

# Nurses' Work Environment and Practice as A Predictor of Burnout

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## ABSTRACT

**Background:** The proportion of nurses who experience burnout is particularly high. The study aimed to evaluate the demographics and working environment and practice of the nursing staff and their level of burnout.

**Methods:** A cross-sectional study was implemented in three hospitals on n=290 nurses from July-August 2020. The Practice Environment Scale of the Nursing Work Index was used to evaluate nurses' work environment and assessment of participants' degree of burnout was carried out using the tool Copenhagen Burnout Inventory. Multiple linear regression was used to find association and  $p < 0.05$  was considered statistically significant.

**Results:** The nurses' work environment was characterized as unhealthy, as the total score was 2.32, and four of the five subscales were also rated lower than 2.5. Nurses were found to experience moderate burnout. The subscale of personal burnout gathered the highest score. The nurses' practice in hospital affairs was associated with lower personal ( $b = -7.3, 95\%CI = -12.2$  to  $-2.4, p = 0.004$ ), work-related ( $b = -9.5, 95\%CI = -14.4$  to  $-4.8, p < 0.001$ ) and patient-related burnout ( $b = -10.6, 95\%CI = -16.1$  to  $-5.1, p < 0.001$ ). Also, nurse manager ability, leadership, and support of nurses were associated with lower personal ( $b = -6.5, 95\%CI = -10.9$  to  $-2, p = 0.005$ ) and work-related burnout ( $b = -5.8, 95\%CI = -10.1$  to  $-1.4, p = 0.009$ ).

**Conclusion:** The nurses were found to experience significant burnout  $p < 0.001$ . But then again this was negatively influenced by their work environment.

**Keywords:** Burnout, Hospital, Nurse, Work, Environment.

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## INTRODUCTION

According to the early observations of scientists, who then systematically studied burnout syndrome, healthcare professionals from different specialties were found to be more prone to the appearance of burnout syndrome<sup>1,2</sup>. Several decades later, burnout continues to have several repercussions on the certain professional group. In particular, recent studies have shown, that a high proportion of doctors, medical students and nurses seem to experience some degree of burnout syndrome<sup>3-5</sup>.

Burnout is a severe well-being issue worldwide with varying incidence rates per country. A very high percentage of Greek healthcare professionals, up to 92%, were found to experience increased levels of burnout<sup>6</sup>. During the period of the COVID-19 pandemic, the nursing staff went through a high incidence of burnout. The rapid and widespread COVID-19 pandemic has put a lot of pressure on health systems. In addition, a great number of patients have become severely ill and required hospitalization. Under these extremely difficult working conditions, which were characterized by a high workload, work intensity, fear of infection, shifts lasting  $\geq 8$  hours and redeployment, nurses have been found to experience high levels of burnout<sup>7</sup>.

The influence of the work environment on nursing staff was initially highlighted by a study, which explored the factors that lead nursing staff to resign<sup>8</sup>. It showed that certain work environment characteristics could more easily attract nurses and reduce the likelihood of them quitting their job. These are, nursing management and leadership, nurses' degree of autonomy, staffing, together with opportunities for promotion, the implementation of care models and professional development through education. Hospitals that provide all the above were called Magnet Hospitals and tend to create a healthy and productive work environment<sup>9</sup>. In addition, the work environment of healthcare organizations, where nurses provide their services, offers healthcare quality, safety and patient or clinician well-being, including protection against the development of burnout syndrome<sup>10</sup>.

Job burnout consists of three elements, are overwhelming exhaustion, feelings of cynicism and detachment from the job, a sense of ineffectiveness and a lack of accomplishment. The effects of burnout are multidimensional and affect both healthcare professionals and patient care. The level of burnout experienced by healthcare professionals, nurses in particular, significantly affects their physical and mental health, to the extent that it can lead them to hospitalization<sup>11</sup>. Also, nurses' burnout is associated with a range of adverse patient outcomes, which include hospital-acquired infections, medication errors, falls and an increased chance of mortality<sup>12</sup>.

Studies on the well-being, including burnout, of nursing staff, were also conducted during the COVID-19 pandemic period. Burnout incidence rates were as high as 60% of study participants<sup>13</sup>. A study of emergency department staff showed higher rates (43%) of burnout in nursing staff compared to other participating healthcare professionals. Also, the work environment was associated with the occurrence of burnout, as the less supportive and poor the work environment was, the higher the percentage of nurses with burnout<sup>14</sup>. Other characteristics of nurses' working environment, such as the increased workload and understaffing of nurses, which characterize most hospitals worldwide, and low levels of job satisfaction, are among the most important factors that lead nurses to burnout<sup>15,16</sup>. Burnout and poor working environment lead to nurses' low assessment of patient safety during the pandemic period<sup>17</sup>. The proportion of nursing staff experiencing burnout during the pandemic varies from study to study. This may be due either to the different work departments where the study is conducted (differences in workload and work intensity) or to the different timing with the different burdens of the pandemic on healthcare systems.

The way healthcare organization is organized, managed and operated can either contribute to the development of burnout syndrome or even protect staff from it. Ensuring the leaders the autonomy of nurses and promoting their participation in decision-making, their involvement in hospital matters accompanied by good medical and nursing staff relationships, are found to be reasons that can mitigate or significantly reduce the likelihood of burnout among hospital staff<sup>18,19</sup>. This study aimed to evaluate the working environment and practice of the nursing staff and their level of burnout and to investigate the existence of a correlation between the elements of the working environment and the appearance of burnout syndrome.

## METHODS

A cross-sectional study was done on nursing staff, (2,000 personnel) from three large public hospitals (408, 743, and 928 beds respectively) in Athens, the capital city of Greece. A total of 400 questionnaires (20% of the total) were distributed and the method of questionnaire distribution was convenience sampling. The study was conducted from July 2020 to August 2020 after approval from the ethics committees of the hospitals.

Each questionnaire was accompanied by a letter of information and consent, which provided the details of the researchers, the purpose of the study, the assurance of anonymity and the voluntary participation of the nurses. The researchers collected

demographic and professional data of the participants and hospital characteristics. The Practice Environment Scale of the Nursing Work Index (PES-NWI) was used to evaluate nurses' work environment<sup>20</sup>. The questionnaire consisted of 31 statements, where participants were asked to indicate (on a Likert scale) their level of agreement or disagreement. The 31 statements are made up of 5 subscales, covering the nurses' participation in hospital affairs, nursing foundations for quality of care, nurse managers' ability to lead and support the nurses, staffing and resource adequacy and collegial nurse-physician relations. Each statement can receive a score from 1 to 4. A score for each subscale, greater than 2.5, indicates that participants agree on the application of the subscale in their working environment. Permission to use the PES-NWI in Greek was obtained<sup>21</sup>.

The assessment of the participants' degree of burnout was carried out using the tool Copenhagen Burnout Inventory (CBI)<sup>22</sup>, which consists of 19 statements. The tool measures three dimensions of burnout, consisting of personal burnout, work-related burnout and patient-related burnout. Participants were asked to indicate for each statement the degree or frequency of occurrence on a five-point Likert scale. There are no cut-off prices that define the level of burnout and a higher score, at the subscale level or in the questionnaire as

a whole, indicates a higher degree of burnout. Permission to use the questionnaire in Greek was requested and granted<sup>23</sup>. The data analysis was done with IBM SPSS 21.0 (Statistical Package for Social Sciences).

The category variables are presented as absolute (n) and relative (%) frequencies, whereas the quantitative variables are presented as mean, standard deviation (SD), median, minimum value and maximum value. the work environment was used as the independent variable and burnout as the dependent variable. Moreover, we eliminated confounding from demographic and occupational characteristics. The multiple linear regression of the b factors (coefficients' beta), the corresponding 95% confidence intervals and *p* values <0.05 are considered statistically significant.

## RESULTS

A total of n=290 questionnaires were analyzed (72.5% response rate). The demographic characteristics are shown in Table 1. The mean age in years of participants was (mean±SD) 41.7±8.6, with most participants being women (80.9%) and tertiary graduates (79.9%). Also, 33% of participants had a master's degree, 6.6% had a Ph.D. degree and 32.6% had a nursing specialty.

**Table 1: Demographic characteristics of the participants.**

Characteristics	Mean ± SD			
Age	41.7±8.6			
Frequency n (%)				
Gender	Male	Female		
	55 (19.1)	233(80.9)		
Educational Level	Two-year education	University	Post-graduate Degree MSc	PhD
	58(20.1)	230(79.9)	95(33.0)	19(6.6)
Specialty	Yes	No		
	94(32.6)	194(67.4)		
Field of Specialty	Pathology	Surgery	Pediatrics	Psychiatry
	44 (45.8)	43(44.8)	2(2.1)	7(7.3)

The professional characteristics of the participants and the organizational characteristics of the hospitals are presented in Table 2. Approximately, 30.3% worked in intensive units, 30% in the pathological field, 26.6% in the surgical field, 8.6% in the emergency department and 4.5% in the

laboratory field. Participants had an average of 16.6±9.5 years of work experience. The average number of hospitalized patients in their last shift was 16.6± 9.5 and the average number of nursing staff in the last shift was 3.7±2.1.

**Table 2: Professional and organizational characteristics.**

Characteristics	Frequency n (%)				
Work Field	Pathology	Surgery	Intensive Units	Emergency Room	Laboratory
	87(30.0)	77(26.6)	88(30.3)	25(8.6)	13(4.5)
Number of Hospital Beds	408	743	928		
	78(26.9)	108(37.2)	104(35.9)		
Number of Surgical Procedures (the year 2019)	8,637	9,186	21,681		
	78(26.9)	104(35.9)	108(37.2)		
Position of Responsibility	No	Yes			
	240(83.3)	48(16.7)			
Working Time on the Last Shift	Morning	Afternoon	Night		
	151(52.4)	76(26.4)	61(21.2)		
Seminars Over the Last Year	No	Yes			
	148(51.4)	140(48.6)			
Work experience (in years)	Number of patients in the nursing unit during the last shift	Number of nursing staff on the last shift			
16,6 <sup>a</sup> ±9,5 <sup>b</sup>	21.8 <sup>a</sup> ±20,3 <sup>b</sup>	3,7 <sup>a</sup> ±2,1 <sup>b</sup>			

<sup>a</sup>Mean, <sup>b</sup>Standard deviation

The descriptive results and the internal consistency of Cronbach's alpha factor for the PES-NWI subscales are shown in Table 3. According to the score, the nurses' work environment is characterized as unhealthy, as the total score was 2.32 and four of the five subscales were rated lower than 2.5. The sub-scale with the highest score was that for

relationships between nursing staff and doctors, while the sub-scale with the lowest score was that of staffing and resource adequacy. The Cronbach's alpha internal consistency factors for the PES-NWI scales were between 0.7 and 0.92, indicating very good reliability.

**Table 3: Descriptive statistics and Cronbach's Alpha for the practice environment scale of the nursing work index and the Copenhagen Burnout Inventory.**

Practice Environment Scale of the Nursing Work Index	Mean±SD		Median	Minimum Value	Maximum Value	Cronbach Alpha
Nurse Participation in Hospital Affairs	2.22±0.51		2.22	1	3.78	0.85
Nursing Foundations for Quality of Care	2.24±0.42		2.2	1.10	3.9	0.78
Nurse Manager Ability, Leadership, and Support of Nurses	2.49±0.57		2.6	1.00	4.00	0.81
Staffing and Resource Adequacy	2±0.48		2	1.00	4.00	0.70
Collegial Nurse-Physician Relations	2.64±0.46		3	1.00	4	0.70
Overall composite score	2.32±0.38		2.27	1.00	3.87	0.92
Copenhagen Burnout Inventory						
Personal burnout	55.2	17.5	58.3	4.2	100	0.86
Work-related burnout	51.8	17	53.6	3.6	100	0.87
Patient-related burnout	43.9	19.8	45.8	0	100	0.86

The Cronbach's alpha internal consistency factors for the CBI scales were between 0.86 and 0.87 indicating exceptional reliability. According to the questionnaire score, nurses experience moderate

burnout. The subscale of personal burnout obtained the highest score, followed by the subscale of work burnout. Burnout related to patients obtained the lowest score.

**Table 4: Multivariate linear regression analysis with Copenhagen Burnout Inventory scales as dependent variables.**

Dependent Variable Independent Variable	Coefficient Beta	95% Confidence Interval for Beta	p-Value	R <sup>2</sup>
<b>Personal burnout</b>				23%
Nurse participation in hospital affairs	-7.3	-12.2 to -2.4	0.004	
Nurse Manager Ability, Leadership, and Support of Nurses	-6.5	-10.9 to -2	0.005	
<b>Work-related burnout</b>				25%
Nurse participation in hospital affairs	-9.5	-14.4 to -4.8	<0.001	
Nurse Manager Ability, Leadership, and Support of Nurses	-5.8	-10.1 to -1.4	0.009	
<b>Patient-related burnout</b>				18%
Nurse participation in hospital affairs	-10.6	-16.1 to -5.1	<0.001	

Table 4 shows the results of the multivariate linear regression, where the dependent variable is the scores of the CBI questionnaire subscales and the independent variables are the scores of the PES-NWI questionnaire subscales. According to the findings of the analysis, better evaluation of the work environment in terms of nurses' involvement in hospital issues and providing direction, leadership and support to nurses was associated with lower burnout. In multivariate models, we eliminated confounding from demographic and occupational characteristics.

## DISCUSSION

The present study highlighted the moderate burnout level experienced by nurses. The findings of the present study are in line with those of studies that were implemented shortly before and during the pandemic in a sample of healthcare professionals and nurses in Greece<sup>6,19,24</sup>. This study was conducted in the summer of 2020 and captures the impact of the first wave of the pandemic on the healthcare system and nursing staff. It also refers to the containment measures taken to contain the pandemic. In the spring of 2020, Greece had just experienced a long-lasting quarantine nearly for three months, which had been very effective in the advancement of the pandemic. As a result, very few cases of COVID-19 were recorded and the healthcare system came under no pressure in terms of hospitalizations. However, since February 2020, the long duration of the quarantine, the unique and unexpected strict restrictions on circulation, combined with the suspension of any kind of absence from work, on one hand, led to the aggravation of nurses' mental health and on the

other hand, it is possible that have become the main factors which can explain the high degree of personal burnout of the nurses in our study. A study has correlated quarantine in the period of the COVID-19 pandemic with the deterioration of nurses' mental health<sup>25</sup>.

It is, therefore likely, that the effect of the strict anti-coronavirus measures, accounts for the fact that the personal burnout subscale score was rated highest, compared to the other two subscales related to participants' work. The comparison of the burnout results of this study with similar studies in other countries should be made with great care. Significant differences have been recorded between countries in the level of burden of the pandemic on healthcare systems. In the first wave, Greece is presenting record-low pandemic indicators. The certain low burden probably explains, to a certain extent, the moderate degree of burnout among participants<sup>26</sup>.

As a pandemic period is characterized by high workload and intensity, high stress, fear of infection and illness, as well as isolation, the social and psychological support, in case nurses receive during pandemic periods, could constitute an important factor in mitigating the extent of their burnout. A study of Greek and Cypriot nurses in terms of the healthcare systems' preparedness to cope with the COVID-19 pandemic, showed that 64.9% of Greek and 60.3% of Cypriot nurses lack receiving psychological support from specialists (psychiatrist, psychologist) within their healthcare organization<sup>27</sup>.

This study showed that the nurses' work environment

has been assessed as unhealthy. To be more specific, four subscales together with the total score in the questionnaire were low. Moreover, the findings are consistent with those of a Greek study, where the subscale of staffing and adequacy of resources scored lower than all<sup>28</sup>. However, two subscales were found to statistically influence nurses' burnout: those are leadership and nurses' involvement in hospital issues. The leadership, which by itself creates a healthy work environment, which in turn will reduce the probability of burnout or mitigate its impact. Authentic leadership and transformational leadership styles have been linked to reducing the appearance of burnout<sup>29,30</sup>. During the pandemic, where nurses experience burnout, the transformational leadership style is a fundamental element of a healthy work environment. Indeed, the role of transformational leadership is twofold, where it either achieves a direct effect in reducing the likelihood of burnout or indirectly through the creation of a supportive work culture<sup>29</sup>.

Furthermore, authentic leadership and structural empowerment that a leader can provide consists of creating ways of access to opportunities, support and resources, which create a healthy work environment far away from burnout and stress<sup>30</sup>. The involvement of nurses in hospital issues was the second feature, which was associated with lower levels of burnout. Nurses are considered to be first-line healthcare professionals. By participating in hospital issues, nurses move out of the context of exclusive care delivery, expanding their professional status by actively participating in decision-making regarding the design of hospital policies and practices. Non-participation in hospital matters may be a factor that contributes to the emergence of burnout syndrome<sup>19</sup>. In addition to burnout, involvement in hospital issues increases nurses' job satisfaction and also reduces the likelihood of leaving their jobs<sup>30</sup>.

The present study has a series of limitations. First, it refers to the fact that it is an observational cross-sectional study. Therefore, the association between the work environment and burnout does not make a causal relation. Second, it was carried out in hospitals in the capital city with a relatively small number of participants, so the results cannot be generalized. Also, the study was conducted shortly after the first wave of the coronavirus pandemic, when the burden on the Greek healthcare system was very low due to the strict containment measures. Therefore, this may account for the moderate burnout level and thus not reflect the potentially high burnout level experienced by nurses during the pandemic according to several studies.

The involvement of nurses in hospital issues is not only a moral recognition of their contribution to service

delivery. Being aware of the productivity and delivery of healthcare services across the entire range of services in the organization is fundamental for good decision-making. Thus, nurses being in the frontline have full knowledge to accomplish part of their duty regarding decision making, therefore, hospital managers should promote the participation of nurses in the hospital board and various committees.

## CONCLUSION

The nurses were found to experience moderate burnout, but this was negatively influenced by their work environment. In particular, the study highlighted the role of nurses' participation in hospital issues and the role of leadership, both at the unit and organizational level, in mitigating nursing staff burnout.

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## CONFLICT OF INTEREST

All authors declare no conflicts of interest in this paper in this section.

## ETHICS APPROVAL

This study has been approved by the ethics committees of the hospitals under study requested.

## PARTICIPANT CONSENT

Informed consent was taken from the participant.

## AUTHORS' CONTRIBUTION

All authors contributed equally to this research study.

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