Article

A Cross Sectional Study in Greece to Investigate Burnout, Anxiety and Depression in Medical and Nursing Staff during the Pandemic Crisis: The Impact of Occupational and Demographic Factors

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Abstract: The presence of burnout, anxiety and depression among health professionals is a crucial issue that must be carefully addressed. The aim of the present study is to investigate levels of burnout, anxiety and depression among health professionals (medical and nursing staff) during the pandemic crisis, the association of burnout with anxiety and depression as well as the impact of occupational and demographic factors. One hundred twenty-five health professionals (medical and nursing staff) participated who were working in a public hospital in the broader area of Athens (sample of convenience). Specifically, 41 males and 84 females with the majority of them being in the category of 36-45 years of age. For the data collection, the Maslach Burnout Inventory (MBI) and the HADS questionnaire were used. The results showed that there was a statistically significant and negative correlation of emotional exhaustion to HADS total (r= -0,377, p=0,000) as well as HADS anxiety (r= -0,417, p=0,000). Also, there was a statistically significant and negative correlation of depersonalization to HADS total (r= -0,370, p=0,000) as well as HADS anxiety (r= -0,431, p=0,000). Moreover, there was a statistically significant effect (p<0,05) of occupational and demographic characteristics.

Keywords: burnout; anxiety; depression; health professionals; medical staff; nursing staff

Introduction

The pandemic (COVID-19), which is considered one of the three pandemics that have affected the population worldwide in the last twenty years (1), started worldwide in 2019. This disease is due to the SARS-CoV-2 coronavirus that first appeared in the city of Wuhan, the capital of China's Hubei province. The virus was aggressive and spread particularly quickly, as confirmed by the numbers that accompany it, since more than 113 million people in 215 different countries have been confirmed to have been infected to date. Specifically, its dangerousness is clearly shown by the fact that by 2020 (2) 2.51 million deaths and 89 million recoveries had been recorded.

The outbreak of the COVID 19 pandemic was the reason for the exacerbation of the already existing problems in the public hospitals, whether they were related to the adequacy of the accommodation structures, or to the adequate degree of dealing with emergencies, as they arose from the influx of patients who were facing the virus privately, without success or by utilizing the resources that were intended to achieve and upgrade them, but had not yet been achieved. Against all this stood the medical and nursing staff who, regardless of the problems they faced, due to the aforementioned, responded to an excessive degree to the demands of the pandemic, with a disproportionate, however, result, since among other things they were led to burnout.

It is understood that the human resource management policies of public hospitals played a big role, as they are linked to the promotion of a system of high work performance related to the utilization of personnel in key positions, their training, participation in decision-making, safety. Equally understandable is the fact that the promotion of such a system, if it is not properly structured with respect to the human factor (i.e., the medical and nursing staff), giving weight to their well-being, collapses.

Globally, before the spread of the virus, most healthcare systems in Europe were facing many challenges. An element that can be evaluated concerns the elderly population of Europe, as 20% of it is over 65 years old, a statistic which translates into a prevalence of important chronic diseases, which the national budget must deal with. It is possible that Europe's aging population is one of the main reasons why the pandemic spread so quickly (3). History has shown that no country in the world was prepared to face such a pandemic and for this reason a series of measures, such as a

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curfew, were put in place to stop its spread and to properly prepare hospitals to receive them. patients who were still pouring in. This preparation included, among other things, the supply of necessary equipment, necessary medicines and ICU beds. In the next phase, the hospitals proceeded to categorize the cases into urgent and non-urgent, with the result that some cases of the pandemic are dealt with immediately, while the other cases do not receive immediate help but are postponed (4). An example that can be given is the vulnerable category of the elderly around the world, whose hospitalization and medical care was suspended as the coronavirus patients preceded them (3).

This treatment resulted in the postponement of major hospitalization programs and thus in financial losses for both hospitals and doctors and other health professionals, with an equally direct effect of burdening an already burdened workplace with an object that could no longer be adequately addressed (4).

Taking into account the above, we understand that the rapid spread of the coronavirus has suddenly become a huge threat to the health personnel of hospitals, internationally but especially in Greek public hospitals. More specifically, its transmission took place at a rapid rate even among the medical and nursing staff themselves, which had negative effects on the mental health of the workers (5-7), as the effort coping with it caused anxiety, depression and fear, denial and anger (8), all of which intensified even outside their working hours. In particular, they were forced to shoulder hard hours, under physical and psychological pressure, putting themselves at risk, in order to respond professionally (9) and without having sufficient but also capable equipment in order to come out unscathed from the battle with the virus. On the contrary, their direct contact with infected patients, grueling hours, work demands and their exposure to potential psychological problems led to accumulated stress and problems which cumulatively created symptoms of post-traumatic stress (PTSD), depression and burnout (10).

According to the above study (10), factors of employees' mental distress are influenced by employees' personality, age, gender, education and family status, as well as workload, work environment and work anxiety. Specifically for the period of Covid-19, a high frequency of anxiety and post-traumatic stress disorder (PTSD) was found in women and nurses, compared to men and doctors, respectively. This result was interpreted in the sense that the nurses had a more direct relationship with the patients and therefore the rates of fatigue, fear and anxiety were much more intense, especially in those who had work experience and conscience and were quick to respond immediately to the situation. At an international level, statistics showed that the medical staff of hospitals such as in Spain (11) and Canada (12), who were affected by the virus, presented severe problems of burnout, anxiety, depression and post-traumatic stress.

At this point we should also refer to the study by Guixia et al. (13), which showed that the staff who worked in intensive care units, during the pandemic, presented symptoms of the syndromes under study, at a rate of 89.57%, compared to the other departments with a rate of 49.15%.

In Greece, statistical studies were carried out in public hospitals, such as, for example, in ACHEPA (Thessaloniki), where the degree of control of the pandemic was examined in relation to the training of each professional, the equipment he/she had at his/her disposal and the support provided to him/her, finding that the levels of employee burnout are proportional to those in the international arena (14). In more detail, regarding the levels of fear of illness, no significant differences were found in the level of fear and also among professionals, something that was also found in a survey carried out in public hospitals in Attica (15). On the contrary, the frontline staff, who cared for the patients, showed greater problems, in proportion to the rest of the staff, which statistically agrees with comparisons made internationally (16-18). Similarly, health professionals working in ICUs showed more serious mental health incidents (14), with a focus on the female gender in proportion to male professionals, which was also found in another research in Greece and internationally (19). Occupational burnout and depression were also experienced by younger, comparatively, ages (14), again agreeing with international data (20-22).

A distinction is generally made between burnout and depression, despite the fact that the syndromes under study appear to have similar symptoms. In reality, however, these symptoms differ as work burnout refers to specific conditions and environments while depression refers to something more general (23). Other studies have also shown that the symptoms of these two syndromes are distinct but both present interrelated negative moods (24), as they present identical psychological states, such as weakness, hopelessness and negative emotions which are accompanied by a complete absence of positive emotions (25, 26). Finally, it seems that burnout and depression are highly correlated, which is also proven by the Maslach Burnout Inventory (MBI) scale, as the component of emotional exhaustion shows a high correlation with depression than with the other dimensions of burnout (27). It is understood that there is a bidirectional relationship between burnout and depression as each of these syndromes overlaps the other (28).

Specifically for the depression of health professionals, international research on the subject of "COVID 19 Mental health international for the General Population (COMET-G) Study", organized by the Department of Medicine in

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Aristotle University of Thessaloniki and the World Psychiatric Association, during the period from March 2020 to and April 2021, clinical depression afflicted 18% of the total population and severe stress was seen in about the same percentage of people. Cause and effect were the same: low level in terms of quality of life combined with problems in intra-family relationships. The results focused on people with a psychiatric history, who showed very high rates (>15%) of suicidal tendencies. Adherence to conspiracy theories was also important, where a large percentage (at least half of the participants) accepted at least one theory (29). According to the aforementioned statistical study, burnout during the pandemic was directly related to the escalation of stressful situations leading to depression, as the former affects the employee's mental health (29), as it has negative consequences on the quality of life of health workers.

Given that our country was in a period of economic crisis for several years, the studies carried out in Greece and related to the psychological state of the population showed a high level of depression and anxiety, with symptoms similar or higher in proportion to previous estimates, but certainly higher in comparison with the period before the financial crisis of 2009, an element that was due to the prevalence of the syndrome while the country faltered due to the virus (30).

The study by Pappa et al. is important. (19), who assessed levels and risk factors for anxiety, depression, traumatic stress, and burnout in 464 individuals employed in six hospitals in Greece and specifically on the front line of dealing with the pandemic. After completing questionnaires on social, demographic, work-related information and psychometric scales, results showed moderate to severe depression (30%), anxiety (25%) and traumatic stress (33%). Work stress was particularly high as the staff presented moderate/severe emotional exhaustion (65%), 92% showed increased levels of depersonalization while 51% showed low/moderate levels of personal achievement. The study under discussion was very important, as it made it clear that a large percentage of health professionals in Greece were significantly burdened due to the pandemic, while at least half were facing problems related to their mental health (19).

In light of the above theoretical approaches, the aim of the present study is to investigate levels of burnout, anxiety and depression among health professionals (medical and nursing staff) during the pandemic crisis, the association of burnout with anxiety and depression as well as the impact of occupational and demographic factors. The main research hypothesis is that burnout will be related to anxiety and depression. We, also, hypothesize that there will be a statistically significant effect of occupational and demographic variables on the levels of burnout, anxiety and depression respectively.

Method

Research design

The present study is a quantitative and cross-sectional study including the variables of burnout, anxiety and depression as well as occupational and demographic factors. In the context of the investigation of the impact of occupational and demographic variables on the levels of burnout, anxiety and depression respectively, the dependent variables are burnout, anxiety and depression while the independent variables are the occupational and demographic factors.

Participants

In this study, 125 health professionals (medical and nursing staff) participated who were working in a public hospital in the broader area of Athens (sample of convenience). Specifically, 41 males and 84 females with the majority of them being in the category of 36-45 years of age (38 individuals, 30.4%). The inclusion criteria of the sample were the following:

- >18 years of age
- Speaking the Greek language
- Belonging to medical or nursing staff
- Working in a public hospital
- Participating in the study voluntarily

Questionnaires

The first part of the measurement tool consisted of the Personal Information Form, in which personal information, such as gender, age, marital status etc., were reported.

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The second part consisted of the Maslach Burnout Inventory (MBI) questionnaire, which is one of the most widely used tools for measuring burnout and which was created by Maslach & Jackson (31), basing its questions on three dimensions of this syndrome (emotional exhaustion, depersonalization, personal accomplishment). This is a standardized questionnaire, which requires that each dimension assessed in the questionnaire has a negative value in order for an employee to be considered "suffering" from burnout (31). The MBI consists of 22 self-report statements, 7 for emotional exhaustion, 7 for depersonalization and 8 for personal accomplishment. Specifically, each statement is evaluated on a seven-point Likert scale, with responses from 0=never, 1=a few times per year, 2=once a month, 3=a few times per month, 4=once a week, 5=a few times per week, 6=every day. Scores for each of the three dimensions of burnout (emotional exhaustion, depersonalization and personal accomplishment) are calculated by summing the scores of the relevant items (32). It should be noted that its reliability and validity has been evaluated internationally (33).

As the concept of burnout refers to a spectrum of symptoms of the syndrome, according to more recent research (Leiter & Maslach, 2016), the additional use of the Anxiety and Depression Scale (HADS) developed by Zigmond and Snaith (34) was necessary. The HADS is a self-administered scale consisting of 14 items, each with four possible responses (34). The HADS has demonstrated good validity in terms of its ability to accurately assess symptoms of anxiety and depression in medical patients. Studies have found that scores on the HADS are significantly related to diagnoses of anxiety and depression based on structured clinical interviews, as well as measures of general psychological distress.

Procedure

The final research proposal of the present study was approved by the research and ethics committee of the Scientific College of Greece (Protocol Number: TER2023225). The data collection took place in the period of February - March 2023. The participants received an informed consent form, which together with the individual's data, contained the purpose of the research, information on the confidentiality and privacy of the information. In addition, there was information on the rights of research participants, such as withdrawing consent and participation at any time they wish. The process was conducted remotely with electronic administration of the questionnaires and more specifically through Microsoft Forms. Participants were asked to complete all the questionnaires.

Statistical analysis

Statistical data analysis was performed using statistical analysis software, IBM SPSS version 26. Data analysis was based on descriptive statistics indicators, frequencies (ν) or percentage (%), as well as mean (SD) and standard deviation (SD). Kolmogorov – Smirnov test was preformed to check the normality of the sample. In order to investigate the relation of burnout to anxiety and depression among health professionals, Spearman correlation was performed. Moreover, to explore the impact of occupational and demographic variables on the levels of burnout, anxiety and depression respectively, Mann-Whitney test and Kruskal Wallis test were performed. All comparisons were made using a significance level of α=0.05.

Results

In the current study, 125 health professionals (medical and nursing staff) participated who were working in a public hospital in the broader area of Athens (sample of convenience). Specifically, 41 males and 84 females with the majority of them being in the category of 36-45 years of age (38 individuals, 30.4%). All the sociodemographic and occupational characteristics are presented in table 1.

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Table 1. Sociodemographic and occupational characteristics of the sample (N=125)		
n	**125**	
Gender		
(Male) n (%)	41	32,8
(Female) n (%)	84	67,2
Age		
18-25	4	3,2
26-35	36	28,8
36-45	38	30,4
46-55	36	28,8
>55	11	8,8
Education		
High school n (%)	10	8,0
Institute of Vocational Training n (%)	19	15,2
University education n (%)	45	36,0
Master/PhD n (%)	51	40,8
Marital status		
Single n (%)	36	28,8
Married n (%)	81	64,8
Divorced n (%)	6	4,8
Widowed n (%)	2	1,6
Profession		
Medical staff n (%)	60	48,0
Nurse n (%)	35	28,0
Nursing assistant n (%)	23	18,4
Supporting health care staff n (%)	7	5,6
Work experience (in years)		
0-5 n (%)	24	19,2
6-10 n (%)	17	13,6
11-15 n (%)	25	20,0
16-20 n (%)	22	17,6
>20 n (%)	37	29,6

Regarding the clinical characteristics of the sample (table 2), the results indicated that the majority of the participants had low emotional exhaustion (74, 59,2%), high depersonalization (54, 43,2%) and low personal accomplishment (54, 43,2%). As far as anxiety and depression is concerned, the results showed that the majority of the participants scored very high in anxiety, which is categorized as abnormal (86, 68,8%) while in depression 80 health professionals (64,0%) presented a borderline abnormal level.

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Table 2. Clinical characteristics of the sample (N=125)		
n	**125**	
Emotional exhaustion - MBI		
17 or less low burnout n (%)	74	59,2
18-29 moderate burnout n (%)	29	23,2
30 and greater high burnout n (%)	22	17,6
Depersonalization - MBI		
5 or less low burnout n (%)	38	30,4
6-11 moderate burnout n (%)	33	26,4
12 and greater high burnout n (%)	54	43,2
Personal accomplishment - MBI		
33 or less high burnout	54	43,2
34-39 moderate burnout	24	19,2
40 and greater low burnout	47	37.6
Anxiety - HADS		
0-7 normal	7	5,6
8-10 borderline abnormal	32	25,6
11-21 abnormal	86	68,8
Depression - HADS		
0-7 normal	11	8,8
8-10 borderline abnormal	80	64,0
11-21 abnormal	34	27,2

Moreover, the results of this study indicated that the mean scores of the MBI were 16,69 for the emotional exhaustion, 12,44 for the depersonalization and 32,70 for the personal accomplishment. In HADS questionnaire, the results indicated that the mean scores were 21,00 for anxiety and depression in total, 11,50 for anxiety exclusively and 9,49 for depression exclusively (table 3).

Table 3. Clinical characteristics of the sample (N=125)					
	N	Minimum	Maximum	Mean	Std. Deviation
Emotional exhaustion - MBI	125	,00	41,00	16,6960	11,51382
Depersonalization - MBI	125	,00	39,00	12,4400	9,79911
Personal accomplishment - MBI	125	4,00	48,00	32,7040	12,55955
Total - HADS	125	1,00	29,00	21,0000	3,96964
Anxiety - HADS	125	,00	16,00	11,5040	2,80732
Depression - HADS	125	1,00	15,00	9,4960	1,98228

In table 4, we see the correlation of burnout to anxiety and depression. Specifically, the results showed that there was a statistically significant and negative correlation of emotional exhaustion to HADS total (r= -0,377, p=0,000) as well as HADS anxiety (r= -0,417, p=0,000). Also, there was a statistically significant and negative correlation of depersonalization to HADS total (r= -0,370, p=0,000) as well as HADS anxiety (r= -0,431, p=0,000). Finally, a statistically significant and positive correlation was observed between personal accomplishment and HADS total (r= 0,339, p=0,000) as well as HADS anxiety (r= 0,401, p=0,000).

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Table 4. Correlation of burnout to anxiety and depression

			Emotional exhaustion	Depersonalization	Personal accomplishment	HADS Total	HADS Anxiety	HADS Depression
Spearman's rho	Emotional exhaustion	Correlation Coefficient	1,000	,754**	-,089	-,377**	-,417**	-,076
		Sig. (2-tailed)	.	,000	,321	,000	,000	,402
		N	125	125	125	125	125	125
	Depersonalization	Correlation Coefficient	,754**	1,000	-,235**	-,370**	-,431**	-,063
		Sig. (2-tailed)	,000	.	,008	,000	,000	,484
		N	125	125	125	125	125	125
	Personal accomplishment	Correlation Coefficient	-,089	-,235**	1,000	,339**	,401**	,042
		Sig. (2-tailed)	,321	,008	.	,000	,000	,645
		N	125	125	125	125	125	125
	HADSTotal	Correlation Coefficient	-,377**	-,370**	,339**	1,000	,834**	,616**
		Sig. (2-tailed)	,000	,000	,000	.	,000	,000
		N	125	125	125	125	125	125
	HADSAnxiety	Correlation Coefficient	-,417**	-,431**	,401**	,834**	1,000	,132
		Sig. (2-tailed)	,000	,000	,000	,000	.	,142
		N	125	125	125	125	125	125
	HADSDepression	Correlation Coefficient	-,076	-,063	,042	,616**	,132	1,000
		Sig. (2-tailed)	,402	,484	,645	,000	,142	.
		N	125	125	125	125	125	125

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

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Table 5. Differences between health professionals with various levels of emotional exhaustion in relation to anxiety and depression

	Emotional exhaustion cut off points	N	Mean Rank	p-value
HADS - Total	17 or less low burnout	74	74,17	0,000
	18-29 moderate burnout	29	51,57	
	30 or more high burnout	22	40,50	
	Total	125		
HADS - Anxiety	17 or less low burnout	74	76,23	0,000
	18-29 moderate burnout	29	48,53	
	30 or more high burnout	22	37,57	
	Total	125		
HADS - Depression	17 or less low burnout	74	63,74	0,958
	18-29 moderate burnout	29	62,31	
	30 or more high burnout	22	61,43	
	Total	125		

In table 5, we see the differences between health professionals with various levels of emotional exhaustion in relation to anxiety and depression. Specifically, the results indicated that in HADS total as well as in HADS anxiety there were statistically significant differences with health professionals with low emotional exhaustion to present more anxiety and depression in total and anxiety exclusively ($p<0,05$) compared to the other groups.

Table 6. Differences between health professionals with various levels of depersonalization in relation to anxiety and depression

	Depersonalization cut off points	N	Mean Rank	p-value
HADS Total	5 or less low burnout	38	81,82	0,000
	6-11 moderate burnout	33	58,26	
	12 and greater high burnout	54	52,66	
	Total	125		
HADS Anxiety	5 or less low burnout	38	80,39	0,000
	6-11 moderate burnout	33	64,59	
	12 and greater high burnout	54	49,79	
	Total	125		
HADS Depression	5 or less low burnout	38	73,88	0,029
	6-11 moderate burnout	33	51,35	
	12 and greater high burnout	54	62,46	
	Total	125		

In table 6, we see the differences between health professionals with various levels of depersonalization in relation to anxiety and depression. Specifically, the results indicated that in HADS total, HADS anxiety as well as in HADS depression there were statistically significant differences with health professionals with low depersonalization to present more anxiety and

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depression in total as well as anxiety and depression exclusively (p<0,05) compared to the other groups.

Table 7. Differences between health professionals with various levels of personal accomplishment in relation to anxiety and depression

	Personal accomplishment cut off points	N	Mean Rank	p-value
HADS - Total	33 or less high burnout	54	52,41	0,004
	34-39 moderate burnout	24	61,08	
	40 and greater low burnout	47	76,15	
	Total	125		
HADS - Anxiety	33 or less high burnout	54	51,13	0,000
	34-39 moderate burnout	24	57,56	
	40 and greater low burnout	47	79,41	
	Total	125		
HADS - Depression	33 or less high burnout	54	61,87	0,929
	34-39 moderate burnout	24	62,52	
	40 and greater low burnout	47	64,54	
	Total	125		

In table 7, we see the differences between health professionals with various levels of personal accomplishment in relation to anxiety and depression. Specifically, the results indicated that in HADS total as well as in HADS anxiety there were statistically significant differences with health professionals with high personal accomplishment (which means low burnout) to present more anxiety and depression in total and anxiety exclusively (p<0,05) compared to the other groups.

Table 8. Differences between health professionals with various levels of anxiety in relation to burnout

	HADS - Anxiety cut off points	N	Mean Rank	
Emotional exhaustion	0-7 Normal	7	76,14	0,000
	8-10 borderline abnormal	32	86,05	
	11-21 Abnormal	86	53,35	
	Total	125		
Depersonalization	0-7 Normal	7	84,57	0,000
	8-10 borderline abnormal	32	81,77	
	11-21 Abnormal	86	54,26	
	Total	125		
Personal accomplishment	0-7 Normal	7	53,29	0,006
	8-10 borderline abnormal	32	46,50	
	11-21 Abnormal	86	69,93	
	Total	125		

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In table 8, we see the differences between health professionals with various levels of anxiety in relation to burnout. Specifically, the results indicated that health professionals with borderline abnormal anxiety presented higher scores of emotional exhaustion (p<0,05). Moreover, health professionals with normal anxiety presented higher scores of depersonalization (p<0,05) while health professionals with abnormal anxiety presented higher scores in personal accomplishment (p<0,05).

There were no statistically significant differences regarding burnout between health professionals presenting different levels of depression (p>0,05).

Table 9. Differences between males and females in relation to burnout, anxiety and depression

	Gender	N	Mean Rank	p-value
Emotional exhaustion	Male	41	48,39	0,002
	Female	84	70,13	
	Total	125		
Depersonalization	Male	41	54,23	0,058
	Female	84	67,28	
	Total	125		
Personal accomplishment	Male	41	69,16	0,184
	Female	84	59,99	
	Total	125		
HADS - Total	Male	41	77,89	0,001
	Female	84	55,73	
	Total	125		
HADS - Anxiety	Male	41	73,72	0,020
	Female	84	57,77	
	Total	125		
HADS - Depression	Male	41	72,84	0,031
	Female	84	58,20	
	Total	125		

Regarding differences between males and females in relation to burnout, anxiety and depression, the results showed that females presented higher emotional exhaustion in comparison to males (p<0,05) while males presented more depression and anxiety (p<0,05) (table 9).

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Table 10. Differences between levels of age in relation to burnout, anxiety and depression

	Age	N	Mean Rank	p-value
Emotional exhaustion	18-25	4	75,00	0,387
	26-35	36	65,33	
	36-45	38	67,74	
	46-55	36	59,72	
	55+	11	45,36	
	Total	125		
Depersonalization	18-25	4	73,13	0,231
	26-35	36	69,81	
	36-45	38	63,47	
	46-55	36	61,17	
	55+	11	41,41	
	Total	125		
Personal accomplishment	18-25	4	48,50	0,452
	26-35	36	54,81	
	36-45	38	66,67	
	46-55	36	66,88	
	55+	11	69,73	
	Total	125		
HADS - Total	18-25	4	50,25	0,087
	26-35	36	51,76	
	36-45	38	74,66	
	46-55	36	62,19	
	55+	11	66,77	
	Total	125		
HADS - Anxiety	18-25	4	66,00	0,016
	26-35	36	46,53	
	36-45	38	72,99	
	46-55	36	64,35	
	55+	11	76,91	
	Total	125		
HADS - Depression	18-25	4	37,63	0,446
	26-35	36	66,07	
	36-45	38	67,88	
	46-55	36	59,61	
	55+	11	56,41	
	Total	125		

Regarding differences between levels of age in relation to burnout, anxiety and depression, the results showed that older health professionals (>55 years) presented higher anxiety in comparison to the other age groups ($p<0,05$) (table 10).

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Concerning the variable of education, the results indicated that only in emotional exhaustion differences were observed ($p<0,05$) with those who have studied in Institutes of Vocational Training to present higher values of emotional exhaustion (75,42) while graduates from high school presented 73,95 and graduates from university education presented 71,31 and finally those health professionals holding a master or PhD presented 48,89.

Concerning the variable of profession, the results indicated that only in emotional exhaustion differences were observed ($p<0,05$). Specifically, those who were nursing assistants (which means graduates from a secondary school) presented higher values of emotional exhaustion (79,37) while nurses (which means graduates from university) presented 77,39 and supporting healthcare staff (graduates from an obligatory school) presented 59,57. Finally, medical staff indicated the lower scores of emotional exhaustion (48,73) compared to the groups of nurses.

With regards to the factors of marital status and work experience (in years), no statistically significant differences were observed.

Discussion

The aim of the present study is to investigate levels of burnout, anxiety and depression among health professionals (medical and nursing staff) during the pandemic crisis, the association of burnout with anxiety and depression as well as the impact of occupational and demographic factors.

Regarding the levels of burnout, anxiety and depression of the sample, the findings show that the majority of the health professionals present low emotional exhaustion but high depersonalization as well as low personal accomplishment. As far as anxiety and depression is concerned, most participants seem to be very anxious in an abnormal level while in depression a borderline abnormal level is, also, observed. The high values of burnout are confirmed in another study of Theofilou et al. (35), in which burnout among health workers during the period of COVID-19 was investigated. Poor mental health with the presence of anxiety and depression in health professionals is in line with other similar studies (36,37). A recent systematic review conducted by Li et al. (38) across 65 studies, involving 97,333 health care workers in 21 countries, has identified a high prevalence of moderate depression (21.7%), anxiety (22.1%), and PTSD (21.5%) among healthcare workers during the COVID-19 pandemic.

Moreover, our study shows that there is a strong relation of burnout to the presence of anxiety and depressive symptoms in medical and nursing staff. This finding corresponds to other similar research findings (39, 40). In the study of Zheng et al. (41) regarding burnout among healthcare providers and the association with anxiety and depression during the COVID-19 pandemic in Macao, China, the results indicate that anxiety and depression remain significantly and positively associated with all types of burnout after controlling for the strong effects of demographic and work factors (41).

In the context of the investigation of the impact of demographic and occupational factors on the level of burnout, anxiety and depression, this study has demonstrated the close association between the above variables. More specifically, it seems that age, gender, education and profession may play a crucial role and affect the degree of burnout as well as anxiety and depression. The findings, in general, are not controversial. For instance, in a study of Nikolaou et al. (42) concerning predictors of anxiety and depressive symptoms among Greek nurses, it was found that younger nurses, unmarried, those without children, those with less work experience, and working in the general medical units were more vulnerable.

The current study presents some limitations. The small number of participating hospitals and research health professionals is its great disadvantage. Moreover, in future studies, apart from demographic and occupational features, other variables could be also studied to see if they can affect burnout and mental health.

It is concluded that public hospitals should be immediately staffed with a psychiatrist specialty as well as with a psychologist-psychotherapist in order to cover the needs of health workers and to support the therapeutic work. It is also suggested that scheduled regular screening for mental disorders in workers, at intervals which will allow the examiners doctors to follow on a personal level the course of the employees as well as to be able to carefully monitor the progress of the group.

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References

1. Bamias, G., Lagou, S., Gizis, M., Karampekos, G., Kyriakoulis, K. G., Pontas, C., &Mantzaris, G.J. (2020). The Greek Response to COVID-19: A True Success Story from an IBD Perspective.Inflammatory bowel diseases, 26(8), 1144–1148.
2. Tountas, Y, Kyriopoulos, J, Lionis, C, Miltiadis, N, Souliotis, K, Yfantopoulos, J, Filalithis, T. (2020). The new NHS: Reform of the National Health System [inGreek](https://www.dianeosis.org/wpcontent/uploads/2020/02/health_system_final.pdf).
3. Souliotis K. (2020). Facing the impact of persistent economic crisis on healthcare in Greece: the need for a new financing paradigm. in Saridi M, Souliotis K, (eds.) The impact and implications of crisis: a comprehensive approach combining elements of health and society, New York: Nova Science Publishers, 293-301.
4. OECD/European Observatory on Health Systems and Policies. (2019), Greece: Country Health Profile 2019, State of Health in the EU, OECD Publishing, Paris.
5. Zhao D, Yao F, Wang L, et al (2020). A comparative study on the clinical features of COVID-19 pneumonia to other pneumonias. Clin Infect Dis.
6. Yuen KS, Ye ZW, Fung SY, et al (2020). SARS-CoV-2 and COVID-19: The most important research questions. Cell Biosc 10, 40.
7. Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., ... & Hu, S. (2020). Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Network Open, 3(3), e203976. doi: 10.1001/jamanetworkopen.2020.3976
8. Darija Salopek-Zihal, Marina Hlavatil, ZvjezdanaGvozdanovic, Mario Gasic, HaroltPlacentol, HrvojeJakic, Denis Klapanl&HrvojeSimic, (2020). Differences in distress and coping with the covid-19 stressor in nurses and physicians. PsychiatriaDanubina. 32(2):287-293.
9. Catton H. (2020). Global challenges in health and health care for nurses and midwives everywhere. International nursing review, 67(1), 4-6
10. Felipe Ornell, Silvia Chwartzmann Halpern, Felix Henrique Paim Kessler, Joana Correa de Magalhaes Narvaez (2020). The impact of the covid-19 pandemic on the mental health of healthcare professionals. Cad Saude Publica. 36(4).
11. Lorena García-Fernández, Verónica Romero-Ferreiro, Pedro David López-Roldán, Sergio Padilla, Irene Calero-Sierra, María Monzó-García, Jorge Pérez-Martín and Roberto Rodriguez-Jimenez (2022). Mental health impact of COVID-19 pandemic on Spanish healthcare workers. Psychological Medicine, 52(1), 195-197. doi:10.1017/S0033291720002019
12. Tan, B. Y. Q., Chew, N. W. S., Lee, G. K. H., Jing, M., Goh, Y., Yeo, L. L. L., Zhang, K., Chin, H. K., Ahmad, A., Khan, F. A., Shanmugam, G. N., Chan, B. P. L., Sunny, S., Chandra, B., Ong, J. J. Y., Paliwal, P. R., Wong, L. Y. H., Sagayanathan, R., Chen, J. T., Sharma, V. K. (2020). Psychological impact of the COVID-19 pandemic on health care workers in Singapore. Annals of Internal Medicine. Advance online publication.
13. Guixia, Liu & Zhang Hui. (2020). A study on burnout of nurses in the period covid-19. Psychology and Behavioral Sciences, 9, 3: 31-36.
14. Koktsidou, I. (2021). Professional burnout (burnout) of the nursing staff at a reference hospital dealing with the COVID-19 pandemic. (School of Social Sciences, Master's Program, Management of Health Units). Greek Open University. Patras.

15. Rizopoulos, T., Goula, A., & Stamouli, M. A. (2020). The professional syndrome burnout in nurses of a public general hospital of Attica. Archives of Greek Medicine, 37(3), 376-383.
16. Hoseinabadi, T. S., Kakhki, S., Teimori, G., &Nayyeri, S. (2020). Burnout and its influencing factors between frontline nurses and nurses from other wards during the outbreak of Coronavirus Disease-COVID-19-in Iran. Investigacion y Educacionen Enfermeria, 38(2), e3. https://doi.org/10.17533/udea.iee.v38n2e03
17. Matsuo, T., Kobayashi, D., Taki, F., Sakamoto, F., Uehara, Y., Mori, N., & Fukui, T. (2020). Prevalence of health care worker burnout during the coronavirus disease 2019 (COVID-19) pandemic in Japan. JAMA Network Open, 3(8), e2017271-e2017271. doi: 10.1001/jamanetworkopen.2020.17271
18. Nie, A., Su, X., Zhang, S., Guan, W., & Li, J. (2020). Psychological impact of COVID-19 outbreak on frontline nurses: A cross-sectional survey study. Journal of Clinical Nursing, 29(21-22), 4217-4226. https://doi.org/10.1111/jocn.15454
19. Pappa, S., Athanasiou, N., Sakkas, N., Patrinos, S., Sakka, E., Barmparessou, Z., Tsikrika, S., Adraktas, A., Pataka, A., & Migdalis, I. (2021). From recession to depression? Prevalence and correlates of depression, anxiety, traumatic stress and burnout in healthcare workers during the COVID-19 pandemic in Greece: A multi-center, cross-sectional study. International journal of environmental research and public health, 18(5), 2390.
20. Ferry, A. V., Wereski, R., Strachan, F., E., & Mills, N. L (2020). Predictors of healthcare worker burnout during the COVID-19 pandemic. Medical, Educational, and Development of Resources through International Exchange (medRxiv). https://doi.org/10.1101/2020.08.26.20182378
21. Giusti, E. M., Pedroli, E., D'Aniello, G. E., Badiale, C. S., Pietrabissa, G., Manna, C., & Molinari, E. (2020). The psychological impact of the COVID-19 outbreak on health professionals: A cross-sectional study. Frontiers in Psychology, 11, 1684. https://doi.org/10.3389/fpsyg.2020.01684
22. Jalili, M., Niroomand, M., Hadavand, F., Zeinali, K., &Fotouhi, A. (2020). Burnout among healthcare professionals during COVID-19 pandemic: A cross-sectional study. Medical, Education, and Development of Resources through International Exchange (medRxiv).]
23. Freudenberger, H. J. (1974). Staff burn-out. Journal of social issues, 30(1), 159-165.
24. Ahola, K., Honkonen, T., Isometsä, E., Kalimo, R., Nykyri, E., Aromaa, A., &Lönnqvist, J. (2005). The relationship between job-related burnout and depressive disorders— results from the Finnish Health 2000 Study. Journal of affective disorders, 88(1), 55-62.
25. Maslach C, Jackson SE, Leiter M. (1997). The Maslach Burnout inventory manual, in Zalaquett CP, Wood RJ (eds.) Evaluating stress: a book of resources. 3. ed. Palo Alto, CA: The Scarecrow Press, 191-218.
26. Pryce, C. R., Azzinnari, D., Spinelli, S., Seifritz, E., Tegethoff, M., &Meinlschmidt, G. (2011). Helplessness: a systematic translational review of theory and evidence for its relevance to understanding and treating depression. Pharmacology & therapeutics, 132(3), 242-267.
27. Bianchi, R., Schonfeld, I. S., &Verkuilen, J. (2020). A five-sample confirmatory factor analytic study of burnout-depression overlap. Journal of Clinical Psychology, 76(4), 801-821.
28. Tóth-Király, I., Morin, A. J., &Salmela-Aro, K. (2021). Reciprocal Associations between Burnout and Depression: An 8-Year Longitudinal Study. Applied Psychology, 70(4), 1691-1727.
29. Spyrou, D. (2021). Measurement of burnout and quality of life of health professionals at G.N.Th. G. Papanikolaou in the covid era. Bachelor's thesis. School of Social Sciences, Master's Program of Studies. Management of Health Units. Greek Open University. Patras.
30. Parlapani, E., Holeva, V., Voitsidis, P., Blekas, A., Gliatas, I., Porfyri, G. N., Golemis, A., Papadopoulou, K., Dimitriadou, A., &Chatzigeorgiou, A. F. (2020). Psychological and behavioral responses to the COVID-19 pandemic in Greece. Frontiers in psychiatry, 11, 821.
31. Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. Journal of organizational behavior, 2(2), 99-113.
32. Maslach C, Jackson SE, Leiter M. (1997). The Maslach Burnout inventory manual, in Zalaquett CP, Wood RJ (eds.) Evaluating stress: a book of resources. 3. ed. Palo Alto, CA: The Scarecrow Press, 191-218.
33. Schaufeli, W. B., &Peeters, M. C. (2000). Job stress and burnout among correctional officers: A literature review. International Journal of Stress Management, 7(1), 19-48.
34. Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica, 67*(6), 361–370.
35. Theofilou, P., Platis, C., Madia, K., & Kotsiopoulos, I. (2023). Burnout and optimism among health workers during the period of COVID-19. South Eastern European Journal of Public Health. Retrieved from https://seejph.com/index.php/seejph/article/view/250
36. Chastali-Sitara M., Alikari V., Platis Ch., Tsironi M., Zyga S., Alefragkis D., Theofilou P. (2020). Association between perceived social support and occupational burnout in Greek nurses: A preliminary study. Prog Health Sci, Vol 10, No 2, 1-7.
37. Theofilou Paraskevi, Eleni Rousta, Dimitrios Alefragkis, Sofia Zyga, Foteini Tzavella, Maria Tsironi, Victoria Alikari (2020). Burnout syndrome and social support in Greek nursing professionals. International Journal of Advance Research in Nursing Volume 3; Issue 1; Jan-Jun 2020; Page No. 18-23.

 doi:10.20944/preprints202304.0853.v1

38. Li Y, Scherer N, Felix L, Kuper H. Prevalence of depression, anxiety and posttraumatic stress disorder in health care workers during the COVID19 pandemic: a systematic review and meta-analysis. PLoS ONE. (2021) 16:e0246454. doi: 10.1371/journal.pone.0246454
39. Hakanen JJ, Schaufeli WB. Do burnout and work engagement predict depressive symptoms and life satisfaction? A three-wave seven-year prospective study. J Affect Disord. 2012; 141: 415–424
40. da Silva FCT, Neto MLR. Psychiatric symptomatology associated with depression, anxiety, distress, and insomnia in health professionals working in patients affected by COVID-19: a systematic review with meta-analysis. Prog Neuropsychopharmacol Biol Psychiatry. 2021; 104: 110057.
41. Zheng Y, Tang PK, Lin G, Liu J, Hu H, Wu AMS, et al. (2023) Burnout among healthcare providers: Its prevalence and association with anxiety and depression during the COVID-19 pandemic in Macao, China. PLoS ONE 18(3): e0283239
42. Ioannis Nikolaou, Victoria Alikari, Foteini Tzavella, Sofia Zyga, Maria Tsironi, Paraskevi Theofilou (2020). Predictors of anxiety and depressive symptoms among Greek nurses. Journal of Health Sciences, 10(1), 90-98.