










**ORIGINAL PAPER**

Psychiatry

# Comparison of emotional approaches of medical doctors against COVID-19 pandemic: Eastern and Western Mediterranean countries

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**Abstract**

**Background:** Pandemics are states of disease that occur worldwide and sharply increase in populations. It causes life events which trigger anxiety, depression, anger, sleep deprivation, emotional distress and stress. World Health Organization (WHO) declared coronavirus disease 2019 (COVID-19) a pandemic on March 11, pointing to the over 118,000 cases in over 110 countries. Many healthcare workers became ill during the pandemic and some among them died. In this study, we aimed to evaluate and compare level of stress against COVID-19 pandemic among doctors from Turkey and Italy.

**Methods:** This research is a cross-sectional study in which Perceived Stress Scale (PSS-10) and Secondary Traumatic Stress Scale (STSS) are administered online via social networks. All data collection tools were delivered to individuals between 1 and 15 June 2020 and filled in online with Google Forms application. In total, 618 individuals were included in this study and all of them were medical doctors.

**Results:** Higher PS and STS levels were found related to female gender, being married, working in pandemic hospital and older ages. Stress levels were found statistically higher in Turkish doctors when compared to Italian doctors for both stress scales (Turkish/Italian PSS:  $20.18 \pm 7.90 / 19.35 \pm 6.71$ , STSS:  $44.19 \pm 13.29 / 38.83 \pm 13.74$ ).

**Conclusion:** The number of doctors per 1000 of population is lower and per capita visits to a physician are higher in Turkey when compared to Italy. Besides pandemic, these heavier working conditions, increased weekly working hours can cause stress for Turkish doctors. Reporting information such this study is important and international collaborations are essential to plan future prevention strategies. We need to strengthen international ties and build more international collaborations rather than staying within our national silos. Additionally, interventions to promote mental well-being in health care professionals exposed to COVID-19 need to be immediately implemented.

## 1 | INTRODUCTION

Pandemics are states of disease that occur worldwide and sharply increase in populations around the world. Pandemics cause life events, which trigger anxiety, depression, loss of control, anger, sleep deprivation, emotional distress and stress.<sup>1</sup> The World Health Organization (WHO) declared coronavirus disease 2019 (COVID-19) a pandemic on March 11, pointing to the over 118 000 cases of the coronavirus illness in over 110 countries and territories around the world and the sustained risk of further global spread. Despite the security and mitigation measures, including quarantine in Hubei Province, the infection spread across China and COVID-19 outbreak has currently affected more than 200 million people globally during the period from December 2019 to August 2021.<sup>2</sup>

COVID-19 causes worries about one's own health and that of loved ones, economic disruption and losses, lifestyle disruptions, social isolation and loneliness.<sup>3</sup> Frontline health professionals against COVID-19 are considered particularly susceptible to development of psychiatric disorders because of lack of satisfactory personal protective equipment, staying away from their families, fear of being infected and infecting loved ones. Together, these conditions could create a "perfect storm" for inducing emotional distress.<sup>4</sup>

In Italy, a couple of Chinese tourists arrived in Milan on 23 January 2020. Unfortunately, on 30 January, they showed relevant symptoms of COVID-19 and the positivity for COVID-19 was confirmed. That was the first case described in Italy. The next day, 78-year-old man died because of COVID-19 so the first death was registered in Italy. In a short period, Italian government took the first containment measures in limited areas. Exiting and entering cities were banned, and schools, shops and museums were closed. Then with the increase in the numbers of cases and deaths, measures and prohibitions were imposed in whole country. International flights were terminated, border gates were closed and curfews had begun.<sup>5</sup> In Italy, there were approximately 5200 beds in intensive care units and 5324 mechanic ventilators.<sup>6</sup>

In Turkey, the first case was diagnosed on 11 March 2020 after a man who had returned to Turkey from Europe tested positive. The first death caused by COVID-19 in the country occurred on 15 March 2020 and by 1 April, it had spread all over Turkey. First measures were announced. All schools and universities were closed. Sportive activities were done behind closed doors. All flights to and from some countries were stopped. All kinds of cultural, educational, artistic and scientific meetings/activities were postponed. Turkish health system has 39 955 intensive care beds and 17,852 mechanic ventilators.<sup>7</sup>

There are limited number of studies on the effects of COVID-19 pandemic on health professionals in literature. Most of these studies are typically based on cross-sectional study designs in one country, which cannot discern whether there is difference between the ways and levels of being affected by doctors from different countries. If international comparisons done carefully, they can play a major role in our learning what works best for COVID-19 pandemic. There needs to be more thoughtful and thorough analyses of country

### What's known

- COVID-19 causes worries about one's own health and that of loved ones, economic disruption and losses, lifestyle disruptions, social isolation and loneliness.
- Frontline health professionals against COVID-19 are considered particularly susceptible to development of psychiatric disorders because of lack of satisfactory personal protective equipment, staying away from their families, fear of being infected and infecting loved ones.
- Together, these conditions could create a "perfect storm" for inducing emotional distress.

### What's new

- There are limited number of studies on the effects of COVID-19 pandemic on health professionals in literature.
- Most of these studies are typically based on cross-sectional study designs in one country, which cannot discern whether there is difference between the ways and levels of being affected by doctors from different countries.
- If international comparisons done carefully, they can play a major role in our learning what works best for COVID-19 pandemic.
- There needs to be more thoughtful and thorough analyses of country differences as it is probably the most important and most valid evidence for informing COVID-19 policy in real time.
- This study is the first comparative study that evaluates the psychological effects of COVID-19 pandemic in both Eastern and Western Mediterranean countries.

differences as it is probably the most important and most valid evidence for informing COVID-19 policy in real time.<sup>8</sup> This study is the first comparative study which evaluates the psychological effects of COVID-19 pandemic in both Turkey and Italy.

In this study, we aimed to evaluate and compare the level of stress, emotional distress with COVID-19 pandemic among pediatricians from Turkey and Italy.

## 2 | MATERIAL AND METHOD

This research is a cross-sectional study in which the scales are administered online via social networks and looked for the snowball effect in order to evaluate the state and trait stress levels and hopelessness levels of doctors in both countries. A stratified random sampling method was chosen to select the respondents.

Perceived Stress Scale (PSS-10) and Secondary Traumatic Stress Scale (STSS) were created in Google Forms delivered to participants.

All data collection tools were delivered to individuals between 1 and 15 June 2020 and filled online with the Google Forms application. Only the forms in which socio-demographic data and scales were filled completely were evaluated. Missing or abandoned forms were not evaluated.

In total, 632 individuals were included in this study and all of them were medical doctors. Three hundred and seventeen of them were from Turkey and 315 from Italy. After the elimination of missing or abandoned forms, 303 Turkish and 310 Italian doctors' data were evaluated and then proceeded with the assessment of PSS-10 and STSS.

The questionnaire began with basic demographic information related to sex, age, marital status, working statuses in pandemic hospital.

PSS-10 is the most widely used 10-item self-report measure of global perceived stress (PS) and created by Cohen.<sup>9</sup> Items in the scale were designed to tap how unpredictable, uncontrollable and overloading respondents find their lives in the last month. A total score ranged from 0 to 40. Subscale scores were computed by summing the six negatively worded items which show perceived helplessness (Items 1, 2, 3, 6, 9 and 10) for Factor 1 ("Negative") and the four positively worded items which show perceived self-efficacy (Items 4, 5, 7 and 8) for Factor 2 ("Positive"), with higher scores indicating greater negative distress/stress feelings and greater positive stress feelings and coping abilities, respectively. Items are on a 5-point Likert scale (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, 4 = very often). Total scores ranging from 0 to 13 would be considered low stress, 14 to 26 would be considered moderate stress, 27 to 40 would be considered high PS.

PSS-10 Turkish adaptation study was made by Eskin et al.<sup>10</sup> PSS-10 was translated to Italian and valuated in 2010 by Fossati (Vita-Salute San Raffaele University of Milan).<sup>11</sup>

STSS is a self-report inventory which is designed by Bride et al.<sup>12</sup> to measure the reactions of helping professionals who have experienced traumatic stress through their work with their traumatised clients. In the last decade, the STSS became a standard tool for assessing Secondary Traumatic Stress (STS) in helping professionals such as social workers, nurses, mental health workers, midwives and paediatric care providers.<sup>13</sup>

Respondents indicate on a 5-point Likert scale (1 = never 2 = rarely 3 = occasionally 4 = often 5 = very often) how often they experienced each of the 17 STS symptoms during the last week. The 17 items are organised in intrusion, avoidance and arousal subscales. Higher STSS total score indicating a higher frequency of symptoms. A total score below 28 corresponds to "little or no STS," a score between 28 and 37 means "mild STS," between 38 and 43 "moderate STS," between 44 and 48 "high STS," and beyond 49 "severe STS".

In order to mention the presence of STS symptoms, the substance in question must be marked as "occasionally" (3), "often" (4) or "very often" (5); represented by items marked "never" (1) and "rarely" (2) is not accepted. At the same time, in order to legitimise of the presence of these PTS diagnostic criteria, at least one of the items

measuring the intrusion, at least three of the items measuring the signs of avoidance and at least two of the items measuring the signs of arousal, should be marked as "occasionally" and above.<sup>14</sup>

STSS; Turkish adaptation study was made by Yildirim et al.<sup>14</sup> and was translated and validated in Italian in 2012 by Setti and Argentero.<sup>15</sup> Studies have consistently identified a two-factor structure with six negatively worded items (Items 1, 2, 3, 6, 9, 10) comprising the first factor and four positively worded items (Items 4, 5, 7, 8) comprising the second factor.

The study was approved by the Ethics Committee as part of the project entitled: "The remote and live doctor-patient relationship during the Covid-19 Pandemic – Valere Project" (Prot. 0028414/i) and was conducted according to the Declaration of Helsinki.

Statistical analysis was performed using IBM SPSS Statistics 22 (Statistical Package for Social Sciences, IBM Inc, Chicago, IL, USA). Histogram, Skewness and Kurtosis values were used in addition to Kolmogorov-Smirnov test for normality distribution. Chi-square was used to compare categorical groups. In correlation evaluation, Pearson correlation for normal distribution values and Spearman correlation for those without normal distribution values were performed.

Independent Samples T-Test was used to compare the averages of two independent groups with normal distribution and Mann-Whitney U test was used to compare the median of two independent groups with no normal distribution. Significance level was accepted if p-value was less than 0.05 ( $P < .05$ ).

### 3 | RESULTS

The sample of this study consists of 303 Turkish and 310 Italian in total 613 participants. All participants were medical doctors.

Socio-demographic attributes of the respondents are presented in Table 1.

Demographic attributes of the respondents were compared with their PSS and STSS points and the results are shown in Table 2.

For Turkish participants, there was significant difference between gender and PS level ( $P = .001$ ). Additionally being married, working in pandemic hospital and older ages resulted in higher PSS and STSS scores but no significant difference was found ( $P > .05$ ).

For Italian participants, STSS scores of women, married ones, doctors who worked in pandemic hospital and elder were found significantly higher than men, single, doctors not working in the pandemic hospital and younger ( $P < .05$ ). Although similar results were found for PS levels, only for gender and marital status statistically significant difference was found. ( $P = .00, .001$ , respectively). Participants between 45 and 54 years old had the highest scores for PSS and STSS; the lowest scores were in the youngest group (Table 2).

Turkish women and men doctors had higher scores when compared to Italians for both scales and Turkish were found related to scoring significantly higher points in the STSS (female  $P = .00$ , male  $P = .001$ ; Table 3).

	Turkish (303) <sup>a</sup>	Italian (310) <sup>a</sup>	P value
Gender			.191
Female	161 (53.1%)	181 (58.4%)	
Male	142 (46.9%)	129 (41.6%)	
Marital status			.000
Married	147 (48.5%)	214 (69%)	
Single	156 (51.5%)	96 (31%)	
Working in pandemic hospital			.000
Yes	216 (71.3%)	85 (27.4%)	
No	87 (28.7%)	225 (72.6%)	
Age			.000
18-29 y	146 (48.2%)	8 (2.6%)	
30-44 y	131 (43.2%)	49 (15.8%)	
45-54 y	19 (6.3%)	62 (20%)	
55-64 y	7 (2.3%)	191 (61.6%)	

<sup>a</sup>The number and percent of cases.

	Turkish		Italian	
	PSS M ± SD	STSS M ± SD	PSS M ± SD	STSS M ± SD
Gender				
Female	21.57 ± 6.39	45.46 ± 12.38	20.62 ± 6.16	40.39 ± 12.16
Male	18.61 ± 9.10	42.76 ± 14.16	17.58 ± 7.07	36.64 ± 15.48
P value	.001	.077	.000	.001
Marital status				
Married	20.84 ± 8.57	44.25 ± 14.29	20.22 ± 6.26	40.25 ± 13.98
Single	19.51 ± 7.23	44.14 ± 12.33	17.41 ± 7.30	35.65 ± 12.70
P value	.463	.944	.001	.006
Working in pandemic hospital				
Yes	20.62 ± 7.70	44.22 ± 12.35	19.40 ± 6.67	41.32 ± 14.45
No	20.01 ± 8.00	44.15 ± 15.47	19.24 ± 6.87	37.88 ± 13.38
P value	.547	.968	.858	.049
Age				
18-29 y	19.82 ± 7.18	42.91 ± 12.35	17.75 ± 7.51	30.25 ± 11.64
30-44 y	20.16 ± 8.54	45.23 ± 13.69	19.14 ± 6.79	37.34 ± 11.56
45-54 y	21.47 ± 7.34	45.31 ± 17.13	20.88 ± 6.05	43.16 ± 13.71
55-64 y	24.85 ± 11.02	46.57 ± 13.90	18.98 ± 6.84	38.16 ± 14.07
P value	.355	.447	.230	.016

Note: M ± SD = mean ± standard deviation.

Married and single Turkish doctors had higher scores than Italian doctors for PSS, STSS and statistically significant difference was found ( $P < .05$ ).

Turkish doctors who work in pandemic hospital had higher scores when compared to Italians for both scales but there was significant difference just for doctors who did not work in pandemic hospital in STSS ( $P = .00$ ).

At all ages, Turkish doctors' stress levels were higher than Italian doctors. Compared to Italian doctors, Turkish doctors' PS levels were significantly higher in older ages and STS levels were significantly higher in younger ages.

Mean score of Turkish doctors' PS level was  $20.18 \pm 7.90$ . 19.5% of them had low, 59.1% moderate, 21.5% high PS levels. Mean score of Italian doctors' PS level was  $19.35 \pm 6.71$ . 17.1% of them had low,

TABLE 1 Demographic attributes of participants

TABLE 2 Comparison of PSS and STSS scores according to demographic attributes

**TABLE 3** Comparison of PSS and STSS scores according to demographic attributes between Turkish and Italian doctors

	Turkish PSS M ± SD	Italian PSS M ± SD	P value	Turkish STSS M ± SD	Italian STSS M ± SD	P value
<b>Gender</b>						
Female	21.57 ± 6.39	20.62 ± 6.16	0.164	45.46 ± 12.38	40.39 ± 12.16	.000
Male	18.61 ± 9.10	17.58 ± 7.07	0.299	42.76 ± 14.16	36.64 ± 15.48	0.001
<b>Marital status</b>						
Married	20.84 ± 8.57	20.22 ± 6.26	0.622	44.25 ± 14.29	40.25 ± 13.98	.011
Single	19.51 ± 7.23	17.41 ± 7.30	0.001	44.14 ± 12.33	35.65 ± 12.70	.000
<b>Working in pandemic hospital</b>						
Yes	20.62 ± 7.70	19.40 ± 6.67	0.167	44.22 ± 12.35	41.32 ± 14.45	.083
No	20.01 ± 8.00	19.24 ± 6.87	0.437	44.15 ± 15.47	37.88 ± 13.38	.000
<b>Age</b>						
18-29	19.82 ± 7.18	17.75 ± 7.51	0.429	42.91 ± 12.35	30.25 ± 11.64	.005
30-44	20.16 ± 8.54	19.14 ± 6.79	0.455	45.33 ± 13.69	37.34 ± 11.56	.000
45-54	21.47 ± 7.34	20.88 ± 6.05	0.726	45.31 ± 17.13	43.16 ± 13.71	.574
55-64	24.85 ± 11.02	18.98 ± 6.84	0.031	46.57 ± 13.90	38.16 ± 14.07	.122

Note: M ± SD = mean ± standard deviation.

**TABLE 4** Different distribution of Turkish and Italian doctors of PSS and STSS scores

	Turkish (303) M ± SD	Italian (310) M ± SD	P value
<b>PSS score</b>			
<14	59 (19.5%)	53 (17.1%)	.047
14-26	179 (59.1%)	211 (68.1%)	
>26	65 (21.5%)	46 (14.8%)	
<b>STSS score</b>			
<28	34 (11.2%)	72 (23.2%)	.000
28-37	60 (19.8%)	86 (27.7%)	
38-43	58 (19.1%)	50 (16.1%)	
44-48	36 (11.9%)	32 (10.3%)	
>48	115 (38%)	70 (22.6%)	

Note: M ± SD = mean ± standard deviation.

68.1% moderate, 14.8% high PS levels. Turkish doctors' PS level was found significantly higher than Italian doctors' ( $P = .047$ ; Table 4).

Mean score of Turkish doctors' STS level was  $44.19 \pm 13.29$ . 11.2% of them had little or no STS, 19.8% had mild, 19.1% had moderate, 11.9% had high and 38% had severe STS levels. Mean score of Italian doctors' STS level was  $38.83 \pm 13.74$ . 23.2% of them had little or no STS, 27.7% had mild, 16.1% had moderate, 10.3% had high and 22.6% had severe STS. Turkish doctors' STS level was found significantly higher than Italian doctors' ( $P = .00$ ; Table 4).

## 4 | DISCUSSION

Studies showed that COVID-19 causes fear, anxiety, stress, worries about one's own health and that of loved ones, economic disruption

and losses, lifestyle disruptions, social isolation and loneliness (Cacioppo, 2010). Issues such as psychological and neuropsychiatric aspects, changed daily routines because of quarantine, socioeconomic problems and worries about future become more involved in their conversations.<sup>16</sup>

Higher PS and STS levels were found related to being a woman as it was showed in previous studies.<sup>17</sup> Meta-analyses of studies yielding sex-specific risk of potentially traumatic events (PTEs) and post-traumatic stress disorder (PTSD) indicated that female participants were more likely than male participants to meet criteria for PTSD, although they were less likely to experience PTEs.<sup>18</sup>

Some doctors started to live apart from their families, some of them were living with high-risk groups at home and they were forced to work. In both countries, schools were closed. Some babysitters left their job. This situation caused so many problems for working parents. Fear of infecting loved ones, worries about their families, isolating themselves caused feeling lonely and triggered stress. Our study results are compatible with this. Being married was found to be a predictor of determining the level of stress.

The mean PS and STS levels of doctors who worked in pandemic hospital were higher than others. Working in pandemic hospital causes and increases the stress levels. Being under high risk of developing disease, contaminating family members, heavy working conditions, increased working hours and treating COVID-19 cases, confronting with more difficult cases can be the reason of it.<sup>19</sup>

Our study findings showed that PS and STS levels were higher for elder doctors. Older people are at greater risk for COVID-19. In fact, high morbidity and potential death occurred mostly in elderly individuals and those with chronic disease.<sup>20</sup> To the point that, additional safety measures were taken for older citizens in some countries. Our results can be related to these risk factors.

Most of the doctors had at least moderate stress levels. During the pandemic, healthcare workers have a higher risk of developing disease and contaminating their family members than those non-healthcare workers. We know that in quarantine, doctors feel more emotions such as anger, frustration, fear, helplessness and they experience more trauma symptoms in the long term and are frequently exposed to stigmatisation by the community.<sup>21</sup>

For both stress scales, stress levels were found statistically higher in Turkish doctors. 71.3% (n = 216) of the participating Turkish doctors were working in pandemic hospitals. This was the 71.2% of all participating doctors who worked in a hospital where COVID-19 is treated. Comparing to Turkish, only 24.9% (n = 87) of participating Italian doctors were working in pandemic hospital.

According to the most recent OECD data, Italy has 4,02 doctors and 6,73 nurses and Turkey has 1,93 doctors and 2,38 nurses per 1,000 of their population.<sup>7</sup> Per capita visits to a physician in healthcare facilities in Turkey are 98 and in Italy 68.<sup>22</sup> This can cause heavier working conditions, uncertain and increased weekly working hours for Turkish doctors. Turkish residents are subject to run times of up to 33 hours continuously, increased workload, weekly working times which exceed 110 hours. These can cause higher stress level for Turkish participants. Despite these negative factors, high mortality rates in Italy comparing to Turkey can be a greater risk factor for the increase in stress levels of Italian doctors.

There are various limitations of this research. One of the limitations is that surveys were conducted online instead of face-to-face interviews. Using online questionnaires was inevitable for this period. The strengths of the study are the high number of participants, the careful choice of the sample selection, the exclusion of the participants with any missing data, and seeing and comparing the stress levels of doctors by two different scales. Correlation between different scales showed the poverty of the results.

## 5 | CONCLUSIONS

As a result, in the long run, this tragic health crisis should significantly enhance our understanding of the mental health risk factors which could have long-term psychological implications among the healthcare professionals facing the COVID-19 pandemic. Reporting information such this study is important and international collaborations are essential for planning future prevention strategies and making rapid progress on COVID-19. We need to strengthen these international ties and build more international collaborations rather than staying within our national silos. Interventions to promote mental well-being in healthcare professionals exposed to COVID-19 need to be immediately implemented and to strengthen prevention and response strategies by training healthcare professionals on mental help and crisis management.

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## DISCLOSURES

The authors declared no conflict of interest.

## AUTHOR CONTRIBUTIONS

All Authors critically reviewed and accepted the paper. GO conceived the study, collected data and drafted the paper. AZ, GO, BA, AP, FC, MFG, SC, DI critically revised the manuscript. GO collected data, conceived the study. DI drafted the paper, revised the manuscript and is the guarantor of the paper. Authors have no conflict of interest to declare.

## ETHICAL STANDARDS

The study was approved by the Ethics Committee of University of Campania (Naples, Italy) as part of the project entitled: "The remote and live doctor-patient relationship during the Covid-19 Pandemic - Valere Project" (AOU Università della Campania Vanvitelli - Prot. 0028414/i) and was conducted according to the Declaration of Helsinki.

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