sector and professional hierarchy, evidencing that the emotional distress from specific events is present in the organizational structure. An atmosphere characterized by constant pressure and oppression was made evident, largely due to the coordination area:

> *Perhaps what affects a little is the psychological part... of some unnecessary demands. [...] The issue about the way of speaking, about the demands, in relation to... mainly to our coordination area. (NT6)*
>
> *You work exhausted, you work tired, you work... it's not only physical tiredness, you know? It's stress, exhaustion, you know? I think that this is the heaviest thing here in the ICU now, you know? (NT13)*
>
> *I feel as if I had somebody always looking at me... mainly when the coordinator is in that glassed cube, dear God... he's always... is everyone working?, why does he keep doing that? It's totally demotivating. (NT14)*

There is also frequent concern regarding demands via instant messaging apps:

> *Kinda, you work your shift right, but you're going home thinking, darn, did I just forget something? It can be like, ah, I forgot to input the date into the computer, something like that, a detail that's not going to harm the patient. Then I keep thinking, will they put that in the group? Or are they going to call me to talk? (NT7)*
>
> *But it's an issue of demands, unnecessary demands, groundless, out of place. [...] That issue of having that little quarrel day and night, that ah, they saw something during the day, already take a picture, already send it to the group, there's already "lambada" in the group. (NT10)*

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The care provided to critically-ill patients is also a source of psychological loads, as there are too many physical and emotional requirements linked to this patient profile:

> *Then that meant a problem for me… a lot of difficulties with the patients dying, because I ended up bonding with them and a patient died, it was as if I had lost a relative. And then that affected me a lot because I had to take medications. (NT13)*

Even so, it was possible to perceive how the professionals' psychological distress is trivialized:

> *A peer ends up internalizing a lot of problems and just ends up with a headache, a little anxiety, irritability, but nothing that serious. (NUR1)*

Analyzing each dimension in isolation in the thirty interviews conducted by counting the codes made in the Atlas.ti® software, all the participants perceived the psychological loads (n=30; 100%), followed by the mechanical (n=12; 40%) and by the physiological (n=3; 10%) ones. Although the physical and biological loads were not much mentioned by the professionals (n=1; 3.33% each), they were constantly observed during their work performance. The loads evidence that psychological distress and bodily efforts are the main wear out axes perceived by the ICU Nursing professionals.

DISCUSSION

The historical feminization of the Nursing profession is reflected in the predominance of women among the participants, as well as in the representation of the country's economic scenario through the notable presence of young individuals[6,7]. Nevertheless, the health sector precarization is widely marked by fixed-term employment contracts, evidencing the instability imposed by the labor market on this professional category and corroborating the findings detected in this study[8].

Paradoxically, these professionals have been active for several years in Nursing and are experienced in the care of critically-ill patients, which reflects the dilemma of the proper and necessary knowledge for their activities and the still limited institutional recognition. Due to the prevailing hiring modality in the institution, there was certain discrepancy among the participants' professional categories, with predominance of nursing technicians, which may exert an influence on the perception about workloads.

The socioeconomic determinants intertwined in the 30-hour workday reveal a paradox, as the formal reduction in the time spent from their workforce does not result in less wear out because their low purchase power imposes extra hours and/or the need for multiple employment contracts[9]. The work regime precarization is worsened due to the absence of benefits, also reflecting gender inequalities especially in the case of mothers, who lack institutional support when their children are ill. Thus, the combination of these factors evidences the direct repercussion exerted by the socioeconomic conditions on Nursing professionals' physical and psychological wear out.

This panorama grounds the social determinants of the work process in health; consequently, it reflects the reality that workloads do affect these professionals' health. The professionals' low perception regarding the biological and chemical loads show that risks are naturalized in Nursing assistance; however, this does not mean that they are not exposed to them, as verified in this study[10,11]. Such invisibility evidenced how the work process is structured in the institution; the professionals are primarily oriented toward meeting the care demands to the detriment of the technical-scientific dimension inherent to their practice. The chemical loads also denote silent triviality, as medications and healing agents are routinely handled without raising any concern about the harms resulting from their interaction with these products, a practice that is both present and recurrent in other settings where Nursing teams develop their activities[14].

The Nursing team vulnerability is corroborated by other studies due to intense exposure to these agents, inherent to their work process[13-15]. This reality reveals institutional weakness in terms of protection and permanent education, as Personal Protective Equipment (PPE) items, odd in this dimension, are seen as props or as a normative requirement and not as a conscious self-protection measure. According to Laurell and Noriega, this dissociation translates workers' alienation, as everyday actions supersede technical-scientific knowledge and result in higher incidence of accidents among these professionals.

Although noise and exposure to radiation are incorporated into the ICU routine, the workers' low perception regarding these physical loads unveils their progressive adaptation to unhealthy conditions. Continuous exposure to situations that generate adaptation eventually becomes tolerance and renders risk invisible[5]; contrary to that, there are predominantly no allusions to these agents by professionals in the literature encompassing ICUs as setting[13,14].

However, the professionals easily recognize the mechanical and physiological loads, as they trigger immediate manifestations such as lesions, fatigue and musculoskeletal disorders, becoming more concrete to the workers' body. Direct care for critically-ill patients emerge as with the potential to cause lesions in Nursing team members, predominantly work-related musculoskeletal disorders (WRMSDs), extensively corroborated in the national and international literature[14,15]. Associated with these conditions, inadequate staffing and ergonomic deficiencies in the

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work environment, the professionals also present physical overload. Therefore, a number of adaptation strategies used by the workers to ensure care continuity are evidenced, which can lead to the onset and/or worsening of their lesions and to disabling limitations in extreme situations[15-18].

In this sense, the physiological loads are a consequence of this scenario and materialize internally in the workers' body after chronically reacting to the institutional demands, with repercussions such as sleep irregularities, fatigue or need for drug therapies. For being a profession with uninterrupted activities, it is known that hospital institutions implement shift regimes; in addition, the literature widely corroborates the impact of night shifts on neuroendocrine regulation and, consequently, on these professionals' Circadian rhythm[19,20].

The materiality of these loads can empower workers to vindicate adequate ergonomic conditions for them to perform their duties, which implies the need to review or formulate institutional policies targeted at promoting workers' health. To such end, it is necessary that the managerial spheres acknowledge the impact exerted by these loads on the professionals' disease process and adopt an active role in devising healthy work environments.

The intertwined actions of the mechanical and physiological loads inevitably affects the professionals' psychology, as their body (tired from physical overload and the physiological changes resulting from shift work) reflect the wear out process in mental illness. Continuous stress, permanent surveillance and the assistance pressure inherent to the intensive care environment turn into psychological distress and are materialized as anxiety, irritability, demotivation and exhaustion. Under prolonged exposure to these conditions, the professionals resort to strategies to adapt, with the possibility of triggering disorders such as Burnout Syndrome, presenteeism and coping[22]. They are alien to their own work process in a way that they are not capable of recognizing their environment as producing/triggering their illness; they are also not aware whether they are subjected to this process[23], which was shown in this study due to them not recognizing some workloads to which they are exposed.

This condition is worsened by the use of instant messaging apps, as it emerges as a work extension, turning free time into productive time and perpetuating exposure to institutional tension. The trivialization of psychological distress is materialized during the professional routine, the quality of the assistance provided is impaired, the patient-family member dyad ceases to be provided comprehensive care and technical actions become mechanical, extinguishing the human, empathetic relationship inherent to care[14]. Given this, it is imperative for institutional managers to recognize such implications and implement communication protocols that delimit the work-rest dichotomy, ensuring respect for the professionals' mental health and for the quality of the assistance provided.

This research study unveils the wear out process undergone by the Nursing professionals in the face of the intertwined actions of their workloads, which exceeds the spheres of the hours devoted to work and of the physical aspect exclusively, also affecting the psychological dimension. That dynamics reflects the institutional and social work organization, in which authoritarian and hierarchical relationships, care demands and scarcity of suitable conditions generate a scenario marked by distress and alienation, preventing the professionals from working autonomously. In order to understand this reality experienced by ICU Nursing teams, it is necessary that managers acknowledge the human and political value of care, also extending it to those who provide such care, so as to offer a work environment characterized by respect, dignity and sustainability for Nursing teams.

Study limitations

The study has limitations regarding the characteristics of its sample, marked by disproportion in terms of the participating categories. The research inclusion criteria and the institution's workforce hiring modality itself are due to this, with the possibility of having influenced the perception regarding workloads, especially in the nurses' view. For being an institutional clipping, the results cannot be generalized to other contexts; but they can provide important insights for the phenomenon in intensive care units; future research in other contexts is recommended.

FINAL CONSIDERATIONS

This research study evidenced that the professionals providing care to critically-ill patients reproduce the nationwide profile of the category: predominance of women, long workdays and health sector precarization through temporary employment contracts. Despite the thirty-hour work schedule, the need for additional income prolongs the professionals' productive time, increasing their physical and emotional overload.

The biological, chemical and physical loads proved to be naturalized in the professional routine; in turn, the mechanical and physiological loads were widely acknowledged in the form of ergonomic inadequacies and insufficient staffing, reflecting the materiality of body wear out. On the other hand, the psychological loads emerged as the core axis of these professionals' distress, denoting continuous stress, authoritarian and hierarchical relationships and rest time invaded by communication technologies.

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The findings ratify the need to rethink the working and management conditions in intensive care environments, acknowledging the importance of the technical-scientific dimension of care and the human dimension of those providing it, in order to corroborate that healthy work environments for the Nursing practice are maintained. To such end, it is suggested that continuing training programs are adopted, as well as ergonomic improvements, institutional communication protocols and psychosocial support for the professionals. It is also emphasized that new research studies should explore the psychological implications of using communications technologies and organizational strategies capable of reducing mental illness in high-complexity units.

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Authors' contributions

Conception, F.B.S. and E.C.N.F.; Methodology, F.B.S. and E.C.N.F.; Software, F.B.S. and E.C.N.F.; Validation, F.B.S. and E.C.N.F.; Formal analysis, F.B.S. and E.C.N.F.; Investigation, F.B.S. and E.C.N.F.; Resources, F.B.S. and E.C.N.F.; Data curation, F.B.S. and E.C.N.F.; Writing, F.B.S., E.C.N.F., L.C.F.B., J.M.A.V.S. and E.J.S; Review and editing, F.B.S., E.C.N.F., L.C.F.B., J.M.A.V.S. and E.J.S; Visualization, F.B.S., E.C.N.F., L.C.F.B., J.M.A.V.S. and E.J.S; Supervision, F.B.S., E.C.N.F., L.C.F.B., J.M.A.V.S. and E.J.S; Project management, F.B.S., E.C.N.F., L.C.F.B., J.M.A.V.S. and E.J.S.

Use of Artificial Intelligence tools

We state that no Artificial Intelligence tools were used in writing the manuscript entitled "Nursing workloads in the care provided to critically-ill patients".