Original

Trait-anxiety and job psychosocial conditions as determinants of mental health in nursing

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A B S T R A C T

Background and objective: Job stress can have important consequences on the physical, mental or social health of the workers. A considerable number of studies have shown that the nursing community is especially vulnerable to suffering stress due to their work characteristics. The purpose of this research was to determine the relationship between perception of psychosocial risk factors at work, trait-anxiety and mental health in nursing.

Method: Two hundred and ten nurses from various public hospitals in Madrid Province have participated in this study. The perception of psychosocial risk factors was evaluated with DECORE and NASA-TLX questionnaires, trait-anxiety was measured by STAI questionnaire and mental health by GHQ-28 questionnaire.

Results: The results of the multiple regression analysis revealed that trait-anxiety was the variable most related to mental health. To explore the isolated association between working conditions and nurses’ mental health, partial correlations controlling the nurses’ trait-anxiety level were calculated and significant correlations were found between mental health and some psychosocial risk factors like organizational support, cognitive and temporal demands and control/autonomy at work.

Conclusion: Trait-anxiety influences the relations between working conditions and nurse’s mental health, but regardless of the trait-anxiety level of nurses, the adverse psychosocial conditions of the workplace are directly associated with poorer mental health.

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La ansiedad rasgo y las condiciones psicosociales del trabajo como determinantes de la salud mental en la enfermería

R E S U M E N

Antecedentes: El estrés experimentado en el ámbito laboral puede tener importantes consecuencias para la salud tanto física como mental y/o social de los trabajadores. Un número considerable de investigaciones han demostrado que el colectivo de enfermería es especialmente vulnerable al estrés debido a las características particulares de su labor. El objetivo de este estudio fue analizar las relaciones entre la percepción de riesgos psicosociales, la ansiedad rasgo y la salud mental en profesionales de la enfermería.

Método: En este estudio han participado 210 profesionales de enfermería de varios hospitales de la Comunidad Autónoma de Madrid. La percepción de los factores psicosociales de riesgo se ha evaluado mediante los cuestionarios DECORE y NASA/TXL, el nivel de ansiedad rasgo se ha valorado con el cuestionario STAI y la salud mental, con el cuestionario GHQ-28.

Resultados: El resultado del análisis de regresión múltiple ha revelado que la variable con mayor correlación con la salud mental fue la ansiedad rasgo. Para evaluar la relación, independientemente de la ansiedad rasgo, entre las condiciones laborales y la salud mental de las/os enfermeras/os, se calcularon las correlaciones parciales, controlando el nivel de ansiedad rasgo, y se encontraron correlaciones significativas y positivas entre una peor salud mental y la mayor presencia de factores psicosociales de riesgo.

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Introducción

Durante la última década, la naturaleza del trabajo ha cambiado drásticamente, principalmente debido a la crisis económica mundial y a la creciente presión y demográfica. El reestructuramiento del ambiente organizacional ha incrementado la prevalencia de factores de riesgo psicosocial en el trabajo y el aumento de enfermedades laborales debido a la tensión y la sobrecarga laboral (Jensen et al., 2019).

Los factores psicosociales se relacionan con las interacciones dentro del ambiente de trabajo, ocupación, condición laboral y capacidades personales, necesidades, cultura, consideraciones personales y extra-job que pueden afectar percepciones y experiencias, influencia de salud, rendimiento laboral y satisfacción (Williams, Buxton, Hindie, Bray & Berkman, 2017). Los factores psicosociales se presentan en todos los tipos de organizaciones y, dependiendo de diferencias individuales, pueden ser percibidos como un problema de salud mental o, por el contrario, si existe un balance óptimo entre condiciones de trabajo e individuales, el trabajo puede convertirse en un medio de salud, bienestar, satisfacción y motivación (Lorente, Salanova, Martínez & Vera, 2014).

El estrés laboral es la principal consecuencia del ser expuesto a factores psicosociales (Sarafis et al., 2016). A pesar de que cortos periodos de estrés pueden llevar a una adaptación funcional, bajo nivel de intensidad, frecuencia o duración, estas reacciones pueden superar un umbral de tolerancia y entrar en el estado de enfermedad. El estrés psicosocial puede afectar al comportamiento de un enfermero y ser considerado un precursor de enfermedad. El estrés psicosocial puede afectar a los enfermeros y a las personas con problemas psicofílicos y un descenso significativo de la calidad de vida en los enfermeros (Dewa, Hoch, Nieuwenhuijzen, Parikh & Sluiter, 2019).

Desde el punto de vista físico, los estudios han demostrado evidencia del comportamiento relacionado con el estrés laboral y un aumento en el riesgo para enfermedades cardiovasculares, gastrointestinales, respiratorias, musculoesqueléticas y problemas de piel, enfermedades del sistema nervioso, enfermedades del sistema reproductor, migrañas, dolores de cabeza, diabetes, y la estimulación en el crecimiento de una enfermedad crónica como el cáncer (Bernal et al., 2015). La alteración del comportamiento de las condiciones de exposición al estrés laboral, puede dar lugar a subida de peso, desnutrición, diabetes y reducción del rendimiento físico (Kirilmaz & Santos, 2016).

El estrés laboral es el factor más importante para concentrarse o pagar atención, el aumento del número de decisiones malas, la disminución de calidad de trabajo y el aumento de situaciones de comportamiento, incluso como el resultado de un ambiente laboral, puede afectar al rendimiento del trabajo, errores mayores o incidentes y, consecuentemente, enfermedades, ausentismo y tasas de rotación (Sarafis et al., 2016).

Se han confirmado varios estudios que algunos trabajadores podrían sufrir una disminución de la calidad de trabajo y las condiciones de trabajo identificadas como idóneas para trabajar, dado ciertos patrones individuales que pueden influir en la percepción del ambiente laboral, y que pueden ser más o menos atractivos y más o menos estresantes (Parent-Lamarche & Marchand, 2018). Un carácter perjudicial, por ejemplo, podría reducir la capacidad para procesar la información, resolver problemas, y el control de uno mismo, y aumentar la percepción del estrés y la sensación de que todo se ha vuelto un desafío. Esto puede conllevar a altos niveles de estrés, lo que puede producir una alta rotación de personal de enfermería, pero independientemente del nivel de estrés laboral, las condiciones laborales adversas se relacionan con una forma directa con un alto nivel de salud mental.

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signs (Khamisa, Peltzer, Ille, & Oldenburg, 2016). Thus, recognizing the impact of anxiety and work-related stressors on general health and the effects of nurses’ general health on poor job performance, absenteeism and increased healthcare costs is important (Pouradeghiyan et al., 2016).

**Aims and hypothesis**

The main goal of this research was to determine how perception of psychosocial risk factors and mental workload (stresors) are related to mental health in a group of nurses from various public hospitals in Madrid Province (Spain), considering trait-anxiety as a personality factor associated with the individuals’ perception of their working conditions and their health. The hypothesis was that trait-anxiety will be strongly related to nurses’ mental health but when controlling statistically its effect, other organizational factors, such as mental workload, organizational support and task control, will enable the prediction of mental health levels.

**Method**

**Participants**

A descriptive cross-sectional study was conducted with a sample of 210 nurses from several public hospitals in Madrid Province. One hundred and seventy-seven were female and the other 33 participants were male. The age of the participants ranged between 22 and 62 years old, with a mean of 38.45 years (SD = 8.37). The mean work experience was approximately 10 years (SD = 6.50).

**Instruments**

A battery of tests was applied, including the following instruments:

**Socio-demographic questionnaire**

Gender, age and years of work experience were included in this questionnaire.

**The General Health Questionnaire (GHQ-28)**

To obtain information on common, non-specific psychiatric problems, the 28-item version of the General Health Questionnaire (GHQ-28) adapted to Spanish population by Lobo, Perez-Echeverria and Artal (1986) was used. GHQ-28 is a self-administered screening tool designed to detect the susceptibility of developing non-psychotic mental disorders in the general population. GHQ-28 has shown high reliability coefficients: α = .97 for the total scale, and between .91 and .97 for the subscales (Godoy-Izquierdo, Godoy, López-Torrejón, & Sánchez-Barrera, 2002). GHQ-28 is composed of four scales: somatic symptoms (feeling of exhaustion or bodily discomfort); anxiety-insomnia (nervousness, anxiety and sleep problems); social dysfunction (problems related to performance and enjoyment of daily activities) and severe depression (thoughts and feelings of worthlessness, sadness and suicide). The score for each of the items varies from 0 (No, not at all or Better than usual) to 3 (Much worse than usual), so for each dimension a total score from 0 to 21 is possible, showing poorer health as the score gets higher. A score greater than or equal to 13 (cut-off score) in each dimension was considered an indicator of health problems.

**State-Trait-Anxiety Inventory (STAI)**

The STAI (Spielberger, Gorsuch, & Lushene, 1970) is one of the most useful tools to assess anxiety in applied psychology research (Buela-Casal, Guíllen–Riquelme, & Seisdedos-Cubero 2011). It provides a measure for two psychological dimensions: state anxiety (transient emotional condition) and/or trait-anxiety (relatively stable anxiety proneness). The Spanish version of the scale was employed to detect those individuals who generally feel anxious, leading them to perceive situations as more threatening. The response scale for each item varies from 0 (hardly ever) to 3 (almost always). A higher STAI total score indicates a higher level of anxiety. The Spanish version of the STAI presents enough methodological guarantees related to its validity and reliability and it is useful to assess the predisposition to anxiety in various settings (α = .90). Normative scores are available for the Spanish population. All participants with a percentile higher than or equal to 70 were considered to have anxiety problems (cut-off score).

**DECORE Multidimensional Questionnaire**

The perception of psychosocial risk factors was assessed with the DECORE Multidimensional Questionnaire (Luceño-Moreno & Martín-García, 2008). It is developed for the Spanish working population and its basic assumption is that high demands, low control, lack of support and imbalanced perceived rewards are the main psychosocial risk factors that significantly contribute to the increase of workers’ mental strain. DECORE includes 44 items (Likert response scale from 1, strongly disagree to 5, strongly agree) grouped in four factors: Job Control (assesses workers’ freedom to decide on issues that affect their work), Organizational Support (assesses the quality of the relationships established with the supervisor or colleagues), Rewards (assesses the benefits that workers perceive, essentially economic performance and job security) and Job Cognitive Demands (assesses the quantitative and qualitative aspects of their job requirements, in relation to how much they work). Higher scores indicate a negative perception of the work environment and, therefore, higher psychosocial risk exposure. Furthermore, it provides a global risk index that enables us to have a global vision of the psychosocial situation and classifies the exposure to risk into 4 levels (excellent, healthy, alert and emergency). Alert and emergency levels represent an inadequate risk exposure. DECORE has adequate reliability (α ≥ .72) and validity (Luceño-Moreno, Martín-García, Rubio-Valdehita, & Díaz-Ramiro, 2010).

**NASA-Task Load Index (TLX)**

The NASA-TLX questionnaire (Hart & Staveland, 1988) was used to evaluate the perceived mental workload. NASA-TLX is a subjective and multidimensional tool that offers a global score based on the average of six dimensions: mental demand (degree of mental and perceptual activity required); physical demand (how much physical activity is required); temporal demand (ratio between requested time and perceived pressure); performance (to what extent is the person satisfied with his/her level of performance); effort (how hard does the person have to work to accomplish that level of performance) and frustration (how insecure, discouraged, irritated, stressed, annoyed does the person feel during the tasks). A workload score from 0 to 100 is obtained for each dimension, showing more workload as the score gets higher. Scores higher than 50 indicate an excessive workload (cut-off score). NASA-TLX is the most widely used mental workload assessment instrument as it has proven to be reliable (α = .82) and valid (Díaz-Ramiro, Rubio-Valdehita, Martín-García, & Luceño-Moreno, 2010).

**Procedure**

This study is part of a broader research aimed to assess the perception of the working conditions of workers in public hospitals. The first step was to contact the Prevention Services of Madrid’s public hospitals to explain the research goals and the procedure. Once the study was approved by the Ethics Committee of the authors’ research center and by the hospital’s managers, several
instruments were applied to nurses, who participated voluntarily and anonymously, and signed an informed consent. The instruments were always applied in their paper and pencil versions. All sessions were held in small groups of 5 to 10 workers in a hospital room and during the nurses’ workday.

Data analysis

SPSS version 22.0 for Windows was used for data analysis. The relationships between dimensions were tested using stepwise multiple regression analyses. First, the total GHQ-28 score was the criterion or dependent variable, and later, each GHQ-28 subscale was introduced as a criterion variable. The predictor variables in all the regression analyses were the subscales of the other questionnaires used in the present study. Next, the same analysis was repeated controlling the effect of participants’ trait-anxiety, using partial correlations as input.

Results

Table 1 shows means, standard deviations (SD) and percentage (%) of people scoring over the cut-off scores for all measures. The percentage (%) of people over the cut-off represents the percentage of nurses who achieved scores in alert or emergency regarding their perception of psychosocial risks, over 70 on mental workload, more than 12 in GHQ-28 subscales, or over percentile 70 on trait-anxiety.

According to the scores obtained in DECORE, about 86% of participants were in a situation of psychosocial risk as cognitive demands, control and rewards were negatively perceived. In contrast, social support was positively perceived. A general alert situation was identified given that the Global Risk Index mean was high (M = 66.80, SD = 14.90). About 40% of the participants ranked on the emergency level and 48% on alert. All psychosocial risk factors are found in the alert level, except for organizational support that is within a healthy level. Interpersonal relationships established with both supervisors and co-workers are positively perceived. Cognitive demands are considered adequate. Nevertheless, control at work and rewards are considered insufficient.

The global mental workload score (the average of the six NASA-TLX dimensions) was considered intermediate (M = 51.50; SD = 14.40). Frustration was particularly low.

In general, the trait-anxiety of our nurses was low, although a 9.5% showed high scores (over the 75 percentile).

The mental health of the nurses in our study was mostly good. Only 6% of the participants showed some psychological health deficit, mainly due to the presence of somatic symptoms and social dysfunction. Less than 2% of participants presented symptoms of severe depression.

Models for prediction of nurses’ mental health

Table 2 shows the Pearson correlation coefficients between all variables. Significant correlations were found between some variables. Trait-anxiety correlated with psychological health; the higher the anxiety score, the poorer the health participants showed. Furthermore, it was found that higher levels of trait-anxiety were associated to lower job performance and greater frustration.

To test the influence of trait-anxiety and working conditions (psychosocial risks and mental workload) on each of mental health dimensions, a stepwise multiple regression analysis was performed. Table 3 shows the results for the predictors that were significant. Trait-anxiety and temporal demands were predictors of somatic symptoms. Anxiety/insomnia scores were predicted by trait-anxiety, cognitive demands and organizational support. Depression was associated with trait anxiety and control, and social dysfunction only with trait anxiety. The rest of the variables considered in the research were not significant (p > .05 in all cases), that is why they are not included in the table.

In view of these results, we concluded that trait-anxiety makes the strongest contribution to explaining participants’ mental health. To explore the sole influence of work conditions on mental health, regression analyses were repeated using partial correlations as input, controlling the moderating effect of participants’ trait-anxiety. Table 4 shows the partial correlation coefficients between mental health and psychosocial risk factors. Significant relationships were found between the dimensions of the GHQ-28 and between the dimensions of NASA-TLX. The association between control and cognitive demands of DECORE was also significant, as well as amongst control and organizational support. In this sense, the lack of job control was associated with higher cognitive demands and lower organizational support.

Table 5 shows the results of the multiple linear regression analysis carried out controlling the effect of trait-anxiety. Frustration, organizational support and cognitive demands were significant predictors of global mental health. The rest of the variables were not significant (p > .05 in all cases). Regarding social dysfunction,
### Table 2
Pearson correlation coefficients between all measures.

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<td>.26**</td>
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* p < .05.
** p < .01.
*** p < .001.

### Table 3
Prediction of mental health.

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<th>GHQ-28 total</th>
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* p < .05.
** p < .01.
*** p < .001.

### Table 4
Partial correlation coefficients between measures, controlling trait-anxiety effect.

<table>
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* p < .05.
** p < .01.
*** p < .001.

### Table 5
Prediction of mental health controlling nurses' trait-anxiety.

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<tr>
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<th>GHQ-28 total</th>
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* p < .05.
** p < .01.
none of the predictors were statistically significant ($p > .05$ in all cases).

**Discussion**

Our results support the findings of other studies concerning the impact of adverse working conditions on the mental health of nurses (Díaz-Ramiro, Rubio-Valdehita, López, & Aparicio, 2020). Approximately 90% of our participants reported a negative perception of their psychosocial working conditions, since their perception of control and rewards exceeded the limits considered tolerable (see Table 1). Similar results were found by Kane (2009) in a study with Indian nurses. Kirilmaz and Santos (2016) also found a high rate of job stress in nurses from Turkey.

Most of our nurses were satisfied with their jobs and, hence, their frustration was low. This may be due to nursing having a strong vocational character (Kirilmaz & Santos, 2016). In our study, we determined that satisfaction with rewards was not significantly related to psychological well-being. However, the absence of control at work was a significant predictor of depression scores. The lack of control in nursing may be a result of the accelerating changes in the health sector and the unpredictability of their tasks (Aiken et al., 2013), and, many times, nursing is not adequately remunerated, has no promotional prospects and their salaries are considered low (Mosadeghrad, 2013; Oliveira, Pinel, Gonçalves, & Diniz, 2013).

In contrast, our results showed that organizational support was in general positively perceived. Some previous studies found social and organizational support to be of high quality (Freiman & Merisalu, 2015), but others have shown that nursing is characterized by poor communication and collaboration with others, and by conflictive relationships with physicians and peers (Mosadeghrad, 2013). Our results pointed out that the lack of good organizational support is significantly associated with higher scores in anxiety and insomnia, even when controlling the trait-anxiety of the participants.

In our research, mental demand was the most significant source of nurses’ workload, followed by temporal and physical demands. As previous research has pointed out, nursing involves abundant responsibilities and a relevant amount of cognitive and emotional demands that have to be carried out at a very fast pace (Freiman & Merisalu, 2015). Time pressure, excessive workload and the obligation to do administrative tasks, are just a few of the potential sources of discomfort for nurses, as these reduce the available time to perform specific nursing tasks (Mosadeghrad, 2013). Our results indicate that high cognitive demands are associated with high levels of anxiety and insomnia, while temporary demands would be directly related to the presence of more somatic symptoms.

We have also found that trait-anxiety plays a relevant role in determining the mental health of the nurses who participated in the study. High anxiety was associated with worse mental health. Nurses’ psychological health was also related, although to a lesser extent, with insufficient organizational support and high cognitive demands. Similarly, Freiman and Merisalu (2015), with a sample of 404 Estonian nurses, found that quantitative and emotional demands, work pace and role conflicts were related to mental health problems.

Having an anxious personality has proven to be the main factor related to the anxiety/insomnia scores. This statement could be considered obvious given that those individuals with elevated levels of trait-anxiety are more likely to have higher state-anxiety. Certain adverse organizational factors tend to aggravate perceived risk and can lead to severe anxiety and, in worse cases, to develop frequent anxiety reactions. The quality of personal relationships established at work as well as cognitive requirements may have an impact on nervousness, tension, anxiety and sleep problems. In other studies, it was revealed that temporal demands have a huge role in the increasing of anxiety and insomnia. Work shifts produce fatigue, irritability, difficulty to concentrate and may also affect the quality and quantity of sleep (Jaafarpour & Khani, 2012). Recently, Díaz-Ramiro et al. (2020) observed that the perceived psychological wellbeing of healthcare professionals from Madrid is connected to sleep quality and daytime sleepiness and, in addition, they confirmed that high trait-anxiety is related to a decline in performance and satisfaction with daily activities (social dysfunction). Similarly, Ardekani et al. (2008) stated that fixed work shifts in the nursing community were associated with both the anxiety/insomnia and the social dysfunction scales, and Gómez-García et al. (2016) have highlighted that a working environment with insufficient resources, economic constraints, and time pressure, may reduce the quality of care in hospitals and lead to develop feelings of frustration and weakness in health-care professionals.

An important correlation between trait-anxiety and the severe depression scale was found. This result suggests that anxious proneness can influence those thoughts and feelings of worthlessness, sadness, hopelessness and suicide. Also, the lack of autonomy to decide about issues related to the own work (control), has been found to be a significant factor associated to the severe depression score. These results agree with other researches that have as well found a strong correlation between the development of the depression symptomatology, work demands and organizational support (Jensen et al., 2019).

Since the perception of the working conditions can be influenced by personality, we controlled the effect of trait-anxiety, so that the assessment of psychosocial risks was not affected by this personal factor. In this case, the results showed that regardless of the trait-anxiety level, the adverse psychosocial conditions of the workplace are directly associated with worse levels of mental health. High cognitive and temporal demands, lack of social support, and an insufficient control over the tasks, are psychosocial risk factors especially associated with worse mental health in nursing. It is necessary, therefore, to consider that although personality could play an important role in the development of mental health problems at work, when the impact of a psychosocial factor is permanent, individual predisposition may be less important.

Finally, Aalto, Heponiemi, Josefsson, Ahrffman, and Elovanio (2018) concluded that health-care organizations should take actions to decrease the workload and increase organizational support of employees. In this sense, we think that the results of our study could have useful and practical implications.

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**Conflict of interest**

None declared.

**References**


