

# Did Personality Type Influence Burn Out Syndrome Manifestations During Covid-19 Pandemic?

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**Introduction:** Emergency department (ED) health care providers had one of the highest incidences of burnout just before the pandemic. Personality type influences the way we communicate and relate to others, as well as our reaction to stress. In evaluating the causes of burnout, we take into account several factors, the most important of which being the conditions of the professional environment, interpersonal relationships and personality traits. This study aims to identify and analyze the relationships between personality traits and burnout syndrome in medical staff in the Emergency Department.

**Material and Methods:** A descriptive, multicenter cross-sectional study project was used to collect data from 60 physicians and nurses from the Emergency Department of the County Emergency Clinical Hospital Galati. The tools used, distributed to participants to collect socio-demographic details, included the Eysenck Personality Inventory (EPI), and a pilot questionnaire. The questionnaire consisted of 11 questions, concerning exhaustion level, and focused on stress-generating elements and emotional management in the Emergency Department during the pandemic.

**Results:** A large percentage of doctors in ED (45.8%) (n = 24) indicated a high level of exhaustion, while only 30.6% (n = 36) of nurses indicated a high level of exhaustion. Physicians displayed a higher level of stress than nurses, with 66.6% (n = 24) of physicians indicating an increased level of stress, compared to only 36.1% (n = 36) of nurses. A large percentage of nurses indicated a high level of depression (36.1%), whereas only 25% of Emergency Department physicians indicated a high level of depression.

**Discussion:** The individuals with a melancholic and choleric temperament, as rated by the EPI, appeared more susceptible to developing burnout syndrome. The indication of instability or neuroticism appears to enhance the occurrence of burnout syndrome. There was also a correlation between extraversion and a high level of burnout, with extraverted individuals more easily reaching a high level of burnout.

**Conclusion:** The results indicate a greater occurrence of exhaustion and stress in Emergency Department physicians compared to nurses in the Emergency Department. From the results, we can propose that there is a relationship between the personality traits as measured by the EPI and the occurrence of burnout syndrome. These findings may help to understand the vulnerability of medical staff to burnout, and to pre-emptively support them to deal effectively with stressors in the work environment.

**Keywords:** burnout syndrome, emergency staff, Covid-19, personality evaluation, neuroticism, extraversion

## Introduction

Burnout is a syndrome conceptualized as a result of wrongfully managed chronic stress at the workplace. The three key dimensions of burnout are: an overwhelming exhaustion, cynicism and detachment from the workplace, and a feeling of inefficiency and lack of accomplishment.<sup>1</sup>

The significance of this understanding is that it explicitly places the experience of individual stress within a social context.<sup>2</sup> Medical staff within Emergency Departments (EDs) have had some of the highest incidences of professional exhaustion, even before the pandemic.<sup>3-5</sup>

The strong manifestation of burnout found in medical staff within the Emergency Department can be attributed to a wide range of psycho-traumatic factors, which are amplified by the vulnerable status of patients treated, as well as their instability.<sup>6</sup> It is recognized that the level of physical demand and stress in the Emergency Department is the highest of all the medical fields.<sup>7</sup>

Recent studies suggest that the way medical staff perceive the work environment has a significant impact on their mental health. The most important stressors associated with burnout in the Emergency Department were lack of equipment, repeated exposure to traumatic events, care of patients with complex conditions, extended work schedules, work environment factors, relationships with others, institutions and their managers, the fear of malpractice, and the lack of balance between professional and private life.<sup>4,8</sup>

Although the work environment is a contributing factor to burnout, it does not necessarily mean that all health professionals in a given environment will suffer from burnout equally. Each person manages stress and interprets the environment in which they work in accordance with the personality factors that characterize them, and with their own individual life experiences. Personality factors are relatively stable features, which influence the way in which medical staff react to stress factors in the workplace.<sup>9</sup>

The concept of “temperaments” has its roots in antiquity, with the concept of the four humors. It was thought that some states, emotions and human behaviors were caused by an excess or deficiency of bodily fluid: Blood, Yellow bile, Black bile and Phlegm.<sup>10</sup> Galen named four sets of states and behaviors after the supposed bodily humor’s: “sanguine”, “choleric”, “melancholic”, and “phlegmatic”. Each one was, in the ancient conception, the result of the excess of humor that generated at its turn, the imbalance in pair qualities.<sup>11,12</sup>

Personality is connected significantly with professional exhaustion, and with the risk of psychological stress.<sup>13</sup> Personality features and personal values have been shown to be important psychological characteristics, serving as predictors of the occurrence of burnout syndrome.<sup>14</sup> In general, many studies have shown that professional exhaustion is associated with a low self-esteem, low emotional stability, low capability to adapt, low stress resistance, perfectionism, and the excessive need to be in charge.<sup>15,16</sup>

Some factors, such as neuroticism and extraversion, influence the way medical staff perform their work tasks, leading to the occurrence of exhaustion.<sup>17</sup> Understanding this relationship is very useful, both for recruiting staff members, and for assigning them to positions that best suit their personality.<sup>18</sup> Neuroticism is a personality trait that contributes to stress and exhaustion, creating vulnerability through both reactive and evocative interactions with a person’s environment.<sup>19</sup>

More prospective longitudinal studies have confirmed that cognitive and behavioral factors can affect the development of depressive feelings as a reaction to loss or interpersonal rejection.<sup>20</sup> Other studies have also shown a close relationship between neuroticism and burnout,<sup>20</sup> as well as an inverse relationship between neuroticism and job satisfaction.<sup>21</sup>

The aim of this study was to investigate the relationship between burnout syndrome and occupational stressors within the Emergency Department, taking into account personality traits, especially neuroticism and extraversion.

Our hypothesis is that different professional categories of the Emergency Department will show different levels of exhaustion, and we assume that there are significant relationships between personality traits and burnout.

## Materials and Methods

### Study Population and Study Protocol

We distributed a total of 80 questionnaires, receiving 60 completed and valid questionnaires, with the response rate thus being 75%. The survey was anonymous, containing instructions on how to fill out the socio-demographic data and questionnaires, as well as informed written consent to participate in the study. The study tools were distributed to be completed by the medical staff outside of working hours.

We studied a total of 60 participants (24 physicians and 36 nurses). This was a descriptive, multicenter, transversal study of the medical and auxiliary staff within the Emergency Department of the County Clinic Emergency Hospital Galati, which is on the “front line” and cares for both patients with Sars CoV-2 infection and non-covid patients.

Data collection was conducted in April 2021, during the Covid-19 pandemic. The professional categories included 24 physicians with training in Emergency Medicine, and 36 nurses working in the Emergency Department and pre-hospital care. Incomplete questionnaires, or those with a lack of consent to participate in the study, were excluded.

The study was conducted in accordance with the Helsinki Declaration of the World Medical Association, using a protocol approved by the Ethics Committee of Clinical Emergency Hospital, Galati, Romania. (Project identification code: 5257/March 02, 2021).

## Tools

The participants who gave their consent have participated in a pilot questionnaire that consisted of 11 questions regarding professional exhaustion, used to indicate stress-generating factors, professional satisfaction, the relationship with those around the individual, and emotional management, within the activity of the emergency department during the pandemic. The Eysenck personality inventory (EPI) was also used.

To assess the level of professional satisfaction two questions were used: „How do you assess the level of professional satisfaction in your institution?” and “Are you satisfied by the present safety equipment and devices needed to carry out your activity?” the answers being quantified on a range from 1 to 5, “1” for “very displeased” and “5” for “very pleased”. The level of empathy, stress, exhaustion, and of self-esteem were assessed using a single corresponding item, for example “How often do you feel affected by your patients’ health status?” quantified on a range from 1 to 5, “1” for “very rarely” and “5” for “very often”. The relationship with the family/the teamwork and the emotional exhaustion were measured with other two sets of questions, for example “Regarding the pandemic evolution, how would you describe the near future?” or “Do you consider that your work influences the time spent with your family in a negative way?”. At the end the participants noted what elements they believe enhance their professional exhaustion.

This tool was conceived instead of the multiple-choice questionnaires in order to shorten the survey material and to increase the answering ratio of the medical staff (Table 1).

Interpretation of questions:

Question 1, 9: d-e job satisfaction

Question 2: 4–5 increased stress level

Question 3, 12: 4–5 high burnout level

Question 5, 6, 10, 4–5 relationship with others - high affect

Question 7, 8: depression

Question 11: self-esteem

The Eysenck personality inventory was developed by Hans and Sybil Eysenck in 1963 and contains 57 questions, of which 24 focus on introversion/extraversion, other 24 are destined to assess the emotional stability –instability (neuroticism), the rest of 9 are a group of questions meant to assess the subject’s sincerity, his attitude towards the survey and the reliability of the results.<sup>22</sup>

The socio-demographic data collected consisted of age, sex, marital status, professional category, work experience, working hours per week, education level and the number of patients cared for per shift (Table 2).

## Data Analysis

The registered data was listed in sampling lists and then summary tables were made. The final analysis of the data was made in IBM SPSS Statistics version 26.0 and Microsoft Excel 2007, and the significance was considered at level  $p < 0.01$  and a confidence interval of 95%.

## Results

We studied a total of 60 participants (24 physicians and 36 nurses). Of the total number of participants ( $n = 60$ ), 44 (73.3%) were female. The average age of the staff working in the ED is 36.33 years old with a deviation standard of 6.16 years, which suggests that emergency medicine is a field of the “youth”. The distribution of the ED staff by gender was 73.3% for female and 26.7% for male. The distribution of the ED staff by civil status shows that the majority of the medical staff is married (71.7%), with a minority being single (20%) or divorced (8.3%). Moreover,

**Table I** STAFF QUESTIONNAIRE Type A

<b>N°</b>	<b>Question</b>	<b>Answer</b>
1	<b>How do you rate the level of job satisfaction in your institution?</b>	a) Very dissatisfied b) Dissatisfied c) Neutral d) Satisfied e) Very satisfied
2	<b>How often do you feel stressed because of your job?</b>	1 - very rarely 2 - rarely 3 - sometimes 4 - frequently 5 - very often
3	<b>How often do you feel exhausted/tired because of your job?</b>	1 - very rarely 2 - rarely 3 - sometimes 4 - frequently 5 - very often
4	<b>What factor contributes to your burnout at work?</b>	a) Lack of respect from patients b) Lack of respect from colleagues c) Caring for patients with Covid-19 d) High workload e) Fear of exposure to the virus f) Bureaucracy g) other (please specify)
5	<b>How often do you feel affected by the health of your patients?</b>	1 - very rarely 2 - rarely 3 - sometimes 4 - frequently 5 - very frequently
6	<b>Do you feel that your work negatively affects your time with your family?</b>	1 - very rarely 2 - rarely 3 - sometimes 4 - frequently 5 - very often
7	<b>Since the beginning of the pandemic, have you had any of the following problems in carrying out your work activities due to emotional problems? (mark YES or NO)</b>	a) Have you reduced the time spent at work b) Did you perform fewer activities at work c) You did not pay the same attention and care as usual in carrying out your activities
8	<b>Looking at the evolution of the pandemic, how would you describe the near future?</b>	a) I look to the future with confidence b) I live in fear that I might get sick c) I live in fear that I might lose my job d) Although I do not like it, I tend to think the worst
9	<b>Do you feel safe in terms of material equipment, protective equipment, appliances, necessary for your work?</b>	a) I am concerned about safety b) Safety needs to be adequately improved c) I feel safe d) I have no concerns

(Continued)

Table 1 (Continued).

N°	Question	Answer
10	<b>Relationship with colleagues/team work. Choose the options that best represent you.</b>	a) My co-workers are my friends b) I socialize easily with others regardless of their character c) The way I interact with colleagues depends a lot on my mood d) Lately I have become tougher in dealing with colleagues e) Relationships with work colleagues are confrontational
11.	<b>During your work activities have you questioned your own judgement and noticed a decrease in your confidence in your own strengths?</b>	1= Very much 2= Great extent. 3=Relatively high 4=Small measure. 5=Very small measure

Table 2 STAFF QUESTIONNAIRE Type B

<b>Please choose the answer that best describes you!</b>
Gender <input type="checkbox"/> M/ <input type="checkbox"/> F
Age ___ Marital status _____
<b>What is your professional category?</b> <input type="checkbox"/> Specialist physician <input type="checkbox"/> Chef physician <input type="checkbox"/> Intern physician <input type="checkbox"/> nurse <input type="checkbox"/> Medical assistant <input type="checkbox"/> stretcher bearer <input type="checkbox"/> another professional category
<b>How many years of work experience do you have in your current position? _____</b>
What is the highest level of education you have? <input type="checkbox"/> Vocational school <input type="checkbox"/> post-secondary education <input type="checkbox"/> Pre-university studies <input type="checkbox"/> University studies <input type="checkbox"/> Postgraduate studies
<b>How many hours do you work per week? _____</b> <b>Do you work night shifts? <input type="checkbox"/> Yes <input type="checkbox"/> No</b>
<b>How many patients do you usually take care of per shift? _____</b>

43.3% of the participants have a work experience of less than 5 years, and 46.7% have only a university degree (Table 3).

The average score quantifying exhaustion of the staff was  $3.58 \pm 1.01$ , with a high percent of the ED doctors (45.8%) (n=24) showing an increased level of exhaustion, and only 30.6% (n=36) of the nurses showing an increased level of exhaustion. The average level of stress of the staff was found to be  $3.38 \pm 0.92$ , with 66.6% (n=24) of doctors showing a high level of stress, along with 9.1% (n=9) of auxiliary staff, and 36.1% (n=36) of nurses. The average score of depression of the staff was found to be  $2.17 \pm 1.38$ , among which the nurses displayed a high level of depression (36.1%), while only 25% of the emergency medicine physicians showed a high level of depression.

The results indicate a greater occurrence of exhaustion, stress, and depression, among the Emergency Medicine physicians, in comparison with the nurses within the Emergency Department. Thus, our hypothesis that the various professional categories within the Emergency Department will present different levels of exhaustion and stress is supported (Table 4).

**Table 3** The Demographic and Professional Characteristics of the Participants (n=60)

<b>Gender</b>		
Male	16	26.7
Female	44	73.3
<b>Age</b>		
<35 years	31	51.7
≥36 years	29	48.3
<b>Marital status</b>		
Married	43	71.7
Unmarried	12	20
Divorced	5	8.3
<b>Work experience</b>		
< 5 years	26	43.3
5–10 years	20	33.4
>10 years	14	23.3
<b>Professional category</b>		
Specialist physician	14	23.3
Nurse	36	60
Intern physician	8	13.3
Chief physician	2	3.3
<b>Education level</b>		
University studies	28	46.7
Postgraduate studies	8	13.3
Post-secondary education	24	40
<b>Working hours per week</b>	54.1	
<b>Patients per shift</b>	28.2	

**Table 4** The Average Scores of the Exhaustion, Stress, Depression Scales Depending on the Professional Categories

	<b>Physicians</b>		<b>Nurses</b>	
	<b>Mean</b>	<b>Standard Deviation</b>	<b>Mean</b>	<b>Standard Deviation</b>
Exhaustion	4.20	0.88	2.97	0.87
Stress	3.79	0.88	3.11	0.85
Depression	2.12	1.29	2.19	1.45
Professional satisfaction	3.37	0.96	3.25	1.07
Self- esteem	2.54	1.14	2.72	1.46

**Table 5** The Distribution of the Correlations Between Stress, Professional Satisfaction, Patients/Shift, Self-Esteem of Doctors

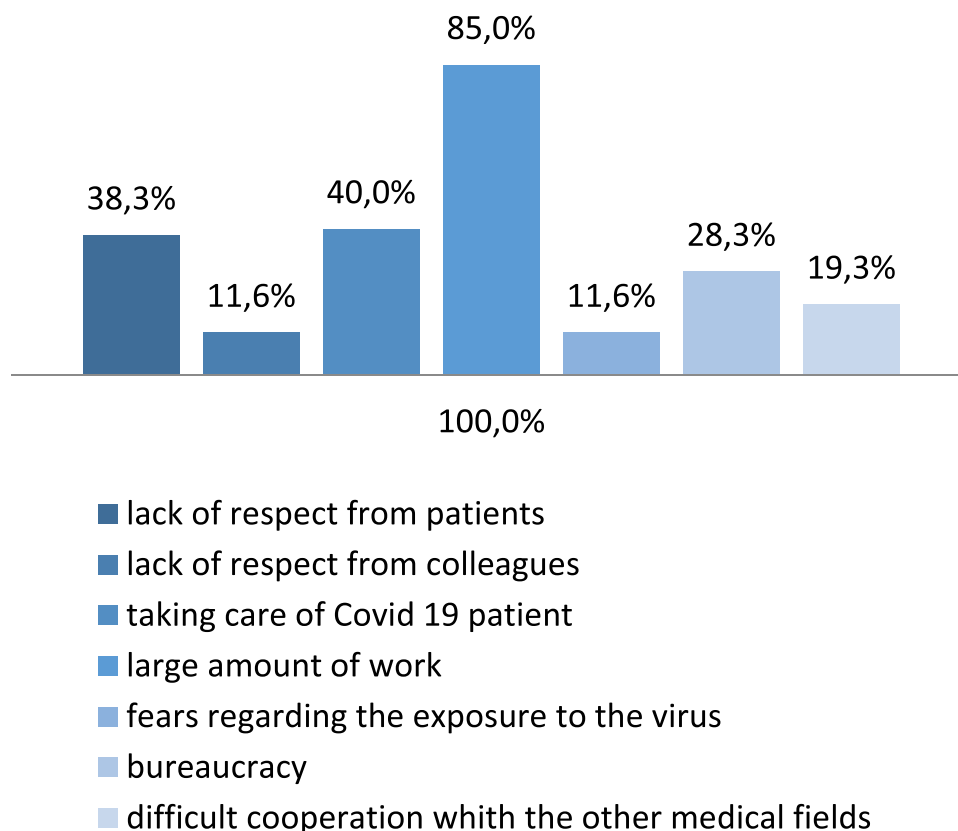
		Satisfaction Physicians	Stress Physicians	Esteem
Satisfaction physicians	Pearson Correlation	1	-0.412*	-0.427*
	N	24	24	24

**Note:** \*Correlation is significant at the 0.05 level (2-tailed).

The results of the doctors were not correlated to age, sex, civil status or experience. Instead, it was identified through analysis of bivariate correlation, based upon the Pearson correlation coefficient, from which an indirect connection of average intensity and significance between the two variables was seen, with  $r = -0.412$ ,  $n = 24$ ,  $p < 0.05$ . Thus, a high level of stress was found to be accompanied by a high level of professional satisfaction. In addition, a correlation between the professional satisfaction and the level of self-esteem was identified, with  $r = -0.427$ ,  $n = 24$ ,  $p < 0.05$ . At a high level of satisfaction, self-esteem is influenced to a small extent (Table 5).

The factors associated with the increase of professional exhaustion for the studied group consist of: the large volume of work (85%), a lack of respect manifested by the patients (38.3%), taking care of Covid-19 patients (40%), bureaucracy (28.3%), a lack of respect manifested by the colleagues (11.6%), fears regarding the exposure to the virus (11.6%) and the difficulty of cooperation with other medical fields/medical units (19.3%) (Figure 1).

Even if the large volume of work, bureaucracy, and taking care of Covid-19 patients are important elements of exhaustion for the ED staff, the possible influence of other factors should not be underestimated. Here, we must include



**Figure 1** The factors associated with the increase of professional exhaustion.

**Table 6** The Relationship Between the Temperament, Extraversion-Introversion and Burnout Syndrome

		Burnout		Total
		High	Low	
Temperament	Choleric	19	6	25
	Sanguine	2	8	10
	Phlegmatic	2	12	14
	Melancholic	10	1	11
Extraversion - introversion	Extraversion	21	16	37
	Introversion	12	11	23
Total		33	27	60

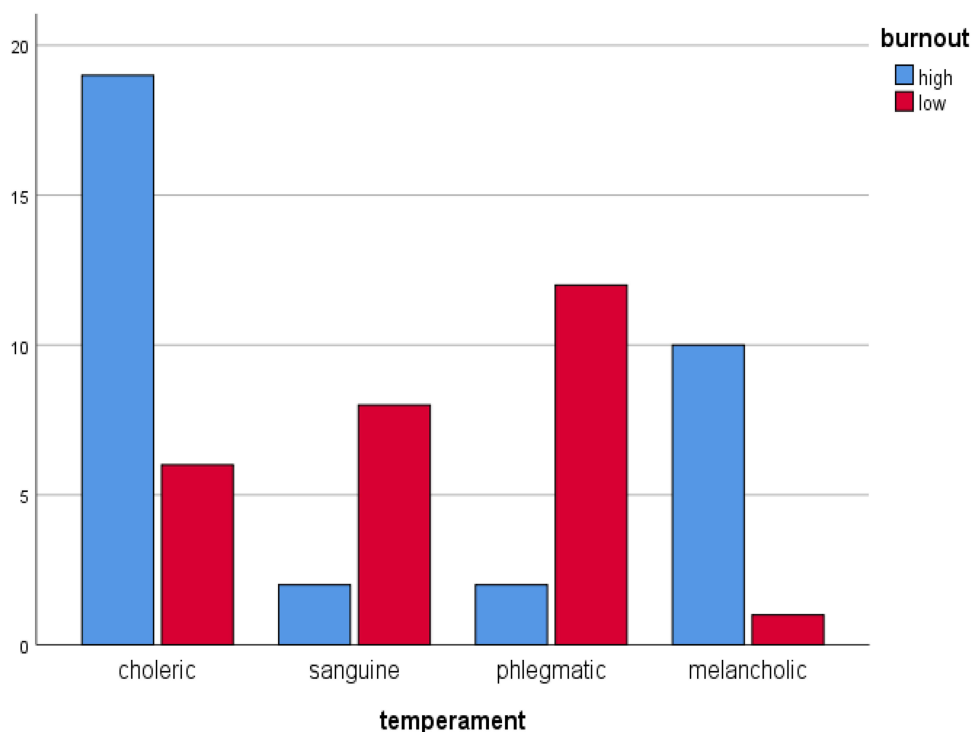
elements such as the relationships with managers and colleagues, as well as the degree of appreciation received for the decisions made at the workplace, and how they are seen by the others at the workplace.<sup>23–25</sup>

## Discussion

To investigate the relationship between the burnout syndrome and the personality characteristics we developed three hypotheses:

Hypothesis 1. The type of temperament influences the occurrence of professional exhaustion, with those expressing the choleric and the melancholic temperaments, as indicated by the EPI, being more liable to experience burnout syndrome.

To verify if there are differences at the types of temperament in the manifestation of burnout syndrome, the non-parametric method was applied, namely the Chi-Square test. Thus, after processing the statistical data, The Chi-Square

**Figure 2** The correlation between the expressed temperament and the occurrence of burnout syndrome.

**Table 7** Chi-Square Tests - Extraversion/Introversion and the Manifestation of Burnout

	Value	The Degrees of Freedom	Asymptotic Significance (2-Sided)	Exact Sig. (2-Sided)	Exact Sig. (1-Sided)
Pearson Chi-Square	10.786 <sup>a,b</sup>	1	0.001		
N of Valid Cases	60				

**Notes:** <sup>a</sup>0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.80. <sup>b</sup>Computed only for a 2x2 table.

test produced a result of 24,512 (Table 6), which shows that there is a correlation between the expressed temperament and the occurrence of burnout syndrome. (Figure 2)

Hypothesis 2. Neuroticism, as a personality feature indicated by the Eysenck personality inventory, influences the occurrence of professional exhaustion and burnout syndrome, with instability being the EPI axis that tends towards burnout.

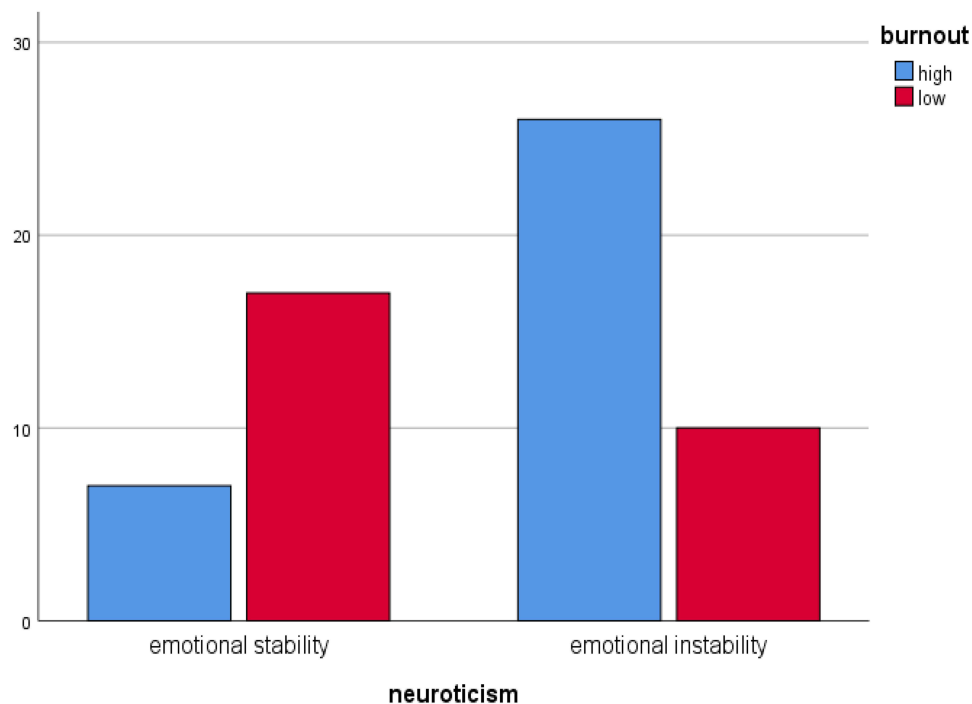
To verify this hypothesis, we used the same coefficient - the Chi-Square test. After processing the data, the Chi-Square test produced a result of 10.786.(Table 7).

This shows a correlation between neuroticism, as a personality feature indicated by the Eysenck personality inventory.

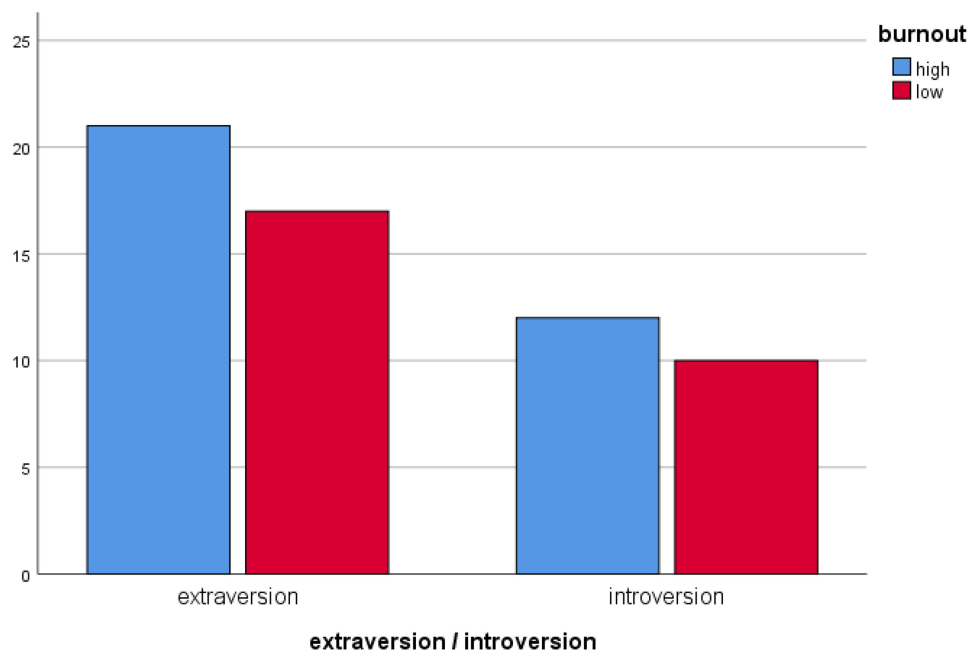
The occurrence of burnout, as well as showing that instability is the Eysenck personality inventory axis predisposed to professional exhaustion. (Figure 3)

Hypothesis 3. We suppose there is a relationship between extraversion/introversion and the manifestation of burnout, with the extraverted individuals more easily developing high levels of burnout.

To verify this hypothesis, we used the same coefficient - the Chi-Square test. After processing the data, the Chi-Square test produced a result of 1.313, which shows that there is a correlation between extraversion and a high level of burnout (Figure 4).



**Figure 3** The occurrence of burnout: the Eysenck personality- to professional exhaustion.



**Figure 4** The Chi-Square test: The correlation between extraversion and a high level of burnout.

Various studies have shown that the individuals with high levels of neuroticism and extraversion have also reported high levels of stress and have displayed high levels of exhaustion. For these subjects, it is essential to offer guidance to avoid the selection of behavioral disengagement.<sup>19,26,27</sup>

## Conclusion

The results indicate a greater occurrence of exhaustion and stress among Emergency Medicine physicians in comparison with nurses within the Emergency Department. Thus, our hypothesis that the various professional categories within the Emergency Department will present different levels of exhaustion and stress is supported by the given evidence.

A high level of professional satisfaction is accompanied by a high level of stress and self-esteem. Bureaucracy, large volumes of work, taking care of patients infected with Sars CoV-2, and factors connected with interpersonal relationships, are all associated with exacerbation of emotional exhaustion among Emergency Department medical staff during the pandemic.

From the results we can say that personality is a predictive factor for the occurrence of burnout syndrome. The individuals with a melancholic or choleric temperament, as indicated by the EPI, are more susceptible to developing burnout syndrome. Instability or neuroticism, as a personality feature, amplifies the occurrence of burnout syndrome. There is also a relationship between extraversion and a high level of burnout, with extraverted individuals more easily reaching a high level of burnout.

## Abbreviations

EPI, Eysenck Personality Inventory; ED, Emergency Department; r, ratio; n, number; p, the level of statistical significance is often expressed as a p-value between 0 and 1.

## Data Sharing Statement

Informed consent was obtained from all subjects involved in the study.

## Ethics Approval and Consent to Participate

The study was conducted in accordance with the Declaration of Helsinki and the protocol was approved by the Ethics Committee of Clinical Emergency Hospital, Galati, Romania. (Project identification code: 5257/March 02, 2021).”

## Consent to Publish

Written informed consent has been obtained from respondents to publish this paper.

## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work. All authors have read and agreed to the published version of the manuscript. C. A. M- wrote original draft preparation, review; V.M-wrote the article and corresponding author; M.A-methodology and investigation; L.D- data curation and formal analysis. A.D.A- software and visualization.

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## Disclosure

The authors declare that there it is no conflict of interest regarding the publication of this article.

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## References

1. Maslach C, Leiter MP. Understanding the burnout experience: recent research and its implications for psychiatry. *World Psychiatry*. 2016;15(2):103–111. doi:10.1002/wps.20311
2. Hyman SA. Burnout: the “other” pandemic. *Anesthesiology*. 2021;134(5):673–675. doi:10.1097/ALN.0000000000003711
3. Lin M, Battaglioli N, Melamed M, Mott SE, Chung AS, Robinson DW. High prevalence of burnout among US emergency medicine residents: results from the 2017 National Emergency Medicine Wellness Survey. *Ann Emerg Med*. 2019;74(5):682–690. doi:10.1016/j.annemergmed.2019.01.037
4. Verougstraete D, Hachimi Idrissi S. The impact of burn-out on emergency physicians and emergency medicine residents: a systematic review. *Acta Clin Belgica Int J Clin Lab Med*. 2020;75:57–79. doi:10.1080/17843286.2019.1699690
5. Schooley B, Hikmet N, Tarcan M, Yorgancioglu G. Comparing burnout across emergency physicians, nurses, technicians, and health information technicians working for the same organization. *Medicine*. 2016;95(10):e2856. PMID: 26962780; PMCID: PMC4998861. doi:10.1097/MD.0000000000002856
6. Popa F, Raed A, Purcarea VL, Lală A, Bobirnac G. Occupational burnout levels in emergency medicine—a nationwide study and analysis. *J Med Life*. 2010;3(3):207–215. PMID: 20945809; PMCID: PMC3019006.
7. Chang BP, Cato KD, Cassai M, Breen L. Clinician burnout and its association with team-based care in the emergency department. *Am J Emerg Med*. 2019;37(11):2113. doi:10.1016/j.ajem.2019.06.032
8. Chor WPD, Ng WM, Cheng L, et al. Burnout amongst emergency healthcare workers during the COVID-19 pandemic: a multi-center study. *Am J Emerg Med*. 2021;46:700. doi:10.1016/j.ajem.2020.10.040
9. Van den Broeck A, Ferris DL, Chang CH, Rosen CC. A review of self-determination theory’s basic psychological needs at work. *J Manage*. 2016;42(5):1195–1229. doi:10.1177/0149206316632058
10. Singer PN, Van der Eijk PJ, Tassinari P. *Galen: Works on Human Nature-Volume 1: Mixtures (De Temperamentis)*. Cambridge University Press; 2019.
11. Karl S. *Essays in the History of Medicine*. New York: Medical Life Press; 1926:67–87. 104.
12. Moreau E. Complexion, temperament and four humor theory in the renaissance. *Encycl Renaissance Philos*. 2020;1–3.
13. Huang L, Zhou D, Yao Y, Lan Y. [Relationship of personality with job burnout and psychological stress risk in clinicians]. *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi*. 2015;33(2):84–87. Chinese.
14. Parks-Leduc L, Feldman G, Bardi A. Personality traits and personal values: a meta-analysis. *PersSocPsychol Rev*. 2015;19(1):3–29. doi:10.1177/1088868314538548.
15. Grzegorek JL, Slaney RB, Franze S, Rice KG. Self-criticism, dependency, self-esteem, and grade point average satisfaction among clusters of perfectionists and nonperfectionists. *J Couns Psychol*. 2004;51(2):192–200. doi:10.1037/0022-0167.51.2.192
16. Wang KT, Slaney RB, Rice KG. Perfectionism in Chinese university students from Taiwan: a study of psychological well-being and achievement motivation. *Pers Individ Dif*. 2007;42(7):1279–1290. doi:10.1016/j.paid.2006.10.006
17. Pérez-Fuentes MDC, Molero Jurado MDM, Martos Martínez Á, Gázquez Linares JJ. Burnout and engagement: personality profiles in nursing professionals. *J Clin Med*. 2019;8:286. doi:10.3390/jcm8030286
18. Farfán J, Peña M, Fernández-Salineró S, Topa G. The moderating role of extroversion and neuroticism in the relationship between autonomy at work, burnout, and job satisfaction. *Int J Environ Res Public Health*. 2020;17(21):8166. doi:10.3390/ijerph17218166

19. Divinakumar KJ, Bhat PS, Prakash J, Srivastava K. Personality traits and its correlation to burnout in female nurses. *Ind Psychiatry J.* 2019;28(1):24. doi:10.4103/ipj.ipj\_52\_19
20. Brown PA, Slater M, Lofters A. Personality and burnout among primary care physicians: an international study. *Psychol Res Behav Manag.* 2019;12:169–177. doi:10.2147/PRBM.S195633
21. Fornes-Vives J, Garcia-Banda G, Frias-Navarro D, Pascual-Soler M. Longitudinal study predicting burnout in Spanish nurses: the role of neuroticism and emotional coping. *Pers Individ Dif.* 2019;138:286–291. doi:10.1016/j.paid.2018.10.014
22. McCann SJ. US state resident big five personality and work satisfaction: the importance of neuroticism. *Cross Cult Res.* 2018;52(2):155–191. doi:10.1177/1069397117723607
23. Eysenck HJ, Eysenck SB. *Manual of the Eysenck Personality Questionnaire.* London: Hodder & Stoughton; 1975.
24. Karasek RA Jr. Job demands, job decision latitude, and mental strain: implications for job redesign. *Adm Sci Q.* 1979;24:285–308. doi:10.2307/2392498
25. Siegrist J. Adverse health effects of high-effort/low-reward conditions. *J Occup Health Psychol.* 1996;1:27. doi:10.1037/1076-8998.1.1.27
26. Greenberg J. A taxonomy of organizational justice theories. *Acad Manage Rev.* 1987;12:9–22. doi:10.2307/257990
27. Shimizutani M, Odagiri Y, Ohya Y, et al. Relationship of nurse burnout with personality characteristics and coping behaviors in health. *Ind Health.* 2008;46(4):326–35. doi:10.2486/indhealth.46.326

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