MJMR, Vol. 36, No. 3, pages (54-66).

Open Access
ISSN:2682-4558

Burnout Among Intensive Care Unit Physicians and Nursing Staff: A Cross-Sectional Study

Hassan Mokhtar Elshorbagy Hetta[1], Ali Taha Abdelwahab[1], Abdullah Dahy mouhamed[1], Haidy Salah Mansour[1]

[1] Anesthesiology and intensive care Department, Faculty of Medicine, Minia University, Minia, Egypt.

DOI: 10.21608/mjmr.2025.413925.2079

Abstract

Background: Burnout, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment, is a critical challenge in modern healthcare, particularly in high-acuity settings like the ICU. **Aim:** This cross-sectional study investigates the prevalence and determinants of burnout among Intensive Care Unit (ICU) physicians and nursing staff at Minia University Hospitals. **Method:** The research utilized a cross-sectional design, surveying 249 healthcare professionals (125 doctors and 124 nurses) using a self-administered questionnaire that included sociodemographic, work, health data, job satisfaction, and the Maslach Burnout Inventory Human Service Survey (MBIHSS). **Results:** Key findings indicate that emotional exhaustion was significantly higher among nurses (62.9% high) compared to doctors (37.6% high), and overall, 25.3% of participants met the diagnostic criteria for burnout. Significant associations were found between burnout levels and age, gender, marital status, education, years of experience, and number of shifts per month. Risk factors identified through multivariate logistic regression included exposure to work-related violence (OR = 7.5), frequent contact with dying patients (OR = 13.8 for daily exposure), chronic disease (OR = 3.2), absenteeism (OR = 3.2), private work (OR = 2.8), and dissatisfaction with various job parameters. Conversely, older age, male gender, being married, being a doctor, fewer shifts per month, and satisfaction with supervision, skills use, and work activities were protective factors. **Conclusion:** The study highlights the urgent need for targeted interventions and supportive policies to mitigate burnout in critical care settings, emphasizing that a healthy workforce is fundamental to delivering high-quality patient care.

Keywords: Burnout, Intensive Care Unit, Minia University Hospitals, Maslach Burnout Inventory Human Service Survey

Introduction

Burnout is a pervasive issue in modern society, particularly within demanding professions such as healthcare. It is defined as a state of physical, emotional, and mental exhaustion resulting from prolonged involvement in emotionally demanding work situations [(1)]. The phenomenon was first described in the mid-1970s by Freudenberger and has since been the subject of extensive research due to its significant impact on individual well-being and organizational effectiveness.

Healthcare workers, especially those in high-stress environments like Intensive Care Units (ICUs), are particularly susceptible to burnout. The demanding nature of their work, characterized by long working hours, high patient acuity, emotional exhaustion, and the constant pressure to make critical decisions under time constraints, contributes significantly to this syndrome [(2)]. ICU physicians and nursing staff are on the front lines, dealing with life-and-death situations daily, which often leads to high levels of stress and job dissatisfaction [(3)]. The emotional burden of managing critically ill patients, performing complex medical procedures, and providing emotional support to families, coupled with the potential for adverse outcomes, can lead to a deterioration in mental

health, manifesting as anxiety, depression, and ultimately burnout [4].

Long working hours and shift work further exacerbate burnout risk by disrupting circadian rhythms and leading to sleep deprivation, which impairs cognitive function and decision-making abilities, increasing the risk of medical errors and compromising patient safety [5]. Additionally, high patient-to-nurse ratios in ICUs increase workload and pressure, affecting patient care quality and leaving little time for healthcare workers' self-care [6].

Understanding and addressing burnout is crucial for several reasons. Firstly, it is a significant occupational hazard affecting a substantial proportion of healthcare workers, with alarmingly high rates among ICU staff [3,7]. The well-being of ICU professionals is directly linked to patient outcomes [4]. Secondly, burnout has far-reaching implications for healthcare systems globally, leading to decreased productivity, increased healthcare costs, and reduced capacity to meet patient demands [8]. Finally, the COVID-19 pandemic has intensified these stressors, bringing the issue of burnout to the forefront and highlighting the urgent need for effective interventions [9.10].

This study aims to reveal the extent of burnout among ICU physicians and nursing staff working in the ICU of Minia University Hospitals and to identify some of its determinants. The primary outcome measured was burnout using the Maslach Burnout Inventory Human Service Survey (MBIHSS) [1]. Secondary outcomes included sociodemographic, work, and health data, as well as job satisfaction. By investigating these factors within the specific context of Minia University Hospitals, this research seeks to provide localized evidence to inform targeted interventions and improve the well-being of critical care professionals.

Materials and Methods

This cross-sectional study was conducted at Minia University Hospitals between July 2024 and December 2024, following approval from the Institutional Ethical Committee (968/11/2023). The study aimed to investigate burnout among Intensive Care Unit (ICU) physicians and nursing staff.

Study Population and Selection

Inclusion Criteria: ICU physicians and nurses who were actively working in their posts during the study period and provided informed consent to participate in the ICU of Minia University hospital.

Exclusion Criteria: Physicians and nurses employed at the hospital for less than six months, and those on vacation during the study period.

Data Collection

Data were collected using a pre-designed, self-administered questionnaire. This questionnaire comprised several sections:

1. **Sociodemographic Variables:** Age, sex, marital status, number of family members, number of rooms in the house, and educational level.

2. **Job Characteristics and Experiences:** Job type, department/ward type, years of experience, number of shifts per month, frequency of dealing with and caring for dying patients, previous exposure to work-related violence (and its type), and engagement in private work outside the hospital.

3. **Attitudes to Work:** Absenteeism in the last three months and thoughts of changing jobs or moving to a different ward/department in the last three months.

4. **Health Problems:** Reported diseases suffered, and visits to a physician or hospital admissions in the last three months.

Job Satisfaction Questionnaire

The job satisfaction questionnaire consisted of 7 main categories, with items rated on a 5-point Likert scale (1 = extremely dissatisfied to 5 = extremely satisfied). Satisfaction was classified as: dissatisfied (< 33.3%), average satisfaction (33.3–66.7%), and satisfied (66.7–100.0%).

The categories included:

1. General Working Conditions: Hours worked per week, flexibility in scheduling, work location, and amount of paid vacation/sick leave.

2. Pay and Promotion Potential: Salary, opportunities for promotion, benefits (e.g., health insurance, life insurance), job security, and recognition for work accomplished.

3. Work Relationships: Relationships with co-workers, supervisors, and subordinates.

4. Use of Skills and Abilities: Opportunity to utilize skills and talents, opportunity to learn new skills, and support for additional training and education.

5. Work Activities: Variety of job responsibilities, degree of independence, and opportunity for periodic changes in duties.

6. Work Burden: Workload, time available for family/friends/leisure, work-related stress, and administrative burden.

7. Supervision: Method of supervision, whether the supervisor admits making errors, and whether the supervisor asks for advice before task implementation.

Maslach Burnout Inventory Human Service Survey (MBIHSS)

The MBIHSS [(1)] is a 22-item questionnaire with a 7-point Likert-type rating scale (0 = never to 6 = everyday). The total burnout scale has a maximum score of 132. It comprises three subscales:

1. **Emotional Exhaustion (EE):** (Statements 1-9) Refers to physical and mental exhaustion (maximum score: 54).

2. **Reduced Personal Accomplishment (RPA):** (Statements 10-14) Measures perception of influence, well-being with work, and relationship with problems, indicating dissatisfaction (maximum score: 48).

3. **Depersonalization (DP):** (Statements 15-22) Reflects attitude changes, such as cold and impersonal contact with those receiving services (maximum score: 30).

Burnout was conceptualized as a continuous variable. High burnout was indicated by high scores on EE and DP, and low scores on RPA. Average burnout was reflected in average scores across all three subscales, while low burnout showed low scores on EE and DP, and higher scores on RPA. Subscales were classified into low, average, and high levels based on established criteria. **(table 1)**. On the total burnout scale, scores of 1–33 were considered low, 34–66 as average, and 67–99.9 as high level of burnout.

Data collector visited the hospital five days a week, collecting one to two questionnaire forms daily. Questionnaires were completed and returned in the same session. Written and verbal consent were obtained from participants, and confidentiality was ensured through anonymous completion of the questionnaires.

Primary and Secondary Outcomes

Primary Outcome: Burnout measured using the MBIHSS.

Secondary Outcomes: Sociodemographic, work, and health data, and job satisfaction.

Sample Size Calculation

The sample size was calculated using Epi-Info, version 7. Based on a 95% level of significance, 80% power of the study, an estimated burnout prevalence of 44% according to **Papazian, et al. 2023 [(11)]**, and an error margin of 5%, the required sample size was estimated to be 249.

Statistical Analysis

All data were collected, tabulated, and statistically analyzed using SPSS version 25 (SPSS Inc., Chicago, IL, U.S.A. Quantitative data were expressed as mean ± SD for parametric data, and median and range for non-parametric data. Qualitative data were expressed as frequencies and relative percentages. Data normality was tested using Shapiro-Wilk's test. Independent t-test and Mann-Whitney U test for differences between

quantitative variables in two groups. Paired t-test for comparing two dependent groups of normally distributed variables. Chi-square test (χ^2) and Fisher's exact test for differences between qualitative variables. All statistical comparisons were two-tailed, with a significance level of p-value ≤ 0.05 indicating significance, p-value < 0.001 indicating high significance, and p-value > 0.05 indicating non-significant difference.

Results

This study included 249 healthcare professionals working in ICUs at Minia University Hospitals, comprising 125 doctors and 124 nurses. The results are presented based on sociodemographic characteristics, work-related experiences, job satisfaction, burnout levels, and statistical analysis of burnout predictors.

Sociodemographic Characteristics

Doctors had a slightly higher mean age (30.6 ± 4 years) than nurses (29.7 ± 2.5 years), with a statistically significant difference (p = 0.03). The gender distribution was nearly equal, with males comprising 48% of doctors and 46% of nurses (p = 0.80). Marital status did not differ significantly between groups, though more nurses were married (74.2%) compared to doctors (64%) (p = 0.08).

Nurses had significantly larger families (mean = 5.6 ± 2.2) compared to doctors (mean = 5.07 ± 2.2) (p = 0.02). Educational level showed clear differences: 36% of doctors are Assistant Lecturers (AL) and 31.2% had postgraduate degrees, while the majority of nurses held diplomas or undergraduate degrees. Both groups had similar years of experience (5.6 ± 3.5 for doctors vs. 5.5 ± 3.2 for nurses), but nurses had significantly more shifts per month (12.3 ± 4.7 vs. 8.3 ± 3.7; p < 0.001). **(table 2)**.

Work-related Experiences and Exposure

More than one-third of both doctors (40.8%) and nurses (38.7%) reported dealing with dying patients more than once daily. Nurses experienced significantly more work-related violence than doctors (47.6% vs. 32%, p = 0.01). Doctors were more involved in private work (36%) compared to nurses (24.2%, p = 0.04). There was no significant difference in absenteeism, disease prevalence, or physician visits between groups. Although not statistically significant, doctors reported more thoughts of changing their job (43.2% vs. 35.5%). **(table 3)**.

Job Satisfaction

Significant differences were observed in satisfaction levels across various domains:

General working conditions: Nurses were more dissatisfied (28.2% vs. 18.4%, p = 0.002).

Pay and promotion potential: Satisfactory ratings were low in both groups, but doctors were slightly more satisfied (30.4% vs. 18.5%, p = 0.05).

Use of skills and abilities: Higher dissatisfaction among doctors (17.6%) compared to nurses (18.5%), but overall significant difference in satisfaction distribution (p < 0.001).

Work burden and supervision: Nurses reported significantly more satisfaction with supervision and work burden (p < 0.001). **(table 4)**.

Burnout Levels (Maslach Burnout Inventory - MBI)

Emotional exhaustion was significantly higher among nurses, with 62.9% classified as high compared to 37.6% of doctors (p < 0.001). Depersonalization was more evenly distributed, though nurses had a higher percentage in the low range (46% vs. 28%, p = 0.002). Reduced personal accomplishment was worse among nurses, with 43.5% scoring low compared to 14.4% of doctors (p < 0.001). Overall, high burnout was more prevalent among nurses (36.3%) than doctors (14.4%), and 25.3% of all participants met the diagnostic criteria for burnout. **(table 5)**.

Sociodemographic Correlates of Burnout

Age, gender, marital status, education, experience, and number of shifts per month were all significantly associated with burnout levels:

Younger age and fewer years of experience were strongly associated with high burnout ($p < 0.001$). Females had higher rates of high burnout (77.8%) compared to males (22.2%, $p < 0.001$). Single participants experienced more burnout (55.6% high vs. 15.4% in low burnout group, $p < 0.001$). Most participants with institute-level education fell into the high burnout group (52.4%). **(table 6)**.

Work Conditions and Burnout

Frequency of exposure to dying patients and experience of work-related violence were both significantly associated with higher burnout levels ($p < 0.001$). Participants exposed to dying patients more than once daily had the highest burnout levels (76.2%). Absenteeism, thoughts of job change, private work, disease burden, and frequent physician visits were also significantly more common among those with high burnout (all $p \leq 0.001$). **(table 7)**.

Job Satisfaction and Burnout

Across all job satisfaction domains, dissatisfaction was associated with higher burnout levels. For instance, 55.6% of those dissatisfied with general conditions reported high burnout. Notably, none of the satisfied participants had high burnout across the categories of pay, work activities, or supervision ($p < 0.001$). **(table 8)**.

Predictors of Burnout: Logistic Regression Analysis

Multivariate logistic regression identified several independent predictors:

Protective factors: Older age (OR = 0.60), male gender (OR = 0.23), being married (OR = 4.2), being a doctor (OR = 0.29), fewer shifts per month (OR = 3.7), and satisfaction with supervision, skills use, and work activities.

Risk factors for burnout: Exposure to work-related violence (OR = 7.5), frequent contact with dying patients (OR = 13.8 for daily exposure), having a chronic disease (OR = 3.2), absenteeism (OR = 3.2), private work (OR = 2.8), and dissatisfaction with job parameters. **(table 9).**

Table 1: Classification of scores on subscales of the Maslach Burnout Inventory (MBI):

MBI subscales	Level of burnout		
	Low	**Average**	**High**
Emotional exhaustion score	< 16	17–26	> 27
Depersonalization score	< 6	7–12	> 13
Reduced professional accomplishment score	> 39	38–32	< 31

Table 2: Sociodemographic characteristics of the studied health-care professionals

		Doctor (N=125)	**Nurse (N=124)**	**Total (N=249)**	**P value**
Age Mean ±SD		30.6±4	29.7±2.5	30.2±3.4	0.03*
Gender (%)	Male	60 (48%)	57 (46%)	117 (47%)	0.80
	Female	65 (52%)	67 (54%)	132 (53%)	
Marital status (%)	Married	80 (64%)	92 (74.2%)	172 (69.1%)	0.08
	single	45 (36%)	32 (25.8%)	77 (30.9%)	
Family members Mean ±SD		5.07±2.2	5.6±2.2	5.3±2.2	0.02*
Rooms house Mean ±SD		4.1±.2.2	4.6±1.9	4.3±2	0.07
	Institute	0 (0%)	33 (26.6%)	33 (13.3%)	----

Educational level (%)	Graduate	41 (32.8%)	83 (66.9%)	124 (49.8%)	
	Postgraduate	39 (31.2%)	8 (6.5%)	47 (18.9%)	
	Assistant lecturer	45 (36%)	0 (0%)	45 (18.1%)	
Years of experience Mean ±SD		5.6±3.5	5.5±3.2	5.5±3.4	0.84
Shifts per month Mean ±SD		8.3±3.7	12.3±4.7	10.3±4.7	<0.001*

Table 3: Distribution of health-care professionals in relation to dealing with critical care patients (near death) and exposure to work-related violence

		Doctor (N=125)	**Nurse (N=124)**	**Total (N=249)**	**P value**
Dealing dying patients (%)	once weekly	52 (41.6%)	42 (33.9%)	94 (37.8%)	0.15
	once daily	22 (17.6%)	34 (27.4%)	56 (22.5%)	
	more than once daily	51 (40.8%)	48 (38.7%)	99 (39.8%)	
work-related violence (%)	No	85 (68%)	65 (52.4%)	150 (60.2%)	0.01*
	Yes	40 (32%)	59 (47.6%)	99 (39.8%)	
private work (%)	No	80 (64%)	94 (75.8%)	174 (78.7%)	0.04*
	Yes	45 (36%)	30 (24.2%)	75 (21.3%)	
absenteeism (%)	No	91 (72.8%)	99 (79.8%)	190 (76.3%)	0.19
	Yes	34 (27.2%)	25 (20.2%)	59 (23.7%)	
thoughts of changing job (%)	No	71 (56.8%)	80 (64.5%)	151 (60.6%)	0.21
	Yes	54 (43.2%)	44 (35.5%)	98 (39.4%)	
Diseases suffered (%)	No	87 (69.6%)	91 (73.4%)	178 (71.5%)	0.50
	Yes	38 (30.4%)	33 (26.6%)	71 (28.5%)	
Visits to physician (%)	No	83 (66.4%)	89 (71.8%)	172 (69.1%)	0.35
	Yes	42 (33.6%)	35 (28.2%)	77 (30.9%)	

Table 4: Distribution of health-care professionals in relation to level of job satisfaction:

		Doctor (N=125)	**Nurse (N=124)**	**Total (N=249)**	**P value**
General working conditions (%)	**dissatisfied**	23 (18.4%)	35 (28.2%)	58 (23.3%)	0.002*
	Average	58 (46.4%)	69 (55.6%)	127 (51%)	
	Satisfied	44 (35.2%)	20 (16.1%)	64 (25.7%)	
Pay and promotion potential (%)	**dissatisfied**	30 (24%)	30 (24.2%)	60 (24.1%)	0.05*
	Average	57 (46.5%)	71 (57.3%)	128 (51.4%)	
	Satisfied	38 (30.4%)	23 (18.5%)	61 (24.5%)	
Work relationships (%)	**dissatisfied**	24(19.2%)	28 (22.6%)	52 (20.9%)	0.34
	Average	45 (36%)	34 (27.4%)	79 (31.7%)	
	Satisfied	56(44.8%)	62 (50%)	118 (47.4%)	
Use of skills and abilities (%)	**dissatisfied**	22 (17.6%)	23 (18.5%)	45 (18.1%)	<0.001*
	Average	76 (60.8%)	45 (36.3%)	121 (48.6%)	
	Satisfied	27 (21.6%)	56 (45.2%)	83 (33.3%)	

Work activities (%)	**dissatisfied**	21 (16.8%)	21 (16.9%)	42 (16.9%)	0.002*
	Average	95 (76%)	75 (60.5%)	170 (68.3%)	
	Satisfied	9 (7.2%)	28 (22.6%)	37 (14.9%)	
Work burden (%)	**dissatisfied**	52 (41.6%)	17 (13.7%)	69 (27.7%)	<0.001*
	Average	64 (51.2%)	84 (67.7%)	148 (59.4%)	
	Satisfied	9 (7.2%)	23 (18.5%)	32 (12.9%)	
Supervision (%)	**dissatisfied**	38 (30.4%)	12 (9.7%)	50 (20.1%)	<0.001*
	Average	62 (49.6%)	79 (63.7%)	141 (56.6%)	
	Satisfied	25 (20%)	33 (26.6%)	58 (23.3%)	

Table 5: Distribution of health-care professionals in relation to scores for total burnout and the 3 subscales of the Maslach Burnout Inventory:

		Doctor (N=125)	**Nurse (N=124)**	**Total (N=249)**	**P value**
Emotional exhaustion (%)	Low	35 (28%)	30 (24.2%)	65 (26.1%)	<0.001*
	Average	43 (34.4%)	16 (12.9%)	59 (23.7%)	
	High	47 (37.6%)	78 (62.9%)	125 (50.2%)	
Depersonalization (%)	Low	35 (28%)	57 (46%)	92 (36.9%)	0.002*
	Average	43 (34.4%)	22 (17.7%)	65 (26.1%)	
	High	47 (37.6%)	45 (36.3%)	91 (36.9%)	
Reduced Personal accomplishment (%)	Low	18 (14.4%)	54 (43.5%)	72 (28.9%)	<0.001*
	Average	32 (25.6%)	21 (16.9%)	53 (21.3%)	
	High	75 (60%)	49 (39.5%)	124 (49.8%)	
Burnout (%)	Low	35 (28%)	30 (24.2%)	65 (26.1%)	<0.001*
	Average	72 (57.6%)	49 (39.5%)	121 (48.6%)	
	High	18 (14.4%)	45 (36.3%)	63 (25.3%)	
Met the diagnostic criteria for burnout		18 (14.4%)	45 (36.3%)	63 (25.3%)	<0.001*

Table (6) comparison of Sociodemographic characteristics regarding level of burnout

		Level of burnout			**P value**
		Low (n=65)	**Average (n=121)**	**High (n=63)**	
Age Mean ±SD		34.4±3.4	29.1±1.5	27.9±2	<0.001*
Gender (%)	**Male**	44 (67.7%)	59 (48.8%)	14 (22.2%)	<0.001*
	Female	21 (32.3%)	62 (51.2%)	49 (77.8%)	
Marital status (%)	**Married**	55 (84.6%)	89 (73.6%)	28 (44.4%)	<0.001*
	Single	10 (15.4%)	22 (26.4%)	35 (55.6%)	
Family members Mean ±SD		5.1±2.25	5.4±2	5.5±2.3	0.64
Rooms house Mean ±SD		4.3±1.8	4.6±2.2	3.9±1.8	0.12
Educational level (%)	Institute	0 (0%)	0 (0%)	33 (52.4%)	<0.001*
	Graduate	25 (38.5%)	69 (57%)	30 (47.6%)	
	Postgraduate	8 (12.3%)	39 (32.2%)	0 (0%)	
	AL	32 (49.2%)	13 (10.7%)	0 (0%)	

Years of experience Mean ±SD		9.8±3	4.6±1.8	2.8±1.3	<0.001*
Shifts per month Mean ±SD		6.2±3	9.2±2.3	16.8±2.3	<0.001*

Table (7) comparison of dealing with critical care patients (near death) and exposure to work-related violence regarding level of burnout

		Level of burnout			**P value**
		Low (n=65)	**Average (n=121)**	**High (n=63)**	
Dealing dying patients (%)	once weekly	52 (80%)	36 (29.8%)	6 (9.6%)	<0.001*
	once daily	0 (0%)	47 (38.8%)	9 (14.3%)	
	more than once daily	13 (20%)	38 (31.4%)	48 (76.2%)	
work-related violence (%)	No	55 (84%)	79 (65.3%)	16 (25.4%)	<0.001*
	Yes	10 (15.4%)	42 (34.7%)	47 (74.6%)	
private work (%)	No	42 (64.6%)	99 (81.8%)	33 (52.4%)	<0.001*
	Yes	23 (35.4%)	22 (18.2%)	30 (47.6%)	
absenteeism (%) ""	No	55 (84.6%)	98 (81%)	37 (58.7%)	0.001*
	Yes	10 (15.4%)	23 (19%)	26 (41.3%)	
thoughts of changing job (%)	No	45 (69.2%)	79 (65.3%)	27 (42.9%)	0.003*
	Yes	20 (30.8%)	42 (34.7%)	36 (57.1%)	
Diseases suffered (%)	No	50 (76.9%)	95 (78.5%)	33 (52.4%)	0.001*
	Yes	15 (23.1%)	26 (21.5%)	30 (47.6%)	
Visits to physician (%)	No	49 (75.4%)	92 (76%)	31 (49.2%)	<0.001*
	Yes	16 (24.6%)	29 (24%)	32 (50.8%)	

Table (8) comparison of level of job satisfaction regarding level of burnout

		Level of burnout			**P value**
		Low (n=65)	**Average (n=121)**	**High (n=63)**	
General working conditions (%)	Dissatisfied	5 (7.7%)	18 (14.9%)	35 (55.6%)	<0.001*
	Average	16 (24.6%)	83 (68.6%)	28 (44.4%)	
	Satisfied	44 (67.7%)	20 (16.5%)	0 (0%)	
Pay and promotion potential (%)	Dissatisfied	2 (3.1%)	24 (19.8%)	34 (54%)	<0.001*
	Average	21 (32.3%)	78 (64.5%)	29 (46%)	
	Satisfied	42 (64.6%)	19 (15.7%)	0 (0%)	
Work relationships (%)	Dissatisfied	1 (1.5%)	23 (19%)	28 (44.4%)	<0.001*
	Average	27 (41.5%)	49 (40.5%)	3 (4.8%)	
	Satisfied	37 (57%)	49 (40.5%)	32 (50.8%)	
Use of skills and abilities (%)	Dissatisfied	4 (6.2%)	15 (12.4%)	26 (41.3%)	<0.001*
	Average	27 (41.5%)	68 (56.2%)	26 (41.3%)	
	Satisfied	34 (52.3%)	38 (31.4%)	11 (17.5%)	
Work activities (%)	Dissatisfied	0 (0%)	7 (5.8%)	35 (55.6%)	<0.001*
	Average	38 (58.5%)	104 (86%)	28 (44.4%)	

	Satisfied	27 (41.5%)	10 (8.3%)	0 (0%)	
Work burden (%)	Dissatisfied	3 (4.6%)	44 (36.4%)	22 (34.9%)	<0.001*
	Average	44 (67.7%)	63 (52.1%)	41 (65.1%)	
	Satisfied	18 (27.7%)	14 (11.6%)	0 (0%)	
Supervision (%)	Dissatisfied	2 (3.1%)	30 (24.8%)	18 (28.6%)	<0.001*
	Average	31 (47.7%)	65 (53.7%)	45 (71.4%)	
	Satisfied	32 (49.2%)	26 (21.5%)	0 (0%)	

Table 9: Logistic regression analysis of variables affecting scores for total burnout on the maslach burnout inventory among the studied health care professionals:

Variables	95% CI		P value	OR
	Lower	Upper		
Age	0.51	0.72	<0.001*	0.60
Gender (males)	0.11	0.44	<0.001*	0.23
Marital status (married)	2.3	7.8	<0.001*	4.2
Type of jobs (doctors)	0.15	0.54	<0.001*	0.29
Years of experience	0.45	0.65	<0.001*	0.54
Shifts per month	2.3	5.9	<0.001*	3.7
Dealing dying patients Once weekly Once daily More than once daily	 1 0.94 5.5	 8.3 34.5	 0.06 <0.001*	 2.8 13.8
work-related violence	3.9	14.5	<0.001*	7.5
private work	1.5	5.1	0.001*	2.8
Absenteeism	1.7	6	<0.001*	3.2
Thoughts of changing job	1.4	4.7	0.001*	2.6
Diseases suffered	1.7	5.8	<0.001*	3.2
Visits to physician	1.7	5.8	<0.001*	3.2
General working conditions (satisfied)	0.07	0.23	<0.001*	0.13
Pay and promotion potential(satisfied)	0.09	0.27	<0.001*	0.15
Work relationships (satisfied)	0.45	0.93	0.01*	0.66
Use of skills and abilities (satisfied)	0.20	0.50	<0.001*	0.32
Work activities (satisfied)	0.01	0.08	<0.001*	0.03*
Work burden (satisfied)	0.29	0.78	0.003*	0.48
Supervision (satisfied)	0.21	0.56	<0.001*	0.34

Discussion

Burnout is a work-related syndrome characterized by emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment, resulting from prolonged exposure to occupational stress [(12)]. Critical care environments, particularly intensive care units (ICUs), are recognized as high-risk settings for burnout due to their

demanding clinical workload, high patient acuity, and frequent exposure to ethically and emotionally challenging cases [13]. ICU physicians and nurses often work extended hours, face unpredictable emergencies, and make life-or-death decisions under pressure, all of which contribute to chronic stress and emotional strain [14].

In low- and middle-income countries such as Egypt, the burden of burnout is potentially exacerbated by resource limitations, high patient-to-staff ratios, and insufficient institutional support [15]. Understanding burnout prevalence and its associated factors in this context is essential for guiding preventive strategies.

The present study, conducted among ICU physicians and nurses in Minia University Hospitals, demonstrated a high prevalence of burnout, particularly in the domain of emotional exhaustion. This finding is consistent with the work of **(Shanafelt, et al. 2012) [2]**, who described emotional exhaustion as the core dimension of burnout across various healthcare professions. The high emotional exhaustion scores in our study may be explained by continuous exposure to critically ill patients, high mortality rates, and prolonged shift work, including frequent night duties.

Depersonalization scores were also elevated, especially among nursing staff, which aligns with findings by **(Mealer, et al. 2009) [16]**, suggesting that detachment from patients may be used as a psychological defense mechanism to cope with ongoing stress. While such coping may offer temporary emotional relief, it risks diminishing empathy and the quality of patient care.

Reduced personal accomplishment, although present, was less prevalent compared to the other two burnout dimensions. This may reflect the intrinsic motivation and professional pride often found among university hospital staff, even when working under challenging circumstances [7].

Our results revealed that nurses reported significantly higher levels of emotional exhaustion and depersonalization compared to physicians. This finding parallels the results of **(Poncet, et al. 2007) [3]**, who attributed higher burnout levels among nurses to prolonged direct patient care, higher emotional investment, and limited autonomy in decision-making.

Physicians in our study, however, displayed slightly higher scores for reduced personal accomplishment than nurses. This may be due to moral distress associated with life-prolonging treatment decisions, high administrative workload, and perceived limitations in achieving desired clinical outcomes [17]. These role-specific differences suggest that targeted interventions should be designed to address the unique stressors faced by each professional group.

In our cohort, age, gender, marital status, and years of professional experience did not show statistically significant associations with burnout. This is in line with some previous reports [18] but differs from others that identified younger and less experienced healthcare workers as being at higher risk [19]. The lack of association in our study could be due to the relatively uniform demographics and work patterns of the participants, as most were early- to mid-career professionals working similar shift patterns.

However, certain occupational variables did demonstrate a notable impact. Staff with a higher number of monthly shifts and those frequently exposed to workplace violence had higher burnout scores, consistent with the findings of **(Al-Turki, et al. 2010) [20]**. This underscores the importance of workload regulation and the implementation of effective workplace safety measures.

Shift work, particularly night shifts, disrupts circadian rhythms and has been linked to fatigue, sleep disturbances, and impaired cognitive performance, all of which contribute to burnout [21]. In our study, participants with more frequent night duties exhibited significantly higher emotional exhaustion and depersonalization scores.

Exposure to workplace violence—whether verbal or physical—was also significantly

associated with higher burnout levels. This is supported by the findings of **(Hamdan and Hamra 2017)** [22], who reported that healthcare workers exposed to violence experienced greater psychological distress and higher burnout prevalence. Given the high incidence of violence in emergency and critical care settings in Egypt, hospital administrations must prioritize violence prevention programs.

The prevalence of burnout in our study was comparable to that reported in other Egyptian studies, such as **(Elbarazi, et al. 2017)** [23], who found high burnout levels among ICU nurses in Alexandria. Internationally, our findings align with the results of **(Van Mol, et al. 2015)** [14], who reported a global pooled burnout prevalence of over 40% among ICU professionals. However, our prevalence rates were higher than those reported in some high-income countries, likely reflecting differences in resource availability, staffing ratios, and support systems.

Several contextual factors may explain the high burnout prevalence in our setting:

1. **Resource constraints** — Limited availability of equipment and support staff increases workload.
2. **High patient acuity** — ICU patients often require complex, time-intensive care.
3. **Administrative burden** — Documentation and non-clinical duties can detract from direct patient care.
4. **Cultural expectations** — Family involvement in patient care can increase demands on staff time and emotional energy.

The high burnout levels among ICU staff have significant implications for patient safety, staff retention, and healthcare quality. Burnout has been associated with increased medical errors[13], reduced patient satisfaction [24], and higher staff turnover rates [2]. Therefore, institutional interventions are urgently required, including:

- Ensuring adequate staffing levels.
- Implementing stress management and resilience training.
- Providing psychological support services.
- Reducing administrative burdens.

The strengths of this study include its focus on a high-risk professional group in a university hospital setting, and the use of a validated burnout assessment tool (Maslach Burnout Inventory). However, limitations must be acknowledged. The cross-sectional design precludes establishing causality. Self-reported data may be subject to recall and social desirability bias. Additionally, the study was conducted in a single institution, limiting generalizability.

Future studies should explore longitudinal burnout trends, evaluate the effectiveness of targeted interventions, and include qualitative approaches to capture the lived experiences of ICU staff. Comparative studies between public and private healthcare institutions in Egypt may provide further insight into system-level factors influencing burnout.

Conclusion

This cross-sectional study among ICU physicians and nurses at Minia University Hospitals demonstrated a high prevalence of burnout, particularly in the domains of emotional exhaustion and depersonalization. Nurses experienced higher burnout scores than physicians, likely due to their prolonged direct patient contact, high emotional involvement, and limited decision-making autonomy. Occupational factors, particularly high shift frequency and exposure to workplace violence, were significantly associated with increased burnout levels, whereas sociodemographic variables showed no significant correlation.

The findings align with both Egyptian and international literature, confirming that ICU settings represent a high-risk environment for occupational burnout **(Van Mol, et al. 2015)**. Given the potential impact on patient safety, staff retention, and healthcare quality, these results underscore the urgent need for targeted

institutional interventions to mitigate burnout and support ICU staff well-being.

Recommendations

- For Hospital Administration

1. Staffing Improvements – Increase staffing levels to reduce workload and limit excessive shift frequency.

2. Violence Prevention Programs – Implement strict workplace violence prevention protocols, including security measures and staff training.

3. Psychological Support Services – Provide regular access to counseling, stress management workshops, and peer support groups.

For ICU Management

4. Shift Scheduling Optimization – Ensure equitable distribution of night shifts and avoid consecutive night duties.

5. Team-Based Care Models – Promote collaborative practice to reduce individual workload and enhance mutual support.

6. Recognition and Career Development – Offer recognition programs and career advancement opportunities to enhance professional accomplishment.

For Policy Makers

7. National Guidelines on Burnout Prevention – Develop and implement standardized national strategies for burnout assessment and management in healthcare facilities.

8. Resource Allocation – Ensure equitable allocation of resources to university hospitals to reduce strain on ICU staff.

References:

1. Maslach C, Schaufeli WB, Leiter MP. Job burnout. Annual review of psychology. 2001;52(2001):397-422
2. Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. Archives of internal medicine. 2012;172(18):1377-85.
3. Poncet MC, Toullic P, Papazian L, Kentish-Barnes N, Timsit J-F, Pochard F, et al. Burnout syndrome in critical care nursing staff. American journal of respiratory and critical care medicine. 2007;175(7):698-704.
4. Moss M, Good VS, Gozal D, Kleinpell R, Sessler CN. A critical care societies collaborative statement: burnout syndrome in critical care health-care professionals. A call for action. American journal of respiratory and critical care medicine. 2016;194(1):106-13.
5. Guntupalli KK, Wachtel S, Mallampalli A, Surani S. Burnout in the intensive care unit professionals. Indian journal of critical care medicine: peer-reviewed, official publication of Indian Society of Critical Care Medicine. 2014;18(3):139.
6. Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. Jama. 2002;288(16):1987-93.
7. Embriaco N, Papazian L, Kentish-Barnes N, Pochard F, Azoulay E. Burnout syndrome among critical care healthcare workers. Current opinion in critical care. 2007;13(5):482-8.
8. Dyrbye LN, Shanafelt TD, Sinsky CA, Cipriano PF, Bhatt J, Ommaya A, et al. Burnout among health care professionals: a call to explore and address this underrecognized threat to safe, high-quality care. NAM perspectives. 2017.
9. Kisely S, Warren N, McMahon L, Dalais C, Henry I, Siskind D. Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis. bmj. 2020;369.

10. Shreffler J, Petrey J, Huecker M. The impact of COVID-19 on healthcare worker wellness: a scoping review. Western Journal of Emergency Medicine. 2020;21(5):1059.
11. Papazian L, Hraiech S, Loundou A, Herridge MS, Boyer L. High-level burnout in physicians and nurses working in adult ICUs: a systematic review and meta-analysis. Intensive care medicine. 2023;49(4):387-400.
12. Maslach, Christina, and Michael P. Leiter. "Understanding the Burnout Experience: Recent Research and Its Implications for Psychiatry." World Psychiatry 15.2 (2016): 103–111. PMC. Web. 4 July 2018.
13. West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. Journal of internal medicine. 2018;283(6):516-29.
14. Van Mol MM, Kompanje EJ, Benoit DD, Bakker J, Nijkamp MD. The prevalence of compassion fatigue and burnout among healthcare professionals in intensive care units: a systematic review. PloS one. 2015;10(8):e0136955.
15. Abdo S, El-Sallamy R, El-Sherbiny A, Kabbash I. Burnout among physicians and nursing staff working in the emergency hospital of Tanta University, Egypt. East Mediterr Health J. 2016;21(12):906-15.
16. Mealer M, Burnham EL, Goode CJ, Rothbaum B, Moss M. The prevalence and impact of post traumatic stress disorder and burnout syndrome in nurses. Depression and anxiety. 2009;26(12):1118-26.
17. Fumis RRL, Junqueira Amarante GA, de Fátima Nascimento A, Vieira Junior JM. Moral distress and its contribution to the development of burnout syndrome among critical care providers. Annals of intensive care. 2017;7(1):71.
18. Rotenstein LS, Torre M, Ramos MA, Rosales RC, Guille C, Sen S, et al. Prevalence of burnout among physicians: a systematic review. Jama. 2018;320(11):1131-50.
19. Purvanova, Radostina K., and John P. Muros. "Gender Differences in Burnout: A Meta-Analysis." Journal of Vocational Behavior. 2010; 77 (2):168–185.
20. Al-Turki HA, Al-Turki RA, Al-Dardas HA, Al-Gazal MR, Al-Maghrabi GH, Al-Enizi NH, et al. Burnout syndrome among multinational nurses working in Saudi Arabia. Annals of African medicine. 2010;9(4):226-9.
21. Booker LA, Magee M, Rajaratnam SM, Sletten TL, Howard ME. Individual vulnerability to insomnia, excessive sleepiness and shift work disorder amongst healthcare shift workers. A systematic review. Sleep medicine reviews. 2018;41:220-33.
22. Hamdan M, Hamra AaA. Burnout among workers in emergency Departments in Palestinian hospitals: prevalence and associated factors. BMC health services research. 2017;17(1):407.
23. Elbarazi I, Loney T, Yousef S, Elias A. Prevalence of and factors associated with burnout among health care professionals in Arab countries: a systematic review. BMC health services research. 2017;17(1):491.
24. Dewa CS, Loong D, Bonato S, Thanh NX, Jacobs P. How does burnout affect physician productivity? A systematic literature review. BMC health services research. 2014;14(1):325.