Factors of work-related stress in hospital nursing bureau according to the demand-control-support model
Factores de estrés laboral en el personal de enfermería hospitalario del equipo volante según el modelo de demanda-control-apoyo

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ABSTRACT:
Objectives: To analyse the presence of work-related stress in the nursing bureau of a University General Hospital taking as reference Karasek's demand-control-support model.
Methods: Cross-sectional observational study. The sample included 38 nursing professionals from the nursing bureau of a University General Hospital. Assessment tools: the Job Content Questionnaire (JQC), translated and validated for hospital nursing, was used to know the perception of nursing professionals concerning their work, and to determine the presence of any work-related stressors.
Results: The participation rate was 90.47% (N=38). The average for the social support dimension was 2.59±0.47, for the psychological demands of 3.26±0.47, and for control over their own work of 2.87±0.40. Data analysis pointed to a moderate level of stress, reflecting a deficit in the social support provided by superiors, particularly in the group of professionals assigned to nursery management (2.89 vs 2.49; p<0.05). None of the three dimensions showed a link of any kind with socio-occupational variables of gender, age, shift, assignment or type of connection to the hospital.
Conclusion: Improvement is needed in this area on the part of human resources management in order to lessen the effect of work-related stress, psychological demands and lack of control over these.
Keywords: Work content; Work-related stress; Processes and results assessment (Healthcare); Psycho-social factors; Nursing staff.
RESUMEN:
Objetivos: Analizar la presencia de estrés laboral en el equipo volante de enfermería de un Hospital General Universitario tomando como referencia el modelo demandas-control-apoyo de Karasek.
Método: Estudio observacional de corte transversal. La muestra estuvo constituida por 38 profesionales de enfermería del equipo volante de un Hospital General Universitario. Instrumentos de evaluación: para conocer la percepción de los profesionales de enfermería sobre el contenido de su trabajo y determinar los estresores laborales, se empleó el cuestionario Job Content Questionnaire (JCQ) traducido y validado para enfermería hospitalaria.
Resultados: La tasa de participación fue del 90.47% (N=38). Se registró una media para la dimensión de apoyo social de 2,59±0,47, para la dimensión de demandas psicológicas en el trabajo de 3,26±0,47, y para la dimensión de control sobre el trabajo se obtuvo una media de 2,87±0,40. El análisis de datos puso de manifiesto un nivel moderado de estresores, destacando un déficit de apoyo social por parte de los superiores, que resultó ser más acusado en el grupo de profesionales adscritos a la dirección de enfermería (2,89 vs 2,49; p<0,05). Ninguna de las tres dimensiones se mostró asociada a las variables socio-laborales de sexo, edad, turno, adscripción y tipo de vinculación al hospital.
Conclusiones: Existe una percepción moderada de estresores laborales, resaltando el escaso apoyo social por parte de los superiores, siendo este aspecto una área de mejora sobre la que intervenir.

Palabras clave: Contenido del trabajo; Estrés laboral; Evaluación de procesos y resultados (Atención de Salud); Factores psicosociales; Personal de enfermería.

INTRODUCCIÓN

Work-related stress is the response people may have to work demands and pressures that are not matched by their knowledge or abilities and which challenge their ability to cope. In other words it is the result of the lack of balance between the demands and pressures faced on the one hand, and the individual’s knowledge and ability on the other(1). Within this context, it is possible to speak of the psycho-social factors of the work, defining them as those characteristics of the conditions of the work and its organization, that can constitute a risk for the health of the workers, when they experience prolonged work stress in the time.

From a theoretical point of view, different models of work-related stress have tried to define and explain the complex relationship between psycho-social factors and illness(2). Among these models, that proposed by Karasek(3,4) is one of the most used in public health for the study of work-related stress(5). In its original version, this model proposed two basic features of work as the main sources of work-related stress: work demands and control over them. The first are the psychological demands that work implies for the individual, while control (essential dimension of the model) refers to how the work is developed and has two components: autonomy and skills development. In this model, stress is identified with mental strain in such a way that the work-related stress experienced by the professional is a composite measure which arises from the above mentioned dimensions: workers will experience mental strain when work demands are high and they feel they have little control over the same. Subsequent formulations of the model added a third dimension to those two: social support, which is a moderator or dampener of the effect of stress over health(6). This factor refers to the social environment in the workplace and is related to colleagues and superiors. This factor, too, includes two components: emotional support and instrumental support.

Several bibliographic references have recognized the importance of work-related stress within the healthcare context(7-12). The vast majority of these studies refer to the specific characteristics of healthcare work: treating pain, death, terminal illness, life-threatening situations, demands and work pressures, role conflicts, problematic patients, inter-group communication, etc(13,14). Stress, when it is chronically sustained,
has important consequences for the health and welfare of professionals and also entails great economic costs for the organizations concerned. Indeed, Bernardo de Quirós et al. (15) mention that work-related stress in healthcare workers is responsible for approximately 50% of sick leave.

Among healthcare professionals, nursing staff have been the subject of a number of studies that have revealed them to be exposed to many work-related stressors, which, if prolonged, may favour the appearance of the burnout syndrome (7,16). Different authors have tried to identify and classify the main stressors that affect nursing staff, and which, essentially, can be related to the origin and development of this work-related burnout and its consequences (17-19). In what is regarded as a classic study, Gray-Toft et al. (20) enumerated seven main stressors that affect nursing professionals' work performance: death and suffering of patients, conflict with physicians, lack of formation, lack of social support, conflict with other nurses, work overload and, lastly, uncertainty about treatment. In brief, then there are work-related stressors directly related with the profession, such as constant contact with pain and suffering, and other that are more related with work organization, which include work overload and the lack of resources. There are even studies, like the one by Stordeur et al. (21), which have made an attempt to organize stressors according to the severity of the effect they can provoke on workers. In their study, the ranking was headed by work overload, followed by conflicts with physicians, conflicts with colleagues and lack of clarity in tasks and objectives.

When the level of work-related stress in different nursing services is researched the literature suggests that the level can change depending on the healthcare unit (22,23). For example, Foxall et al. (24), mentioned that for nurses working in intensive care “dealing with death and suffering” is more stressful than for those working in medical and surgical cares. These, in turn, gave greater priority to work overload. In this context, it is worth mentioning the scarcity of works that have taken as their subject of study the stress suffered by the nursing professionals of the nursing bureau in hospital centres. Due to their employment status, these professionals are subjected to continuous changes of unit and service, which may contribute to the psychological strain suffered by them when carrying out their duties.

Taking into account the aforementioned theoretical and empirical framework, the overall objective of the present study was to assess the exposure to work-related stressors in the work performance of the nursing staff of the nursing bureau of the University General Hospital, Murcia, Spain. The secondary objective was to determine whether there was a relationship between the exposure to stressors and the socio-demographic and occupational variables considered in the study. Based on the Karasek’s theoretical model and assuming that a lower level of social support implies a higher vulnerability to stress, the following work hypothesis was proposed: professionals assigned to individual hospital units register a lower level of work-related stress than those who must answer to nursing management.

METHOD

Design

A Cross-sectional observational study.
Participants

The population under study comprised the nursing professionals of the nursing bureau of a University Hospital in Murcia, Spain. A sample of convenience was used that was formed by 38 professionals, which implied a 90.47% of participation. The nursing bureau was made up of two groups of nurses: the first and bigger group, was drawn from professionals that could be assigned by management to any service or healthcare unit of the hospital, while the members of the second group were assigned to a particular unit.

Assessment tools

Apart from an ad-hoc questionnaire with questions about socio-demographic and occupational variables, the questionnaire “Job Content”(3) was used, validated for hospital nursing staff by Escribà et al.(25), with the aim of assessing the demand-control-social support model in the study population. This tool assesses the exposure to work-related stressors, taking into account the three dimensions named in Karasek's model: psychological demands (6 items), control (7 items) and social support (9 items). Thus, the questionnaire has 22 items that use a four-point Likert scale. The questionnaire can be used as a diagnostic tool to identify the increase in the risk of stress-related illness, assuming that a high level of psychological demands accompanied by a low level of control over the same and scarce social support will originate an increased morbidity risk. This research registered an internal consistency of .84 for the psychological demands dimension, .69 for the control dimension and .85 for the social support dimension.

Procedure

This research complied with Spanish Organic Law 15/1999, of 13th December, on Personal Data Protection. The participation was of voluntary nature and granted confidentiality and anonymity at every stage. After receiving permission from the Managing Director of the University Hospital to distribute the questionnaire among staff, the Nursing Manager, the Nursing Bureau Supervisor and the Supervisor of the different inpatient units were informed. Finally, each professional was given the questionnaire, which was to be returned in a sealed envelope to the research team or to the Nursing Management secretary. The questionnaires were distributed and collected in 2015.

Data Analysis

The statistical analysis was carried out using the statistical package SPSS (V.15.0). Average, maximum, minimum and standard deviation was calculated for each variable. Absolute and relative frequency measures were used for the qualitative variables. A Chi-square test was used for the bivariate analysis of qualitative variables, and Spearman’s correlation for the quantitative variables. In the case of quantitative and a qualitative variables a Student t-test was used when a quantitative variable had a normal distribution and Mann-Whitney U-test when it did not follow this distribution. When the analysis involved polytomous qualitative and quantitative variables, ANOVA was applied if the quantitative variable followed a normal distribution and non-parametric Kruskal-Wallis test if it did not follow such a distribution.
RESULTS

The sample population comprises 86.8% women and 13.2% men. Most of the professionals interviewed (84.2%) were aged between 31 and 50 years, 13.2% were aged between 20 and 30 years, and 2.6% were more than 51 years old. As regards shift work, the largest group had a rotatory shift that included night (78.9%), followed by those who only worked day shifts (13.2%) and those who only worked the morning shift (7.9%). Concerning to the type of contract that the subjects had, 50% had temporary contract were hired, a 31.6% of them were locums, and only a 18.4% were permanent staff. The average numbers of years of service in the same hospital was 5.26 years (DT = 4.06). Regarding the service the professionals were assigned to, 76.3% of them were assigned to Nursing Management, while 23.7% were assigned to individual inpatient units.

The descriptive statistical data obtained for each of the 22 items of the “job content” questionnaire are presented in table 1. As can be see, among the most relevant psychological demands are “busy work” (3.58 ± 0.5) and the “continuous concentration” required (3.26 ± 0.6). As regards to control dimension, one of the aspects most mentioned by the participants is the need to continuously learn new things (3.63 ± 0.49), while the social support dimension, professional competence and the friendliness of work colleagues, an assessment of the work environment are valued positively.

<table>
<thead>
<tr>
<th>Item</th>
<th>C.I. of 95%</th>
<th>Average</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The people I work with like team working.</td>
<td>[2.62; 2.96]</td>
<td>2.79</td>
<td>.528</td>
</tr>
<tr>
<td>2. The people I work with cooperate to get the job done</td>
<td>[2.73; 3.11]</td>
<td>2.92</td>
<td>.587</td>
</tr>
<tr>
<td>3. The people I work with are competent in doing their jobs.</td>
<td>[2.88; 3.17]</td>
<td>3.03</td>
<td>.434</td>
</tr>
<tr>
<td>4. The people I work with are friendly.</td>
<td>[2.85; 3.21]</td>
<td>3.03</td>
<td>.545</td>
</tr>
<tr>
<td>5. The people I work with take a personal interest in me.</td>
<td>[2.40; 2.82]</td>
<td>2.61</td>
<td>.638</td>
</tr>
<tr>
<td>6. My supervisor is successful in getting people to work together.</td>
<td>[1.98; 2.50]</td>
<td>2.24</td>
<td>.786</td>
</tr>
<tr>
<td>7. My supervisor is concerned about the welfare of those under him.</td>
<td>[1.86; 2.40]</td>
<td>2.13</td>
<td>.811</td>
</tr>
<tr>
<td>8. My supervisor cooperates in order to get the job done.</td>
<td>[1.97; 2.56]</td>
<td>2.26</td>
<td>.891</td>
</tr>
<tr>
<td>9. My supervisor takes note of what I say.</td>
<td>[2.00; 2.57]</td>
<td>2.29</td>
<td>.867</td>
</tr>
<tr>
<td>10. My job requires working very hard.</td>
<td>[3.12; 3.56]</td>
<td>3.34</td>
<td>.669</td>
</tr>
<tr>
<td>11. My job is really busy.</td>
<td>[3.41; 3.74]</td>
<td>3.58</td>
<td>.500</td>
</tr>
<tr>
<td>12. My tasks are frequently interrupted before finishing, and I have to finish them later.</td>
<td>[2.81; 3.29]</td>
<td>3.05</td>
<td>.733</td>
</tr>
<tr>
<td>13. My job requires working very fast.</td>
<td>[2.98; 3.38]</td>
<td>3.18</td>
<td>.609</td>
</tr>
<tr>
<td>14. My job gets slower due to the delay of other people or departments.</td>
<td>[2.93; 3.34]</td>
<td>3.13</td>
<td>.623</td>
</tr>
<tr>
<td>15. My job requires long periods of continuous concentration on what is being done.</td>
<td>[3.07; 3.46]</td>
<td>3.26</td>
<td>.601</td>
</tr>
<tr>
<td>16. In my job, I have an opportunity to develop my own special abilities.</td>
<td>[2.29; 2.76]</td>
<td>2.53</td>
<td>.725</td>
</tr>
</tbody>
</table>
17. I have a lot of influence on what happens in my job. [2.10; 2.64] 2.37 .819
18. My job allows me to make a lot of decisions on my own. [1.89; 2.38] 2.13 .741
19. My job requires me to be creative. [2.24; 2.66] 2.45 .645
20. My job requires a high level of skill. [3.32; 3.68] 3.50 .558
21. My job requires that I learn new things. [3.47; 3.79] 3.63 .489
22. I get to do a variety of things in my job. [3.25; 3.70] 3.47 .687

Note: CI: Confidence Interval; SD: Standard deviation.

Table 2 shows descriptive statistical data related to the three dimensions that make up the demand-control-social support model, along with the internal consistency coefficients obtained for each scale. As can be seen in the table, there were moderate to high scores in the three dimensions of the model. However, within the social support dimension, is notorious the difference between the support received from co-workers and that received from superiors (2.87 ± 0.39 vs 2.23 ± 0.77; p ≤ .000).

Table 2 Statistical descriptions and α scores of the dimensions of the demand-control-support model.

<table>
<thead>
<tr>
<th>Model dimension</th>
<th>Minimum</th>
<th>Maximum</th>
<th>C.I. of 95%</th>
<th>Average</th>
<th>SD</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demands</td>
<td>2.50</td>
<td>4.00</td>
<td>[3.10;3.41]</td>
<td>3.25</td>
<td>.467</td>
<td>0.84</td>
</tr>
<tr>
<td>Control</td>
<td>2.00</td>
<td>3.71</td>
<td>[2.80;3.04]</td>
<td>2.86</td>
<td>.397</td>
<td>0.69</td>
</tr>
<tr>
<td>Support</td>
<td>1.56</td>
<td>3.78</td>
<td>[2.43;2.74]</td>
<td>2.58</td>
<td>.471</td>
<td>0.85</td>
</tr>
</tbody>
</table>

Note: α: Cronbach's alpha; CI: Confidence Interval; SD: Standard deviation.

Verification of the work hypothesis

In order to verify the hypothesis, a statistical analysis was developed, comparing the results obtained for the three dimensions of the model in relation with the assignment of each participant to particulars inpatient units or general nursing management. The results obtained partially confirmed our hypothesis, in that showed significant differences were only observed for the social support dimension. More specifically, professionals assigned to nursery management noticed less social support than those assigned to inpatient units (2.89 ± 0.27 vs 2.49 ± 0.48; p < .05). Moreover, an additional analysis differentiating support from superiors and support from colleagues showed the difference between groups was only maintained in the case of support from superiors (2.69 ± 0.55 vs 2.09 ± 0.77; p < .05), the statistical significance for the support from colleagues disappearing.

Finally, a statistical analysis was developed to of determine whether there were significant differences in stress exposure related with the socio-demographic and occupational variables foreseen in the study. No statistically significant differences were found in this respect.

DISCUSSION

The general objective of this research was to evaluate the exposure of nurses of the nursing bureau in a University Hospital to work-related stressors according to the demand-control-support model(3).
Most of the researches on this subject have been carried out in groups different from those analyzed in our study, such as students and professionals from other units\(^{(11,26-28)}\). Based on Karasek expanded model\(^{(3)}\) and focusing on our data, regarding the psychological demand at work, the most relevant aspects highlighted by the professionals were the intense work and the intense concentration that requires the same. These findings coincide with other similar studies in nursing professionals who do not belong to the specific nursing staff of the nursing bureau\(^{(29,30)}\). If we refer to the control at work, almost half of the professionals, highlighted the little control they have over it, due to the inability to make decisions for themselves, as well as the requirement of having to learn and performs many different tasks. Finally, when the social support dimension was analysed, a difference was observed between the support received from colleagues and that received from superiors. In our study the results obtained show that the professionals not assigned to a specific hospitalization unit, perceive less support from the superiors. Although we cannot compare these results with studies in professional groups of similar characteristics (nursing bureau); there are data in the previous literature that support the findings obtained. The unpredictability and uncontrollability of work tasks and the lack of social support favors the emergence of stress and burnout syndrome in the context of work\(^{(31)}\).

This is an area of possible improvement, as a high percentage of professionals claim they receive little support from supervisors. This reflects the results of several authors\(^{(32-35)}\), although some studies, e.g. Morano et al\(^{(30)}\) describe the favourable support received from the institution. As regards the support received from colleagues, several researches underline the importance of an ideal work environment and team work as protective factors against work-related strain and associate both factors with higher levels of job satisfaction\(^{(33,36,37)}\). In this context, our study obtained positive results, unlike those obtained in a previous study developed with nursing bureau nurses\(^{(32)}\).

An assessment of psychosocial risks in the work environment, even though complex and problematic task, should be present in occupational-risk prevention studies related with healthcare organization, in order to identify any risks and act at an early stage\(^{(2,34)}\). As several authors have mentioned the nursing staff is subject to many diverse stress sources\(^{(7,9,18,20,21,37,38,39)}\), which, if allowed to develop, have important consequences on the welfare of nursing professionals and on the organization itself. Many of these stressors are related with work organization and can be modified by the organization. Thus, the stress related with the nursing role is one of the most studied predictors related to burnout and engagement\(^{(8)}\), and one of the easiest work stressors for the organization deal with by implementing improvement strategies.

One of the main implications of the findings using Karasek’s model\(^{(3)}\) is the provision of empirical support to improve the health or well-being of workers without sacrificing their productivity. In this way, the psychological strain suffered by professionals can be mitigated independently of modifications in the work load, by increasing their decision making capacity and control of their own resources and skills. According to our results, the support offered by supervisors is an area of possible intervention in order to minimize the potentially adverse effects that psychological work-related demands may have over professionals\(^{(33,34,36,37,40)}\).

There are certain limitations to the study that should be mentioned. First of all and due to obvious factors, we had to use a none randomized sample of professionals. In
addition, a greater sample size drawn from different hospitals would have allowed a greater generalization of the findings.

**CONCLUSION**

As a conclusion, we mention the moderate perception of work-related stressors within the professional group analysed. Nonetheless, the lack of social support offered to the professionals by superiors should be highlighted, although this is balanced out by the support obtained from colleagues. Such perception of a lack of support was greater in the cases of professionals assigned to the nursing management. This element of support from superiors is an area over which human resources management should intervene in order to improve the welfare of health professionals’ and to prevent the appearance of work-related strain within the group, increasing the quality of care provided.

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