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Relationship between Feelings and Risk of Burnout Syndrome to the Medical Staff in the Emergency Department of Galați Hospital During the Covid 19 Pandemic Period

Cosmina-Alina MOSCU[1]
Virginia MARINA[2*]
Aurelian-Dumitrache ANGHELE[3]
Mihaela ANGHELE[4]
Liliana DRAGOMIR[5]
Anamaria CIUBARA[6]

[1] „Dunărea de Jos" University, 47 Str. Domnească 800201Galați, România
ORCID ID: 0000-0001-5837-306X
cosmina_caluian@yahoo.com

[2] „Dunărea de Jos" University, Faculty of Medicine and Pharmacy
ORCID ID: 000-0002-0516-734X
virginia.marina@ugal.ro

[3] „Dunărea de Jos" University, 47 Str. Domnească 800201Galați, România
ORCID ID: 0009-0005-6669-1398
anghele_aurelian@yahoo.com

[4] „Dunărea de Jos" University, 47 Str. Domnească 800201Galați, România
ORCID ID: 0009-0004-4115-0037
mihaela.anghele@ugal.ro

[5] ORCID ID: 0000-0001-5919-3941
lilianadragomir2017@gmail.com

[6] ORCID ID: 0000-0003-0740-3702
anamburlea@yahoo.com

* **Corresponding author**

Abstract:

Introduction: Burnout syndrome is a manifestation of chronic stress caused by occupational stressors. The large number of patients infected with SARS Covid 2 has had a particular psychological impact on medical staff in Emergency Departments and only.

Material and Methods: This was a descriptive study, of medical staff in the Emergency Department of the Galati County Emergency Hospital, which is in the front line in the fight against coronavirus. All 120 participants signed an informed consent form and then completed a socio-demographic questionnaire, self-designed questionnaire to identify feelings experienced at work during Covid-19 Pandemic and the MBI - HSS (MP) (Maslach Burnout Inventory) to assess their burnout level.

Results: The study found that 45% of the subjects were at high risk of Burnout. Medical staff in the Emergency Department show a degree of Burnout syndrome directly proportional to their experience in the field.

Conclusions: The prevalence of Burnout syndrome in the Emergency Department is high, more than half of the physicians suffer from a high level of Burnout. Older age and less experience in the field and female gender are predictive factors for Burnout syndrome. Self-reported risk factors are increased overtime, workload, bureaucracy, lack of sleep, lack of respect from patients and colleagues, fear of exposure to the virus and patient care. Self-reported feelings of exhaustion, stress, and depression are dependent on symptoms of Burnout syndrome

Keywords: *Burnout, Prevalence, Professional, Emergency Department, MBI-HSS (MP)*

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1. Introduction

Burnout is a response to prolonged occupational stress, in which the individual experiences three feelings: emotional and physical exhaustion, depersonalization/cynicism and reduced professional performance, Maslach and Leiter (2006).

During the COVID 19 pandemic period, this topic has been frequently debated in the literature, the prevalence of burnout syndrome among frontline healthcare workers has had high rates comparative with other clinical specialty. According to the latest Medscape survey, the Covid19 pandemic is still felt among doctors, 65% of physicians working in the emergency departmentsuffer from burnout syndrome, Danet (2021); Barello et al. (2020); Gualano et al. (2021).

The COVID-19 pandemic period has had a major impact on the healthcare system, having a psychological impact on medical staff as well, providing complex care in a highly stressful environment, along with fear related to the virus, caring for patients infected with Covid-19 virus with high complexity, rigorous adherence to disinfection procedures, and bureaucracy, Raudenská et al. (2020); Patel et al. (2018).

Moreover, Romania has faced numerous challenges since limiting the spread of the virus by introducing quarantine with measures from the authorities for those who did not respect it, theprecarious infrastructure of the health system with reduced medical and auxiliary personnel and faulty management, the reluctance of the population regarding vaccination against Covid-19 virus due to fear and decreased trust in the medical system, Dascalu (2020); Enciu et al. (2022); Dascalu et al. (2021).

Researchers have shown that professional burnout negatively affects both the individual component through the emergence of health problems, poor interpersonal relationships anddecrease in professional performance, as well as the institution's performance through decreased patient satisfaction, professional reorientation of medical staff, loss of motivation of medical staff and an increase in the number of medical errors, Wright and Katz (2018); Southwick and Southwick (2018); Dellve and Jendeby (2022); Salvagioni et al. (2017).

This article is an extension of a previous research based on a batch of nurses working in the emergency department, where we showed that there is a high risk of Burnout in approximately 30% of the nurses, related to the nature of the work, Moscu et al. (2022); Moscu et al. (2023).

In this article, our objective is to identify the presence of professional burnout in different professional categories that work with

patients with Covid-19 infection in an Emergency Department. Our hypothesis is that physicians present a higher risk of developing burnout than nurses that work in Emergency Department. Another hypothesis is that self-reported feelings of exhaustion and stress are also closely related to Burnout syndrome.

2. Material and Methods

2.1 Inclusion and Exclusion Criteria

This was a cross-sectional study of the medical staff in the Department of Emergency. The data was collected within the Emergency Department of "Sf Clinical Emergency Hospital "Andrei" in Galati, Romania during January-April 2022. A set of paper and pencil questionnaires was distributed, which included a questionnaire to identify the presence of the risk of burnout, a socio-demographic questionnaire and an informed consent toparticipate in the study voluntarily and anonymously. The consent of the local ethics committee was obtained for this study (Protocol code: 5257/02.03.2021). In this study, we included only nurses and physicians who work in the Emergency unit. Exclusion criteria: experience less than one-year, incomplete questionnaires, lack of consent to participate in the study.

2.2. Characteristics of Eligible Studies

To identify the presence of burnout risk, we used a Maslach Burnout Inventory-Human Services Survey for Medical Professionals (MBI-HSS MP) questionnaire, adapted to medical personnel in which the word "recipients" was replaced by "patients". The questionnaire consists of 22 items that evaluate the experience of each symptom on a like heart scale (never=0, every day=6) and consists of three dimensions: Emotional exhaustion (9 items, example: "I feel emotionally drained from my work), Depersonalization (5 items, example: "I don't really care what happens to some patients"), and low Professional accomplishment (8 items example: "I have accomplished many worthwhile things in this job."), Maslach et al. (2022).

For each dimension, an average score and a total score are calculated to determine the presence of the Burnout syndrome, higher scores indicated presence of burnout risk, Haslam et al. (2022); Wang et al. (2020); Wu et al. (2020).

In this study, using the Shapiro-Wilk normality test ($p>.05$), the data were normally distributed, obtaining a skewness of -0.043 ± 0.278 and kurtosis$=-0.110\pm0.53$) for EE, for depersonalization (skewness of -0.35 ± 0.275 and kurtosis$=-0.410\pm0.525$) and for PA (skewness of -0.13 ± 0.28 and kurtosis$=-0.13\pm0.53$). The Cronbach's Alpha coefficients were 0.79 for EE, 0.80 for DP and 0.75 for PA. We administered a self-designed questionnaire, in which participants self-reported their feelings during the

pandemic. The questionnaire consisted of 10 items regarding the measurement of the degree of professional satisfaction, stress, exhaustion, depression, relationship with colleagues / family, self-esteem and empathy. The questionnaire also included an open-ended question, with participants reporting factors that contribute to exhaustion. This tool was used in other studies, Moscu et al. (2021); Moscu et al. (2022). For this study, the Cronbach's Alpha coefficients was 0.7.

From a socio-demographic point of view, variables such as age, sex, marital status, professional category, education level, work experience, working hours and the number of patients treated per shift were analyzed.

In order to test for the strength and direction of the linear relationship between two continuous variables, we used the Pearson correlation. It is denoted by the symbol 'r' and can range from -1 to +1. A correlation coefficient of +1 indicates a perfect positive correlation, where the two variables increase or decrease together in a linear fashion. A correlation coefficient of -1 indicates a perfect negative correlation, where one variable increases as the other decreases in a linear fashion. A correlation coefficient of 0 indicates no linear relationship between the two variables.

We calculated the odds ratio (OR) to assess the association between our independent variable and the outcome of interest. The OR was calculated using logistic regression analysis, with adjustments made for potential confounding variables. The OR was used to estimate the relative odds of the outcome in the exposed group compared to the unexposed group. A significant OR indicates a statistically significant association between the independent variable and the outcome.

3. Results

Characteristics of Studied Batch

After excluding cases with incomplete data or any other exclusion criteria, the study group included 120 physicians and nurses working in the Emergency Department. In the following section I will try to briefly present a statistical analysis that allows to express as accurately as possible the main characteristics of the studied group.

The study group included 80 nurses and 40 physicians, of whom 20 were specialist physicians, 7 primary care physicians and 13 resident physicians. Of the total number of 120 participants, we noted the predominance of female subjects of approximately 76.7%. A very high percentage of 77.5% of the subjects declared that they were married. Moreover, 63.3% of the subjects were over 35 years old, 21.7% had less than 5 years of experience in the field and 43.3% of the subjects had university studies **(Table 1)**

Table 1. *Distribution by characteristics of the study group*

Gender	Number	Percentage (%)
Male	28	23.3
Female	92	76.7
Age		
<35 years old	44	36.7
>35 years old	76	63.3
Marital status		
Single	18	15
Married	93	77.5
Divorced	9	7.5
Professional category		
Specialist doctors	20	16,7
Seniors' physicians	7	5,8
Resident doctors	13	10,8
Nurses	80	66,7
Experiences in the field		
< 5 years	26	21,7
5-10 years	38	42,5
>10 years	43	35,8
Level of educations		
College of nurse studies	50	41,7
University studies	52	43,3
Postgraduate studies	18	15

The authors created the table, according to the data collected in our study and statistics used to analyze data.

For the age variable we defined the following statistical characteristics: the mean age among the subjects was 37.6 years with a standard deviation of ± 6.9 years, the median value being 36.5 years. The statistical indices skewness and kurtosis define a homogeneous distribution of the data, characterized by a normal Gaussian curve appearance, with discrete left deviation of the values.

As the variables hours worked per week and number of patients treated per shift, we divided the study group into two subgroups. One subgroup is represented by 40 physicians, including the three professional grades (senior's physicians, specialists, residents) and the second group is represented by 80 nurses. In the case of the subgroup formed by nurses, the average number of hours worked per week was 44.7 hours with a standard deviation of ± 4.3 hours, the median value being located at 48 hours, the

statistical indices skewness and kurtosis define an inhomogeneous distribution of the data, witha peak of 48 hours worked/week.

Next, we analyzed the 2 sublots in terms of the variable patients cared per shift. In the caseof the sublot constituted by doctors, the average number of patients consulted per shift was 31.8 patients with a standard deviation of ± 12.8 patients, the median value being 30 patients. The statistical indices skewness and kurtosis define a homogeneous distribution of the data, characterized by a normal Gaussian curve with a slight left deviation of the values, with a peak of 70 patients consulted per shift. **(Table 2)**.

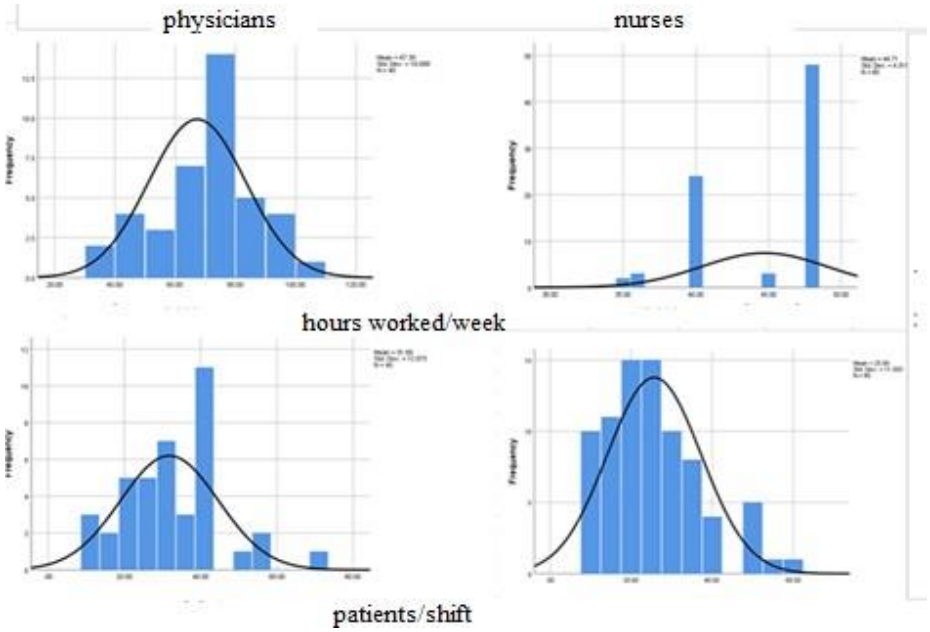
Table 2. *Distribution by number of hours worked per week and of patients treated per shiftin the two sublots (physicians and nurses)*

	Nurse s		**Physicians**	
	Hours worked per week	Patients consulted per shift	Hours worked per week	Patients consulted per shift
Valid	80	80	40	40
Mean	44.71	25.68	67.3	31.8
Std. Deviation	4.31	11.59	16.08	12.87
Skewness	-.749	.896	258.83	165.75
Std. Error of Skewness	.269	.269	-.070	.587
Kurtosis	-1.041	.478	.374	.374
Std. Error of Kurtosis	.532	.532	-.040	.781
Minimum	35	10	.733	.733
Maximum	48	60	30	11

The authors created the table, according to the data collected in our study and statistics used to analyze data.

As variable hours worked per week, we defined the following statistical characteristics: the average number of hours worked per week among physicians was 67.3 hours with a standard deviation of ± 16.08 hours, the median value being located at 70 hours. The statistical indices skewness and kurtosis define a homogeneous distribution of the data, characterized by a normal Gaussian curve appearance, with discrete right deviation of the values, with a peak of 100 hours worked/week. **(Figure 1)**.

Figure 1.
Histograms of Distributions by number of hours worked per week and patients per shift for the two sublots (physicians and nurses).



In the case of the subgroup made up of nurses, the average number of patients cared for per shift is 25.68 patients with a standard deviation of ± 11.5 patients, the median value being located at 25 patients, the statistical indices skewness and kurtosis define a homogeneous distribution of the data, characterized by a normal Gaussian curve appearance, with discrete left deviation of thevalues, with a peak of 60 patients consulted per shift.

Characteristics of Burnout Syndrome dimensions and correlations with sociodemographic variables

The results showed that 45% of subjects had a high risk of developing burnout syndrome among physicians and emergency department nurses. For the burnout syndrome scale, the resultswere as follows: 45% of subjects had a high level of emotional exhaustion, 78.33% had a high level of depersonalization and 75.83% had a low level of personal accomplishment.

Analysis of the two subplots showed that more than half of the Emergency Department physicians were at high risk of Burnout, while only 29 Emergency Department nurses were at highrisk of Burnout **(Table 3)**.

Table 3. *Types of dimension scores on the total number of subjects and the 2 subplots*

Emotional Exhaustion	Physicians	Nurses	Total subjects of study
≤18	4	13	15
19-26	11	38	49
≥27	25	29	56
Depersonalization			
≤5	3	0	3
6-9	14	9	23
≥10	23	71	94
Personal Accomplishment			
≥40	5	8	13
39-34	10	6	16
≤33	25	66	91

The authors created the table, according to the data collected in our study and statistics used to analyze data.

The relationship between the three dimensions of the burnout syndrome was evaluated using the Pearson correlation coefficient. A significant positive correlation resulted between the three dimensions of the burnout syndrome ($r=0.545$; $p<0.001$), ($r=0.471$; $p<0.001$). The emotional exhaustion dimension had an average of 24.81 points and a standard deviation of 7.78 points, depersonalization an average of 16.1 points and a standard deviation of 6.65 points and personal achievements an average of 28.55 and a standard deviation of 8.38 points. **(Table 4)**

Table 4. *Descriptive statistics and Correlation between emotional exhaustion, depersonalization and low personal achievement*

	Statistics	**EE**	**DP**	**PA**
	Mean	24.81	16.12	28.55
EE	Pearson Correlation	1	.545**	.471**
DP			1	.356**
PA				1
	N	120		

**. Correlation is significant at the 0.01 level (2-tailed).

In case of the variable gender, descriptive ANOVA test results showed that male subjects have a mean of 23.96 points for EE, 14.89 points for DP and 25.07 points for PA, showing lower mean values than female subject. In the case of the marital status variable, after ANOVA testing, descriptive results showed that subjects who reported married marital status

had higher mean values of the Burnout syndromedimensions. Also, subjects with divorced marital status show higher mean values of burnout than unmarried subjects. **(Table 5)**

Analyzing the mean values of the Burnout syndrome scales depending on the work experience in the Emergency Department, we found a positive relationship between the variables, the participants with more than 6 years of experience in the field have higher mean values of the burnout syndrome scales compared to the participants with less experience. Also, analyzing theage variable, participants over 36 years of age present higher mean values for the emotional exhaustion and depersonalization scales compared to participants under 35 years of age. **(Table 5)**

Variation in mean values of Burnout syndrome scales correlated with work experience in the Emergency Department by age, hours worked per week and number of patients cared for per shift. For the variable hours worked per week, higher mean values were observed for those whoworked more than 50 hours per week for the EE and AP dimensions. In the case of the number ofpatients cared for per shift, no significant differences were found **(Table 5)**.

Table 5. *Descriptive ANOVA test results by the gender, marital status, experience in the field, age, hours worked per week and patient cared for per shift variable*

		N°	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
						Lower Bound	Upper Bound		
EE	Male	28	23.96	9.79	1.85	20.16	27.76	9	42
	Female	92	25.07	7.08	.73	23.60	26.54	9	42
	Married	93	25.44	7.87	.81	23.81	27	9	42
	Single	18	22.38	7.92	1.86	18.44	26.3	9	40
	Divorced	9	23.22	5.54	1.84	18.96	27.4	15	32
	experience ≤ 5 years	48	22.3	7.3	1.05	20.20	24.4	9	40
	experience ≥6 years	72	26.4	7.6	.9	24.67	28.2	9	42
	Age 25-35 years old	54	23.42	7.88	1.07	21.27	25.57	9	40
	Age >35 years old	66	25.95	7.53	.92	24.10	27.8	9	42
	Hours worked per week <50	86	23.87	7.95	.85	22.16	25.57	9	42
	Hours worked per week >50	54	25.85	7.95	1.08	23.68	28.02	9	42
	Patients cared / shift <30	84	24.83	8.03	.87	23.08	26.57	9	42
	Patients cared / shift >30	36	24.97	7.18	1.19	22.54	27.40	9	42
	Total	**120**	**24.81**	**7.76**	**.70**	**23.41**	**26.2**	**9**	**42**
DP	Male	28	14.89	7.43	1.40	12.01	17.77	5	28
	Female	92	16.5	6.4	.66	15.17	17.82	5	33

		N°	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
						Lower Bound	Upper Bound		
PA	Married	93	16.75	6.69	.69	15.37	18.13	5	33
	Single	18	13.94	6.37	1.5	10.77	17.11	6	28
	Divorced	9	14	6.14	2.04	9.27	18.72	5	25
	experience ≤5 years	48	14.3	5.9	.86	12.62	16.08	5	26
	experience ≥6 years	72	17.3	6.87	.8	15.69	18.92	5	33
	Age 25-35 years old	54	14.68	6.21	.84	12.98	16.38	5	28
	Age >35 years old	66	17.3	6.81	.83	15.62	18.97	5	33
	Hours worked per week <50	86	17.4	6.51	.7	16	18.8	5	33
	Hours worked per week >50	54	14.98	6.34	.86	13.24	16.71	5	27
	Patients cared / shift <30	84	16.75	6.84	.74	15.26	18.23	5	33
	Patients cared / shift >30	36	14.58	5.99	.99	12.55	16.61	5	26
	Total	**120**	**16.12**	**6.65**	**.607**	**14.92**	**17.32**	**5**	**33**
	Male	28	25.07	7.68	1.45	22.09	28.05	10	40
	Female	92	29.61	8.33	.86	27.89	31.34	10	45
	Married	93	28.88	8.21	.85	27.19	30.57	10	45
	Single	18	27.16	9	2.13	22.66	31.66	10	45
	Divorced	9	28	9.47	3.15	20.71	35.28	10	38
	experience ≤ 5 years	48	27.1	8.2	1.19	24.7	29.52	10	45
	experience ≥6 years	72	29.51	8.36	.98	27.54	31.48	10	45
	Age 25-35 years old	54	28.66	8.63	1.17	26.3	31.02	10	45
	Age >35 years old	66	28.46	8.23	1.01	26.44	30.49	10	45
	Hours worked per week <50	86	27.15	8.31	.89	25.36	28.93	10	45
	Hours worked per week >50	54	28.05	8.21	1.11	25.81	30.29	10	45
	Patients cared / shift <30	84	29.67	8.27	.9	27.88	31.47	10	45
	Patients cared / shift >30	36	25.91	9.34	1.55	22.75	29.07	10	41
	Total	**120**	**28.5**	**8.38**	**.76**	**27.04**	**30.07**	**10**	**45**

The authors created the table, according to the data collected in our study and statistics used to analyze data.

Characteristics of self-reported feelings and correlations with Burnout Syndromedimensions

After descriptive analysis of the data, self-reported exhaustion averaged 3.62, suggesting increased exhaustion in 57.5% of participants. Self-reported stress averaged 3.3, with about half of the study group reporting feelings of stress at work. 58.3% of the study group reported increased professional satisfaction. The analysis of the interpersonal relationship variable, with an average of 2.62, suggests that 51.7% of participants reported that their relationships with others were deficient.

Most participants consider that the biggest source of exhaustion is the large workload, followed by bureaucracy, care for patients infected with COVID-19 and lack of respect from patients. Other reported sources of exhaustion were fear related to exposure to the virus, the increased number of hours worked accompanied by lack of sleep.

The average values of self-reported feelings and frequency of sources of exhaustion are shown in the Table 6.

Table 6. *The average values of self-reported feelings and frequency of sources of exhaustion*

Feelings	Mean	Percentage (%)
Self-reported Professional satisfaction	3.25	58.3
Self-reported stress	3.30	40
Self-reported exhaustion	3.62	57.5
Self-reported empathy	3.06	40
Self-reported depression	2.15	39.1
interpersonal relationships	2.62	51.7
Self-reported self esteem	2.63	23.3
Sources of exhaustion at work	Increased number of working hours	25.3
	Lack of sleep	23.58
	large amount of work	75
	lack of respect manifested by the patients	35.3
	bureaucracy	34.5
	fears regarding the exposure to the virus	20.25
	difficult cooperation with the other medicalfields / medical units	17.5
	taking care of Covid-19 patients	30.3

The authors created the table, according to the data collected in our study and statistics used to analyze data.

To determine the relationship between the burnout syndrome scales and self-reported feelings by the participant, we performed the non-parametric Chi square test. After analyzing the data and bar charts, correlations were found between self-reported feelings and burnout syndromescales. The most significant correlation is the relationship between high emotional exhaustion and reduced personal achievement and self-

reported exhaustion. **(Figure 2)** The Chi-square test valuesfor each scale are represented in the table 7.

Table 7. *The Chi-square test values for Emotional Exhaustion, Depersonalization, Personal achievements and Self-reported feelings.*

	EE		DP		PA	
	Pearson Chi-Square	Asymptotic Significance (2-sided)	Pearson Chi-Square	Asymptotic Significance (2-sided)	Pearson Chi-Square	Asymptotic Significance (2-sided)
Self-reported Professional satisfaction	1.312	0.51	6.453	0.04	4.275	0.118
Self-reported stress	7.275	0.002	1.775	0.41	0.899	0.638
Self-reported exhaustion	41.466	0.001	2.274	0.32	13.907	0.001
Self-reported empathy	1.728	0.42	3.391	0.18	2.854	0.24
Self-reported depression	1.194	0.55	4.260	0.11	3.814	0.149
interpersonal relationships	5.187	0.07	3.247	0.197	2.040	0.361
Self-reported self esteem	3.525	0.172	6.833	0.33	2.325	0.313

The authors created the table, according to the data collected in our study and statistics used to analyze data.

Figure 2.
The correlation between High Emotional Exhaustion and self-reported exhaustion

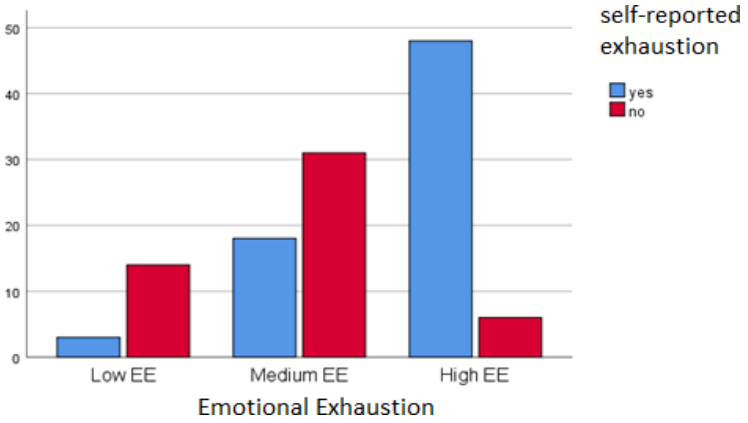


Table 8 shows the Pearson correlation coefficients and the associated significance levels (two-tailed) between emotional exhaustion, depersonalization, and personal accomplishment criteria of burnout and several other variables (professional satisfaction, stress, empathy, depression, interpersonal relationships, and self-esteem).

Professional satisfaction is negatively correlated with EE, but the correlation is not statistically significant ($p > .05$). This suggests that higher levels of professional satisfaction may be associated with lower levels of emotional exhaustion. However, the relationship is not strong enough to be considered statistically significant **(Table 8).**

Stress is positively correlated with EE ($r = .223$, $p < .05$), indicating that higher stress levels are associated with higher levels of emotional exhaustion. This finding is consistent with previous research showing that work-related stress is a major contributor to burnout **(Table 8).**

EE is strongly and positively correlated with exhaustion ($r = .668$, $p < .001$), indicating that higher levels of emotional exhaustion are strongly associated with higher levels of exhaustion. This finding is not surprising, as emotional exhaustion is one of the core components of burnout and is often considered the most important predictor of burnout **(Table 8).**

Empathy and depression are not significantly correlated with burnout criteria (EE, DP, or PA). This suggests that empathy may not be a major factor in the development of burnout. However, these finding is somewhat unexpected, as depression is often considered a risk factor for burnout **(Table 8).**

Interpersonal relationships are positively correlated with DP, but the correlation is not statistically significant ($p > .05$). This suggests that better interpersonal relationships may be associated with lower levels of depersonalization. However, the relationship is not strong enough to be considered statistically significant **(Table 8).**

Self-esteem is negatively correlated with DP ($r = -.278$, $p < .01$), indicating that lower levels of self-esteem are associated with higher levels of depersonalization. This finding is consistent with previous research suggesting that low self-esteem may be a risk factor for burnout **(Table 8).**

Table 8 *Pearson correlations between Maslach Burnout Inventory results and participants feelings: professional satisfaction, stress, exhaustion, empathy, depression, interpersonal relationships, self esteem*

	EE criteria		**DP criteria**		**PA criteria**	
	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)
Professional satisfaction	-.103	.261	.183	.045	.092	.316
Stress	.223	.014	-.109	.238	-.012	.900
Exhaustion	.668	.000	-.002	.981	-.236	.009
Empathy	-.078	.397	-.080	.387	.112	.223
Depression	.022	.812	-.087	.345	.043	.645
Interpersonal relationships	.176	.054	-.147	.108	-.037	.690
Self esteem	-.097	.291	-.278**	.002	.025	.788

The authors created the table, according to the data collected in our study and statistics used to analyze data.

Further, we analyzed burnout's association and risk estimate with Various Job-related Criteria. Firstly, we studied the risk estimates for the relationship between burnout and job satisfaction criteria. The odds ratio for burnout criteria (yes/no) is 1.649, indicating that individuals who experience burnout are 1.649 times more likely to have negative job satisfaction than those who do not experience burnout. The 95% confidence interval ranges from .650 to 4.179, suggesting that the true odds ratio will likely be within this range. The risk estimate for the cohort with satisfaction criteria = yes is 1.245, indicating that individuals with job satisfaction are 1.245 times more likely to not experience burnout compared to those who do not have job satisfaction. The 95% confidence interval ranges from .797 to 1.943, suggesting that the true odds ratio will likely be within this range. The risk estimate for the cohort with satisfaction criteria = no is .755, indicating that individuals who do not have job satisfaction are .755 times more likely to experience burnout than those with job satisfaction. The 95% confidence interval ranges from .463 to 1.231, suggesting that the true odds ratio will likely be within this range **(Table 9).**

Further, we analyzed the risk estimates for the relationship between burnout and stress criteria. The odds ratio for burnout criteria (yes/no) is 1.541, indicating that participants with burnout criteria are 1.54 times more likely to have stress criteria than those without. This estimate's 95% confidence interval ranges from 0.577 to 4.119, indicating that the true odds

ratio is likely to be within this range with 95% certainty. The risk estimate for the cohort with stress criteria = yes is 1.315, indicating that participants with stress criteria are 1.315 times more likely to have burnout criteria than those without stress criteria. This estimate's 95% confidence interval ranges from 0.683 to 2.531, indicating that the true odds ratio is likely to be within this range with 95% certainty **(Table 9).** The risk estimate for the cohort with stress criteria = no is 0.853, indicating that participants without stress criteria are 0.853 times as likely to have burnout criteria compared to those with stress criteria. This estimate's 95% confidence interval ranges from 0.613 to 1.188, indicating that the true odds ratio is likely to be within this range with 95% certainty **(Table 9).**

The odds ratio for Burnout criteria (yes/no) concerning exhaustion criteria is 1.815, meaning that individuals with exhaustion criteria are 1.815 times more likely to experience burnout than those without exhaustion criteria. This odds ratio's 95% confidence interval ranges from 0.715 to 4.608. For the cohort with exhaustion criteria = yes, the odds ratio for Burnout criteria (yes/no) is 1.324, indicating that individuals with exhaustion criteria who are also experiencing burnout are 1.324 times more likely to have burnout compared to those without burnout. This odds ratio's 95% confidence interval ranges from 0.815 to 2.152. For the cohort with exhaustion criteria = no, the odds ratio for Burnout criteria (yes/no) is 0.730, suggesting that individuals without exhaustion criteria are 0.730 times less likely to have burnout than those with exhaustion criteria. This odds ratio's 95% confidence interval ranges from 0.464 to 1.147 **(Table 9).**

The analysis of the Burnout and empathy criteria shows that the odds ratio for Burnout criteria (yes/no) is 0.638, with a 95% confidence interval ranging from 0.250 to 1.630. This suggests that there may not be a significant association between Burnout criteria and empathy criteria. However, when looking at the two cohorts, the odds ratio for Burnout criteria for the group with empathy criteria = yes is 0.812, with a 95% confidence interval ranging from 0.542 to 1.216, while the odds ratio for the group with empathy criteria = no is 1.272, with a 95% confidence interval ranging from 0.744 to 2.176. This suggests that the association between Burnout criteria and empathy criteria may depend on the presence or absence of empathy criteria **(Table 9).**

The odds ratio for the association between burnout criteria and depression criteria is 0.447, indicating that participants who meet the criteria for burnout are 55.3% less likely to meet the criteria for depression than those who do not meet the criteria for burnout. However, the confidence interval for this estimate (0.172 to 1.162) includes 1, which indicates that the association is not statistically significant at the 95% confidence level. When examining the cohorts, those who meet the criteria for depression have an odds ratio of 0.690 for meeting the criteria for burnout compared to those who do not meet the criteria for depression. On the other hand, those who do not meet the criteria for depression have an odds ratio of 1.543 for meeting the criteria for burnout. These findings suggest a possible negative association between depression and burnout **(Table 9).**

The odds ratio for Burnout criteria is 0.438, with a 95% confidence interval ranging from 0.171 to 1.125. This indicates that there may be a negative association between burnout and interpersonal relationships, but this association is not statistically significant. When considering the cohorts based on their interpersonal relationship criteria, those who reported "yes" for having good interpersonal relationships had an odds ratio of 0.656 for burnout, with a confidence interval ranging from 0.428 to 1.006. On the other hand, those who reported "no" for having good interpersonal relationships had an odds ratio of 1.497 for burnout, with a confidence interval ranging from 0.884 to 2.533. This suggests that having good interpersonal relationships may protect against burnout, while poor interpersonal relationships may increase the risk of burnout **(Table 9)**.

The analysis shows a statistically significant association between burnout and self-esteem. The odds ratio of 0.347 indicates that individuals with burnout are less likely to have high self-esteem than those without burnout. The 95% confidence interval ranges from 0.130 to 0.932, indicating a high level of uncertainty in the estimate. Moreover, the analysis also shows that the association between burnout and self-esteem varies depending on whether an individual has high or low self-esteem. The odds ratio of 0.474 for the cohort with high self-esteem indicates that burnout is associated with lower odds of having high self-esteem. On the other hand, the odds ratio of 1.364 for the cohort with low self-esteem indicates that burnout is associated with higher odds of having low self-esteem **(Table 9)**.

Table 9 *Association and risk estimate of Burnout with Various Job-related Criteria*

Burnout and job satisfaction criteria	Risk estimate		
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Burnout criteria (yes / no)	1.649	.650	4.179
For cohort satisfaction criteria = yes	1.245	.797	1.943
For cohort satisfaction criteria = no	.755	.463	1.231
Burnout and stress criteria			
Odds Ratio for Burnout criteria (yes / no)	1.541	.577	4.119
For cohort stress criteria = yes	1.315	.683	2.531
For cohort stress criteria = no	.853	.613	1.188
Burnout and exhaustion criteria			
Odds Ratio for Burnout criteria (yes / no)	1.815	.715	4.608
For cohort exhaustion criteria= yes	1.324	.815	2.152
For cohort exhaustion criteria = no	.730	.464	1.147
Burnout and empathy criteria			
Odds Ratio for Burnout criteria (yes / no)	.638	.250	1.630
For cohort empathy criteria= yes	.812	.542	1.216
For cohort empathy criteria = no	1.272	.744	2.176
Burnout and depression criteria			
Odds Ratio for Burnout criteria (yes / no)	.447	.172	1.162
For cohort depression criteria= yes	.690	.468	1.016
For cohort depression criteria= no	1.543	.864	2.756
Burnout and interpersonal relationship criteria			
Odds Ratio for Burnout criteria (yes / no)	.438	.171	1.125
For cohort interpersonal relationship criteria = yes	.656	.428	1.006
For cohort interpersonal relationship criteria = no	1.497	.884	2.533
Burnout and self-esteem criteria			
Odds Ratio for Burnout criteria (yes / no)	.347	.130	.932
For cohort self-esteem criteria = yes	.474	.249	.903
For cohort self-esteem criteria = no	1.364	.951	1.957
Number of Valid Cases	120		

4. Discussion

In this report, our aim was to identify the presence of the risk of developing burnout syndrome among a group of participants working in the Emergency Department, caring forpatients infected with SARS CoV-2.

Our results indicate an increased risk of developing burnout syndrome, half of the studied group presenting high values on all dimensions of professional exhaustion.

We hypothesized that the professional categories in the emergency department may have different degrees of developing Burnout syndrome. After the analysis of the 2 groups,the group consisting of physicians presents a higher risk of developing burnout syndromethan the nurses, having a large number of hours worked per week and at the same time a greater number of patients consulted and treated.

The obtained data are related to the data obtained in the literature; the front-line medicalstaff present a higher risk of developing burnout syndrome (Nobre et al. 2019; FrançanSouza et al. 2014).

The Covid 19 pandemic, with all its consequences, proved to be an additional factor inexacerbating professional burnout, Portero et al. (2020); González-Gil et al. (2021).

In this study, we showed that larger experience in field has an impact on the development of the burnout syndrome, in all its dimensions. Contrary to our expectations, specialized literature shows that staff with more experience in the field can easily manage periods of stress and emotional burden (Nobre et al. 2019; FrançanSouza et al. 2014; Portero et al. 2020; González-Gil et al. 2021; Gómez-Urquiza et al. 2017).

Participants over the age of 36 reported more pronounced feelings of emotional and physical exhaustion than those under the age of 35, confirming that the specialty of emergency medicine, due to difficult working conditions, is easier to manage by a younger staff (Popa et al. 2010).

Other researchers do not mention age as an impact factor in the development of Burnoutsyndrome (Kolachev & Novikov, 2020).

For the gender variable, we showed that female participants present a higher risk of professional burnout, presenting increased values on all dimensions of the burnout syndrome (Friganović et al. 2019). Also, participants with married and divorced marital status have anincreased risk of burnout compared to participants with unmarried marital status, probably due to personal life responsibilities or personality (Cañadas-De la Fuente et al. 2018).

Participants reported as sources of exhaustion at work, increased overtime, workload, bureaucracy, lack of sleep, lack of respect from patients and colleagues, fear of exposure to the virus and patient care.

Petrino et all said that the increased workload is also due to insufficient medical staff, who are ten times more likely to develop burnout (Petrino et al. 2022).

Working conditions, lack of clarity of work tasks, difficult interaction with others, andcommunication patterns, workplace injuries are reported as risk factors in the development of burnout in healthcare professionals, (Tsolakidis & Vasiliki, 2022).

Another hypothesis was that self-reported feelings are correlated with the dimensions of professional exhaustion. Most of the participants were professionally satisfied. however, they showed feelings of stress,

exhaustion or depression. More than a third of participants reported a deterioration in their self-esteem. However, about half of the participants reportincreased empathy.

Contrary to our results, studies show an association of professional exhaustion with a low degree of professional satisfaction and empathy, (Linzer & Harwood, 2018; Wilkinson et al. 2017). According to a meta-analysisby Koutsimani et al., burnout syndrome is associated with feelings of depression and anxiety (Koutsimani et al. 2019).

Maintaining optimal mental health requires significant resources, therefore it is important to address emotional exhaustion through psychoactive interventions individual interventions and organizational change programs.

The results of this study provide insight into the relationship between burnout and various factors such as professional satisfaction, stress, empathy, depression, interpersonal relationships, and self-esteem. These findings are consistent with previous research on burnout, which has shown that emotional exhaustion is a major component of burnout and is strongly associated with stress and work-related factors (Maslach & Leiter, 2016; Shanafelt et al. 2016).

The finding that professional satisfaction is negatively correlated with emotional exhaustion, but the relationship is not statistically significant, is consistent with previous studies that have found a weak relationship between job satisfaction and burnout, Bianchi et al. (2015). However, other studies have reported a stronger relationship between job satisfaction and burnout, suggesting that this relationship may vary depending on the specific sample and measures used, Shanafelt et al. (2016).

The positive correlation between stress and emotional exhaustion is consistent with numerous studies that have found stress to be a major predictor of burnout (Maslach & Leiter, 2016; Shanafelt et al. 2016). This finding highlights the importance of stress management interventions for preventing and treating burnout.

The lack of significant correlation between empathy and burnout criteria in this study is somewhat unexpected, as previous research has suggested that empathic distress can contribute to burnout among healthcare professionals (Figley, 2002). However, other studies have also found no significant correlation between empathy and burnout suggesting that the relationship between empathy and burnout may be complex and dependent on other factors (Soler et al. 2017).

The finding that interpersonal relationships are positively correlated with depersonalization, but the relationship is not statistically significant, is consistent with previous research that has shown that poor relationships with colleagues can contribute to burnout (Bianchi et al. 2015). However, the lack of a significant relationship in this study may be due to sample size or measurement issues.

Finally, the negative correlation between self-esteem and depersonalization is consistent with previous research that has found that low self-esteem can be a risk factor for burnout, Alarcon et al. (2009). This finding highlights the importance of self-care and self-compassion in preventing burnout.

The findings of this study are in line with previous research that has demonstrated a significant association between burnout and job satisfaction, stress, and exhaustion. However, the lack of a statistically significant association between burnout and depression and interpersonal relationships differs from some other studies that have reported a positive association between these factors and burnout.

For example, a meta-analysis conducted by Halbesleben and Buckley (2004) found that depression was significantly associated with burnout, and a study by Maslach et al. (2001) found that interpersonal conflicts were a significant predictor of burnout.

5. Conclusion

Burnout is an increasingly common phenomenon in the medical world. Among the medical staff in the Emergency Department, there is a high risk of developing Burnout syndrome, half of the participants show high values of emotional exhaustion, depersonalization and low personal accomplishment. Among the studied groups, our study shows that the physicians present a higher risk of developing Burnout due to the increased number of hours worked and the patients under care. Older age, high job experience and female gender are predictive factors for Burnout.

Overall, the results suggest that work-related stress is positively associated with emotional exhaustion, which is a core component of burnout. Moreover, lower levels of self-esteem are associated with higher levels of depersonalization, which is another criterion of burnout. However, empathy and depression do not appear to be major risk factors for burnout based on these findings. Additionally, although professional satisfaction and interpersonal relationships are weakly associated with burnout criteria, the relationships are not statistically significant, suggesting that they may not be

significant risk factors for burnout in this particular sample.

Overall, while there is some variability in the literature, the results of this study add to the growing body of evidence that suggests burnout is strongly associated with job-related criteria such as job satisfaction, stress, and exhaustion. Further research is needed to clarify the association between burnout and other factors such as depression and interpersonal relationships.

Participants reported as sources of exhaustion at work, increased overtime, workload, bureaucracy, lack of sleep, lack of respect from patients and colleagues, fear of exposure to the virus and patient care. Self-reported feelings of exhaustion, stress, and depression are dependent on symptoms of burnout syndrome.

In order to effectively manage the effects of Burnout syndrome, it is necessary to recognized the factor that contribute to professional Burnout.

Abbreviation

EE -emotional exhaustionDP-depersonalization
N° - number
PA- personal achievement

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: 1594/21.01.2020).

Consent to Publish: Written informed consent has been obtained from respondents to publish thispaper.

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