Working conditions of nurses: evaluation based on the demand-control model*

*Condições de trabalho de profissionais da enfermagem: avaliação baseada no modelo demanda-controle**

Condiciones de trabajo de profesionales de enfermería: evaluación basada en el modelo demanda-control

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ABSTRACT

Objective: To describe the relationship between indicators of psychological demands and job control among nursing workers, according to the Demand-Control Model. **Methods:** It was a cross-sectional study, with 491 nurses of a public university hospital in *Rio Grande do Sul,* in the period of March to December 2006. It was used the Brazilian version of the Job Content Questionnaire, to assess the psychosocial dimensions of work (psychological demands and control). **Results:** It was found that 30% of nursing workers were classified in the passive work group (low demand and low control), 29% in the active work (high demand and high control), 21% in the high demand (high demand and low control) and 20% in the low demand (low demand and high control). The high demand was higher among technicians and nursing assistants. **Conclusion:** It is necessary to implement measures that aim to reduce the psychological demands from work and allow greater flexibility and autonomy to the worker.

Keywords: Working conditions; Occupational health; Nursing staff/psychology

RESUMO

Objetivo: Descrever a relação entre os indicadores de demandas psicológicas e de controle sobre o trabalho entre trabalhadores de enfermagem, segundo o Modelo Demanda-Controle. **Métodos:** Estudo seccional, com 491 trabalhadores de enfermagem de um hospital universitário público do Rio Grande do Sul, no período de março a dezembro de 2006. Utilizou-se a versão brasileira do "Job Content Questionnaire", para avaliação das dimensões psicossociais do trabalho (demanda psicológica e controle). **Resultado:** Obteve-se 30% dos trabalhadores de enfermagem classificados no grupo trabalho passivo (baixa demanda e baixo controle), 29% no grupo trabalho ativo (alta demanda e alto controle), 21% no grupo alta exigência (alta demanda e baixo controle) e 20% no grupo baixa exigência (baixa demanda e alto controle). A alta exigência foi maior entre técnicos e auxiliares de enfermagem. **Conclusão:** Medidas que visem a reduzir as demandas psicológicas provenientes do trabalho e que permitam maior flexibilidade e autonomia ao trabalhador são necessárias.

Descritores: Condições de trabalho; Saúde do trabalhador; Recursos humanos de Enfermagem/psicologia

RESUMEN

Objetivo: Describir la relación entre los indicadores de demandas psicológicas y de control sobre el trabajo entre trabajadores de enfermería, según el Modelo Demanda-Control. **Métodos:** Estudio seccional, con 491 trabajadores de enfermería de un hospital universitario público de *Rio Grande do Sul*, en el período de marzo a diciembre de 2006. Se utilizó la versión brasileña del *Job Content Questionnaire*, para evaluar las dimensiones psicosociales del trabajo (demanda psicológica y control). **Resultado:** Se obtuvo que 30% de los trabajadores de enfermería fueron clasificados en el grupo trabajo pasivo (baja demanda y bajo control), 29% en el grupo trabajo activo (alta demanda y alto control), 21% en el grupo alta exigencia (alta demanda y bajo control) y 20% en el grupo baja exigencia (baja demanda y alto control). La alta exigencia fue mayor entre técnicos y auxiliares de enfermería. **Conclusión:** Son necesarias medidas que tengan por objetivo reducir las demandas psicológicas provenientes del trabajo y que permitan mayor flexibilidad y autonomía al trabajador.

Descriptores: Condiciones de trabajo; Salud laboral; Personal de Enfermería/psicología

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INTRODUCTION

Nursing is classified as one of the main illness and tension high-risk occupations in the health area[1-3]. If work is the main source of tiredness and tension, occupational stress can attack workers when there is an unbalance resulting from the work demands relationship with the effective ability one has to face stressful situations[3]. Workers' psychological suffering comes when they cannot transform their work anymore, becoming unable to find balance between it and their physiologic and psychic needs[4].

Work stress-causing factors in the hospital nursing area are many, generating inappropriate working conditions. Among the nursing work negative aspects, it is possible to highlight: activities routine; constant interruptions; interpersonal conflicts with administrators, physicians, and the nursing team itself; difficulties to respond to patients' and their families' emotional demands; contact with pain and death; staff deficit; insufficient free time for activities that do not involve work; intense work rhythm; and not being able to participate in the decision making processes that change the institution[5].

Such list of factors shows burdens that are inherent to the nursing work[4] and evidences a group of psychosocial stress factors[6] that are frequently associated to occupational diseases. Among the models that characterize work psychosocial stress is the Demand-Control Model (DCM), presented in the end of the 1970's. According to this Model, high psychological demands and low level of control over work could be indicators of physical and emotional overload in the work routine[6].

The DCM distinguishes four basic types of work experience generated by the psychological demands interaction with control: low strain (low demand and high control – reference category), active work (high demand and high control), passive work (low demand and low control), and high strain (high demand and low control – category which is most exposed to diseases)[6]. Such model has been applied in several countries, especially around Europe, aiming to analyze psychosocial dimensions in the work context[5-7].

Based on the four work groups defined by the DCM, the following guideline questions were established for the present study: what is the level of psychological demand and control over the nursing workers of a public school hospital in Rio Grande do Sul? How are these workers divided among the DCM categories?

The study objects are self-reported psychological demands and control nursing workers face. Upon the knowledge of such variables relationship and level, flexibilization measures can be suggested for the work organization, so as to reduce the psychosomatic overload, and consequently prevent diseases that result from aggressions suffered in the organizational context.

This study aimed to describe the relationship between psychological demand indicators and control over work among nursing workers, according to the DCM.

METHODS

The present is a cross-sectional epidemiologic study, performed at a public school hospital in the Middle-West Region of Rio Grande do Sul, a reference center for urgent and emergency care, intensive care and bone marrow transplantation. Out of the total number of workers (528), 491 participated in the study (93%). The non-participation (7%) resulted from refusals or retirements. A questionnaire with closed and pre-established questions was used. It comprised the following variables: Socio-demographic data, age, gender, education, marital status, *per capita* family income in minimum salaries, Body Mass Index (BMI) and Tabagism; Work-related variables: position (nurse; nursing technician or assistant), sector, time working in the position and sector, weekly work load, shift; Work Psychosocial Dimensions (Brazilian version of the *Job Content Questionnaire - JCQ*)[5,7].

Data collection was performed through an interview during work shifts, between March and December 2006, by previously capacitated interviewers. Data entry occurred through the Epi-info®, version 6.04 program, with independent double typing. After errors and inconsistencies were corrected, the data analysis was performed through SPSS® 18.0 for windows. The psychological demand and control scales were calculated according to the JCQ manual (www.jcqcenter.org) recommendations. The DCM quadrants were defined based on distribution, and dichotomized in levels of low/high control and low/high demand, resulting in the groups: low strain (reference group), passive work, active work, and high strain (most exposed group). Associations among variables were considered meaningful when $p<0,05$. *Cronbach's Alpha* coefficients for psychological demand and control were, respectively, 0.70 e 0.59. The study was approved by the Comitê de Ética em Pesquisa (Committee for Research Ethics) of the proponent institution (CAAE 0008.0.243.000-07). Participants signed the Informed Consent Term after the research aspects had been clarified.

RESULTS

Participants'socio-demographic characterization: nursing workers were predominantly female workers (88.4%); the age average was 41 years old (±8.7 years); the minimum age was 22 years old and the maximum age was 67 years old; most of them were married, or lived with a partner (65.8%) and 58.9% had completed high school. It is important to highlight that 13% of nursing technicians were graduated in nursing. With regard to *per capita* family income, 41.3% of workers were classified as receiving less than 2 minimum salaries. Thirty four percent of workers were overweight, and 14.1% were obese; 10.8% were smokers.

Participants' work-related characterization: out of 491 workers, 29.7% were nurses, 32.8%, nursing technicians, and 37.5% were nursing assistants. These professionals had been working in their current positions for about 14.4 years (±8.3 years). The sectors with the majority of workers were Clinical Units (Clinical admission, Surgical Admission, Hemato-oncology, and Psychiatry) – 32,6%, Intensive Care (adult, pediatric and new born) – 19.1%, Maternity and Pediatrics – 14.1%, followed by the Surgical, and Urgency and Emergency Care, respectively with 11.8% and 11.4% of workers. Nurses, nursing technicians and assistants had been working in their current sector for an average of 8 years. Also, 59.3% of the total number of workers worked day shifts; 53% had a 36-hour weekly workload; and 26.3% of nursing workers had other continued employments.

Work psychosocial dimensions characterization: the dimensions of control over work and psychological demand according to professional category were, at first, individually assessed. Results are presented in Tables 1-4. Further along, they were grouped according to the DCM quadrants (Table 5).

When analyzing Table 1 data with regard to the psychosocial dimension of control over work, percentage differences were meaningful for most of the elaborated questions. Nurses presented higher percentages in the following items: work requires learning new things, being creative; it demands a high level of ability and multi-tasking, an individual decision-making, and the ability of giving opinions and have them accepted. However, nursing technicians and assistants had different results. Besides achieving the lowest percentages for questions concerning high control over work, they also reached the highest percentages for work involving repetitive tasks with little freedom to decide how to do it.

Table 2 shows meaningful differences between the assessed groups with regard to the degree of control over work (p=0.000).

When analyzing Table 3 data, the psychological demand indicators were higher for nursing technicians and assistants than for nurses concerning an excessive volume of work and activities, and being exposed to conflicts. Regarding the two first questions – quick and hard work, there were not meaningful differences between the professional categories. In Table 4, a higher percentage of nurses than nursing technicians/ assistants were classified as having more psychological

Table 1 – Indicators of control over their own work, as reported by nursing workers at a school hospital. RS, 2006.

Control Indicators	Position				Value of *p*
	Nurse		Tech/assistant		
	n.º	%	n.º	%	
My work requires that I learn new things					0.000
I agree	146	100.0	335	97.1	
My work involves a lot of repetitive activities					0.109
I agree	124	84.9	313	90.7	
My work requires that I am creative					0.000
I agree	131	89.7	267	77.4	
My work allows me to make decisions by myself					0.000
I agree	122	83.6	223	64.6	
My work requires a high level of ability					0.000
I agree	140	95.9	309	89.6	
I have little freedom to decide how to do my work					0.000
I agree	127	87.0	326	94.5	
I can do a lot of different things through my work					0.000
I agree	105	71.9	183	53.0	
Things I say about what happens at my work are considered					0.000
I agree	128	87.7	282	81.7	
I have the opportunity to develop my special abilities					0.006
I agree	121	82.9	245	71.0	

Table 2 – Nursing professional categories distribution according to the degree of control over the work process at a school hospital. RS, 2006.

Categories	Control over work				Value of *p*
	Low		High		
	n.º	%	n.º	%	
Nurse	36	24.7	110	75.3	0.000
Nursing Technician/Assistant	215	62.3	130	37.7	

Table 3 – Work psychological demands as reported by nursing workers at a school hospital. RS, 2006.

Questions indicating Psychological Demand	Nurse		N. Technician and assistant		Value of *p*
	n.º	%	n.º	%	
My work requires that I perform tasks quickly					0.381
I agree	95	65.1	210	60.9	
My work requires that I work hard					0.930
I agree	73	50.0	171	49.6	
I am not requested to perform an excessive volume of work					0.020
I agree	47	32.2	150	43.5	
Time to perform my tasks is enough					0.002
I agree	97	66.4	275	79.7	
I am free of conflicting demands made by others					0.000
I agree	38	26.0	185	53.6	

Table 4 – Nursing professional categories according to the degree of work psychological demand at a school hospital. RS, 2006.

Categories	Psychological Demand				Value of *p*
	Low		High		
	n.º	%	n.º	%	
Nurses	56	38.4	90	61.6	<0.001
Nursing Technicians/ Assistants	191	55.4	154	44.6	

Table 5 – Frequency for nursing workers at a school hospital, according to the demand-control model quadrants. RS, 2006.

D-C Model quadrants	n.º	%
Low strain (↓D↑C)	100	20.4
Passive Work (↓D↓C)	147	29.9
Active Work (↑D↑C)	140	28.5
High strain (↑D↓C)	104	21.2

D=Psychological Demands C=Control over work

demands at work (p<0.001).

The psychological demands and control over work interactions analysis revealed that nursing workers were more often in the passive work category (29,9%), followed by the active work category (28,5%) (Table 5).

DISCUSSION

In the present study, nurses demonstrated having a higher degree of control over their work than nursing technicians and assistants, possibly due to the nursing work hierarchical division. In the other hand, nurses reported more negative characteristics with regard to psychological demand.

Two factors related to the control dimension are worth a deeper look. The first one is: in spite of a work division favoring nurses, who have to supervise, teach and coordinate the nursing team, about 25% of them were allocated in the group with low control over work (Table 2). When assessing the questions about worker's control over their work[6], the percentage of nurses (87%) that affirmed *I have little freedom to decide how to do my work* (Table 1) was surprising. The second interesting factor was that 37.7% of nursing technicians and assistants were allocated in the group with high control over work (Table 2).

Maybe the nurses' work dynamic partially explains the high percentage for the low freedom reported. That is, tasks are planned throughout the work shift, however, sometimes it is impossible to perform them due to the several interruptions (emergency situations, lack of staff, among others), causing nurses to feel powerless and consider having low control over work. This is one of the singular and variable contexts of real work[8]. In other words, there is a difference between what is recommended and the reality of nursing work, thus workers are affected in different ways by work situations and also react in different ways.

With regard to the high percentage of nursing technicians and assistants with a high control over work, maybe the fact many of them had a degree in nursing can partially explain such finding. That is, they feel comfortable making some decisions during the execution of tasks. In this case, answers would be linked to the conception of control over the tasks performance, which can be understood or valued regardless of a broader definition of the work process (power relationships within the institution)[5].

A work organization that neutralizes free and creative behaviors impoverish mental activity and can harm the worker's body through psychic or physical

somatizations[4], which corroborates with the affirmation: a low level of control over work and work tasks execution planning can harm the worker's health[6]. That is, the lack of or little control can impact on self-esteem, be a source of stress, dissatisfaction and tension in the work environment. Repercussions of such in one's health can be present even when a problem represented by organic alterations is still not visible[5-6].

The nursing work control assessment leads to reflections over the professionals' graduation process in this area over history. Such process generated divisions, fragmentations, and subordinations within the profession: the *ladies nurses* and the *nurses*[9]. The first group was comprised of graduates meant to supervise and teach; the second, of graduates trained to provide direct patient care, and report to the first group, rarely being able to interfere in the decision making processes.

The professional graduation itself determines a higher and lower level of control over work depending on the professional, as it divides and assigns tasks among nursing workers. It is possible to say that the nursing work division process reproduced the hegemonic ways the general work routine is structured, prioritizing division, fragmentation, shares, hierarchy and subordination of both tasks/activities and the individuals' relationships[5,10].

Another aspect worth of attention is the prevalence of low psychological demands among nursing technicians and assistants. The opposite was expected, considering that the nursing work division for such professional category imposes a more intense work rhythm[11].

In nursing, work is performed, most of the times, through tasks distribution among different members, according to hierarchical operations. Considering the activities complexity, different abilities are demanded from each worker when dealing with instruments, methods and processes[9]. In this group of workers, nurses are responsible for managing and supervising work, as well as controlling the process as a whole. The responsibility for the intellectual part of work lies with the nurse, but does exclude him/her from activities that involve physical effort. As to the hands on work, nursing technicians and assistants have the main role, executing delegated tasks.

The nursing team is the only one in the health area that watches patients 24 hours a day, and it is natural for them to be in touch with the human-related needs of such patients (eating, sleeping, personal hygiene, and a comfortable environment)[10]. Therefore, nursing workers get involved in this routine, taking these responsibilities, and are demanded to do them by patients, doctors, families, and the service administrators.

Hence, during such tasks execution, nursing technicians and assistants are mainly involved in developing actions with physical effort that require energy, for instance: Helping patients get up holding and transporting them, as well as other burdens; making beds; bandaging injuries that sometimes require uncomfortable positions; moving a lot around the hospital; remaining stood up almost all the time; holding and transporting patients when changing decubitus, moving from a stretcher to a bed, from the bed to a chair, from the bed to the bathroom. In hospital service, the nursing work is intense and demands high productivity from professionals with little time to perform tasks. Time and they way it is organized for hospital care work can be psychologically violent and greatly impact on workers health for a long time[2].

In this study, the analysis of psychological demand and control over work interactions revealed that the majority of workers were in the passive work category (Table 5). The DCM demonstrates that passive work is the second most problematic exposition for the health area. The absence of meaningful challenges can lead to a decrease in one's global productivity and capacity to generate solutions when facing work problems and routine activities[6].

Tasks division among nursing technicians and assistants (the ones who medicate, the ones who help with personal hygiene, the ones who transport…), cause monotony and repetition, provoking physical and mental tiredness, as well as nourishing feelings of apathy among workers.

When comparing the present study with three national studies[5,12,13] that utilized the DCM in their investigations about nursing workers in the hospital environment, it was possible to observe that: the first study[5], performed in a hospital in Bahia, had similar percentages for passive work (28.4%) and low strain (24.5%), while the other categories presented inverted proportions (active work 19.3% and high strain 27.8%); the second[12], with critical unit nursing workers at a hospital in Lajeado-RS, demonstrated a higher percentage for high strain work (44.1%) and lower percentages for active work (22%), passive work (19.7%), and low strain work (14.2%); and the third study[13], which researched nursing workers from a city hospital in Rio de Janeiro, revealed a lower percentage of workers in the passive work (16.6%) and high strain groups (17.9%), and higher proportions for the active work (39.1%) and low strain groups (26.6%).

Such studies demonstrate important percentages

concerning high strain work professionals, mainly when critical unit nursing workers are considered. Such fact confirms that nursing work presents the highest health harm risk to the area workers[14]. As the DCM establishes – work performed with high demand conditions is harmful to workers health, and it is a predictor of most adverse reactions generated in the work environment[6].

However, it is important to highlight the inherent limitations to utilizing a scale that was not created to measure work stressful experiences in a specific group of workers, like nursing workers. In this context, some authors[15] question how applicable the DCM is in certain areas, especially those requiring interaction with people, which is the health area workers' case. For these authors[15], the main limitation presented by the DCM concerns the inability to consider peculiarities the work dealing with people has, once it was originally developed to be used in industries, and although its intention was to be used in a more general way.

Therefore, some questions used in the scale should be carefully assessed and contextualized in the nursing work process, which is the case for the item *'time to perform my activities is enough'*. Because nursing work is a 24 hour activity, the question about how long tasks take to be performed does not seem to reach the objective of measuring psychological demand. When workers cannot finish a certain activity, a co-worker working in the next shift will. Due to this, lack of time does not represent what the model intends to measure (harmful effect).

With regard to control, the item *'my work involves a lot of repetition'* might not be necessarily related to the use of abilities in the work process, as postulated by the DCM. Some aspects of the hospital environment could ease the harmful effects of such repetition. Among them, an important factor could be the nursing care involved in all these activities. In other words, even executing only one type of task, nursing workers who deal with bandaging during their whole shifts, in between pincers movements, they interact with patients and family. Therefore, this question can also be harmed.

CONCLUSIONS

The psychological demand and control over work indicators among nursing workers, according to the DCM, evidenced the highest percentage of nursing workers is in the passive work group. The most exposed to exhaustion are nursing technicians and assistants, comprising 21.2% of workers.

The DCM was an important theoretical-methodological instrument in the nursing work psychosocial aspects investigation. It was possible to verify through it that many elements in the work environment can represent potential stress and tension incentives to the nursing worker. For instance: work overload, task fragmentation, time pressure, inappropriate work conditions, conflicting relationships, repetition and monotony, intensity and excessive work rhythm for long periods of time contribute to work-related diseases. New studies utilizing the DCM can contribute to the improvement of quality of life and health amongst nursing workers. Thus, it is necessary to highlight that after getting to know the methodology better, it was possible to verify that some aspects deserve a more amplified investigation, for other non-assessed variables could enrich data previously found.

In conclusion, measures that aim to reduce psychological demands resulting from work and that allow workers to have more flexibility and autonomy are necessary. These aspects are the managers, nursing workers, and researchers' responsibility. Some of the measures could be, respectively: participative management, having nursing workers actively indicate ways to solve problems concerning the nursing work process organization; collective construction of health promotion and prevention actions, in a continuous process of recognition of risky situations in the work environment, and research development, aiming to verify associations between work demands and physical and psychological disorders among nursing workers. Such measures can effectively contribute to the improvement of health and work conditions in the nursing area.

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