

## Anxiety and strategies for coping with stress used by first responders and out-of-hospital emergency health care staff before the COVID-19 pandemic

*Ansiedad y estrategias de afrontamiento ante el estrés en primeros intervinientes y personal sanitario de emergencias extrahospitalarias previas a la pandemia de COVID-19*

Elizabeth Piñar-Navarro<sup>1</sup>, Guillermo A. Cañadas-De la Fuente<sup>2</sup>, Emilio González-Jiménez<sup>2</sup>, César Hueso-Montoro<sup>2</sup>

The characteristics of working in emergencies mean that the professionals who deal with them are exposed to highly stressful situations. There are several variables that mediate the traumatic impact of critical situations, referring to the professional, the critical situation and its context<sup>1,2</sup>. Those referring to the professional are related to personality characteristics, previous experiences and coping skills<sup>3</sup>. One of the consequences of acute post-intervention stress is the emotional exhaustion that can ensue, which can manifest as anxiety, stress,

compassion fatigue and burnout syndrome<sup>4,5</sup>.

In light of the effect of the emotional exposure of these professionals, it is important for their health and for the performance of effective work to be aware of the emotional risks involved in emergency work. The objective of this study was to determine the anxious propensity in threatening situations and coping strategies for stress in emergency first responders (EFRs) and out-of-hospital emergency health personnel, as well as to analyze the influence that sociode-

mographic and occupational variables may have on this.

An observational, cross-sectional study was carried out on a sample of EFRs, namely firefighters and security forces, as well as out-of-hospital emergency health care workers, with at least 6 months' experience in the position. The study was carried out in the province of Granada (Spain). Anxiety was assessed by means of the trait anxiety subscale of the STAI<sup>6</sup> scale, which refers to a personality factor for responding to situations perceived as threatening. Stress coping strategies were assessed by means of the COPE-28 instrument scales<sup>7</sup>. In addition, sociodemogra-

**Table 1.** Characteristics of the sample (n=145)

	Me (IQR)
Age (years)	44 (37-49)
Professional experience (months)	228 (156-288)
Time in current position (months)	120 (53-180)
	N (%)
<b>Gender</b>	
Men	133 (91.70)
Women	12 (8.30)
<b>Marital Status</b>	
Single	20 (13.80)
Married	112 (77.25)
Divorced/separated/widowed	13 (9.00)
<b>Educational level</b>	
Baccalaureate	58 (40.00)
Vocational training/other	50 (34.50)
Higher education	37 (25.50)
<b>Profession</b>	
Firefighter	31 (21.40)
Security bodies	90 (62.10)
Healthcare	24 (16.60)
<b>Type of contract</b>	
Permanent	137 (94.50)
Interim or temporary	8 (5.50)

Me: median; IQR: interquartile range.

phic and occupational data were collected. To analyze the association of the sociodemographic and occupational variables with the main variables, Mann-Whitney, Kruskal-Wallis or Spearman correlation tests were used, as required. In addition, linear regression was performed for those associations that were statistically significant, adjusted for sex, since previous studies have shown their influence on the variables of interest<sup>4,8,9</sup>. The study was approved by the Biomedical Research Ethics Committee of the province of Granada.

Se incluyeron 145 sujetos (Tabla 1). La mediana en el nivel de ansiedad fue de 12,00 (RIC = 7,00-19,00); en hombres fue de 11,00 (RIC = 7,00-18,00) y en mujeres de 16,00 (RIC = 7,25-26,50). Los datos descriptivos de las escalas del instrumento COPE-28 se muestran en la Tabla 2.

A total of 145 subjects were included (Table 1). The median anxiety level was 12.00 (IQR= 7.00-19.00); in men it was 11.00 (IQR= 7.00-18.00) and in women 16.00 (IQR= 7.25-26.50). The descriptive data of the COPE-28 instrument scales are shown in Table 2.

The bivariate analysis showed that anxiety was statistically significantly associated with age ( $p = 0.014$ ) and professional experience ( $p = 0.016$ ). Regarding coping strategies, age was associated with de-

**Table 2.** Descriptive statistics of the COPE-28 questionnaire scales

	Samples N = 145 Me (IQR)	Men N = 133 Me (IQR)	Women N = 12 Me (IQR)
Active coping	4 (4-5)	4 (4-5)	4 (4-5)
Planning	4 (3-5)	4 (3-5)	4 (2-5)
Instrumental support	3 (2-3)	3 (2-3)	3 (2-4)
Social emotional support	2 (2-3)	2 (2-3)	2 (2-3)
Self-distraction	2 (1-3)	2 (1-3)	2 (1-4)
Relief	2 (1-3)	2 (1-3)	2 (1-3)
Behavioral Disengagement	0 (0-2)	0 (0-2)	0 (0-1)
Positive reinterpretation	3 (2-4)	3 (2-4)	3 (2-4)
Denial	0 (0-2)	0 (0-2)	0.50 (0-2)
Acceptance	4 (3-5)	4 (3-5)	4 (3-5)
Religion	0 (0-2)	0 (0-2)	0 (0-1)
Substance use	0 (0-0)	0 (0-0)	0 (constante)
Mood	2 (1-3)	2 (1-3)	2 (2-3)
Self-blame	2 (1-3)	2 (1-3)	2 (1-3)

Me: median; IQR: interquartile range.

**Table 3.** Linear regression between associated variables (adjusted for sex)

	B <sub>0</sub>	B <sub>1</sub>	p value
STAI-R anxiety vs age	2.941	0.258	0.018
STAI-R anxiety vs professional experience	9.972	0.018	0.040
<b>COPE -28 coping</b>			
Religion vs professional experience	0.396	0.002	0.048
Denial vs age	-0.309	0.026	0.071
Denial vs professional experience	0.352	0.002	0.074
Emotional support vs marital status	3.103		
Single		Reference	
Married/partnered		-0.843	0.003
Divorced/separated/widowed		-0.637	0.125
Positive reinterpretation vs marital status	3.740		
Single		Reference	
Married or cohabiting		-0.833	0.008
Divorced/separated/widowed		-1.217	0.008
Substance use vs marital status	0.560		
Single		Reference	
Married or cohabiting		-0.351	0.052
Divorced/separated/widowed		0.070	0.786
Self-incrimination vs educational level	1.690		
High school graduate		Reference	
Vocational training/other		0.559	0.017
Higher education		0.594	0.010
Unemployment vs type of contract	1.791		
Permanent		Reference	
Interim or temporary		0.765	0.145
Discharge vs profession	1.677		
Firefighter		Reference	
Security forces		0.063	0.826
Healthcare		0.954	0.026
Instrumental support vs profession	3.226		
Firefighter		Reference	
Healthcare security forces		-0.754	0.002
		-0.335	0.347

B<sub>0</sub>: constant; B<sub>1</sub>: regression coefficient.

nial ( $p = 0.026$ ); professional experience with denial ( $p = 0.016$ ) and religion ( $p = 0.042$ ); marital status was associated with emotional support ( $p = 0.040$ ), positive reinterpretation ( $p = 0.022$ ) and substance use ( $p = 0.026$ ); level of education with self-blame ( $p = 0.017$ ); type of

contract with relief ( $p = 0.023$ ); finally, type of profession was associated with instrumental support ( $p = 0.005$ ) and relief ( $p = 0.016$ ). Table 3 shows the result of these associations after adjusting for sex.

In relation to anxiety, it is interesting to note that the scores ob-

served were below the mean values reported for the general population used in the validation of the STAI<sup>6</sup>. These professionals may have a personality factor that makes them respond with less anxiety to situations perceived as threatening. Regarding coping strategies, the scores were high in active coping, planning and acceptance, which indicates a profile of subjects in whom an active coping factor predominates, considered as an adaptive strategy, as opposed to emotional or avoidance factors.

The results show that anxiety increases significantly with increasing age. The same occurs with the length of professional practice, i.e., the longer the professional practice, the greater the anxiety. These results may be due to feelings of secondary vulnerability to traumatic events, intolerance to uncertainty at work, decisions involving a great deal of responsibility or major life changes<sup>2,10,11</sup>, although it is true that other studies allude to the fact that experience protects against anxiety, although not against depression<sup>12</sup>.

Anxiety among healthcare workers has been widely studied, since many studies reveal that working in the emergency department negatively affects both their personal lives and the quality of care provided to their patients, due to stressful and adverse working conditions<sup>13</sup>. This may justify the fact that healthcare workers scored higher on the coping strategy of relief, which means that this group tends to increase awareness of their own emotional discomfort, accompanied by a tendency to express or discharge these feelings<sup>7</sup>. In health emergency situations, such as that experienced with the COVID-19 pandemic, healthcare workers are the group most exposed to the virus in their work environment<sup>14</sup>, which presumably results in a greater intensification of

responses such as anxiety in threatening situations like this and in the implementation of strategies such as emotional relief, compared to other groups that operate on the front line.

The results also show that the group of professionals with higher education and professional training scored higher in the self-blame strategy. The evidence associates the most intense emotional responses with the degree of responsibility<sup>2</sup>.

This study has some limitations in terms of sample representation (limited geographical area) and design, which do not allow causal relationships to be established. One of its strengths is that the sample includes the diversity of groups that usually act on the front line in out-of-hospital emergency situations, taking into account the difficulty of access to this population, which is so dispersed in terms of places of work. It is important to point out that this research shows a snapshot of two relevant aspects of the emotional state of the EFRs and the health workers who act in out-of-hospital emergencies, with the singularity that the data were collected before the COVID-19 pandemic, which has been an unprecedented health emergency. We start from the hypothesis that the findings observed will be modified after this crisis, which opens the possibility of carrying out future research to compare data from before and after, in order to determine the impact of the crisis. This is also relevant for the implementation of preventive measures after traumatic events of particular relevance. In the specific case of the health crisis generated by COVID-19, international studies indicate that intervention in the psychological crises that may arise plays a fundamental role in the overall deployment of disease control<sup>15</sup>.

## References

- Lewis-Schroeder NF, Kieran K, Murphy BL, Wolff JD, Robinson MA, Kaufman ML. Conceptualization, assessment, and treatment of traumatic stress in first responders: a review of critical issues. *Harv Rev Psychiatry*. 2018;26:216-27.
- Guerrero-Barona E, García-Baamonde E, Moreno-Manso JM, González-Rico P. Estrés laboral e inteligencia emocional en el servicio de urgencias y emergencias 112. *Emergencias*. 2016;28:355.
- Arble E, Arnetz BB. A model of first-responder coping: an approach/avoidance bifurcation. *Stress Health*. 2017;33:223-32.
- Greinacher A, Derezza-Greeven C, Herzog W, Nikendei C. Secondary traumatization in first responders: a systematic review. *Eur J Psychotraumatol*. 2019;10:1562840.
- Casal Angulo C, Lerma Cancho AM, Carrasco Rueda MA. Decálogos de seguridad para el personal sanitario en emergencias extrahospitalarias terrestres. *Emergencias*. 2019;31:202-4.
- Guillén-Riquelme A, Buela-Casal G. Actualización psicométrica y funcionamiento diferencial de los ítems en el State Trait Anxiety Inventory (STAI). *Psicothema*. 2011;23:510-5.
- Morán C, Landero R, González MT. COPE-28: A Psychometric Analysis of the Spanish Version of the Brief Coping. *Universitas Psychologica*. 2010;9:543-52.
- Jones S, Nagel C, McSweeney J, Curran G. Prevalence and correlates of psychiatric symptoms among first responders in a Southern State. *Arch Psychiatr Nurs*. 2018;32:828-35.
- Stanley IH, Hom MA, Spencer-Thomas S, Joiner TE. Examining anxiety sensitivity as a mediator of the association between PTSD symptoms and suicide risk among women firefighters. *J Anxiety Disord*. 2017;50:94-102.
- Gerolimatos LA, Edelstein BA. Anxiety-related constructs mediate the relation between age and health anxiety. *Aging Ment Health*. 2012;16:975-82.
- Smith EC, Burkle FM. The forgotten responders: the ongoing impact of 9/11 on the Ground Zero recovery workers. *Prehosp Disaster Med*. 2018;33:436-40.
- Tuohy A, Knussen C, Wrennall MJ. Effects of age on symptoms of anxiety and depression in a sample of retired police officers. *Psychol Aging*. 2005;20:202-10.
- Gómez-Urquiza JL, De la Fuente-Solana EI, Albendín-García L, Vargas-Pecino C, Ortega-Campos EM, Cañadas-De la Fuente GA. Prevalence of Burnout Syndrome in Emergency Nurses: A Meta-Analysis. *Crit Care Nurse*. 2017;37:e1-e9.
- Ministerio de Sanidad del Gobierno de España. Procedimiento de actuación para los servicios de prevención de riesgos laborales frente a la exposición al SARS-CoV-2. Madrid: Ministerio de Sanidad; 2020.
- Li W, Yang Y, Liu ZH, Zhao YJ, Zhang Q, Zhang L, et al. Progression of Mental Health Services during the COVID-19 Outbreak in China. *Int J Biol Sci*. 2020;16:1732-8.

**Author affiliation:** <sup>1</sup>Health Emergency Public Company (EPES 061), Provincial Service of Granada, Granada, Spain. <sup>2</sup>Department of Nursing, Faculty of Health Sciences, University of Granada, Granada, Spain.

E-mail: emigoji@ugr.es

**Conflicting interest:** The authors declare no conflict of interest in relation to this article.

**Contribution of the authors, financing and ethical responsibilities:** All authors have confirmed their authorship, the non-existence of external financing and the maintenance of confidentiality and respect for patients' rights in the document of author responsibilities, publication agreement and assignment of rights to EMERGENCIAS. The study was approved by the Biomedical Research Ethics Committee of the province of Granada.

**Article not commissioned by the Editorial Committee and with external peer review.**

**Editor in charge:** Guillermo Burillo Putze.

**Correspondence:** Emilio GonzálezJiménez. Department of Nursing, Faculty of Health Sciences, University of Granada. Avenida de la Ilustración, 60. 18016 Granada, Spain.