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RESEARCH ARTICLE

STRESS IN EVERYDAY PRACTICE AND OCCUPATIONAL ACTIVITIES: PREDISPOSING FACTORS TO CHRONIC DISEASES

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ABSTRACT

Modern life is permeated by the influence of stress, usually resulting from everyday life situations and work activities. Researchers have taken great care in conceptualising stress and defined it as an organic reaction that involves physical, psychological, mental and hormonal components and develops in stages. Many studies have investigated factors that influence this phenomenon that is often associated with alterations in workers' health and organisational performance. This review will show that the development of physical and mental illness is described as related to an imbalance between stressful demands and the level of control exerted over them. Quality of life is a crucial point that must be considered to prevent chronic diseases, and people should have the ability to recognise stressors and to find strategies to combat them.

Key words:

Chronic diseases, Health,
Quality of life, Stress.

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INTRODUCTION

Recent scientific knowledge has enabled the development of several types of high-performance neuroscientific evaluations. This field is highly specialised because it comprises specific knowledge about the disorders of the nervous system, but it is also broadly applicable field because the disorders of the nervous system affect the entire body. Stress - often called the "disease of the century"- is a topic of interest among researchers to evaluate the participation of the central nervous system and the entire body. This phenomenon is known to interfere with institutional, social and personal activities. Internal and external sources of stress are influenced by each individual's thoughts, beliefs and interpretations of the world and by general events, although much about its influence remains unclear (Backé et al., 2012; Hayes and Bonet, 2010; Oyama and Fukahori, 2015).

Evaluative scales are available for measuring the quality and/or

the quantity of issues resulting from behavioural changing, especially stressful experiences. Multiple variables are involved in stressful individual events, even though stress is characterised by scales that effectively capture a range of approaches to a problem. Scales that measure pain, consciousness levels, and levels of development of repetitive stress injury among work crews, as well as many other scales, are key resources for management to improve worker satisfactions (Beck, 2011; Koolhaas et al., 2011; Sili et al., 2014; Sorgaard et al., 2010).

Other studies stating the correlation at the level of stress and work activities usually emphasize the variables found in the workplace, often disregarding the variables of everyday life. Therefore, this review aims to investigate stress as a constant influence on personal and professional life leading to chronic diseases with consequences for the work process and the quality of care provided by professionals working in a stressful environment.

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Stress: a general overview

Definitions of stress emphasise facets of the work environment and everyday life that exceed an individual's coping ability or an individual's physiological or psychological responses to stressors. Individuals may alter their behaviour in response to a stressful stimulus, which may be an activity, situation or psychological experience that is observed directly or indirectly (Drago and T n sescu, 2010). Therefore, to understand the stress response process, it is necessary to consider clinical conditions that appear at different stages of the reaction to stress (O'Connor and Spagnola, 2009; Papathanassoglou, et al., 2010; Vedhara et al., 1999).

Selye (1956), a pioneer in research on stress, described three phases of the stress response: alarm, resistance and exhaustion. Approximately 30 years later, studies would identify a fourth stage, near exhaustion, which falls between the stages of resistance and exhaustion (Lipp and Guevara, 1994). The alarm stage corresponds to the organic response to the stressor, which may be any stimulus that generates stress. In this stage, the individual responds by coping with or escaping from the stressor. The alarm stage is characterised by symptoms including tension, tachycardia, headache and a feeling of exhaustion. If the alarm stage persists, the stress response extends beyond the normal range of the alarm stage, and the resistance stage begins. This stage includes psychosocial manifestations, including anxiety, appetite instability and sexual disorders (Selye, 1956). In the stage of near exhaustion, the individual cannot cope with the stressor, which triggers changes in behaviour that are typically less severe than those that take place in the stage of exhaustion. The stage of near exhaustion can represent the end of the resistance stage (Lipp and Guevara, 1994). Finally, the exhaustion stage emerges from the excessive demands of stress and can result in physiological illness (Selye, 1956).

Bauer (2005, 2008), in turn, notes that stress also emerges from aspects of everyday life, noting the presence of diseases that are characterised by slow and progressive damage and/or immunological changes that resemble those observed in chronic stress. Therefore, stress is considered a global epidemic, but it is also necessary for life because the stress response can be adaptive and protect the body (Drago and T n sescu, 2010; Goligorsky, 2001; Nicolaidis et al., 2015). When faced with the prospect of dealing with excessively stressful events, it is essential to develop coping strategies that address organisational, social and personal issues related to stress and respond to individuals' personal needs and work environment. The consequences of chronic stress can be avoided with the involvement of multidisciplinary teams that prioritise giving care to caregivers provided that this is in line with the culture of the organisation (Faragher et al., 2005; LaMontagne et al., 2007).

A knowledge of the mechanisms of the stress response is required to make efficacious therapeutic decisions and to design future research strategies. Thus, it is worthwhile to highlight the trends of studies that focus on stress and psychoneuroimmunology. These studies have discovered several neuropeptides involved in neural responses and

associated with the immune system (Papathanassoglou et al., 2010; Wayne and Trudeau, 2011).

Cerebral system of response to stress: general features

Stress comprises physical and mental responses that are activated in situations involving danger. The literature on the relationship between stress and stressors shows that stress situations induce a general increase in the activation of the organism that enables it to react. The immune system automatically responds to pathogens and unknown molecules. When this system is disturbed or threatened, a series of molecular, cellular, and behavioural responses is activated to neutralise the disturbing forces and re-establish a dynamic equilibrium. These are the body's main resources to maintain the dynamic equilibrium of the internal environment, known as homeostasis (Papathanassoglou et al., 2010). The organic disequilibrium that takes place during stress varies from one individual to another, and it can represent a cumulative response to stress stimuli rather than arising exclusively from an on-going stressor (Nicolaidis et al., 2015).

It is believed that different neural and endocrine mechanisms are involved in the response to stressors and that these mechanisms can be selectively activated (Capuron and Miller, 2011; Lai and Huang, 2011; Nicolaidis et al., 2015; Wayne and Trudeau, 2011). A stressor is a stimulus that initiates a stress reaction by triggering the activation of the hypothalamic-pituitary-adrenal axis, causing the release of adrenocorticotropic hormone and consequent stimulation of hormonal secretions (Figure 1). Cortisol, for example, binds to receptors inside leukocytes (white blood cells, which play an important role in combating infections), thereby causing immunosuppression in most cases. Among the well-known effects of cortisol is the regulation of the migration of leukocytes through tissues (Bauer, 2005; Goligorsky, 2001; Vermes and Beishuizen, 2001). However, this mechanism works in partnership with the physiological systems involved in the stress response.

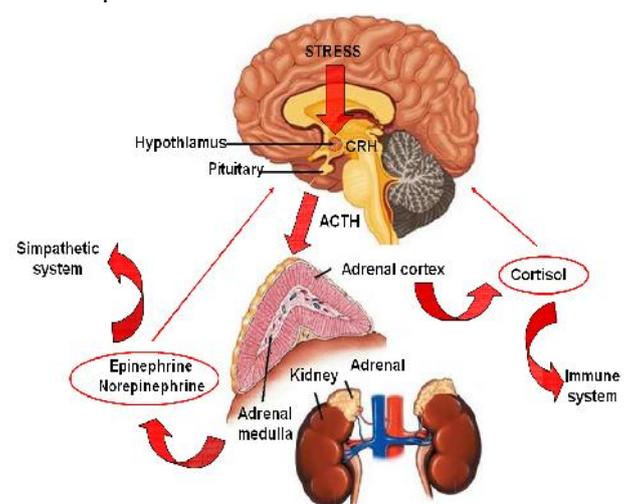


Figure 1 Stress activates the hypothalamic-pituitary-adrenal axis: the anterior pituitary releases ACTH, which induces the release of cortisol (the main hormone regulating the immune system) by the adrenal glands.

There are three axes of action in the physiological response to stress: 1) the neural axis, involving immediate activation of the

autonomic and peripheral nervous systems in response to the stress stimulus; 2) the neuroendocrine response, which activates more slowly and is adapted to longer-lasting stress conditions, drives the fight-or-flight response because it prepares the organism for intense muscular activity when the opportunity arises to do something to control the situation; and 3) the endocrine response, which is the slowest and longest lasting response and requires the stress situation to persist over a longer period of time. This response manifests when an individual lacks strategies to confront a stress situation. When activated, each response gives rise to different changes, such as increases in heart rate or blood pressure (Lai and Huang, 2011; Vedhara et al., 1999). Studies have demonstrated bidirectional connections between the neural and the endocrine and immune systems. Through neuroendocrine pathways, the central nervous system regulates the immune system, which in turn sends signals to the brain through the action of cytokines. Within the context of emotional stress, behavioural reactions are restricted to two major categories: neuroendocrine reactions with secondary effects on the metabolism and immune reactions and mood alterations that affect immunity and cause immunosuppression or immune activation throughout the body (Capuron and Miller, 2011; Marques et al., 2007; Vedhara et al., 1999).

Immune competence increases during acute stress because it is an adaptive response. However, when stress is chronic, immune competence might be compromised, causing a decrease in both the activity and the proliferation of certain lymphocyte subpopulations (Drago and T n sescu, 2010). The human body has efficient mechanisms to maintain its equilibrium in the face of stress situations. However, such mechanisms might fail when stimulation is too intense or too prolonged, preventing the organism from maintaining homeostasis and possibly leading to fatigue disorders (Backé et al., 2012; Papathanassoglou et al., 2010).

Stress: predisposing factors to chronic diseases

Researchers have identified various pathological changes that result from stress due to decreased immunity, such as diabetes, cancer, inflammatory diseases, and problems associated with obesity. An individual under stress may also be less productive as a result of a decreased ability to concentrate and think coherently (Cnop et al., 2012; Deak et al., 2015; Kirshbaum, 2010). Depression is an important effect of stress that may increase suffering and reduce welfare for affected individuals. Depression may also aggravate existing diseases or facilitate the appearance of new medical conditions to which the individual is predisposed (Brown et al., 2009; Schulz et al., 2011; Theorell et al., 2015).

A study of the prevalence of musculoskeletal symptoms of stress identified lumbar pain as a major cause of absenteeism, which in turn led to work overload for colleagues, conflict in interpersonal relationships, and a consequent increase in the rate of exhaustion at the workplace (Mehrdad et al., 2010; Hoogendoorn et al., 2002). Hypertension is another condition triggered by stress that increases psychological and organisational overload (De Gaudemaris et al., 2011). Moreover, some researchers have observed that the main trait

of rheumatic affections (fibromyalgia and arthrosis) is intense pain, and any painful stimulus is likely to activate the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis, which regulates stress reactions (McCray and Agarwal, 2011; Schmidt-Wilcke and Clauw, 2011). According to some authors who describe the triggering or worsening of medical conditions under stress conditions, even skin diseases do not escape the influence of stress. The emotional stress of having a skin disease might be associated with embarrassment due to the appearance of symptoms (Basavaraj et al., 2011). Several studies in the stress management literature emphasise the harmful aspects of stress, including morbidity and mortality (Abrams et al., 2010; Rao, 2010), and note the existence of research that proposes ways of controlling the negative aspects of stressful work and daily life situations (Drago and T n sescu, 2010; LaMontagne et al., 2007). The maintenance of life depends on the capacity of the organism to prepare the body for “fight or flight” when confronting stressors in the environment (Goligorsky, 2001; Vermes and Beishuizen, 2001).

Thus, stress is continually present from everyday life and the work environment. Among potential stressors are family disharmony, fear, tension, violence, changes in routine, illness, work pressure, and the profession and type of work being performed. The effects of excessive and continuous stress are not limited to impaired health of the individual and decreased the quality of life, but also include reduced productivity. Thus, it is very important to understand the causes of stress and successful methods of stress reduction.

Nursing: a stressful profession model

Nurses professionals are one of the largest healthcare workforces in the world, and they provide individual, family and community care. The nursing profession can be stressful because of the organisational structure of nurses’ work and its psychological demands. Nurses’ activities include disease prevention, health promotion, recovery and rehabilitation in addition to administrative activities (Beck et al., 2011; Diiorio et al., 2011; Oyama and Fukahori, 2015). Studies have described the stressful character of the nursing profession, as demonstrated in Figure 2.

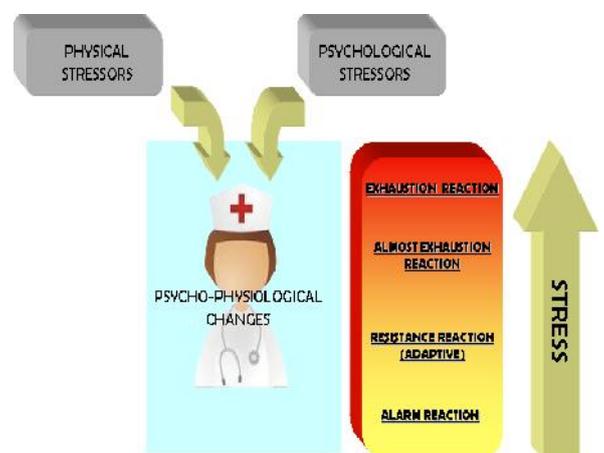


Figure 2 Stress arising from a sequence of reactions ulminating in exhaustion. The psychophysiological alterations arise from both physical and psychological stressors

Studies of occupational stress in nurses have not yet established whether any specific function or specialty of the profession is more stressful than others. Nurses' sources of stress vary, although some stressors are common to nurses working in any position or environment. However, some studies report that the main sources of occupational stress in nurses are the activities specifically related to the nursing profession (Tomei *et al.*, 2015). Despite nurses' many responsibilities, few studies have addressed stress management among nurses. Nursing managers who work in a hospital setting encounter unique difficulties, such as intense pressure, demands, work overload, lack of autonomy, and lack of time to plan, among other stressors related to the management, technical, and social aspects of nursing. The overall demands on nurses working in managerial positions, including competence, good communication skills, firmness in decision-making, creativity, strategic planning, negotiation skills, leadership, maintaining interpersonal relationships, and seeking professional acknowledgment, are considered stressors, or "stress agents" (Motta *et al.*, 2009).

In a thorough study on health issues in nurses, four groups of diseases in the nursing population were described: *diseases arising from the physical demands imposed by the profession itself*, e.g., standing for long periods of time, overload of weight when mobilising patients (e.g., spinal affections and various vein issues); *diseases triggered by psycho-social stress* (e.g., arterial hypertension, stable angina, gastritis, and depression); *diseases induced by chemicals* (e.g., allergic rhinitis and thrombocytopenia); and diseases with unknown causes that these authors define as *diseases associated with the functioning of the thyroid and the pancreas*. The diseases in the latter group were diagnosed during periods of intense stress, which suggests a close relationship between the emotional and physical states of nurses (Beck *et al.*, 2006).

Overall, as previously observed, stress is a dynamic process that may be either aggravated or reversed depending on the coping techniques that an individual uses. To reduce stress, an individual must use specific stress management techniques. Strategies to promote health in workers in large hospitals have been the topic of intense discussions. Mental health is particularly important to monitor because it is the first area to be affected, whereas physical health problems merely reflect the consequences of the stress response (Cohen *et al.*, 2015).

Without the use of stress management strategies, it is likely that stress-related illnesses will increase in severity, weakening the immune system and consequently increasing exposure to disease (Galbraith and Brown, 2011; Vermes and Beishuizen, 2001). When a coping strategy focuses on the problem, individuals try to deal directly with the stressful situation itself and test several strategies to ameliorate it. When coping is focused on emotion, individuals employ emotional or cognitive strategies that change their perception of the stressful situation; these strategies tend to alleviate the problem or cause the individual to avoid the problem (Faragher *et al.*, 2005; Hassink-Franke *et al.*, 2011).

Final Remarks And Future Perspectives

This study described the psychophysiological alterations

resulting from stressors that arise in the workplace and in everyday life. The response to these stressors, although it is frequently not perceived, can culminate in several chronic diseases. To cope with these stressful events individuals must increase their self-esteem and cultivate a more harmonious and balanced work and personal life.

The nursing profession is both important and highly respected because patients will always require care. On the other hand, some specialists have observed that nurses do not have enough time to take care of themselves. This is ironic because, as health-care providers, nurses are aware of the benefits of balanced nutrition and exercise. Nurses must be given opportunities to incorporate the elements of a healthy lifestyle into their day. Measures must be taken to create working conditions for nurses in which they can better cope with stressful situations.

Researchers have mentioned that workplaces can provide instruction in physical fitness, stress reduction, leadership, and relaxation techniques. Several attempts have been made to apply the recommendations of studies on stress in the workplace and to instruct workers in coping mechanisms and multidisciplinary partnerships. Workers who do not exercise regularly generally have higher levels of stress. Regular exercise improves cardiovascular functioning and thus reduces the amount of stress hormone in the bloodstream. Physical activity is also associated with psychosocial benefits; for example, the social interaction and interpersonal communication that take place during exercise can serve as strategies for coping with stressful situations.

Some studies have shown that fitness classes offered in the workplace are effective at preventing occupational diseases, improving workers' quality of life, and decreasing absenteeism. However, this intervention by itself will not yield significant results without related social policy, ergonomic studies, and the collaboration of managers, occupational safety experts, occupational physicians, and specialists in human resources. Managers must also do their part to design strategies promoting workers' health in an integral manner and addressing the environmental factors in the workplace that contribute to stressful conditions.

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