

## Anxiety, depression, work-related stress and psychological flexibility in nurses: A correlational-comparative study

*Ansiedad, depresión, estrés laboral y flexibilidad psicológica en enferme-  
ras: un estudio correlacional-comparativo*

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### Abstract

Nursing is exposed to a variety of occupational stress affecting their psychological health and productivity. Psychological flexibility has been shown to have beneficial effects on mental health of general population. The aims of this study were to analyze in nursing staff the relationship between the exposure to work-related stressors and psychological flexibility; and between emotional symptomatology and psychological flexibility; and the differences of the exposure to work-related stressors and emotional symptomatology among different work areas and different shift work. A correlational-comparative study has been developed. In addition to sociodemographic and work variables, the NSS, DASS-21, AAQ-II questionnaires were used to measure the work-related stressors, stress, anxiety, depression, and psychological flexibility, respectively. The prevalence of moderate-very severe levels of depression, anxiety and stress was 17.6%, 29.9% and 23.3%, respectively. A significant negative correlation was observed between work-related stressors and psychological flexibility; between occupational stress and psychological flexibility; between emotional symptomatology and psychological flexibility; between anxiety, stress and age; between work-related

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stressors and age. Nurses working rotating shifts reported significantly higher levels of emotional symptomatology, stress and anxiety than those working day shifts. Psychological flexibility seems to explain a significant prevalence of emotional symptomatology in nurses. Community nurses showed the lowest levels of anxiety, depression and stress when compared to hospital nurses working in different areas.

**Keywords:** Depression; Anxiety; Occupational Stress; Psychological Flexibility; Nurses

### **Resumen**

La enfermería está expuesta a una variedad de estrés laboral afectando a su salud mental y productividad laboral. Se ha demostrado que la flexibilidad psicológica tiene beneficios para la salud mental de la población general. Los objetivos de este estudio fueron analizar en el personal de enfermería la relación entre estresores laborales y flexibilidad psicológica; entre sintomatología emocional y flexibilidad psicológica; y las diferencias en la exposición a estresores y en la sintomatología emocional de la enfermería entre diferentes áreas de trabajo y turnos. En este estudio correlacional comparativo se usaron los cuestionarios NSS, DASS-21 y AAQ-II. La prevalencia de niveles de moderado a muy severo de depresión, ansiedad y estrés fueron 17.6%, 29.9% y 23.3%, respectivamente. Se observó una correlación significativa negativa entre los estresores laborales y la flexibilidad psicológica; entre el estrés laboral y flexibilidad psicológica; entre sintomatología emocional y flexibilidad psicológica; entre ansiedad, estrés y la edad; y entre los estresores laborales y la edad. Las enfermeras que trabajaban con turnos rotatorios declararon niveles significativamente mayores de sintomatología emocional, estrés y ansiedad que las que trabajaban en turnos diurnos. La flexibilidad psicológica parece explicar una prevalencia significativa de sintomatología emocional en enfermería. Las enfermeras comunitarias mostraron los niveles más bajos de ansiedad, depresión y estrés en comparación con las enfermeras de hospital.

**Palabras clave:** Depresión; Ansiedad; Estrés Ocupacional; Flexibilidad psicológica; Enfermeras

## **INTRODUCTION**

Stress is the reaction that individuals may have due to work demands and pressures that, sometimes, exceed their expectations and test their ability to face the situation (Leka *et al.*, 2004). Stress at workplace refers to occupational stress and it is recognized worldwide as a major problem faced by nurses (Khamisa *et al.*, 2015). Nursing is a profession within the health care sector that faces a growing demand for high quality services. Nurses are exposed to a variety of occupational stress affecting their psychological health and work productivity (Kourakos, 2017). In the scientific literature the work-related stress of nurses has been

studied in different countries and moderate to-severe stress levels were found (Nascimento *et al.*, 2019; Gu *et al.*, 2019).

Depression is one of the main causes of disability worldwide. Globally, it is estimated to affect over 300 million people, equivalent to 4.4% of the world's population. Globally, depression is the main cause of disability and it is considered the main contributor to non-fatal health loss (7.5% of all YLD -Years Lived with Disability). Anxiety disorders represent one of the largest groups of disorders in Psychiatry and Medicine, with prevalence levels of 13.6-28.8% in Western countries. Anxiety disorders are considered the sixth largest contributor to non-fatal health loss and it is in the top 10 causes of YLD, leading to a global total of 24.6 million YLD in 2015. Higher levels of anxiety have been associated with an increased risk of suicide, longer duration of diseases and increased likelihood of non-response to treatment (WHO, 2017; Michael *et al.*, 2007; Kupfer, 2015).

Internationally, the increasing demands of healthcare in combination with the shortage of nurses, can lead to a high risk of experiencing mental disorders such as anxiety, depression and occupational stress (Perry *et al.*, 2015). Depression and anxiety in nursing have been extensively studied, observing mild-moderate levels (Arianpooran, 2019).

There are many contextual factors that scientific literature sets out as risks or related to the development of psychological problems in nurses, as shift work and its relationship with psychological variables. Some authors suggest a significant correlation between rotating work shifts and both anxiety and stress levels, compared to fixed day shifts (Nascimento *et al.*, 2019). Regarding to depression, a significant correlation with rotating shifts has been observed (Lee *et al.*; 2015). The presence of anxiety and depression in nurses derives from aspects of work context, such as work overload, rotating shifts and long work shifts (Hasan & Tumah, 2018). These factors worsen mental stress, depression and anxiety levels of workers (Gu *et al.*, 2019).

Work area is another contextual factor investigated in the literature. Evidence has shown that levels of stress, anxiety and depression are remarkable at Intensive Care Unit and Emergency Unit (ICU/EU) (Chegini, 2019; Vasconcelos *et al.*, 2018). Literature shows that nurses working at regional and local hospitals suffer from higher levels of depression and anxiety than community nurses (Huang *et al.*, 2018).

So far, the contextual variables have explained the probability of developing emotional symptoms or mental disorders in nurses. However, the literature shows a scarce number of studies researching personal variables and how they can explain the probability of developing a psychopathology.

To face the demands of daily life, as well as work stressors, the scientific evidence shows a thinking ability, which is called psychological flexibility (PF), that facilitates the adaptation to adverse situations through change. Hayes *et al.* (2006; p.7) define "psychological

flexibility” as “the ability to fully contact the present moment and the thoughts and feelings it contains without needless defence and, depending upon what the situation affords, persisting or changing in behaviour in the pursuit of goals and values”.

In recent years PF has been of great interest to the scientific community due to the growing evidence in favour of its beneficial effects on mental health. As such, a model has been developed to explain the relationship between PF and psychological health (Hayes *et al.*, 2006), which explains that “experiential avoidance” is a key process underlying psychological health problems.

The results of Sairanen *et al.* (2018) study showed that experiential avoidance was a powerful predictor of psychological symptomatology, such as anxiety, depression and stress. The results are consistent with a number of studies indicating that experiential avoidance (or its inverted form, PF) is an essential process in psychological disorders. Experiential avoidance plays an important role in the development of psychological distress after stressful life experiences (Kashdan *et al.*, 2006; Plumb *et al.*, 2004).

Kashdan and Rottenberg (2010) listed the different ways in which PF has been researched and considered the correlation between PF and health, as well as the evidence that the absence of PF is related to certain variants of psychopathology. The correlation between emotional symptomatology, such as anxiety, depression or stress, and PF has been investigated in the scientific literature. A high degree of psychological inflexibility has been associated with high levels of depression, anxiety and psychological distress (White *et al.*, 2013) and could indicate a risk factor for mental health (Bond *et al.*, 2011).

Although PF has been extensively investigated in relation to emotional symptomatology in clinical and non-clinical individuals, its relationship with these symptoms in nurses has been scarcely researched.

The main objective of this study was to analyse the relationship between PF and emotional symptoms. Other specific objectives were to understand the relationships between levels of anxiety, depression and occupational stress with PF, as well as its relationship with work variables (shifts, work area) in nursing staff working in the Public Health Service.

## MATERIALS AND METHODS

### ***Design and ethical considerations***

This is a correlational-comparative study. The study was approved by the Ethics Committee of Research of Malaga (May, 2019), and the ethical considerations of the Declaration of Helsinki (Manzini, 2000) were complied with at all times. The data were processed in accordance with the provisions of the Spanish Personal Data Protection Act

(15/1999). In addition, the University Ethics Committee gave its approval for this study to be conducted.

## ***Participants***

The sample consisted of 980 registered nurses from different hospital areas and from 33 community healthcare centres (urban and rural area), who agreed to participate and fully completed the questionnaires.

## ***Instruments***

### ***The Nursing Stress Scale (NSS)***

Occupational stress levels were measured using the NSS (Nursing Stress Scale) questionnaire developed by Gray-Toft and Anderson (1981), adapted to the Spanish population and validated by Más and Escribá (1998). The 34-items self-administered questionnaire is classified into 7 factors: factor I “death and dying”, factor II “conflict with physicians”, factor III “inadequate preparation”, factor IV “lack of support”, factor V “conflict with other nurses”, factor VI “workload” and factor VII “uncertainty concerning treatment”. The mean scores of the 7 subcategories were calculated obtaining the total score of the subcategories, so that the highest score shows the highest perception of exposure to professional stressors. The NSS is reported to have high internal consistency and construct validity (Más & Escribá, 1998).

### ***DASS-21 (Depression Anxiety Stress Scales-21) questionnaire***

DASS-21 is a self-administered 21-item scale that assesses the presence of anxiety, depression or stress. The Spanish version was validated by Ruiz *et al.* (2017). THE DASS-21 consists of 3 scales, depression, anxiety and stress, each one consisting of 7 items. The higher the total score, the greater the degree of symptomatology. The DASS-21 has been found to have good psychometric properties, with all 3 scales demonstrating high internal consistency in general population and clinical samples (Randall, Thomas, Whiting & McGrath, 2017).

### ***The Acceptance and Action Questionnaire - II (AAQ-II)***

The AAQ-II measures experiential avoidance and psychological inflexibility. It evaluates the ability to behave flexibly in certain stressful situations, problems or negative feelings. It is a 10-item self-report measure that was developed specifically to assess the Acceptance Commitment Therapy results. The Spanish version (Ruiz *et al.*, 2013) consists of 7 items that are answered using a 7-point Likert scale, ranging from “never true” to “always true”. The responses are summed for each item. The total score provides an indication of psychological flexibility. The higher the score, the greater the degree of experiential avoidance. The AAQ is reported to be both reliable and valid in previous research (Bond & Bunce, 2003).

### ***Sociodemographic and occupational variables questionnaire.***

Age and gender were used as sociodemographic variables and type of work area and work shift as occupational variables.

### ***Procedure***

This study took place in Malaga (Spain) in the Regional University Hospital and 33 healthcare centres (urban area and rural area).

Participants were contacted at their work place from different hospital units, Outpatient Clinics of different specialties and 33 healthcare centres. They were given verbal and written information about the study, the informed consent and the self-administered questionnaires to fill out individually and voluntarily.

### ***Data analysis***

A descriptive and analytical statistical analysis was performed using the Statistical Package of Social Sciences (SPSS), version 25.0. Descriptive statistics such as frequency, mean value and standard deviation were used to analyse socio-demographic characteristics. Pearson correlation were performed to determine if there were significant differences between psychological flexibility and the rest of the study variables; as well as differences between age and the same variables. Student's *t*-test for independent samples was used to compare the differences between all the study variables and the groups "psychologically flexible" staff and "psychologically inflexible" staff; as well as to compare the differences between all the study variables and the "rotating shift" and "day shift" groups. F Anova-test was used to compare the differences between all the study variables and the "work area" groups.

## **RESULTS**

According to the descriptive statistical analysis, the mean age of the participants was 44.7 years (SD=10.952), 77.4% (n=759) of them were women and 22.6% (n=221) were men. Regarding occupational variables, 26.3% of nurses were working in community healthcare centers and 73.7% working at hospital. Among hospital nurses, 24.3% were working at ICU/EU, 13.2% at surgery unit, 33.7% in ward area and 2.6% at outpatient clinics. The majority of nurses (61%) worked rotating shifts (mornings, afternoons and nights) and 39% worked day shifts (mornings or afternoons). Most of the nurses were older than 50 years old (35.1%, n=344). The mean work-related stressors score was 37.72 (SD= 15.70) with a range of 97. The highest score stressors were "workload" (9.75, SD= 4.072) and "death and dying" (8.72, SD= 4.083) (tables 1, 2).

**Table 1.**  
*Descriptive data for the qualitative study variables.*

Variable	% (n)	Mean (SD)	Range	Variable	% (n)	Variable	% (n)
<b>Sex</b>				<b>Work Experience</b>		<b>Work Shift</b>	
Male	22.6	(221)		<2 years	2.2	Day shift	39 (382)
Female	77.4	(759)		2-10 years	18.0	Rotating shift	61 (598)
Total	100	(980)		11-24 years	37.1	Total	100 (980)
				>=25 years	42.7		
				Total	100	Work Area	
<b>Age</b>	44.71	(10.952)	22-64			Healthcare Centre	26.3 (258)
22-30 years	14.0	(137)				ICU/EU	24.3 (238)
31-40 years	22.3	(219)				Surgical Area	13.2 (129)
41-50 years	28.6	(280)				Ward Area	33.7 (330)
>50 years	35.1	(344)				Outpatient Clinic	2.6 (25)
Total	100	(980)					

ICU/EU= Intensive Care Unit/Emergency Unit

**Table 2.**  
*Descriptive data for the quantitative study variables.*

Items	Mean (SD)	Range	Min-Max
NSS-1	8.72 (4.083)	22	0-22
NSS-2	4.86 (2.677)	21	0-21
NSS-3	3.11 (1.723)	9	0-9
NSS-4	2.40 (2.095)	17	0-17
NSS-5	3.99 (2.791)	15	0-15
NSS-6	9.75 (4.072)	23	0-23
NSS-7	5.06 (2.864)	18	0-18
NSS-T	37.72 (15.709)	97	0-97
DASS-21D	3.33 (4.589)	71	0-71
DASS-21A	3.46 (3.866)	21	0-21
DASS-21E	6.27 (4.618)	21	0-21
DASS-21T	12.95 (11.371)	61	0-61
<b>Variable</b>	<b>Groups</b>	<b>n</b>	<b>Percentage</b>
DASS-21D	None	711	72.6 %
	Low	97	9.9 %
	Moderate	106	10.8 %

Variable	Groups	n	Percentage
	Severe	33	3.4 %
	Very severe	33	3.4 %
	Total	980	100 %
DASS-21A	None	610	62.2 %
	Low	77	7.9 %
	Moderate	142	14.5 %
	Severe	68	6.9 %
	Very severe	83	8.5 %
	Total	980	100 %
DASS-21E	None	652	66.5 %
	Low	100	10.2 %
	Moderate	118	12.0 %
	Severe	84	8.6 %
	Very severe	26	2.7 %
	Total	980	100 %

The following analysis carried out was Pearson's bivariate correlations for occupational stress, emotional symptomatology (anxiety, depression and stress measured by DASS-21) and PF variables; and Pearson's bivariate correlations for occupational stress, emotional symptomatology and age variables (table 3).

**Table 3.**

*Correlation coefficients between occupational stress and psychological flexibility; occupational stress and age; emotional symptomatology (depression, anxiety, stress) and psychological flexibility; emotional symptomatology and age.*

Items	NSS-1	NSS-2	NSS-3	NSS-4	NSS-5	NSS-6	NSS-7	NSS-T
Psychological Flexibility	-.207***	-.243***	-.255***	-.237***	-.232***	-.205***	-.218***	-.271***
Age	-.086**	-.186***	-.136***	-.030	-.109**	-.127***	-.215***	-.169***
Items	DASS-21D	DASS-21A	DASS-21E	DASS-21T				
Psychological Flexibility	-.410***	-.439***	-.404***	-.465***				
Age	.014	-.080*	-.074*	-.056				

\* $p < .05$ ; \*\* $p < .01$ , \*\*\* $p < .001$

According to Table 3, statistically significant inverse correlations have been found between work-related stressors, specifically NSS-1, NSS-2, NSS-3, NSS-4, NSS-5, NSS-6,

NSS- 7 and NSS-T dimensions, and psychological flexibility variable. This indicates that the higher the level of psychological flexibility variable, the lower the level of exposure to work-related stressors and the lower the level of occupational were found.

Statistically significant inverse correlations have been found between work-related stressors, specifically, the dimensions NSS-1, NSS-2, NSS-3, NSS-5, NSS-6, NSS-7 and NSS-T and age variable. This indicates that the older the age, the lower the level of exposure to work-related stressors and the lower the level of occupational stress were found.

Statistically significant negative correlations between the emotional symptomatology variable (measured by DASS-21) and psychological flexibility variable have been found ( $p < .001$ ). This reflects that the higher the level of psychological flexibility, the lower the level of emotional symptomatology (table 3).

Similarly, statistically significant negative correlations have also been observed between the emotional symptomatology variable, specifically the dimensions DASS-21A, DASS-21S, and age variable. This indicates that the older the age, the lower the level of emotional symptomatology (table 3).

Afterwards Student's *t*-tests were conducted to compare the prevalence of work-related stressors between "shift work" groups ("day shift", "rotating shift"), and "psychological flexibility" groups ("non flexible", "flexible"); and to compare the emotional symptomatology levels between the above-mentioned groups (table 4).

**Table 4.**

*Student's t-test differences in the exposure to stressors and in occupational stress and emotional symptomatology between the "psychological flexibility" groups.*

<b>Variable</b>	<b>Group</b>	<b>n</b>	<b>Mean (SD)</b>	<b>t</b>	<b>p value</b>	<b>95% CI</b>
NSS-1	no flexible	167	10.58 (4.391)	6.130	.000	[1.524, 2.968]
	flexible	813	8.33 (3.911)			
NSS-2	no flexible	167	6.29 (3.220)	6.550	.000	[.207, 2.246]
	flexible	813	4.57 (2.452)			
NSS-3	no flexible	167	4.08 (1.856)	7.571	.000	[.866, 1.475]
	flexible	813	2.91 (1.626)			
NSS-4	no flexible	167	3.50 (2.427)	6.592	.000	[.924, 1.711]
	flexible	813	2.18 (1.948)			
NSS-5	no flexible	167	5.41 (3.182)	6.537	.000	[1.200, 2.235]
	flexible	812	3.70 (2.611)			
NSS-6	no flexible	167	11.59 (3.616)	7.081	.000	[1.605, 2.842]
	flexible	812	9.37 (4.059)			

Variable	Group	n	Mean (SD)	t	p value	95% CI
NSS-7	no flexible	166	6.44 (3.142)	6.348	.000	[1.146, 2.179]
	flexible	813	4.78 (2.721)			
NSS-T	no flexible	167	47.11 (17.064)	7.992	.000	[8.535, 14.123]
	flexible	813	35.78 (14.701)			
DASS-21D	no flexible	167	7.48 (6.687)	9.413	.000	[4.305, 5.701]
	flexible	813	2.48 (3.461)			
DASS-21A	no flexible	167	7.20 (4.887)	11.455	.000	[3.929, 5.088]
	flexible	813	2.69 (3.109)			
DASS-21E	no flexible	167	10.38 (4.599)	12.895	.000	[4.253, 5.662]
	flexible	813	5.43 (4.147)			
DASS-21T	no flexible	167	24.60 (12.757)	13.491	.000	[11.993, 1.098]
	flexible	813	10.55 (9.433)			

It was noted that the “non flexible” group scores were significantly higher than the “flexible” group scores at all dimensions of work-related stressors (measured by NSS) and at all emotional symptomatology dimensions measured by DASS-21 (anxiety, depression, stress and DASS-21 Total) (table 4).

**Table 5.**

*Student’s t-test in the exposure to work-related stressors and emotional symptomatology between the “shift work” groups.*

Variable	Group	n	Mean (SD)	t	p value	95% CI
NSS-1	day shift	221	8.42 (3.701)	-4.422	.000	[-1.642, -.632]
	rotating shift	759	8.80 (4.253)			
NSS-2	day shift	221	4.86 (2.511)	-6.332	.000	[-1.405, -.740]
	rotating shift	759	4.86 (2.698)			
NSS-3	day shift	221	3.04 (1.622)	-3.268	.001	[-.576, -.144]
	rotating shift	759	3.13 (1.772)			
NSS-4	day shift	221	2.32 (2.051)	-3.648	.000	[-.761, -.229]
	rotating shift	759	2.43 (2.102)			
NSS-5	day shift	220	3.76 (2.834)	-4.983	.000	[-1.268, -.551]
	rotating shift	759	4.06 (2.707)			
NSS-6	day shift	221	9.22 (4.189)	-5.783	.000	[-2.068, -1.020]
	rotating shift	758	9.90 (3.881)			
NSS-7	day shift	220	4.94 (2.630)	-7.843	.000	[-1.753, -1.051]
	rotating shift	759	5.09 (2.876)			

Variable	Group	n	Mean (SD)	t	p value	95% CI
NSS-T	day shift	221	36.25 (15.102)	-6.575	.000	[-8.547, -4.617]
	rotating shift	759	38.14 (15.564)			
DASS-21D	day shift	221	3.52 (3.659)	-3.018	.003	[-1.391, -.295]
	rotating shift	759	3.27 (5.071)			
DASS-21A	day shift	221	3.08 (3.629)	-3.932	.000	[-1.453, -.485]
	rotating shift	759	3.58 (3.967)			
DASS-21E	day shift	221	5.83 (4.499)	-4.484	.000	[-1.920, -.751]
	rotating shift	759	6.40 (4.621)			
DASS-21T	day shift	221	12.13 (11.011)	-3.885	.000	[-4.299, -1.396]
	rotating shift	759	13.19 (11.468)			

Similarly, the “rotating shift” group scores were significantly higher than the “day shift” group at all dimensions of exposure to work-related stressors and emotional symptomatology dimensions (table 5).

F Anova-tests were conducted to explore the relationship among work-related stressors and “work area” groups, and among emotional symptomatology and “work area” groups (table 6).

**Table 6.**

*F ANOVA test. Differences in exposure to work-related stressors and emotional symptomatology among the “work area” groups.*

Variable	Work Area	n	Mean (SD)	F	p value	95% CI
NSS-1	Healthcare Centre	258	8.02 (3.481)	1.689	.000	[7.59, 8.44]
	ICU/EU	238	9.73 (4.320)			[9.18, 10.28]
	Surgical Area	129	6.77 (3.602)			[6.14, 7.40]
	Ward Area	330	9.39 (4.175)			[8.94, 9.84]
	Outpatient Clinic	25	7.52 (3.765)			[5.97, 9.07]
	Total	980	8.72 (4.083)			[8.46, 8.97]
NSS-2	Healthcare Centre	258	3.78 (2.055)	20.985	.000	[3.53, 4.03]
	ICU/EU	238	5.82 (2.989)			[5.43, 6.20]
	Surgical Area	129	4.57 (2.576)			[4.12, 5.01]
	Ward Area	330	5.15 (2.578)			[4.87, 5.43]
	Outpatient Clinic	25	4.64 (3.040)			[3.39, 5.89]
	Total	980	4.86 (2.677)			[4.69, 5.03]
NSS-3	Healthcare Centre	258	2.79 (1.534)	6.504	.000	[2.60, 2.98]
	ICU/EU	238	3.39 (1.934)			[3.15, 3.64]
	Surgical Area	129	2.76 (1.435)			[2.51, 3.01]
	Ward Area	330	3.30 (1.761)			[3.11, 3.49]
	Outpatient Clinic	25	2.84 (1.546)			[2.20, 3.48]
	Total	980	3.11 (1.723)			[3.00, 3.22]

Variable	Work Area	n	Mean (SD)	F	p value	95% CI
<b>NSS-4</b>	Healthcare Centre	258	1.84 (1.878)	6.744	.000	[1.61, 2.07]
	ICU/EU	238	2.55 (2.242)			[2.27, 2.84]
	Surgical Area	129	2.54 (2.043)			[2.19, 2.90]
	Ward Area	330	2.68 (2.073)			[2.46, 2.91]
	Outpatient Clinic	25	2.36 (2.396)			[1.37, 3.35]
	Total	980	2.40 (2.095)			[2.27, 2.54]
<b>NSS-5</b>	Healthcare Centre	257	2.89 (2.599)	15.498	.000	[2.57, 3.21]
	ICU/EU	238	4.58 (3.025)			[4.19, 4.97]
	Surgical Area	129	4.62 (2.571)			[4.17, 5.07]
	Ward Area	330	4.18 (2.665)			[3.89, 4.46]
	Outpatient Clinic	25	3.92 (1.869)			[3.15, 4.69]
	Total	979	3.99 (2.791)			[3.81, 4.16]
<b>NSS-6</b>	Healthcare Centre	257	7.99 (3.952)	25.412	.000	[7.50, 8.47]
	ICU/EU	238	10.60 (4.139)			[10.07, 11.13]
	Surgical Area	129	8.71 (3.816)			[8.05, 9.38]
	Ward Area	330	10.88 (3.721)			[10.48, 11.28]
	Outpatient Clinic	25	10.20 (2.930)			[8.99, 11.41]
	Total	979	9.75 (4.072)			[9.49, 10.00]
<b>NSS-7</b>	Healthcare Centre	258	3.76 (2.454)	27.181	.000	[3.45, 4.06]
	ICU/EU	238	5.85 (3.135)			[5.45, 6.25]
	Surgical Area	129	4.57 (2.436)			[4.14, 4.99]
	Ward Area	329	5.77 (2.725)			[5.47, 6.06]
	Outpatient Clinic	25	4.16 (2.444)			[3.15, 5.17]
	Total	979	5.06 (2.864)			[4.88, 5.24]
<b>NSS-T</b>	Healthcare Centre	258	31.07 (13.545)	23.989	.000	[29.41, 32.73]
	ICU/EU	238	42.25 (17.454)			[40.02, 44.48]
	Surgical Area	129	34.33 (13.912)			[31.90, 36.75]
	Ward Area	330	41.11 (14.852)			[39.50, 42.71]
	Outpatient Clinic	25	35.80 (11.662)			[30.99, 40.61]
	Total	980	37.72 (15.709)			[36.73, 38.70]
<b>DASS-21D</b>	Healthcare Centre	258	2.37 (3.241)	4.851	.001	[1.97, 2.77]
	ICU/EU	238	3.22 (3.913)			[2.72, 3.72]
	Surgical Area	129	3.70 (4.059)			[2.99, 4.40]
	Ward Area	330	3.99 (5.874)			[3.35, 4.62]
	Outpatient Clinic	25	3.64 (4.212)			[1.90, 5.38]
	Total	980	3.33 (4.589)			[3.04, 3.62]
<b>DASS-21A</b>	Healthcare Centre	258	2.29 (3.003)	8.314	.000	[1.93, 2.66]
	ICU/EU	238	3.84 (4.192)			[3.31, 4.38]
	Surgical Area	129	3.88 (3.816)			[3.21, 4.54]
	Ward Area	330	3.88 (3.993)			[3.45, 4.31]
	Outpatient Clinic	25	4.28 (4.818)			[2.29, 6.27]
	Total	980	3.46 (3.866)			[3.22, 3.71]
<b>DASS-21E</b>	Healthcare Centre	258	4.82 (4.189)	9.105	.000	[4.31, 5.34]
	ICU/EU	238	6.65 (4.721)			[6.05, 7.25]
	Surgical Area	129	6.65 (4.235)			[5.91, 7.39]
	Ward Area	330	6.95 (4.793)			[6.44, 7.47]
	Outpatient Clinic	25	6.60 (4.481)			[4.75, 8.45]
	Total	980	6.27 (4.618)			[5.98, 6.56]

Variable	Work Area	n	Mean (SD)	F	p value	95% CI
<b>DASS-21T</b>	Healthcare Centre	258	9.48 (9.502)	8.568	.000	[8.31, 10.64]
	ICU/EU	238	13.73 (11.957)			[12.20, 15.26]
	Surgical Area	129	14.20 (10.821)			[12.32, 16.09]
	Ward Area	330	14.48 (11.877)			[13.20, 15.77]
	Outpatient Clinic	25	14.52 (12.593)			[9.32, 19.72]
	Total	980	12.95 (11.371)			[12.23, 13.66]

ICU/EU= Intensive Care Unit/Emergency Unit

Regarding the work area, ICU/EU scores were significantly higher for NSS-1, NSS-2, NSS-3, NSS-7 and NSS-T variables; ward area scores were significantly higher for NSS-4, NSS-6, DASS-21D and DASS-21E variables; outpatient clinic scores were significantly higher for DASS-21A and DASS-21T variables; surgery area scores were significantly higher for NSS-5 variable and significantly lower for NSS-1 and NSS-3 variables; healthcare center scores were significantly lower for NSS-2, NSS-4, NSS-5, NSS-6, NSS-7, NSS-T, DASS-21D, DASS-21A, DASS-21E and DASS-21T variables (table 6).

## DISCUSSION

In the present study one aim was to analyse the relationship between psychological flexibility (PF) and emotional symptomatology in nurses. These results showed statistically significant differences among the exposure to work-related stressors, emotional symptomatology and psychological flexibility. Nurses from the “non flexible” group, compared with nurses from the “flexible” group, reported significantly higher levels of depression, anxiety, stress, overall emotional symptomatology and to the exposure to all work-related stressors. It has also been observed that a relationship of statistical significance and negative correlation exists between work-related stressors and psychological flexibility. It should be noted that a negative significant correlation between emotional symptomatology and psychological flexibility has been found. This indicates that the lower the level of psychological flexibility, the higher the exposure to work-related stressors and the higher the level of depression, anxiety and stress. These results are supported by other studies on a different population sample (Puolakanaho *et al.*, 2020; Meyer *et al.*, 2019; Waters *et al.*, 2018).

Another purpose of this study was to analyse the differences in emotional symptomatology and the exposure to work-related stressors in nurses and its relationship with occupational variables. The results of this study about perceived work stress support those found in various studies (Nascimento *et al.*, 2019). In the present study, “workload” and “death and dying” were the highest score stressors, results supported by other studies (Ko & Kiser-Larson, 2016; Wahlberg *et al.*, 2016).

In this study the prevalence of moderate to-very severe levels of depression, anxiety and stress was 17.6%, 29.9% and 23.3%, respectively, results that corroborate those reported in other countries (Gu *et al.*, 2019; Arianpooran, 2019). The presence of anxiety, depression and occupational stress on nurses supports those results demonstrating that this relationship derives from work aspects such as workload, rotating shifts and long working hours, which are considered the major stressors that influence the occupational stress and emotional symptomatology in nurses (Santos *et al.*, 2017; Karanikola *et al.*, 2016).

The findings showed significant differences about exposure to stressors and emotional symptomatology between “shift work” groups. The results demonstrated that emotional symptomatology, occupational stress and anxiety levels are significantly higher on nurses working rotating shifts than day shifts, results that support studies in other countries (Nascimento *et al.*, 2019; Samaei *et al.*, 2018; Khodadadi *et al.*, 2016). This may be explained by the long night shifts and variable work schedule from hospital nurses. Variable long work shifts can disrupt the circadian cycle and cause sleep disorders, increased mental burden, persistent fatigue and behavioral changes such as irritability, bad attitude, reduced communication skills, reduced ability to cope with the emotional demands at the workplace and reduced efficiency (Lin *et al.*, 2014; Caruso, 2014). On the contrary, the findings showed that depression levels are significantly higher in nurses working day shifts than in those working rotating shifts, results that differ from other studies (Lee *et al.*, 2015; Wang *et al.*, 2014). This may be because workload and work pressure are probably high in day shifts and administrative work is also part of their tasks, which may exceed their work ability and, consequently, lead them to depressive symptoms.

On the other hand, a statistically significant and negative correlation between work-related stressors and age has been found. Moreover, a statistically significant and inverse correlation between exposure to most of stressors and age has been observed. These results are similar to Cheung and Yip (2015) study concerning the relationship between occupational stress and age. Statistically significant and inverse correlations have also been found between anxiety, stress and age. This indicates that older nurses reported lower levels of anxiety and stress. These results support those in other countries (Cheung & Yip, 2015; Wahlberg *et al.*, 2016).

Regarding the work area, this study shows a statistically significant difference in the exposure to work-related stressors among the different work areas, being significantly higher in ICU/EU nurses at all dimensions except at “conflict with other nurses”, and significantly lower for community nurses. Similarly, ICU/EU nurses reported the significantly highest occupational stress levels, and on the contrary, the community nurses reported the lowest scores. This is probably because nurses working at ICU/EU must deal with severe traumatized and acutely ill patients, as well as with death and dying patients. Additionally, their responsibility and workload are often high. These results are supported by other studies

performed in other countries (Borges *et al.*, 2019), and in Spain (Díaz Tobajas *et al.*, 2017), in which moderate-to severe stress levels were observed in ICU/EU.

In regard to emotional symptomatology, these results show that the highest statistically significant levels of depression and stress were reported by nurses working on ward units and the lowest significant levels by community nurses. These results are consistent with other studies (Ramírez-Baena *et al.*, 2019; Munnangi *et al.*, 2018; Khodadadi, *et al.*, 2016), which showed significant levels of anxiety and depression in the medical area. In this study, the nurses were working at medical and surgery ward units with similar characteristics where the nurse-patient ratio is higher than in other hospital areas (such as surgical area, ICU/EU, Radiology), and consequently the workload is higher. Also, the family visits regime on ward is more flexible than in specialized units, which can make nurses more difficult to develop properly their caregiving tasks. In addition, nurses working in ICU/EU and surgery area showed, significantly, the second highest stress levels. This may be due to the high responsibility required in these specialized hospital work areas.

Notably Outpatient Clinic nurses reported, significantly, the highest anxiety levels, which may be explained by the high nurse-patient ratio, shortage of nursing staff, little time to care for patients and extra administrative work, which probably increases the workload.

It must be noted that community nurses showed, significantly, the lowest levels of anxiety, depression and stress when comparing to hospital nurses working in different areas, results that support Huang *et al.* (2018) study. This may be because community nurses normally deal with chronic patients, can organize their work in advance and probably feel that their work is under control.

These results could be an important tool for the Health Human Resources staff to be taken into account, as they could be predictors of emotional symptomatology. Those above-mentioned work conditions along with the psychological vulnerability of nurses (being flexible or not) could lead to a risk of psychological disorders, which should be considered by hospital and nursing managers in order to target them for preventive interventions to protect the psychological health of the nursing workforce and, consequently, increase their productivity.

In conclusion, according to the results of this study, psychological flexibility seems to explain a significant prevalence of emotional symptomatology in nurses. The results show that community nurses reported, significantly, the lowest levels of anxiety, depression and occupational stress when comparing to hospital nurses working in different areas. On the contrary, nurses working on ward units showed the highest significant levels of depression and stress, and outpatient clinic nurses reported, significantly, the highest anxiety levels. In addition, nurses working in intensive care unit, emergency unit and surgery area showed, significantly, the second highest stress levels.

### ***Applying Research to Occupational Health Practice***

Anxiety, depression and occupational stress are prevalent among nurses which may lead to absence from work and major problems. Individual and occupational factors are important factors which can affect these psychological variables. The results confirmed that nurses who showed low levels of psychological flexibility, reported significantly higher levels of emotional symptomatology and occupational stress. Although the contextual variables have been widely studied in the scientific literature, there are rarely studies that describe the impact of individual variables, as psychological flexibility, on mental health of nurses. The work conditions along with the psychological vulnerability of nurses (being flexible or not) could lead to a risk of psychological disorders. These results are groundbreaking as they could be predictors of emotional symptomatology. These findings could be a useful tool for Human Resources health staff and nursing managers in the development of programs of health promotion and prevention of mental illnesses which would target preventive interventions to protect the psychological health and reduce the risk of emotional symptomatology in nursing staff and, consequently, increase their productivity.

### ***Limitations***

This study presents limitations. Firstly, our study relied on self-report measures only. Self-reports methods create the potential for bias, respondents may overestimate or underestimate their level of psychological flexibility and emotional symptomatology. Secondly, the data were collected at a single point in time. A future study of longitudinal design would provide a more substantive understanding of the concept.

### ***Ethical aspects***

The study was approved by the Ethics Committee of Research of Malaga (May, 2019), and the ethical considerations of the Declaration of Helsinki (Manzini, 2000) were complied with at all times. The data were processed in accordance with the provisions of the Spanish Personal Data Protection Act (15/1999). In addition, the University Ethics Committee gave its approval for this study to be conducted.

### ***Conflicts of interests***

None

### ***Funding resources***

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