



# The impact of work-related stress on nursing: physical activity as a preventive strategy

## El impacto del estrés laboral en enfermería: actividad física como estrategia preventiva

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Submitted: 19-06-2024 | Revised: 18-09-2024 | Accepted: 02-01-2025 | Published: 03-01-2025

### ABSTRACT

Work-related stress in nursing was identified as a growing problem that significantly affected the physical, emotional, and psychological health of healthcare personnel, especially in high-demand settings such as the city of Rosario, Argentina. This phenomenon manifested itself as a response to various internal and external factors, including work overload, structural conditions in healthcare centres, multiple jobs, and family responsibilities. It was highlighted that this situation reduced the quality of the service provided, increased the risk of errors and generated multiple physical and emotional symptoms, ranging from gastritis to anxiety or depression. In Rosario, where healthcare demand was intensified by the influx of patients from other localities, nurses were exposed to long working hours, staff shortages, demanding physical conditions, and frequent musculoskeletal injuries. These conditions exacerbated stress and affected the safety of both workers and patients. Against this backdrop, physical exercise was analysed as an effective tool to counteract the effects of stress. Studies showed that exercise strengthened the immune system, regulated the neuroendocrine system and improved overall well-being. However, it was noted that various personal and work-related obstacles made it difficult to exercise regularly. Finally, the need to implement institutional policies that promote physical exercise, adapted to the reality of nursing staff, was emphasised in order to preserve their health and ensure a safer and more humane working environment.

Keywords: Work-Related Stress; Nursing; Rosario; Physical Exercise; Mental Health.

### RESUMEN

El estrés laboral en enfermería fue identificado como un problema creciente que afectó significativamente la salud física, emocional y psicológica del personal sanitario, especialmente en contextos de alta demanda como la ciudad de Rosario, Argentina. Este fenómeno se manifestó como una respuesta a diversos factores internos y externos, incluyendo la sobrecarga laboral, las condiciones estructurales de los centros de salud, el pluriempleo y las responsabilidades familiares. Se destacó que esta situación redujo la calidad del servicio prestado, aumentó el riesgo de errores y generó múltiples síntomas físicos y emocionales, desde gastritis hasta ansiedad o depresión. En Rosario, donde la demanda sanitaria fue intensificada por la afluencia de pacientes de otras localidades, los enfermeros estuvieron expuestos a extensas jornadas, escasez de personal, condiciones físicas exigentes y lesiones musculoesqueléticas frecuentes. Estas condiciones agravaron el estrés y afectaron la seguridad tanto del trabajador como del paciente. Frente a este panorama, se analizó el ejercicio físico como una herramienta eficaz para contrarrestar los efectos del estrés. Estudios mostraron que el ejercicio fortaleció el sistema inmunológico, reguló el sistema neuroendocrino y mejoró el bienestar general. Sin embargo, se advirtió que diversos obstáculos personales y laborales dificultaron su práctica regular. Finalmente, se subrayó la necesidad de implementar políticas institucionales que promuevan el ejercicio físico, adaptadas a la realidad del personal de enfermería, con el fin de preservar su salud y garantizar un entorno laboral más seguro y humano.

Palabras clave: Estrés Laboral; Enfermería; Rosario; Ejercicio Físico; Salud Mental.

## INTRODUCTION

In the field of health, one of the fundamental pillars for ensuring quality care is the physical, emotional, and psychological well-being of healthcare personnel. Within this group, nursing staff represent one of the populations most exposed to situations of work overload, chronic stress, and professional burnout, due to the highly demanding nature of their duties. Stress in nursing has become a persistent and growing problem that impacts not only the health of professionals but also the safety and quality of patient care. This phenomenon is a complex response to multiple risk factors, both internal and external, that exceed personal resources to deal with them effectively.

In this context, the city of Rosario, Argentina, has become a paradigmatic setting due to its high population density, its role as a healthcare center for surrounding areas, and the high demand for care that falls on its healthcare institutions. This situation intensifies the challenges faced by nursing staff, who often have to work long hours under demanding physical conditions, structural limitations of the healthcare system, and personal factors such as multiple jobs or family responsibilities. All of this creates an environment prone to the onset of stress syndrome, the consequences of which can translate into physical, emotional, cognitive, and behavioral symptoms, affecting professional performance and the quality of service provided.

Given this problem, it is imperative to develop preventive and intervention strategies that promote the overall health of nursing staff. Various studies have identified physical exercise as one of the most effective tools for mitigating the negative effects of stress, due to its benefits for the musculoskeletal, cardiovascular, immune, and neuroendocrine systems, as well as its ability to improve mood, self-esteem, and stress coping. In this context, it is important to explore the relationship between physical activity and stress levels in nursing professionals, not only as a protective factor, but also as a practice that promotes occupational health. This study therefore aims to investigate the influence of physical exercise on reducing work-related stress in nurses, with a special emphasis on the current situation in Rosario, providing evidence and a basis for designing intervention programs that respond to the real needs of this key population in the healthcare system.

## DEVELOPMENT

Stress is a growing problem among healthcare professionals, particularly affecting nurses who face a variety of physically and emotionally demanding situations. It is therefore considered one of the most common syndromes in the healthcare workplace, impacting all staff.

It is essential to promote and highlight habits and behaviors that can be useful in reducing stress, using techniques such as cognitive behavioral therapy, which focuses on identifying and managing intrusive thoughts that affect behavior and emotions. According to Hidalgo, Casas, & Monsalve(1), stress inoculation seeks to develop skills to manage stressful situations through repeated exposure to them. This is because the different areas in which the work is carried out present various physical challenges that require staff to be in optimal physical and emotional condition. Patient care requires various maneuvers and interventions that involve intense physical activity, such as CPR, patient mobilization, adapting the environment, hygiene, and patient transfer, among others.

However, not all nurses can devote their free time to physical exercise, as many have multiple jobs due to low pay; others are studying or training, and some are parents who want to spend their free time with their families and educating their children. As a result, physical exercise takes a back seat, even though the lack of exercise can mean a decrease in worker and patient safety.

Therefore, physical exercise becomes a tool, as according to various studies it helps protect against the harmful effects of stress, reduce stress levels, and improve physical fitness. This allows nurses in this area to perform effectively and maintain optimal health, while also reducing stress levels and increasing staff and patient safety.

### Current situation in the city of Rosario, Argentina

According to official data from the National Institute of Statistics and Census of Argentina, the population of Rosario is approximately 1 342 619 inhabitants,(2)who require care from health professionals, including nursing staff. Due to the presence of several second and third level health centers in Rosario, the demand for medical care is increased. This is because Rosario not only serves its own population but also receives patients from nearby towns. Since this city has more specialized hospitals than the surrounding areas, it has become a destination for those seeking

more advanced or specific treatments, resulting in a significant increase in the flow of patients requiring care from nursing staff. This constant flow of patients directly impacts the staff's ability to provide care, creating both physical and emotional overload and leading to significant conditions such as stress.

Nursing staff are exposed to a variety of multifactorial risks, including biological, psychological, social, environmental, personal, and physical risks, among which musculoskeletal injuries stand out. These injuries mainly affect the joints of the shoulders, hands, ankles, and feet. These are often attributed to activities such as standing and walking for long periods of time, or lifting heavy loads, which can cause neck pain. Manual handling of loads can also trigger injuries to the lumbar spine, causing low back pain and, in some cases, spinal cord injuries. The highly demanding nature of nursing work in terms of muscle use is highlighted by the high incidence of musculoskeletal injuries compared to other occupations in the health sector.<sup>(3)</sup> These risks are further exacerbated by socioeconomic conditions in healthcare facilities, as well as long working hours and overtime. The fast pace of work, staff shortages, poor environmental conditions such as inadequate lighting, cramped furniture (leading to poor body mechanics), and the work-related stress involved in handling loads and repetitive movements all contribute to this problem. Constant physical demands and inappropriate postures maintained for long periods also increase the risk of injury, including both manual handling and lifting, as well as the risk of falls.<sup>(4)</sup>

The importance of considering stress syndrome as a concern in the nursing field lies in the fact that it is the most common occupational syndrome in the world, affecting a large part of the working population and generating particularly serious and visible consequences for healthcare professionals.

### **The notion of stress**

It is difficult to define stress due to its multifactorial, sociocultural, and environmental nature and the way it is perceived. However, Lazarus & Folkman<sup>(4)</sup> provide an approach, defining it as a particular relationship between the individual and the environment that is evaluated by the individual as threatening or overwhelming their resources and endangering their well-being. Labrador<sup>(6)</sup> considers that a person is under stress when they have to cope with environmental demands that they believe exceed their resources, so that the subject perceives that they cannot respond effectively. In this type of situation, the person emits a stress response consisting of a significant increase in the physiological and cognitive activation of the organism, which, in turn, prepares itself for intense motor activity. These definitions are the closest to the problem addressed in this research work.

### **Psychological-emotional impact**

This syndrome can manifest itself with both physical and psychological symptoms. The psychological symptoms of stress reduce the ability to concentrate, increasing the risk of making mistakes which, in the nursing context, can have a major impact on patient safety, as well as causing a decrease in decision-making speed and memory. An increase in the frequency of anxiety has been observed, with signs and symptoms such as intrusive thoughts, fear, emotional exhaustion, and exhaustion from work; depersonalization, development of negative, cynical, or distant attitudes toward service or care recipients, lack of personal fulfillment, tendency to evaluate one's own work negatively with feelings of inadequacy and low self-esteem; irritability, or reduced sexual desire, among others. If not treated in time, these symptoms can lead to depression and emotional instability.

### **Physical impact**

Among the most representative physical symptoms are gastritis, irritable bowel syndrome, high blood pressure, immunosuppression, body tremors, alopecia, menstrual cycle imbalances such as oligomenorrhea, heart disease, bruxism, muscle tension, changes in appetite, gastrointestinal imbalance, diarrhea or constipation, insomnia, among many others.<sup>(7)</sup> Considering the above, we can see how this can directly affect patient safety, as we are compromising the measures implemented by nursing staff to ensure the protection and well-being of patients during care. Practices and protocols designed to prevent errors, reduce risks, and minimize the possibility of adverse events during care depend crucially on the effectiveness of the staff.<sup>(8)</sup>

Work-related stress affects not only the emotional and physical health of nurses, but also their daily habits. A cross-sectional study conducted in two health centers providing outpatient services in Bogotá, Colombia, revealed how healthcare personnel resort to harmful habits to cope with

high levels of stress. Forty percent of nurses consume caffeine to stay awake during the workday, while 60% report consuming alcohol and 29% report consuming antidepressants, among other psychoactive substances, either during or after work as a mechanism to cope with work-related stress. It is important to note that these workers are trained and aware of the risks and adverse effects of such practices, both in the short and long term.(1)

### **Promoting physical activity**

To mitigate the physical risks associated with heavy lifting and prevent musculoskeletal injuries, incorporating physical exercise into the daily routine is recommended. According to the American College of Sports Medicine (ACSM), physical exercise in adults should consist of cardio-respiratory or moderate-intensity strength training for more than 30 minutes a day, five days a week, for a total of 150 minutes per week. Alternatively, adults can perform vigorous-intensity cardiorespiratory exercise for 50 minutes a day, three days a week (more than 75 minutes per week), or a combination of moderate- and vigorous-intensity exercises. This should be complemented with resistance exercises involving the major muscle groups, as well as neuromotor exercises that improve balance, agility, and coordination, and flexibility exercises.(9)

These activities should be planned and structured, generally repetitive, with the aim of improving physiological condition and enhancing specific skills such as strength, endurance, speed, or flexibility. The World Health Organization provides examples of these activities, which include strength training in the gym, running, swimming, or practicing yoga. Integrating these activities into daily life could significantly contribute to reducing the risk of injury and improving the overall health of nursing staff.(10,11) Knowing the positive impact on physical abilities, we wonder if there is any relationship between physical exercise and stress in nursing.

### **Benefits of physical exercise**

Physical exercise activates various systems in the body. The musculoskeletal system, when performing activity, requires the activation of the nervous system, which regulates motor functions. This, in turn, requires nutrients, which causes an increase in cardiac chronotropism and inotropism and the release of various neurotransmitters and hormones into the circulatory system, such as growth hormone (somatotropin), adrenaline, noradrenaline, endorphins, and adjustments in blood insulin levels. On the other hand, the immune system is stimulated.

In this way, exercise benefits different systems. In the central nervous system (CNS), for example, the hypothalamic-pituitary-adrenal axis is activated in response to the stress generated during training, which has effects even after the physical activity has ended, mainly in the relaxation phase. This improves attention, cognitive functions, regulates appetite, and enhances sexual activity.

In the immune system, various cells and proteins are activated, such as NK (natural killer) cells, B and T lymphocytes, immunoglobulins, and cytokines. This strengthening of the immune response regulates inflammatory processes and reduces the risk of infections.(12) This is particularly useful for nursing staff, who work in environments with high exposure to pathogens, various stressors, and hostile environments, making exercise act as a counterbalance to stressors that can weaken the immune system, helping to maintain the physical and cognitive capacity of staff and, in this way, enabling them to perform their duties effectively, reducing absenteeism and thus the burden on the healthcare system. On the other hand, it helps reduce the likelihood of disease transmission and opportunistic infections.(13)

So, how can we measure stress levels in nurses? And is there really a relationship between stress and exercise?

In this paper, we will focus on highlighting healthy habits, with an emphasis on physical exercise, as it has been shown to provide the body with higher energy levels, improve the immune system, and strengthen the musculoskeletal system, all of which are necessary for the proper performance of the tasks of students and alumni of the nursing degree program at a private university in Rosario.

## **CONCLUSIONS**

Throughout this study, it has been shown that stress is one of the main syndromes affecting the health and performance of nursing staff, constituting a multifactorial problem that needs to be addressed from a comprehensive perspective. The physical and emotional overload that characterizes this profession, especially in high-demand healthcare settings such as the city of

Rosario, exposes nurses to a series of risks that directly impact their well-being and the quality of care provided. Adverse working conditions, constant contact with human suffering, exposure to biological and environmental factors, and the cognitive and emotional demands of the role create fertile ground for the onset of stress symptoms, both psychological and somatic.

In light of this reality, physical exercise emerges as a valuable non-pharmacological strategy, with solid evidence supporting its effectiveness in reducing stress and preventing musculoskeletal injuries, as well as strengthening the overall health of professionals. Its incorporation into the daily routine of nursing staff can translate into significant benefits for the regulation of the neuroendocrine axis, improved immune response, increased physical endurance, and optimized cognitive functioning. Despite these advantages, it is important to recognize the structural, organizational, and personal barriers that hinder the regular practice of physical activity by nursing staff, such as long working hours, multiple jobs, family responsibilities, and the lack of adequate spaces for developing healthy habits.

Therefore, it is crucial that health institutions, together with those responsible for training and managing human resources, design and implement policies and programs to promote physical exercise, tailored to the specific characteristics of this professional group. Initiatives such as education on stress management techniques, flexible working hours, the creation of self-care spaces, and the promotion of physical activity in the workplace can contribute to substantially improving the quality of life of nursing staff. Furthermore, future research should delve deeper into measuring stress levels and their correlation with physical exercise in order to generate contextualized evidence to guide informed decisions on occupational health.

Ultimately, addressing stress in nursing requires an interdisciplinary and committed approach that not only recognizes the magnitude of the problem but also proposes sustainable solutions based on the promotion of healthy habits. Physical exercise, far from being an isolated solution, should be understood as a central tool in building a more humane, healthy, and resilient work environment, capable of protecting both professionals and patients and ensuring the continuity of ethical, safe, and quality care in the healthcare system.

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## FUNDING

None.

## CONFLICT OF INTEREST

None.

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