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Reducing Work-related Stress in Nursing Personnel: Applying an Intervention*

Theme: Evidence-based practice.

Contribution to the subject: Educational interventions are key in favoring changes in nurses' stances towards research. Therefore, this study proposes a new approach to the management of stress among nursing personnel through a novel, innovative and consistent proposal in the scientific community.

ABSTRACT

Objective: To compare the levels of *ex-post-facto* stress between nursing personnel who participated in an educational intervention with nursing personnel on work duties, within the hospital work environment. **Materials and method:** This was an observational and cross-sectional study. The final sample was composed of 30 nursing personnel, with 15 of them composing the group exposed to the intervention and 15 being selected by simple random sampling to compose the unexposed group. The intervention consisted of a program focused on the employees, structured in four sessions, applied in a course format twice a week, and lasted two months. The Student's t-test for independent samples and the Mann-Whitney U-test were used to compare the groups. **Results:** Using the Mann-Whitney U-test, the stress levels could be compared between the groups, and a statistical difference in stress levels was observed between the control group (3.34 ± 0.71 a.u.) and the intervention group (2.52 ± 0.59 a.u.) ($p = 0.002$; $d = 1.26$). **Conclusions:** Comparing the general stress levels between the groups, it was found that the intervention significantly decreased the stress levels in the participants; it was also possible to identify the mental stressors faced by the participants using the Scale of Stress in Professionals.

KEYWORDS (SOURCE: DECS/MeSH)

Psychological stress; occupational stress; occupational health; intervention; mediation analysis; nursing.

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* Este artigo se deriva da tese de mestrado intitulada "Redução do estresse laboral em profissionais de enfermagem", apresentada ao Programa de Pós-Graduação em Enfermagem da Faculdade de Enfermagem da Universidade Federal do Piauí, Brasil.

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*Reducción del estrés laboral en profesionales de enfermería: aplicación de una intervención**

RESUMEN

Objetivo: comparar los niveles de estrés *ex-post-fact* entre los profesionales de enfermería en el ambiente del trabajo hospitalario participantes de intervención educativa con profesionales de enfermería en actividades laborales. **Materiales y método:** estudio observacional y transversal. La muestra final se compuso por 30 profesionales de enfermería, de la que 15 profesionales compusieron el grupo expuesto a intervención y 15 se seleccionaron por muestreo aleatorio para componer el grupo no expuesto. La intervención consistió en un programa, con enfoque en el trabajador, estructurado en cuatro sesiones, aplicado en formato de curso, con periodicidad quincenal y duración de dos meses. En la comparación entre los grupos, se utilizaron la prueba t de Student para muestras independientes y la prueba U de Mann-Whitney. **Resultados:** por medio de la prueba U de Mann-Whitney, se puede comparar el nivel de estrés entre los grupos, en el que se observó diferencia estadística del nivel de estrés entre el grupo control ($3,34 \pm 0,71$ u.a.) y el grupo intervención ($2,52 \pm 0,59$ u.a.) ($p = 0,002$; $d = 1,26$). **Conclusiones:** comparando el nivel de estrés general entre los grupos, se constata que la intervención disminuyó significativamente el nivel de estrés en los profesionales; se logró aun identificar los estresores mentales de los profesionales por medio de la Escala de Estrés en Profesionales.

PALABRA CLAVE (FUENTE: DeCS/MeSH)

Estrés psicológico; estrés laboral; salud laboral; intervención; análisis de mediación; enfermería.

* Este artículo se deriva de la tesis de maestría "Redução do estresse laboral em profissionais de enfermagem" presentada al programa de posgrados en Enfermería de la Facultad de Enfermería de la Universidade Federal do Piauí, Brasil.

Redução do estresse laboral em profissionais de enfermagem: aplicação de uma intervenção*

RESUMO

Objetivo: comparar os níveis de estresse *ex-post-fact* entre os profissionais de enfermagem no ambiente do trabalho hospitalar participantes de intervenção educativa com profissionais de enfermagem em atividades laborais. **Materiais e método:** estudo observacional e transversal. A amostra final foi composta por 30 profissionais de enfermagem, da qual 15 profissionais compuseram o grupo exposto à intervenção e 15 foram selecionados por amostragem aleatória simples para compor o grupo não exposto. A intervenção consistiu em um programa, com foco no trabalhador, estruturado em quatro sessões, aplicado em formato de curso, com periodicidade quinzenal e duração de dois meses. Na comparação entre os grupos, foram utilizados o teste t de Student para amostras independentes e o teste U de Mann-Whitney. **Resultados:** por meio do teste U de Mann-Whitney, pode-se comparar o nível de estresse entre os grupos, no qual se observou diferença estatística do nível de estresse entre o grupo controle ($3,34 \pm 0,71$ u.a.) e o grupo intervenção ($2,52 \pm 0,59$ u.a.) ($p = 0,002$; $d = 1,26$). **Conclusões:** comparando o nível de estresse geral entre os grupos, constata-se que a intervenção diminuiu significativamente o nível de estresse nos profissionais; foi possível ainda identificar os estressores mentais dos profissionais por meio da Escala de Estresse em Profissionais.

PALAVRAS-CHAVES (FONTE: DeCS/MESH)

Estresse psicológico; estresse ocupacional; saúde do trabalhador; intervenção; análise de mediação; enfermagem.

* Este artigo se deriva da tese de mestrado intitulada "Redução do estresse laboral em profissionais de enfermagem", apresentada ao Programa de Pós-Graduação em Enfermagem da Faculdade de Enfermagem da Universidade Federal do Piauí, Brasil.

Introduction

The number of studies in the scientific literature regarding the negative impacts of psychosocial factors on the onset of stress in the work environment, health, and well-being of employees is growing (1). In the nursing field, the literature expresses the onset of work-related stress for reasons intrinsic to the physical environment, conflicts with other healthcare providers, overload, and demands stemming from the work environment (2).

As common as it may seem, the theme of stress in the workplace and how healthcare providers cope with it, nursing personnel act with little to no awareness of the stress they cope with during their work routine. Consequently, a lack of knowledge exists regarding the stress process, which is essential for adequate coping, otherwise, stress may lead employees to physical and emotional exhaustion (3).

In this context, the stress in the workplace can be understood as a strain on the human being's dynamic balance generated due to changes occurring in the work environment (4). This instability generated, in turn, can develop a pattern of cognitive, behavioral, or physiological emotional responses, which are toxic and adverse components of the work content, resulting in low performance, low morale, high turnover, absenteeism, and violence in the workplace (5).

Individual responses on how to cope with stress in the workplace in a healthy way can minimize the negative impacts of working conditions and organization and, consequently, reduce the risk of disease. As a result, interventions for the management of occupational stress that aim to promote healthy coping procedures have been under development (6).

Currently, researchers have been searching for the development and implementation of interventions to mitigate the pain suffered by nursing personnel (7). For these situations, interventions have been developed with the purpose of reducing symptoms of depression, anxiety, and stress, as well as improving the general well-being, without requiring medical consultation or medication interventions (8).

Among these interventions, there are programs of prevention and/or reduction of stress and/or burnout management. These programs can be structured with the combination of more than

one intervention and with strategies that seek to minimize the effects of stress on the employees' health. These programs are developed through interventions that aim to improve interpersonal relationships in the work environment or organizational interventions, which aim to provide changes in the personal context and, consequently, in the occupational environment (9).

The literature points out that interventions with combined approaches that use more than one technique produce better effects on work-related stress and contribute to mentally healthy work environments (10). However, there is no guidance to date as to which interventions provide the best combination and balance; there is only guidance as to which intervention to use for a particular audience, for instance: nonspecific population (universal prevention), high-risk population (selective prevention), or for those presenting emergent symptoms (indicated prevention) (11).

In light of the above, the existence of means that enable the prevention and/or reduction of occupational stress is of utmost importance within the work environment, thus influencing the physical and mental well-being of nursing personnel, as well as providing improvements in their performance, motivating the assistance provided by them to patients.

The null hypothesis was that the intervention does not decrease stress in the work environment of nursing personnel, and the alternative hypothesis was that the intervention decreases stress levels in the work environment of nursing personnel. Finally, the objective of this study was to compare the levels of *ex-post-facto* stress between nursing personnel who participated in an educational intervention with nursing personnel on work duties, within the hospital work environment.

Materials and Methods

This is an observational, cross-sectional, *ex-post-facto* study. The final convenience sample was composed of 30 nursing personnel working at a university hospital. The participants were informed of the study at their workplace regarding the pre-test application period, which was considered enrollment for the course (intervention), as well as the starting date of the intervention and the post-intervention date; the post-test was applied only to participants who reached at least 75 % of participation in the intervention.

Between April and May 2019, the pre-test (application of the sociodemographic form, General Work Stress Scale - GWSS) was carried out; then, the dates for the application of the course, which was held from May to July, were announced. In August, upon verification of the participants, those who had participated in the interventions were recruited to perform the post-test (filling out the GWSS again) one month after the last day of the intervention.

During the pre-test application, 132 healthcare providers were interested in participating and all of them filled out the sociodemographic form and the GWSS. From these providers, 45 attended the course and 15 met the minimum requirement of 75 % participation, which composed the exposed group (EG) to the intervention; for the composition of the non-exposed group (NEG), 15 nursing personnel were selected from the use of a simple random sampling technique among the 87 participants who did not participate in the intervention, but who voluntarily took the pre-test and continued with their work activities. Only 15 participants were selected to compose the sample so that it would be homogeneous.

The intervention proposal was based on the psychoeducational group approach (12) aimed at managing stress stemming from work-related situations and, despite being a well-known approach, no instances of these interventions applied to nursing personnel in their work environments can be found in the literature; therefore, this intervention, set up in a course format in order to increase the participants' interest, is unprecedented within the nursing field.

Aiming to allow a greater number of healthcare providers to participate in the intervention, we have applied the intervention in the form of a course entitled "Prevention and management of stress in nursing personnel"; it was structured in four sessions, it was held every two weeks and lasted for two months. The meetings were held in the institution's auditorium, in order to provide easy access, comfort, and privacy to the participants. The sessions were held in the morning and afternoon shifts, during the workday, with each meeting lasting an hour.

The intervention was carried out by the main researcher, and specialized professionals were invited to minister each session; in the first session, the work agreement, self-diagnosis, and coping strategies were addressed, which were carried out by the main researcher; in the second session, which was on compassion fatigue, the invited nurse presented the theme

"compassion for patients who are suffering" to open the discussion; in the third session, stress management, and relaxation techniques were presented, as well as the physical activity itself, and there was a practical self-massage class; finally, the last session was carried out by a psychologist who presented the theme "social skills training".

The inclusion criteria established were nursing personnel who had been working for more than six months in direct or indirect patient care during the data collection period; the exclusion criteria were nursing personnel who were on leave or vacation during the data collection period.

To analyze the level of stress experienced by these healthcare providers, the GWSS, which presents psychometric characteristics, was used. The GWSS avoids making separate evaluations and considers the individual's perception, which meets the criticism regarding approaches that focus on stressors or reactions in isolation and, therefore, fills some gaps in existing instruments for evaluating occupational stress (13).

The GWSS consists of 23 items, and for each question, individuals must choose one of the following five options: 1 - strongly disagree; 2 - disagree; 3 - partially agree; 4 - agree; 5 - strongly agree. The higher the overall average, the higher the level of stress. The instrument is composed of the following dimensions: "Autonomy/control", "Roles and work environment", "Relationship with the boss", "Interpersonal relationships" and "Growth and appreciation".

Through the GWSS, it is possible to calculate the average for each item on the scale, thus finding an indicator that will vary between 1 and 5. The higher the average, the greater the stress associated with the factor related to the question. A value for the average equal to or higher than 2.5 should already be understood as an indicator of considerable stress. Therefore, the average of the responses for each of the questions enables the evaluation of the most prevalent stressors, according to the employees' perception.

The dimensions of the GWSS were investigated using Student's t-test for independent samples to analyze the dimensions named "Autonomy/control", "Roles and work environment", "Relationship with the boss", and "Interpersonal relationships". The Mann-Whitney U-test was used for the "Growth and appreciation" dimension due to the existence of outliers in the intervention group.

The data collected in this study were recorded by a double entry in Excel spreadsheets and later processed by the Statistical Package for the Social Sciences (SPSS, version 20.0). In the descriptive analysis, the qualitative variables were distributed in absolute (N) and relative (%) frequency, and the quantitative variables in medians and interquartile ranges. In the inferential analysis, data distribution was verified using the Shapiro-Wilk test, in which the variables "time of admission" and "workload in other institutions" of the control and intervention groups did not present normal distribution. For the classification of the occupational stress level of the research group, from the data survey, the providers' perceptions obtained through the GWSS were evaluated by the points attributed to calculate the averages defined by Paschoal and Tamayo (13).

When the distribution of these variables was verified, both the overall score and the domains presented normal distribution in the control group (CG) and in the intervention group (IG), except for the domain "professional growth and appreciation", which was not normally distributed in the intervention group. As a result, the overall score, even with normal distribution, presented outliers in the intervention group. In the comparison of stress between the groups, the Student's t-test for independent samples was used for the variables "autonomy", "work environment", and "relationship with the boss", and the Mann-Whitney U-test for the general stress score and "professional growth and appreciation" for the non-parametric data, with a significance level of $p \leq 0.05$ for two-tailed hypothesis tests.

In addition to statistical significance, it was attempted to calculate the effect size using Cohen's d. This measure was selected since it is a common measure of effect size for several types of tests or when the samples of the two groups are similar beyond clinical significance (14). Calculating effect size, besides the advantage of not depending on sample size, informs the significance of the results and is a common metric for comparing results from different studies (15).

This study was approved by the Research Ethics Committee of the Universidade Federal do Piauí, under Legal Opinion no. 3,169,631. The nursing personnel who met the inclusion criteria were individually invited to participate in the study, upon clarification of its objectives, methods, and purpose. Those who agreed to participate signed the free and informed consent form and responded to the other instruments in their own work environment.

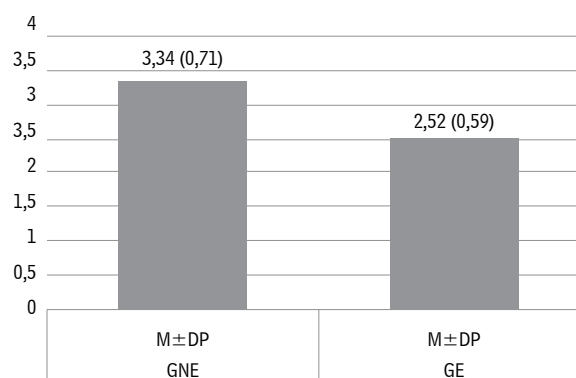
Results

Regarding participant characterization, the CG was composed of 10 nurses and 5 nursing technicians, 80 % of them were female, adults (34 ± 34 -41 years old), and 66.7 % were married. The IG was also composed of 10 nurses and 5 nursing technicians, adults (37 ± 34 -40 years old), of which 93.3 % were female; regarding marital status, 60 % were married.

Regarding the employment profile of these healthcare providers, 67.7 % of the CG employees were employed in other jobs, while 86.7 % of the IG employees were employed in other jobs. Among those who were employed in more than one job in the CG, 40 % worked 30 hours a week, and in the IG, 33.3 % worked 30 hours. Concerning the length of time of employment in the institution where the study was carried out, a median of five years was obtained in both groups.

The following is the comparison of the stress levels of nursing personnel in the CG and IG assessed by the GWSS.

Figure 1. The general mean of stress of the NEG and EG assessed by the GWSS. Brazil, 2019 (N = 30).



Valor de $p = 0.002$; d de Cohen = 1,26

Source: Own elaboration.

Through the Mann-Whitney U-test, the level of stress between the groups could be compared, and a statistical difference in stress levels was observed ($U = 40.500$, $p = 0.002$). Based on this result, the intervention reduces stress levels in the work environment, thus the alternative hypothesis is considered.

Table 1 below presents the mean for each dimension of the GWSS between the EG and NEG.

Table 1. Comparison between the control and intervention groups concerning the dimensions of the GWSS among nursing personnel. Brazil, 2019 (N = 30).

	EG (N = 15)	NEG (N = 15)	p-value	Cohen's d
	M ± SD*	M ± SD		
Autonomy**	3,82 ± 0,50	2,86 ± 0,67	p < 0,001	1,62
Roles and work environment**	3,33 ± 0,75	2,44 ± 0,75	p = 0,003	1,18
Relationship with the boss**	3,24 ± 1,04	2,45 ± 0,81	p = 0,029	0,84
Interpersonal relationships**	2,91 ± 1,01	2,56 ± 0,71	p = 0,274	0,40
Growth and appreciation***	3,07 ± 0,95	2,25 ± 0,78	p = 0,023	0,94

*Standard deviation; **Student's t-test; *** Mann-Whitney U-test

Source: Own elaboration.

Discussion

It is noteworthy that this study stems from a master's thesis, in which the null hypothesis was that the intervention program does not reduce the stress levels in the nursing staff's work environment, and the alternative hypothesis was that the intervention program reduces the stress levels in the nursing staff's work environment. It was verified that the level of stress decreased significantly ($p = 0.002$), rejecting the null hypothesis and confirming that the intervention decreased the stress levels in these nurses' work environments.

In the evaluation of the staff members' stress levels, the items composing the GWSS are employee-oriented, presenting questions that evaluate the major stressors in the work environment based on the employees' perception, as the following items, for instance: "the lack of communication between me and my co-workers makes me angry"; "I get in a bad mood for having to work many hours in a row"; and the "type of control existing in my job makes me angry".

The main stressors that affect nursing personnel, ordered from highest to lowest level of consensus, are work overload, fre-

quent interruptions during the execution of their tasks, the performance of different tasks simultaneously, working during the night shift, and insufficient time to provide emotional support to patients (16).

When comparing the GWSS scores between the CG and the IG, it was found that the stress levels decreased significantly, which confirms that the intervention decreased the stress levels in these employees' work environments. However, the literature points out that in small samples, the p-value may not be significant, regardless of how large the sample size may be (15); in turn, the large effect size ($d = 1.26$) demonstrates the significance of this result allowing comparison with other studies.

These findings contribute to knowledge regarding combinations in multimodal interventions, as there is no guidance as to which interventions can best be combined and balanced, only those that can be targeted to a nonspecific, high-risk population or to those with emergent symptoms (11).

The results, if positive, may highlight its relevance, since no national studies were found that evaluated the combination of mental health and educational interventions, even though these are low in individual and social costs, associated with work-related stress in nursing personnel.

In the "Autonomy/control" dimension of the GWSS, lower values of stress levels and large effect size were observed, which are important facts, since autonomy is highly requested by nursing personnel, especially nurses. It is worth noting that the roles of nurses, nursing technicians, and nursing assistants are defined in Decree no. 94.406/1987, which regulates Law no. 7.498/1986, concerning the professional practice of nursing. The duties of nurses are defined in articles 8 and 9 of this decree, while the duties of nursing technicians are defined in article 10, and those of nursing assistants in article 11 (17). Historically, nurses have sought their own identity within the nursing team, in a professional context hardly recognized by society and sometimes marginalized, including by the patients themselves (18).

In a study carried out with nursing personnel working at a public general hospital that analyzed the association between occupational stress, quality of life at work, and factors associated with it, it was observed that nurses, nursing technicians, and nursing assistants in active work presented a higher prevalence of

dissatisfaction with the quality of life than those in passive work. This demonstrates that even a high level of control, especially of nurses who are granted more autonomy to make decisions regarding their own work, is sometimes not able to suppress the negative aspects provided by high demand, which is characterized mainly by the disproportionality between the number of patients and nursing personnel (2).

Moreover, it is worth emphasizing the relationship between autonomy and responsibility, since work has been recognized as an important factor of illness, triggering and increasing the incidence of mental disorders (19). Therefore, theoretically, the measure of autonomy, pressure, and freedom to use abilities in daily life can represent greater responsibility, which resonates negatively in these staff members' professional lives (20).

Despite this fact, the stressor included in the scale "I feel irritated with the deficiency in the disclosure of information regarding organizational decisions" draws attention since, even with the significant decrease, the stress levels remain high. It is noteworthy that situations in the work environment that demand a greater work effort than a professional's capacity to perform can be perceived as stress triggers since the employee may experience a feeling of incompetence and lack of control over the situation. The existence of poorly defined responsibilities also causes stress, since it makes it impossible for nurses to make decisions (21).

It is essential for nursing personnel to be aware of their rights and duties, which are protected by resolutions issued by the Federal Council of Nursing so that they can better understand their responsibilities and try to prevent the onset of stress.

In turn, the stressor "I get irritated with discrimination/favoritism in my work environment" is still high. Similar data was found in another study that used the GWSS, the point being that discrimination and favoritism issues are related to the antisocial behavior of people in organizations, with the intention of harming colleagues and the organization itself (22).

Concurrently, the work performed by nursing personnel is mostly considered rewarding and a source of pleasure and well-being. However, the lack of appreciation can lead them to go through a stressful factor (23). Consequently, the work performed

by professionals under these circumstances can become mechanical since they are unmotivated, harming both the professionals themselves and patients. Moreover, the lack of recognition causes feelings of inferiority, low self-esteem, loss of enthusiasm, and inability to build bonds (24).

In a study carried out with a qualitative approach, nursing personnel working at a philanthropic oncology hospital in the north of Paraná, Brazil, summarized the interpersonal relationships with the "lack of commitment of the workgroup" - words of the staff members (25). The study that identified the main occupational factors which were the most stressful affecting nursing personnel in the medical units of a general university hospital in Murcia demonstrated that the lack of interpersonal relationships was considered one of the most stressful factors (17).

A study (26) highlighted that nursing personnel considers their work environment more stressful due to interpersonal relationships among the multi-professional team, communication with patients and family members, administrative management, and human resources.

The nursing team is inserted in a professional environment (hospital) as an indispensable component in the provision of care; however, relationship difficulties within the team can hinder the progress of the care process, in addition to rendering the work environment unpleasant. Interpersonal relationships in the nursing team may either be a contributing or disturbing factor in the work environment, causing positive or negative consequences for both healthcare providers and patients (27).

The relevance of this data is highlighted, since the lack of professional growth perspectives combined with low wages are determining factors for dissatisfaction at work, which can lead to an increase in absenteeism, professional turnover, and physical and emotional wear of that team, directly interfering with the quality of services provided.

In this era where knowledge and innovation are valued, human capital is the most valuable asset in organizations. In this sense, attention is drawn to the need for actions to promote well-being and prevent diseases through programs developed by the institutions' occupational health services, aiming to encourage the adoption of healthy behaviors by staff members (19).

It is noteworthy that the stressor “The few perspectives of career growth have left me distressed” causes high stress levels in the control group participants ($M = 4.33$); however, the staff members who participated in the intervention presented moderate stress levels ($M = 2.80$), demonstrating that the approaches applied in the intervention can improve these staff members’ perspective on their profession and, possibly, reduce their stress levels.

The recognition of staff members starts within the hospital where their activities are performed; when the hospital management encourages them, it demonstrates the importance of their work and promotes an environment that enables the improvement of the work process, allowing the staff to be encouraged to improve their work with each passing day. In turn, the staff members, when well cared for, transfer the appropriate assistance to patients with more enthusiasm (28).

Valuing nursing personnel implies including them in the definitions regarding the operation of healthcare organizations, decentralizing decisions, and increasing the possibility of control over their own work and its demands, effectively improving working conditions and identifying the elements and factors that interfere in the generation of the employees’ health (29). It is worth noting the institution’s importance in providing activities implemented by the managers that increase the healthcare team’s feelings of appreciation. It is noteworthy that the absence of adequate prevention of occupational diseases leads to profound negative effects, not only for employees and their families but also for society.

Despite the contributions of this study, limitations are acknowledged, such as the loss of participants, the convenience sampling technique of the CG, and so on. Therefore, the generalization of the results to other units may not be possible. The use of a nationally produced data collection instrument limits discussion with the international scientific literature. Finally, the cross-sectional design, which allows the analysis of associations between variables, without establishing causality relationships, is yet an-

other limitation. However, these conclusions may be the basis for new studies nationally and perhaps internationally.

A relevant contribution was the approval of the program’s continuity for execution as an extension project in the hospital; thus, it contributes not only to the nursing field but also to other employees working in this hospital. This achievement will enable the improvement of the intervention used, along with the long-term evaluation of the effects of the intervention on the staff members.

Conclusion

It was possible to identify the stressors in nursing personnel working at a university hospital through the use of the GWSS. Comparing the level of general stress between the CG and the IG, it was found that the intervention significantly decreased the level of stress in these staff members. It is noteworthy that, despite the statistical significance in most dimensions, some stressors still remained at high levels. However, only in the dimension “Interpersonal relationships” no statistical significance was found, yet, it presented a medium effect size, which, for clinical evidence, becomes relevant.

The main stressors identified were deficient training for a professional qualification, deficient disclosure of information concerning organizational decisions, discrimination and favoritism in the work environment, competition in the organizational environment, and limited prospects for career growth. It is known that professionals subjected to low levels of stress work more efficiently; in addition to the better quality of life and the well-being enjoyed by these staff members in more favorable conditions, this also benefits patients through improved quality of care. Therefore, it is possible to reflect upon the reasons why nursing personnel experience work-related stress, as well as to alert the institution’s management teams.

Conflict of interest: none declared.

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