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ESTRESSE OCUPACIONAL E FATORES ASSOCIADOS  
ENTRE ENFERMEIROS DE HOSPITAIS PÚBLICOS\*

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## OCCUPATIONAL STRESS AND ASSOCIATED FACTORS AMONG NURSES AT PUBLIC HOSPITALS\*

Alessandro Rolim Scholze<sup>1</sup>, Julia Trevisan Martins<sup>2</sup>, Maria Lucia do Carmo Cruz Robazzi<sup>3</sup>, Maria do Carmo Fernandez Lourenço Haddad<sup>2</sup>, Maria José Quina Galdino<sup>4</sup>, Renata Perfeito Ribeiro<sup>2</sup>

**ABSTRACT:** We aimed to assess the occupational stress and associated factors among nurses from public hospitals. Cross-sectional study with a sample of 185 nurses from three public hospitals in Paraná. The data were collected between November 2015 and April 2016, using a questionnaire to characterize the participants and the Job Stress Scale. Descriptive analyses and logistic regression were applied. Among the participants, passive and high-demand work was predominant. The negative perception of the care support services ( $p=0.003$ ), continuing education programs ( $p=0.007$ ), time and opportunities to solve the care problems ( $p<0.001$ ) and participation in administrative ( $p=0.014$ ) increased the chances that the nurses would perceive the work as stressful. On the opposite, longer experience at the institution ( $p<0.001$ ) and social support ( $p<0.001$ ) were associated with lesser perceptions of exhausting work. In conclusion, the nurse's stress was associated with factors from the work environment, mainly factors that hamper high-quality care delivery.

**DESCRIPTORS:** Occupational health; Stress, psychological; Nurses; Hospitals, public.

### ESTRESSE OCUPACIONAL E FATORES ASSOCIADOS ENTRE ENFERMEIROS DE HOSPITAIS PÚBLICOS

**RESUMO:** Objetivou-se avaliar o estresse ocupacional e fatores associados entre enfermeiros de hospitais públicos. Estudo transversal com amostra de 185 enfermeiros de três hospitais públicos do Paraná. Os dados foram coletados entre novembro de 2015 e abril de 2016, mediante questionário de caracterização dos participantes e a *Job Stress Scale*. Realizaram-se análises descritivas e regressão logística. Entre os participantes, predominou o trabalho passivo e o de alta exigência. A percepção negativa dos serviços de apoio à assistência ( $p=0,003$ ), programas de educação continuada ( $p=0,007$ ), tempo e oportunidades para solucionar os problemas da assistência ( $p<0,001$ ) e participação em decisões administrativas ( $p=0,014$ ) aumentaram as chances de os enfermeiros perceberem o trabalho como estressante. Em contrapartida, maior tempo de trabalho na instituição ( $p<0,001$ ) e apoio social ( $p<0,001$ ) associaram-se a menores percepções de trabalho desgastante. Conclui-se que o estresse do enfermeiro esteve associado a fatores do ambiente laboral, sobretudo aqueles que dificultam prestar assistência de qualidade.

**DESCRIPTORES:** Saúde do trabalhador; Estresse psicológico; Enfermeiras e enfermeiros; Hospitais públicos.

### ESTRÉS OCUPACIONAL Y FACTORES ASOCIADOS ENTRE ENFERMEROS DE HOSPITALES PÚBLICOS

**RESUMEN:** = La finalidad fue evaluar el estrés ocupacional y factores asociados entre enfermeros de hospitales públicos. Estudio trasversal con muestra de 185 enfermeros de tres hospitales públicos de Paraná. Los datos fueron recolectados entre noviembre del 2015 y abril del 2016, mediante cuestionario de caracterización de los participantes y la *Job Stress Scale*. Fueron ejecutadas análisis descriptivos y regresión logística. Entre los participantes, predominó el trabajo pasivo y el de alta exigencia. La percepción negativa de los servicios de apoyo a la atención ( $p=0,003$ ), programas de educación continuada ( $p=0,007$ ), tiempo y oportunidades para solucionar los problemas de la atención ( $p<0,001$ ) y participación en decisiones administrativas ( $p=0,014$ ) aumentaron las chances de que los enfermeros percibieran el trabajo como estresante. Los enfermeros percibieron el trabajo como estresante. Por otra parte, mayor tiempo de trabajo en la institución ( $p<0,001$ ) y apoyo social ( $p<0,001$ ) fueron asociados a menores percepciones de trabajo agotador. Se concluye que el estrés del enfermero estuvo asociado a factores del ambiente laboral, sobretudo aquellos que dificultan la prestación de atención de calidad.

**DESCRIPTORES:** Salud laboral; Estrés psicológico; Enfermeros; Hospitales públicos.

\*Taken from the thesis entitled: "Work environment, psychoactive substance consumption and stress in hospital nurses: analysis of associated factors". Universidade Estadual de Londrina, 2016.

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## ● INTRODUCTION

Nursing is the main workforce at hospital institutions and these professionals' work is fundamental, as they are responsible for direct and uninterrupted care to the patient, 24 hours per day, seven days per week. As a care manager, the nurse has a unique perspective on patient care and hospital operations and stands at the frontline of these health services<sup>(1-2)</sup>. These professionals are submitted to different occupational risks though, mainly psychosocial risks<sup>(3-4)</sup>.

The nurses experience a harsh – physical and psychologically exhaustive – work process, with high and complicated demands and long work journeys; they work in shifts, with a work burden motivated by the insufficient number of professionals to attend to the overcrowded services. In addition, in this environment, permeated by complex interpersonal relationships with the multiprofessional team, there is a lack of acknowledgement, autonomy and devaluation of this group; there is the daily contact with suffering, high performance requirements for the teams and concerning patient safety. These and other factors trigger occupational stress and produce physical and mental health problems for these professionals<sup>(5-6)</sup>.

Occupational stress is commonly interpreted as the feeling of being tense, burdened and concerned with the job requirements. Nevertheless, this stress results from the interaction between psychological demand, control/decision over the work<sup>(7)</sup> and the social support the worker receives in his daily work from colleagues and heads. In this theoretical perspective, social support is understood as the result of interpersonal interaction at work which, as it favors a pleasant environment and support from peers and heads, produces a mitigating effect on the worker's psychological demands and work-related tension<sup>(8)</sup>.

The main repercussions associated with occupational stress include absenteeism, work-related dissatisfaction, occupational accidents, reduced quality of life, burnout syndrome, cardiovascular problems, minor mental disorders, as well as a decline in the worker's performance, which affects the quality of care<sup>(9-13)</sup>.

In view of the above, it is important for the the nurses and the organizations to identify the stressful factors in the work environment, as well as the physical, mental and social health losses these professionals can be victims of. This information can support the search for sultions to mitigate the nurses' stress situations in the job environment, thus offering a better quality of life and wellbeing.

In view of these considerations, in this study, we aimed to assess the occupational stress and associated factors among nurses at public hospitals.

## ● METHOD

Cross-sectional, analytic-descriptive study, developed at three public hospitals, called A, B and C here, located in a city in the state of Paraná. Institution A is a tertiary hospital, offering 313 beds and 127 nurses. Hospitals B and C deliver health care up to the secondary level, offering 130 and 113 beds, respectively, with 47 nurses each.

The study population consisted of 221 professionals. The following inclusion criteria were established: being a clinical nurse or nurse supervisor; having worked at one of the institutions for at least one years as, after this period, most professionals have already adapted to their work environment; and not being on leave of absence from work.

A stratified sample was calculated, considering a proportion of 50% as the prevalence of stress among nurses from public hospitals is unknown. The confidence level was 95% and the absolute sampling error 5%. Hence, the minimum number of participants at the secondary hospitals would be 78, against 97 nurses at the tertiary hospital, totaling 175 professionals.

After defining the minimum number of participants to guarantee the representativeness of the population, all nurses were invited to participate in the study. Thirteen (5.9%) of them were on leave, 23 (10.4%) refused to participate and 185 (83.7%) -141 from the day shift and 44 from the night shift) agreed

to participate, being 81 (36.7%) from the secondary hospitals and 104 (47.0%) from the tertiary hospital.

The data were collected between November 2015 and April 2016, and the main researcher contacted the professionals during the shift intervals, inviting them to participate in the research. The professionals who demonstrated their interest in participating were taken to a private room and received information about the study. After their consent, they received a data collection instrument in an individual envelope. After completing the instrument, the participant left the envelopes in a sealed box to guarantee confidentiality.

The research was developed in compliance with the ethical standards for research involving human beings. Approval was obtained from the Research Ethics Committee at Universidade Estadual de Londrina, under Opinion 1.310.741 and CAAE: 49062415.5.0000.5231.

The data collection instrument consisted of two questionnaires: one to characterize the participants and the Brazilian version of the Job Stress Scale, translated and validated in 2004<sup>(14)</sup>.

The first tool contained sociodemographic characterization questions (sex; age; income; marital status; children and degree), occupational (length of experience at the institution; weekly work journey; function and work shift; other affiliations; perception about: 1. care support services, 2. efficacy of continuing education, 3. time and opportunities to discuss the patient care with other colleagues and the solution of care-related problems, and 4. participation in administrative decisions), and life habits (exercising, alcohol and tobacco consumption). The authors elaborated this questionnaire and tested it in advance in a sample of 20 nurses not included in the study population, with a view to testing its understanding and operation.

The Job Stress Scale is a self-applied scale, consisting of 17 questions with Likert-style answers, which assesses the occupational stress through three dimensions: psychological demands (five items), control in the work process (six items) and social support (six items). The social support dimension is part of the scale, under the hypothesis that it softens the association between the job-related tension and stress-related disorders. In addition, it constitutes a latent variable (dimension)<sup>(8,14)</sup>.

Based on the combination of the demand and control dimension, the type of work is indicated which the professional experiences: (1) high-demand work, considered stressful (low control and high demand); (2) passive work (low control and low demand); (3) active work (high control and high demand); and (4) work of low demand (high control and low demand). The work of low demand and the active work represent ideal work experiences for the workers, as they are motivating and favor creativity. On the other hand, the high-demand and passive types are considered the most harmful, in view of the greater mental requirement, predisposing the workers to the development of comorbidities, as schematically represented in Figure 1<sup>(15)</sup>.

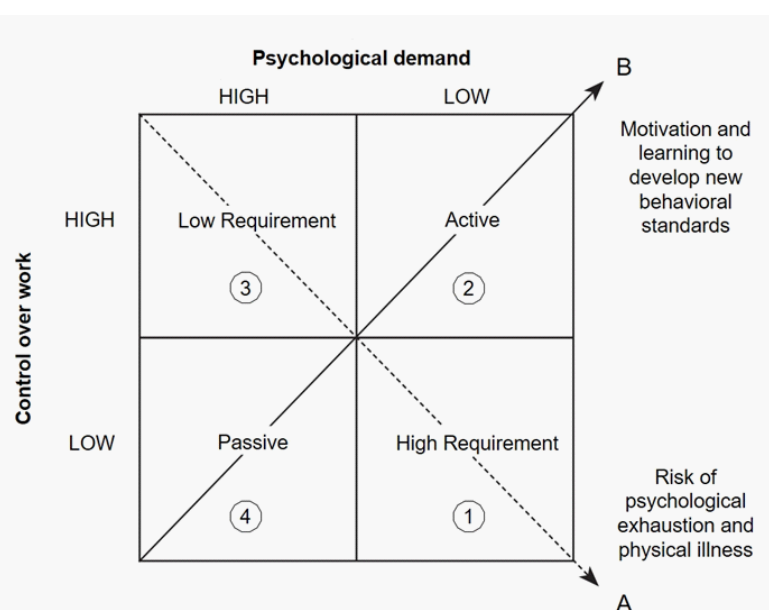


Figure 1 – Relationship model between control and demand, adapted from Theorell; Karasek. Washington, DC, United States, 1996

The data were analyzed in the software Statistical Package of Social Sciences™(SPSS), version 20.0. Descriptive, bivariate associations, gross and adjusted logistic regression analyses were undertaken, calculating the odds ratios (OR) and respective confidence intervals (95% CI). For the multivariate model, using the backward method, all independent variables that presented  $p \leq 0.20$  in the bivariate analysis were incorporated, considering the high-demand work as the dependent variable. The independent variables that remained significantly associated after the adjustment ( $p < 0.05$ ) were maintained, according to the Wald test.

## ● RESULTS

Among the 185 nurses who participated in this study, the majority was female ( $n=152;82.2\%$ ), had a stable partner relationship ( $n=113;61.1\%$ ) and children ( $n=115;62.2\%$ ). Ages ranged between 24 and 63 years, with an average age of 41.25 years, and the mean monthly income was R\$6,596.42, ranging between R\$2,300.00 and R\$17,600.00.

As regards the occupational characteristics, nurses with only one employment bond prevailed ( $n=137;74.1\%$ ), who were active in clinical functions ( $n=136;73.5\%$ ) and in the daytime period ( $n=141;76.2\%$ ). The length of experience at the institution ranged between one and 34 years, with an average of 7.99. The weekly workload of the nurses with a single job averaged at 37.8 hours, ranging between 24 and 44 hours. Among the nurses with more than one job, the average was 69.4 hours, ranging between 50 and 84 hours.

As for the life habits, it was identified that most of the participants exercised ( $n=101;54.6\%$ ), and that the minority consumed alcohol frequently ( $n=38;20.5\%$ ) and smoked ( $n=32;17.3\%$ ).

In Figure 2, the type of work the participants performed is displayed, according to the characteristics of the Demand-Control model, showing the predominance of nurses who develop passive and high-demand work.

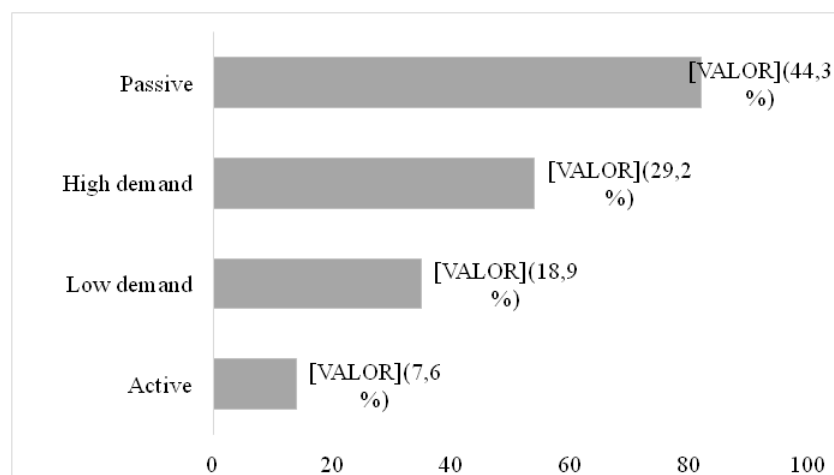


Figure 2 – Distribution of types of work perceived by the hospital nurses according to Demand-Control model ( $n=185$ ). Londrina, PR, Brazil, 2015-2016)

As high-demand work (low control and high demand) represents a high risk of physical and mental illness for the workers, a multivariate model ( $p < 0.001$ ) was adjusted that identified the associated factors (Table 1). The negative perception of the care support services ( $OR=3.78$ ), efficacy of the continuing education programs ( $OR=3.78$ ), time and opportunities to discuss the problems resulting from patient care with other colleagues ( $OR=4.41$ ) significantly increased the chances that the nurses perceived their work as stressful.

On the other hand, nurses who revealed a negative perception on their participation in administrative decisions ( $OR=0.28$ ) presented a lower chance of perceiving their work as highly demanding, that is,



the non-participation in administrative decisions reduced the perception of stressful work.

In addition, the longer the experience at the institution (OR=0.89) and the greater the perceived social support from heads and colleagues (OR=0.75), the lower the perception of stressful work.

Table 1 - Factors associated with high-demand work among nurses from public hospital institutions (n=185). Londrina, PR, Brazil, 2015-2016

Variables	High-demand work		
	n(%)	Adjusted OR (95% CI)*	p-value
Care support services			
Negative perception	41(46.1)	3.78(1.56-9.18)	0.003
Positive perception	13(13.5)	1	
Efficacy of continuing education			
Negative perception	19(35.2)	3.18(1.36-7.45)	0.007
Positive perception	35(64.8)	1	
Participation in administration decisions			
Negative perception	30(55.6)	0.28(0.10-0.77)	0.014
Positive perception	24(44.4)	1	
Time and opportunities to discuss patient care with other colleagues			
Negative perception	44(81.5)	4.41(1.62-12.01)	<0.001
Positive perception	10(18.5)	1	
Length of experience	7.48(8.06)**	0.89(0.83-0.96)	<0.001
Social support	17.9(2.9)**	0.75(0.63-0.90)	<0.001

\*Adjusted odds ratio (95% confidence interval); \*\*Mean (standard deviation)

## ● DISCUSSION

In this study, young women living in a stable marital relationship and with children were predominant. These women are exposed to double work journeys, as they perform both activities inherent in the work environment and housework – taking care of their home and their children<sup>(16)</sup>. Thus, their wear due to the task overload should be taken into account, at the workplace as well as in their daily family life, increasing their susceptibility to stress.

What the participants' life habits are concerned, the majority practiced physical exercise and a minority consumed alcohol frequently and smoked. The adoption of this health profile can be associated with the fact that these professionals know the harmful effects of sedentariness and of psychoactive substances on the biopsychosocial levels, including: obesity, diabetes mellitus, cardiovascular diseases, depression, sleep disorders, substance dependence, among others<sup>(17)</sup>.

Most nurses in this study had only one job affiliation (n=137;74.1%) and an average weekly hour load of 37.84 hours, probably due to their reasonable average salary and job stability, in view of their tenure status. This condition is considered almost ideal because, as they do not develop long work journeys, they stay alert, reducing the risks of adverse events, occupational accidents, absenteeism and presenteeism, burnout and mental illnesses which, in turn, are important causes of permanent disability<sup>(17-18)</sup>. These negative aspects can affect the 48(25.9%) nurses in this sample who indicated a double work journey though, and who developed an average weekly work journey of 69.4 hours, ranging between 50 and 84 hours.

Although the majority worked in the day shift, 23.8%(n=44) worked at night, which is inevitable in the hospital area, as patient care should be continuous. This type of work provokes physiological

changes and affects the professionals' physical and psychological wellbeing, predisposing the worker to fatigue, reducing the job performance and causing dissatisfaction, leading them to exhaustion and disease<sup>(10,19-20)</sup>. In this study, nighttime work was not included in the multiple model due to the lack of a significant association with occupational stress, as observed in a study involving Taiwanese nurses. Nevertheless, it was identified that shift work, mainly when at night, is related to a worse quality of sleep<sup>(21)</sup>.

Stress is triggered in the workers when they are unable to maintain control over their practice. Their work may be high-demand or passive, converging towards disease or distancing from professional activities, respectively<sup>(14)</sup>.

Among the nurses in this study, predominantly passive work was found, followed by high-demand work, similar to other studies developed in Brazil and abroad<sup>(11,16)</sup>. These conditions can lead to a gradual reduction in the workers' ability to solve routine problems in their work environment, besides the experience of high levels of suffering and dissatisfaction due to the monotony of the work process, which expropriates the workers of their know-how<sup>(22)</sup>, making them incapable of facing the intellectual challenges that may emerge in daily nursing work.

The high-demand work, characterized by low control and high demand, predisposes the worker to physical and mental illness. All of the predicting variables in the multivariate model were job-related, mainly those related to patient care.

The nurses in this study indicated that dissatisfaction with the care support services (OR=3.78;  $p=0.003$ ), with the continuing education programs (OR=3.18;  $p=0.007$ ) and the insufficient time and opportunities to discuss the patient care with other colleagues (OR=4.41;  $p<0.001$ ) were factors that increased the chances of occupational stress manifestations. It is highlighted that hospital activities are complex and dynamic, requiring that professionals master specific technologies, knowledge and skills. This environment is also permeated by precarious work and health system conditions, evidenced in the lack of human and material resources, overcrowded services and a fragmented work process<sup>(23)</sup>.

This "*modus operandi*" affects the quality of care the nurses provide as, due to the insufficient number of workers for the patients' high demands, there is no time to deliver proper care to patients and relatives. Consequently, complications occur in the patient's clinical conditions, adverse events, increased infection rates, pressure ulcers, falls, extended hospitalization and higher costs, that is, losses for patients, health institutions and professionals<sup>(13,24)</sup>.

Despite advances in the understanding that care is interdisciplinary, decision making on care targets for the patients and their families is historical and culturally the physician's responsibility. Hence, it is common at health services that nurses are not supported to engage in communication and decision making about care objectives and targets. These professionals have empowered themselves of their work practice though, aiming to improve the quality of health care. Therefore, they should take part in shared decision making as they are members of the multidisciplinary health team and also because nursing is a science that involves specific competences and skills<sup>(25)</sup>.

In that sense, continuing education in hospital institutions is considered a tool to train, develop and enhance the professionals' technical-scientific competency which, by increasing the safety and ability for daily practice<sup>(26)</sup>, will mitigate the perception of stressful work.

This argument was supported by a research developed in Iceland, in which the impact of a nursing education program on the perceived demand-control-social support of hospital nurses was evaluated. That research identified that, among the nurses who characterized their job as high-demand, the education program contributed for them to consider the work less stressful as, by increasing the nurses' autonomy and control over their work process, the training also enhanced the social support received from their managers and colleagues<sup>(27)</sup>.

Besides the traditional in-service continuing education methods, the options: training based on realistic simulation; online training courses; and rapid-decision help tools on websites and applications<sup>(25)</sup>. In addition, with the advent of advanced-practice nursing, the professional master's programs emerge as a relevant training alternative, preparing professionals for a transforming, innovative and advanced practice of procedures and processes that incorporates scientific evidence<sup>(28)</sup>.

It is highlighted that the managers are responsible for developing continuing education actions in hospitals and, thus, any educational activity resulting in professional qualification should be encouraged and supported, independently from whether it takes place in service or beyond.

The nurses who participated in administrative decisions presented a greater chance of perceiving their work as highly demanding when compared to professionals who did not ( $OR=0.28$ ;  $p=0.014$ ), which was also verified in a study involving Swedish nurses. Even if the nurse managers have greater control over their work, which can camouflage this stress, they present a heavier workload, a speedier work rhythm and higher levels of psychological demands, increasing their vulnerability to illness when compared to clinical nurses<sup>(2)</sup>.

In this study, the nurses with greater experience at the institution presented lesser chances of exhausting work ( $OR=0.89$ ;  $p<0.001$ ). Although the workers' aging reduces their physical and cognitive capacities, the years in the career grant them further professional experience and resiliency to cope with the stress<sup>(12)</sup>. In that sense, it is important to recognize these professionals at the institution and encourage them to share their experience with peers, helping them to cope and to develop defense strategies in response to the occupational stress.

It was also verified in this study that the lower perceived social support received from heads and colleagues were associated with stressful work ( $OR=0.75$ ;  $p<0.001$ ). Other studies demonstrated that the favorable organizational climate – especially instrumental support and emotional relationships established with heads and colleagues – produces mitigating effects on the stress that help the worker to cope with difficult, tense and problematic situations<sup>(8-9,15)</sup>. The organizational culture, lack of support for the workers, communication flaws and conflicts among physicians, nurses and other professionals are factors that contribute to mental illness and wear in the interpersonal relationships in the hospital context<sup>(6)</sup>.

In view of the negative repercussions of stress in nurses, interventions in the organizational processes are needed to reduce specific stressors in the hospital environment: changes in the work conditions, in the organization of care support, in the increase of communication skills and in the change of work hours<sup>(29)</sup>. Physical and mental relaxation techniques should also be weighed up, considering them as individual strategies to reduce the work-related stress, despite being less effective than the organizational strategies<sup>(30)</sup>.

These research findings suggest the need for the hospital institutions to invest in the care support services, continuing education programs and multidisciplinary group spaces to solve patient care problems, as well as to promote social support in the hospital nurses' work environment, aiming to reduce their stress.

The study limitations are intrinsic in the cross-sectional design, which does not permit the establishment of causal relations. Nevertheless, we believe that it offers relevant contributions as, by identifying the predicting factors of harmful stress for nurses, the study allows the managers and the workers themselves to seek measures to mitigate it, thus improving the quality of work life and, in turn, the care deliver to patients and their relatives.

These research findings cannot be generalized. Therefore, we suggest that studies be developed in other regions of the country, mainly among nurses from private institutions, due to the peculiarities of their work process.

## ● CONCLUSION

Passive and high-demand work was predominant in the research sample, indicating negative consequences for the nurse's physical and mental health. The factors associated with the high-demand work were the negative perception of the care support services, the continuing education programs, the limited time and the opportunities to solve the problems deriving from the care and the participation in administrative decisions. Longer experience at the institution and perceived social support were related with lower perceptions of exhausting work.



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