

# Increase of burnout among emergency department professionals due to emotional exhaustion during the SARS-Cov2 pandemic

## Evolution from 2016 to 2021

Oriol Yuguero, PhD<sup>a,b,\*</sup> , Nuria Rius, MD<sup>b</sup>, Jorge Soler-González, PHD<sup>c</sup>, Montserrat Esquerda, PhD<sup>b,d</sup>

### Abstract

The objective is to establish there have been any significant changes in the evolution of levels of burnout and empathy at the different Emergency Department in our region, bearing the severe acute respiratory syndrome coronavirus 2 pandemic. This cross-sectional observational study was conducted in a healthy region between November 2020 and January 2021. Lleida emergency care centers. All the doctors and nurses of the health were contacted by email. Empathy was measured using the Spanish version of the Jefferson scale of physician empathy. Burnout was measured using the Maslach Burnout Inventory (MBI) in the version validated in Spanish. Sociodemographic data were also recorded. We compared the data with 2016 results. A total of 159 professionals agreed to participate in this study. A significant increase in the MBI score was observed in the 2020 to 2021 sample (39.5 vs 49.7), mostly due to an increase in the MBI-EE (21.5 vs 28.5), as well as an increase in the Jefferson scale of physician empathy score (112 vs 116). ( $P = .039$ ). There were no differences when analyzing the association between professions (nurses or doctors) or years worked, burnout, and empathy. For 2020 to 2021, the 41 to 50 years age group showed the highest burnout (MBI score). Emergency department practitioners suffered more burnout compared to 2016, especially due to emotional exhaustion ( $P < .001$ ). Despite practitioners' improved degree of empathy, which had been described as being preventative against burnout, during the COVID-19 pandemic, over-involvement may have led to empathic stress and emotional exhaustion, giving rise to greater burnout.

**Abbreviations:** ED = emergency department, JSPE = Jefferson scale of physician empathy, MBI = Maslach Burnout inventory, SARS-CoV2 = Severe acute respiratory syndrome coronavirus 2.

**Keywords:** Burnout, COVID19, emergencies, empathy

## 1. Introduction

Emergency departments (ED) are generally places with high levels of stress.<sup>[1]</sup> A wide variety of symptoms and syndromes are treated in the ED, many of which are life-threatening. In turn, the plan for the implementation of satisfaction surveys to assess the quality of service and levels of user satisfaction with the public health services of Catalonia (PLAENSA),<sup>[2]</sup> specifically in the ED, highlights the importance of the relationship with the patient and the handling of information and confidence shown by professionals, where empathic skills are very important.

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) pandemic has aggravated the situation, with increased

care and workload, an increase in the number of patients attended to and length of the working day, dealing with more patients in extreme situations, and making professionals witnesses of more human suffering. The ED has been one of the front-line services in caring for SARS-Cov2 patients.<sup>[3]</sup>

Professionals in the ED had very high rates of burnout syndrome prior to the pandemic.<sup>[4]</sup> Burnout is characterized by emotional exhaustion, depersonalization, and lack of personal gratification.<sup>[5]</sup> The figures are higher among physicians and frontline professionals, including ED practitioners, as stated on numerous occasions in the Medscape report.<sup>[6]</sup> There are several studies that reflect how the pandemic has worsened the levels of burnout among health professionals, especially ED professionals.<sup>[7]</sup>

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The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

All participants provided consent to participate in the project. The study was approved and validated by the Research Ethics Committee of the Lleida Health Region (code2020/2370).

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<sup>a</sup> Institut de Recerca Biomèdica de Lleida, IRBLLEIDA, Lleida, Spain, <sup>b</sup> Facultat de Medicina, Universitat de Lleida, Spain, <sup>c</sup> Direcció d'Atenció Primària. Institut Català de la Salut, Lleida, Spain, <sup>d</sup> Institut Borja de Bioètica, Barcelona, Spain.

\* Correspondence: Oriol Yuguero, Institut de Recerca Biomèdica de Lleida, IRBLLEIDA, Avda. Rovira Roure, 80, Lleida 25198, Spain (e-mail: Oriol.yuguero@gmail.com).

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Empathy<sup>[8]</sup> refers to the attitude and ability to understand the experiences and feelings of others and the ability to communicate this understanding to patients. Several studies have described the benefits of high levels of empathy in improving healthcare<sup>[9]</sup> and patient satisfaction.<sup>[10]</sup> However, excess empathy may cause empathetic stress<sup>[11]</sup> if the necessary tools are not generated to manage emotions.

Given the importance of burnout among professionals in our health system, our research team evaluated the level of burnout among many professionals in our health region.<sup>[12]</sup>

The results suggest an association between levels of burnout and empathy, since professionals with higher levels of burnout displayed the lowest levels of empathy, and vice versa. In addition, levels of burnout were higher among ED professionals than among primary care professionals in the same region.<sup>[13]</sup>

At a time when levels of professional burnout are increasing in many countries and fields of action, we believe it is important to assess its relationship with empathy. Improving the communication skills and empathy of professionals can be a good tool for ending dehumanization, as described previously.

The aim of this study is to examine whether the relationship between high levels of empathy and low burnout remains stable over the years. We would like to understand the consequences of promoting empathy among health professionals. Finally, we want to evaluate what impact the SARS-Cov2 pandemic could have had in that relationship, especially in emergency health professionals, those who have been on the front line.

## 2. Methodology

This cross-sectional observational study was conducted in the health regions of Lleida and Pyrenees. In this region, there are 5 public hospitals, 3 in mountainous districts and 2 in the city of Lleida: one chronicity-oriented and without an ED, and the Arnau de Vilanova University Hospital. The Arnau de Vilanova University Hospital, with 470 beds, is oriented to processes of greater complexity and is the only hospital with an ED in the city and the reference for the Lleida region. These hospitals have a population of over 400,000 people. There are also 12 continuous primary care centers and 6 mobile units for outpatient emergencies. In our health region, we had 1 more wave of SARS-CoV2 than the rest of our country; we wanted to see if it had really had an impact on a group of professionals who previously had high levels of burnout.

### 2.1. Participants and sampling method

All doctors and nurses of the health region who worked in public emergency care centers were contacted by email. At the time of the survey, 272 professionals worked in the centers described above, and a response rate of 58.4% was obtained. Participants voluntarily agreed to participate and completed an anonymous survey on burnout and empathy between November 2020 and January 2021. Data were anonymised to ensure confidentiality. We used a simple sampling method. We contacted the entire group of professionals and aimed for a response rate of more than 50% in the survey. We believe that the sample was representative in terms of age and gender proportions.

#### 2.1.1. Instruments and variables.

**2.1.1.1. Assessment of empathy.** Empathy was measured using the Spanish version of the Jefferson scale of physician empathy (JSPE).<sup>[14,15]</sup> In the JSPE, respondents indicated how strongly they agreed on a scale of 1 to 7, with each of the 20 empathy-related statements in patient care settings. Higher JSPE scores indicated greater empathy.

**2.1.1.2. Assessment of burnout.** Burnout was measured using the Maslach Burnout inventory (MBI)<sup>[16]</sup> in the version validated in Spanish<sup>[17]</sup> previously used in other studies.<sup>[18]</sup> The MBI is a 22-item instrument rated on a 7-point Likert scale on feelings related to work. Respondents rated how often they experienced these feelings on a scale from 0 (never) to 6 (every day). The MBI includes 3 subscales: emotional exhaustion (MBI-EE), depersonalization (MBI-DP), and personal accomplishment (MBI-PA). High scores on the MBI-EE and MBI-DP, and low MBI-PA scores correspond to high levels of burnout.

**2.1.1.3. Other variables.** The following sociodemographic data were recorded: age, sex, profession (emergency medical doctor or nurse), place of professional practice (regional hospital, second-level healthcare hospital, primary care, or outpatient care), years worked in the ED, and compatibility with other workplaces. Finally, we have the same data from the sample obtained in 2016, published in 2017.<sup>[12]</sup>

**2.1.2. Data analysis.** This was a cross-sectional observational study with 2 quantitative dependent variables (the results of the MBI and JSPE). A Microsoft Excel database containing the variables defined for this study was created.

Descriptive statistics includes absolute and relative frequencies for qualitative variables and quartils (median and first and third quartiles) for non-normally distributed quantitative variables. Bivariate analysis included the chi-squared test to assess the relationship between qualitative variables, the Mann-Whitney's U test to compare a non-normally distributed quantitative variable between 2 groups, and the Kruskal-Wallis test with qualitative variables of more than 2 groups. The Spearman's correlation coefficient was used to assess the relationship between 2 non-normally distributed quantitative variables.

The responses to the surveys were anonymous because the 2016 participants cannot be matched with the 2021 participants and have to be treated as independent samples. For this reason, the bivariate analysis to compare the results of the scales between the 2 years of study is carried out using the non-parametric Mann-Whitney U test to compare the distribution of quantitative variables between 2 independent groups.

A quantile multivariable regression for the median of the empathy score and for the median of each of the 3 Maslach Burnout Inventory subscales was fit to assess the year effect (2021 vs 2016) once adjusted by sex, age group, professional category, work place. Since age and years of experience are highly correlated, alternative models with this variable instead of the age group were also tested. Possible interactions with year were tested. The estimated 95% confidence intervals are provided for each model coefficient. All statistical analysis were performed in R and applying a level of significance of 0.05.

**2.1.3. Patient involvement.** There were no patient involvement in the design of the study.

## 3. Results

We observed a significant increase in the MBI score of the study group in 2020 compared with the 2016 sample.

The characteristics of the 100 professionals participating in the 2016 survey, which was analyzed in the published in 2017<sup>[12]</sup> and those of the 159 professionals participating in the 2020 to 2021 survey are shown in Table 1.

Eighty per cent of the sample worked in a hospital Emergency Department, and 91% of the sample worked in the public sector. Nurses represent for 42.8% of the sample. 106 of participants were women (66.7%). The main group of participants was between 31 and 40 years old (29.6%), followed by those with 41 to 50 years old (23.9%). However, the main group of

**Table 1**  
**Description of 2016 and 2020 to 2021 study samples.**

Variable	2016 N = 100	2020–21 N = 159	P overall
Workplace			<.001
Hospital emergency department	68 (68.0%)	128 (80.5%)	
Outpatient emergency care	22 (22.0%)	13 (8.18%)	
Primary emergency care	10 (10.0%)	18 (11.3%)	
Employment sector			.008
Public	100 (100%)	146 (91.8%)	
Private	0 (0.00%)	13 (8.18%)	
Profession			.035
Nurse	57 (57.0%)	68 (42.8%)	
Physician	43 (43.0%)	91 (57.2%)	
Gender			1.000
Man	33 (33.0%)	53 (33.3%)	
Woman	67 (67.0%)	106 (66.7%)	
Age groups			.257
<30	11 (11.0%)	31 (19.5%)	
31–40	37 (37.0%)	47 (29.6%)	
41–50	30 (30.0%)	38 (23.9%)	
51–60	19 (19.0%)	37 (23.3%)	
>60	3 (3.00%)	6 (3.77%)	
Years worked			.340
<5	27 (27.0%)	38 (23.9%)	
5–10	25 (25.0%)	26 (16.4%)	
11–15	21 (21.0%)	37 (23.3%)	
16–20	10 (10.0%)	24 (15.1%)	
21+	17 (17.0%)	34 (21.4%)	
Other occupation			.222
No	59 (60.2%)	82 (51.6%)	
Yes	39 (39.8%)	77 (48.4%)	
MBI score (SD)	39.5 (17.6)	49.7 (21.7)	<.001
MBI-EE	21.5 (11.3)	28.5 (12.8)	<.001
MBI-DP	7.29 (4.73)	9.45 (6.81)	.003
MBI-PA	37.4 (7.27)	36.3 (6.75)	.242
MBI-EE tertiles			<.001
[3, 20)	52 (52.0%)	41 (25.8%)	
[20, 32)	28 (28.0%)	53 (33.3%)	
[32, 54]	20 (20.0%)	65 (40.9%)	
MBI-DP tertiles			.038
[0, 6)	44 (44.0%)	58 (36.5%)	
[6, 12)	34 (34.0%)	42 (26.4%)	
[12, 30]	22 (22.0%)	59 (37.1%)	
MBI-PA tertiles			.266
[8, 35)	30 (30.0%)	60 (37.7%)	
[35, 41)	32 (32.0%)	53 (33.3%)	
[41, 48]	38 (38.0%)	46 (28.9%)	
JSPE score (SD)	112 (15.1)	116 (14.9)	.039
JSPE tertiles			.071
[44, 110)	43 (43.0%)	47 (29.6%)	
[110, 123)	31 (31.0%)	55 (34.6%)	
[123, 140]	26 (26.0%)	57 (35.8%)	
Age			.445
≤50	78 (78.0%)	116 (73.0%)	
>50	22 (22.0%)	43 (27.0%)	
Years worked			.148
≤15	73 (73.0%)	101 (63.5%)	
>15	27 (27.0%)	58 (36.5%)	

Median (IQR) for quantitative variables and frequencies (%) for qualitative variables.

IQR = interquartile range, JSPE = Jefferson Scale of Physician Empathy, MBI = Maslach Burnout Inventory, MBI-DP = depersonalization, MBI-EE = emotional exhaustion, MBI-PA = personal accomplishment.

respondents had worked in an emergency service for less than 5 years (23.9%).

A significant increase in the MBI score was observed in the 2020 to 2021 sample (39.5 vs 49.7) ( $P < .001$ ), mostly due to an increase in the MBI-EE (21.5 vs 28.5) ( $P < .001$ ), as well as an increase in the JSPE score (112 vs 116) ( $P = .039$ ).

There were no differences when analyzing the association between professions (nurses or doctors) or years worked,

burnout, and empathy. A significant difference was observed regarding sex, with men in the 2020 to 2021 achieving higher MBI-DP scores (depersonalization) than women (11.5 vs 8.44). No significant differences were found when analyzing the association between age groups and the other variables analyzed, even though in the 2016 sample the 31 to 40 years age group was the most empathic and the ones with the highest burnout, partly due to high emotional exhaustion (MBI-EE scores).

For 2020 to 2021, the 41 to 50 years age group showed the highest burnout (MBI score), again mostly due to higher emotional exhaustion, as in the aforementioned group. JSPE scores were high in all age groups, with no significant differences. The differences between empathy and burnout and the socio-demographic variables can be found in Table 2 and graphically described in Supplemental Digital Content, <http://links.lww.com/MD/I67>.

The JSPE scores were significantly correlated with the MBI scores for both 2016 [Pearson rho (*P* value):  $-.263$  (.008) and 2020–21 samples ( $R = -0.508$  ( $P = .000$ )] (Figs. 1 and 2).

A multivariate regression model for median was conducted. In the adjusted empathy model there was a significant increase in median empathy of 6.5 points (95% CI = [0.8, 10.1]) between the 2 periods. There were no significant differences in empathy between age groups, gender, professional category or place of work. If we adjust it by time worked, there is a significant increase between 2016 and 2021 in the median empathy only in the group of professionals with 5 to 10 years of experience of 9 points, with (95% CI = [1.4, 18.8]) with no other differences.

In the multivariate model for emotional exhaustion, there was a significant increase between 2016 and 2021 in the median of emotional exhaustion in all age groups, being significant in the under 30s, with differences of up to 24 points, and similar in the 41 to 50 age group. In the over-50 age group, there was a significant increase in 2021 of up to 12 points in some centers. Emotional exhaustion does not seem to differ between sexes or professional categories. The results with the time worked across the age group do not show significant interaction of time worked with the year.

The multivariate model for depersonalization shows a significant interaction between the place of work and the year. According to this model, there is a significant increase between 2016 and 2021 in the median of depersonalization in professionals working in hospital emergency departments of 7 points, with (95%CI = [3.9, 11.0]) and not significant in others.

In the model for personal accomplishment there is a significant decrease between 2016 and 2021 in the median score in personal fulfillment (equivalent to more personal fulfillment), in professionals under 30 years of age of  $-6$  points, with (95% CI =  $[-9.0, -1.5]$ ) and a non-significant change in the rest of professionals. Personal fulfillment shows no differences between sexes, professional categories or according to place of work adjusted for age and year.

#### 4. Discussion

Emergency department practitioners suffered more burnout compared to 2016, especially due to emotional exhaustion ( $P < .001$ ). In addition, in the sample of 2020, there was an increase in empathy among professionals compared to 2016. Despite practitioners' improved degree of empathy, which had been described as being preventative against burnout, during the SARS-CoV2 pandemic, over-involvement may have led to empathic stress and emotional exhaustion, giving rise to greater burnout. It is likely that the SARS-CoV2 pandemic has brought to light shortcomings in the system and the tensions to which professionals have been subjected in recent years, especially in terms of their employment and economic conditions.

The number of patients admitted to emergency services increased exponentially until 2019, which increased the workload of professionals with older and more complex patients. However, in 2020, during the first half of the year, the number of emergencies related to SARS-Cov2 decreased a lot.<sup>[19]</sup>

In fact, the pandemic has had a great impact on emergency professionals, since we were one of the groups that had been on the front line in all waves, which has allowed us to learn about the clinical characteristics of SARS-Cov2.<sup>[20]</sup>

We believe that these results are most interesting because, in recent years, evidence of the importance of promoting empathic attitudes has been increasing in our country. Empathy is a key element of professional development and accomplishment.

**Table 2**

**Bivariate analyses between results of empathy and burnout and sociodemographic variables.**

	JSPE	EE	DP	RP	MBI
<b>Professional category</b>					
Nurse	118 [104;125]	25.0 [15.0;36.0]	8.00 [3.00;13.0]	38.0 [32.0;42.0]	44.0 [30.0;60.0]
Doctor	116 [107;126]	25.0 [15.0;35.0]	7.00 [4.00;13.0]	37.0 [32.0;43.0]	44.5 [29.0;60.8]
<i>P</i> overall	.905	.968	.748	.858	.874
<b>Gender</b>					
Men	111 [102;123]	25.0 [15.0;34.0]	8.50 [4.00;14.8]	37.0 [32.0;43.0]	45.0 [28.0;64.2]
Women	118 [107;126]	25.0 [15.0;37.0]	7.00 [4.00;12.0]	37.0 [32.0;41.0]	43.0 [30.0;59.0]
<i>P</i> overall	.021	.863	.058	.343	.876
<b>Age</b>					
<30	116 [107;123]	27.0 [14.2;35.0]	8.50 [5.00;15.0]	35.5 [31.0;38.0]	49.0 [31.0;65.0]
31–40	120 [106;127]	27.0 [17.0;37.0]	8.50 [4.00;12.0]	37.5 [34.0;42.0]	47.0 [32.0;60.0]
41–50	113 [102;124]	26.5 [16.8;39.0]	7.00 [4.00;12.0]	36.5 [31.0;41.0]	44.0 [30.8;65.2]
>50	116 [107;124]	22.0 [12.0;28.0]	6.00 [3.00;11.0]	39.0 [33.0;44.0]	35.0 [24.0;50.0]
<i>P</i> overall	0.501	0.034	0.152	0.022	0.017
<b>Years worked</b>					
<5	115 [108;123]	27.0 [16.0;37.0]	9.00 [4.00;13.0]	36.0 [32.0;40.0]	46.0 [32.0;65.0]
5–10	116 [102;124]	25.0 [17.5;32.5]	8.00 [5.00;14.0]	37.0 [33.0;40.0]	47.0 [32.5;58.5]
11–15	116 [103;123]	24.0 [16.0;34.8]	7.00 [4.00;12.0]	39.5 [33.0;43.0]	40.0 [28.2;58.8]
16–20	117 [106;124]	26.5 [15.2;40.2]	7.50 [3.00;14.5]	35.0 [30.2;41.8]	45.5 [29.0;72.0]
21+	120 [108;130]	22.0 [9.50;33.0]	5.00 [3.00;10.0]	39.0 [34.0;43.0]	35.0 [22.5;54.0]
<i>P</i> overall	.447	.376	.093	.031	.08
<b>Other occupation</b>					
No	118 [105;127]	26.0 [16.0;36.0]	7.00 [3.00;12.0]	38.0 [32.0;43.0]	44.0 [30.0;61.0]
Si	116 [105;123]	24.5 [14.0;35.0]	8.00 [4.00;13.0]	37.0 [32.8;41.0]	43.5 [30.0;60.0]
<i>P</i> overall	.49	.555	.355	.513	.963

JSPE = Jefferson Scale of Physician Empathy, MBI = Maslach Burnout Inventory, MBI-DP = depersonalization, MBI-EE = emotional exhaustion, MBI-PA = personal accomplishment.



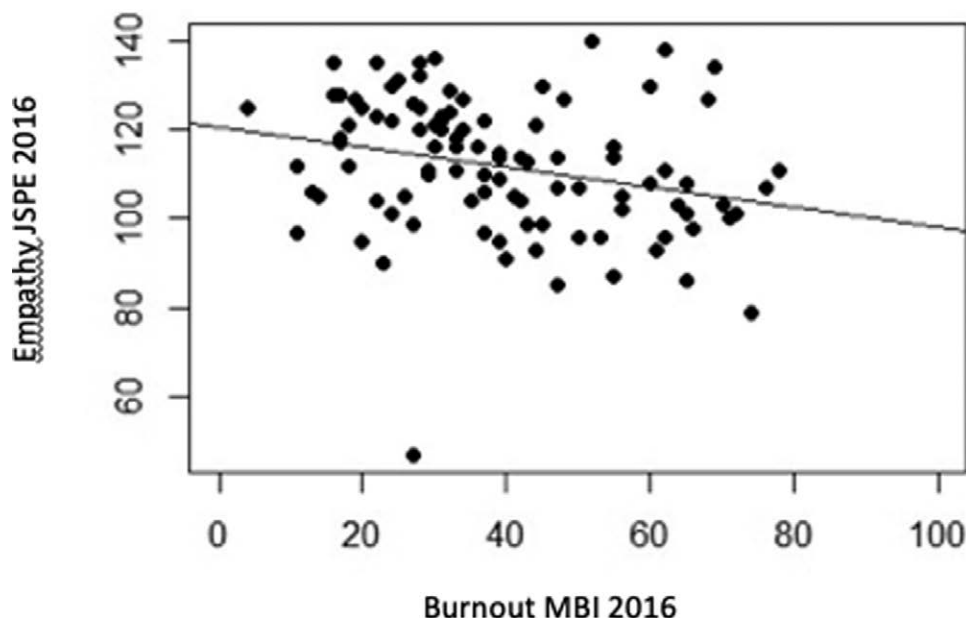


Figure 1. Correlation between burnout and JSPE in 2016 sample.

However, understanding and putting oneself in the shoes of patients in situations of extreme stress and suffering can end up taking a toll. Promoting the improvement of communication skills to be more empathic with patients seems to be a tool to reduce burnout among professionals.<sup>[14]</sup>

We did not detect any differences with respect to time worked, professional category, or place of work. We believe this is important because in the sample of 2020, there were a greater number of physicians, although the results were not significant. In both the samples, there was a clear predominance of women. We found that in the 2020 sample, the degree of depersonalization increased in both sexes, but this increase was statistically significant in men ( $P = .01$ ).

In terms of age, it is interesting to note that in the 2016 sample, professionals with the greatest burnout were aged 31 to 40 years, by some distance from those aged over 50, which was surprising. In the sample of 2020, the 41 to 50 years group had the most statistically significant burnout ( $P = .007$ ), achieving less personal accomplishment than other age groups. We also noted that they suffered greater emotional exhaustion ( $P = .014$ ), which was more than 10 points higher than in 2016. This suggests that our emergency professionals were emotionally exhausted, which led to increased burnout among them. No differences in empathy were observed according to age.

This is important because the youngest professionals who should be most motivated are those who are the most burnt out. This should lead to the proposal of a new leadership model in which new formulas are sought to reduce the burnout of professionals beyond financial rewards, such as improving workload, favoring family reconciliation, and recognition of professionals.<sup>[21]</sup>

To date, high levels of burnout have been cited among health professionals, especially in times of SARS-CoV2 in our country.<sup>[22]</sup> However, few comparative studies have been conducted, and no study has highlighted this surprising association with empathy. A recent study<sup>[23]</sup> showed that a lack of empathy towards professionals can trigger professional burnout. However, it may also be argued that increased burnout among professionals leads them to cease to be empathetic. However, empathy has also been linked to compassion fatigue.<sup>[24]</sup>

As Lemaire<sup>[20]</sup> points out, it is essential to identify the key aspects of the medical profession that cause and sustain exhaustion, promoting clinical leadership, and an organizational culture of support. Second, the medical profession and health organizations should consider the welfare of health professionals as a central part of patient care, as burnout clearly affects the attention to, safety, and quality care of the patient. Third, health practitioners should be recognized as a quality indicator for all health systems.

SARS-CoV2 has shown us that we must promote other types of leadership and professionals.<sup>[25]</sup> We must promote emotionally intelligent professionals with the capacity for empathy and resilience, with the capacity to determine when they are starting to feel burned out, and provide them with tools to control it and promote and facilitate compassionate leadership.<sup>[26]</sup>

The increase in burnout during the SARS-CoV2 pandemic has a multifactorial origin, related not only to the increase in workload, schedules, and de-specialization, but also to situations of moral distress experienced during the pandemic.<sup>[27]</sup> These experiences may require professional unrest linked to the pandemic to be specifically addressed. Various strategies have shown efficacy, from specific mental health support services,<sup>[28]</sup> promotion of resilience, mainly related to a group or community approach,<sup>[29]</sup> with strategies to promote compassion (for self, for others, from others),<sup>[30]</sup> or through self-reflective strategies and ethical deliberation<sup>[31]</sup> to facilitate the identification, expression, and reinterpretation of lived experiences.<sup>[32]</sup>

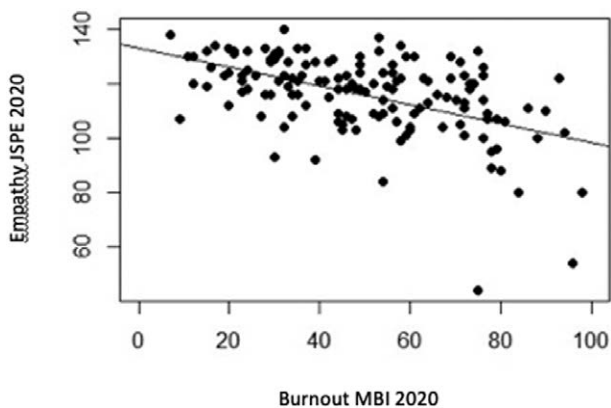


Figure 2. Correlation between Empathy and Burnout in 2020 sample.

## 5. Strengths and limitations

The main limitations of our study are the number of responses obtained and the fact that the study was conducted in a specific area. Although the sample was small, it is representative of a standard emergency care service, and the results are in line with other published series,<sup>[33,34]</sup> corroborating the increase in burnout after the SARS-CoV2 epidemic. In particular, countries that experienced the first waves of SARS-CoV2, such as Italy and Spain. Moreover, the characteristics of the study did not allow us to follow up on the professionals who responded in 2016.

## 6. Conclusion

Promoting empathic skills as a good tool to prevent burnout in recent years has a good effect on health professionals. However, this increase in empathy has increased the emotional exhaustion of professionals. And the solution has increased the problem, specially among young professionals.

It is necessary to develop tools to protect professionals from the suffering of patients, self-care strategies, and more global strategies of workload management. The system cannot provide emotionally exhausted young professionals. In times of SARS-CoV2, emergency professionals have suffered and have been in the frontline caring for the sick and witnessing the pain of others. Therefore, we believe we are on the right track. Now, we must improve the skills to care for those who have been cared for throughout this process.

## Author contributions

**Conceptualization:** Oriol Yuguero, Jorge Soler-González, Montserrat Esquerda.

**Data curation:** Nuria Rius.

**Formal analysis:** Montserrat Esquerda.

**Investigation:** Nuria Rius.

**Methodology:** Jorge Soler-González, Montserrat Esquerda.

**Project administration:** Oriol Yuguero.

**Supervision:** Oriol Yuguero.

**Validation:** Oriol Yuguero.

**Visualization:** Oriol Yuguero.

**Writing – original draft:** Oriol Yuguero, Nuria Rius, Montserrat Esquerda.

**Writing – review & editing:** Oriol Yuguero, Nuria Rius, Jorge Soler-González, Montserrat Esquerda.

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