SCIENTIFIC LETTERS

Levels of anxiety and depression among emergency physicians in Madrid during the SARS-CoV-2 pandemic

Niveles de ansiedad y depresión en médicos de urgencias de Madrid durante la pandemia por el virus SARS-CoV-2

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Emergency departments have played a key role in the SARS-CoV-2 pandemic declared in February 2020[1]. Before then, several organizational adaptations were made in response to epidemiological changes and new findings on COVID-19[2]. These changes were compounded by exposure to the risk of infection itself, which increased the previously documented stress burden on emergency medical personnel (EMP)[3,4]. Anxiety and depression among the EMP have been studied[3,5] with different prevalences, due to factors that are not comparable even within the same country, but have not been analyzed in a pandemic such as the current one and in a territory with a high impact of the pandemic. Our aim was to determine which factors are associated with higher scores on the anxiety and depression screening instruments in the EMP of the Community of Madrid.

A cross-sectional observational study was designed, approved by our scientific research ethics committee (File 102/20), based on a non-randomized electronic form distributed among hospital and out-of-hospital emergency physicians in the Community of Madrid. Medical professionals enrolled through direct contact with the corresponding coordinators/heads and dissemination in social networks were included. The Beck Anxiety Inventory (BAI)[6] and the Hamilton Depression Scale (HDS)[7] were chosen as screening instruments for the detection of anxiety and depression, respectively. Clinically significant scores are 22 on the BAI and 13 on the HDS. The independent variables were demographic characteristics of the respondent and logistical aspects of work organization and type of hospital. The form was distributed in the week of April 6-12, 2020.

Of the 565 potential responses, 328 (63.0%) valid questionnaires were received. The mean (standard deviation) age of the respondents was 40.3 (8.2), 247 were women (75.3%), 195 (59.5%) were family physicians and 69 (21.0%) were resi-

dents. Thirty respondents (9.1%) were resident physicians and 15 (4.6%) physicians working in out-of-hospital emergency departments, 278 (79.5%) respondents belonged to the public system. The number of on-call visits/month was 5.2 (2.3). The mean number of hospital physicians in the morning, afternoon and night shifts was 11 (5), 6 (3) and 4 (2), respectively.

The mean score on the BAI was 16 (10). The frequencies of scores corresponding to moderate and severe anxiety were 79 (24.1%) and 15 (4.6%), respectively. The mean score among women was 17 (10) and among men 14 (10) (P = 0.029). Among attendings, the BAI score correlated inversely with the number of physicians present in the three shifts (morning, afternoon and evening) with the following Pearson's coefficients: -0.27, -0.29 and -0.16 (P < 0.001, P < 0.001 and P = 0.004; respectively). Respondent age also correlated inversely with BAI score (Pearson's coefficient -0.113, P = 0.042). The number of staff physicians inversely correlated with BAI score across all respondents (Pearson's coefficient -0.277, P < 0.001) (Figure 1A). The mean BAI score according to hospital complexity level was as follows: first level 17 (9), second level 18 (10) and third level 15 (11). Between the second and third level of complexity, the difference was statistically significant (Scheffé, P = 0.023). Grouping the respondents according to the cut-off point established for the BAI as indicative of clinically relevant anxiety, it was determined that age, number of shifts/month and number of attendings showed statistically significant differences between non-anxious staff and those with higher scores (Table 1).

The mean HDS score was 13 (10). The frequencies of scores corresponding to severe depression and major depression were 45 (13.7%) and 30 (9.1%), respectively. The mean score

among women was 13 (9) and among men 12 (11) (P = 0.520). Among attending physicians, the HDS score correlated inversely with the number of physicians present in the three shifts (morning, afternoon and evening) with the following Pearson's coefficients: -0.25, -0.29 and -0.28 (P < 0.001). The respondent's length of service and the number of on-call/month correlated with the HDS score directly (Pearson's coefficient 0.125, P = 0.024 and 0.122, P = 0.028, respectively). The number of physicians on staff correlated inversely with HDS score in all respondents (Pearson coefficient -0.255, P < 0.001) (Figure 1B). The mean HDS score according to hospital complexity level was as follows: First level 16 (12), second level 14 (11) and third level 12 (9). No statistically significant differences were found. Grouping the respondents according to the cut-off point established for HDS as indicative of clinically significant depressive traits, it was determined that the number of attending physicians and the number of shifts/month showed statistically significant differences between the staff who scored above the cut-off point and the rest of the respondents (Table 1).

When the correlation and coexistence between depression and anxiety was assessed, it was observed that the BAI and HDS scores had a Pearson correlation coefficient of 0.801 (P < 0.001) (Figure 2).

Considering only BAI values for clinically relevant anxiety and HDS for clinically significant depression, concordance between subjects with anxiety and depression occurred in 88 respondents (Kappa 69.3%; P < 0.001). On the other hand, 195 subjects did not qualify for either category (Kappa 97.0%). Having a clinically significant depression score was associated with an increased risk of having a clinically significant anxiety score (OR 3.16; 95% CI 2.43-4.10).
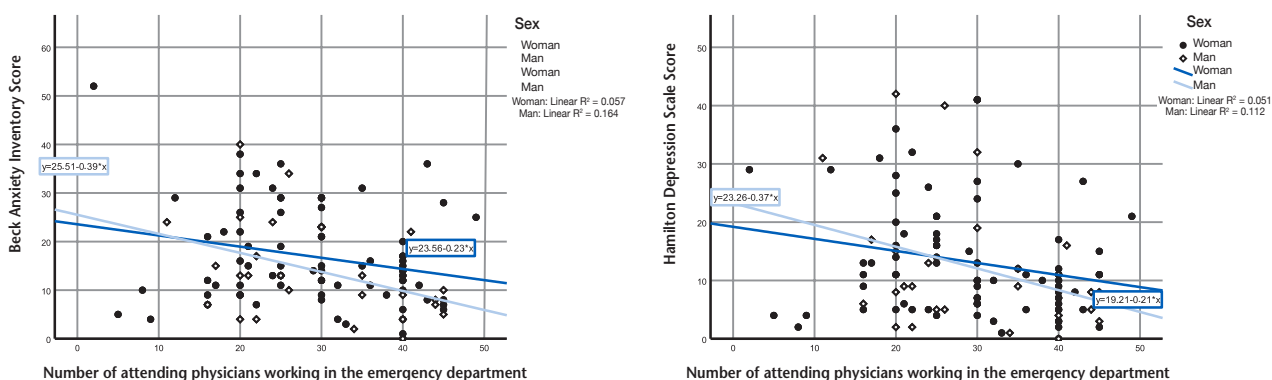
In the present study, the propor-

Figura 1. Correlation between the number of attending physicians assigned to the respondent's emergency department (staff size) and Beck anxiety inventory (right) and Hamilton depression scale score (left).

tion of respondents with clinically significant scores is three times higher than that described by Pérez-Álvarez, although the latter study is outside a pandemic state[8]. The higher detection of anxiety among women and resident physicians has been previously documented[9,10]. However, our study points to the lower size of the staff as an added factor to the risk of anxiety, probably due to the effect that sick leave caused by infection has on the rest of the team.

According to our results, experience in the emergency department has been found to be a protective factor against anxiety. This had previously been related to the prevalence of emotional disorders by Atif et al. who found that veteranship was not associated with greater anxiety[9] but was associated with lower levels of depression. In contrast, our findings indicate that younger physicians show higher levels of anxiety when comparing attendings with residents or in the bivariate correlation of BAI with the age of respondents. These observations are congruent with the findings of Firth-Cozens et al.[12] in recently joined physicians and in studies already discussed referring to the general medical population[9,13,14].

The relationship between clinically significant levels of anxiety and depression observed in this study is particularly striking[14]. On the one hand, we can consider that the increased demand for care and exposure to logistical changes and an inherent risk of contagion may explain higher levels of anxiety. On the other hand, the effect of the environment generated by the population affected by depression or anxiety, which can induce mood changes in healthy personnel,

Table 1. Results of the analysis of comparison of means of epidemiological and logistic variables, between individuals with clinically significant anxiety and depression and the rest of the respondents

Variable		N	Mean (SD)	P
Beck Anxiety Inventory				
Age	Normal	234	41 (8)	0.009
	Moderate or severe anxiety	91	38 (9)	
Seniority	Normal	234	12 (6)	0.457
	Moderate or severe anxiety	94	11 (8)	
No. of attending physicians assigned to the service	Normal	231	31 (10)	< 0.001
	Moderate or severe anxiety	93	26 (10)	
No. of shifts/month	Normal	234	4.9 (2.0)	0.005
	Moderate or severe anxiety	91	5.7 (2.8)	
Hamilton Depression Scale				
Age	Normal or mild	201	41 (8)	0.587
	Depression	124	40 (8)	
Seniority	Normal or mild	201	11 (6)	0.296
	Depression	127	12 (7)	
No. of attending physicians assigned to the service	Normal or mild	198	32 (10)	< 0.001
	Depression	126	25 (9)	
No. of shifts/month	Normal or mild	201	5.0 (2.0)	0.043
	Depression	124	5.5 (2.7)	

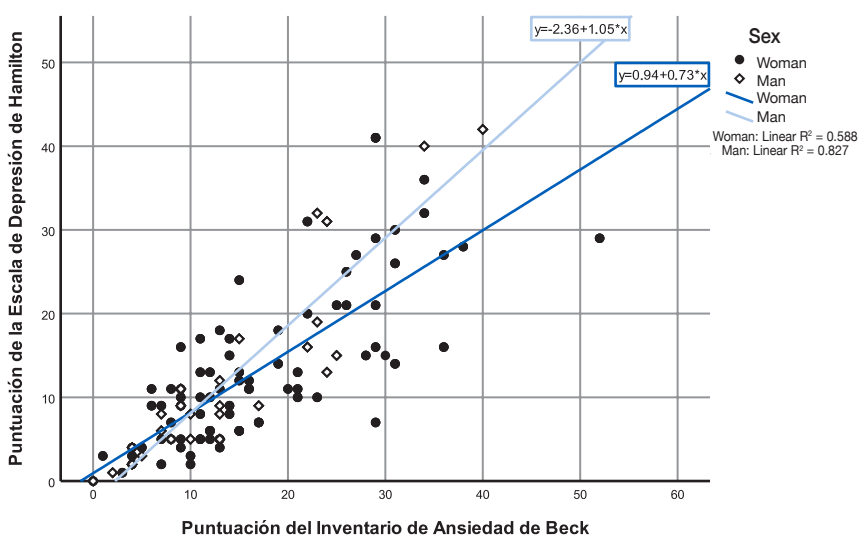N: absolute number of respondents; SD: standard deviation.

Figure 2. Correlation between the Hamilton Depression Scale score and the Beck Anxiety Inventory.

may also contribute to strengthen this correlation[15].

In the event of similar situations in the future, we could suggest the following useful measures: temporarily increasing the size of the staff, having a reinforcement staff, reducing the number of medical guards and combining veteran personnel with less experienced personnel.

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