

Original Research Article

INTENSIVE CARE UNIT STRESS AND BURNOUT AMONG HEALTHCARE WORKERS

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ABSTRACT

Background: It is well known that working in an intensive care unit (ICU) may be somewhat stressful. More than the physical labor, the psychological aspect of caring for critically sick patients causes extreme mental stress for all ICU healthcare personnel.^[1,2] This involves talking about end-of-life concerns and disclosing deaths, particularly in an unexpected circumstance, to the patient's family and relatives. It also entails discussing the danger of death.^[3,4]
Aim: To study stress and burnout among Healthcare workers in Intensive Care Unit (I.C.U.).

Materials and Methods: This was a cross sectional study, the sample taken will include all doctors (Faculties, Senior Residents and Junior residents) and nurses working in the I.C.U. of Santosh Medical College and Hospital, Ghaziabad by using sample size 62 by using the following psychiatric scales:
1. Semi structured proforma for Socio demographic data. 2. Cohen Perceived Stress Scale. 3. Maslach Burnout Inventory Scale (MBI). 4. Oldenburg Burnout Inventory (OBI).

Results: The finding of this study suggests moderate to severe intensity of burnout and stress among Intensive care unit healthcare workers irrespective of gender, age group and socioeconomic status.

Conclusion: The psychological welfare and work satisfaction of healthcare professionals can be enhanced by routinely evaluating burnout in them, modifying risk factors, and halting the transmission of infection to patients and oneself. High-burnout Health Care Professionals may benefit from psychological counseling to practice coping mechanisms and make lifestyle adjustments.

Keywords: Stress, Burnout, Coping skills.

INTRODUCTION

Intensive Care Unit (ICU), sometimes referred to as a critical care unit (CCU), intensive therapy unit, or intensive treatment unit (ITU), is a dedicated section of a hospital or healthcare facility that offers intensive care medicine. In order to maintain normal body functioning, patients in intensive care units must receive round-the-clock care, continuous supervision from life support equipment, and treatment for serious or life-threatening illnesses and injuries. They employ highly skilled medical professionals with a focus on critical illness care, including nurses, respiratory therapists, and doctors. ICUs differ from ordinary hospital wards in other

ways as well, such as having a larger staff-to-patient ratio and exclusive access to cutting-edge medical supplies and technology.

Stress at work and the feelings it evokes, particularly in the intensive care unit, have been extensively studied in the past few years [5-8]. ICU specialists work in an extremely demanding, high-stakes, high-stress setting that is mentally, physically, and emotionally taxing.

Individual stress reactions may be indicated by physical warning signals (e.g., headaches, stomach issues, low back pain, and difficulties in sleep) as well as mental responses (e.g., irritability or aggressiveness, lack of attention, low self-confidence, and emotional instability).^[9-11] These

non-specific symptoms, however, make it difficult to identify the cause of stress and, as a result, limit the development of healthy coping methods or proactive measures to stop this continuous process. Burnout is classified as an occupational syndrome.^[1] that results from chronic workplace stress that remains unresolved and that contains 3 major dimensions.^[2,3] Emotional exhaustion is the core stress dimension and entails symptoms of exhaustion and depleted emotional and physical resources; depersonalization is the interpersonal component, including negativity, callousness, and detachment as behavioral reactions to occupational stress; and finally, lack of a feeling of personal accomplishment captures the self-evaluation of reduced efficacy and sense of accomplishment.^[1,2]

RED-FLAG SIGNS OF STRESS AMONG HEALTHCARE WORKERS: The indicators would point to the need for a senior physician with experience or their training supervisor to get in touch with the trainee in order to pinpoint any underlying issues and establish specific objectives for growth.^[12]

- The disappearing act includes being late, not returning calls, vanishing between the ward and clinic, and taking frequent sick days.
- Low work rate: tardiness in procedures, patient clerking, letter dictation, decision-making, early arrival, late departure, and inability to complete all tasks
- Ward rage is characterized by outbursts of anger and shouting matches with coworkers, including nurses, midwives, secretaries, etc.
- **Rigidity:** inability to compromise, inability to take constructive criticism well, difficulty setting priorities.
- Junior coworkers and nurses who practice "bypass syndrome" look for ways to avoid asking a doctor for advice or assistance.
- Career issues include test anxiety, uncertainty about one's career path, and disenchantment with medicine.^[13]

Looking at all these stress factors, it is hypothesized that Critical care workers are working under chronic pressure which leads to different psychiatric morbidities. Thus, there was a felt need by the investigators to conduct study on "Intensive Care Unit Stress and Burnout among healthcare workers".

Aim and Objectives

Aim: To study stress and burnout among Healthcare workers in Intensive Care Unit (I.C.U.).

Objectives

- To study the prevalence of stress in Intensive Care Unit healthcare workers.
- To study the prevalence of burnout in Intensive Care Unit healthcare workers.
- To study the individual contributing factors for stress and burnout among Intensive Care Unit healthcare workers.

MATERIALS AND METHODS

Study Design

This will be a cross sectional study, the sample taken will include all doctors (Faculties, Senior Residents and Junior residents) and nurses working in the I.C.U. of Santosh Medical College and Hospital, Ghaziabad.

Study Group: All doctors (Faculties, Senior Residents, Junior Residents) and nurses.

Sample Size: 62

Study Place: Santosh Medical College and Hospital, Ghaziabad

Inclusion Criteria

1. The study includes all doctors (faculties, Senior Residents and Junior Residents) and nurses working in the I.C.U. of Santosh Medical College and Hospital, Ghaziabad.
2. Those who have given written informed consent.

Exclusion Criteria

1. This study will not include doctors and nurses who are having previous psychiatric illness.
2. This study will not include participants outside Santosh Hospital, Ghaziabad.

RESULTS

The data is represented in number and percentages mean with standard deviation. Univariate and bivariate analyses were done using Fisher's exact test for dichotomous outcomes and the ANOVA test for normally distributed continuous outcomes. Correlative analyses were done using Pearson correlation for normally distributed variables. The level of significance was kept at $p < 0.05$.

Software: SPSS (Statistical Package for Social Sciences) Version 24.0 (IBM Corporation, Chicago, USA).

A total of 62 subjects were included in the study. The mean age of the study population was 32.08 ± 7.48 with a range of 22 to 57 years. There were 36 males and 26 females. Twenty-six subjects (41.9%) were married. There were 83.9% Hindus, 6.5% each Muslim and Sikhs and 3.2% were Christian. Out of the total study participants, 22.6% were nursing staff, 62.9% were junior resident doctors and 14.5% were specialist doctors. Most of the study participants lived in a nuclear family (69.4%). Twenty-four percent lived in joint family and 6.5% lived with extended family. Most of the study participants lived in urban area (91.9%) while only 5 (8.1%) lived in rural areas. [Table 1]

Two subjects (3.2%) had personal history of psychiatric illness while 5 (8.1%) had family history of psychiatric illness. [Table 2]

The results of The Maslach Burnout Inventory (MBI) is given in the above table. With respect to emotional exhaustion component of the MBI, 19 (30.6%) had moderate burnout while 43 (69.4%) had high-level of burnout. The depersonalization component indicated most participants with high-level of burnout (96.8%) while 2 (3.2%) had moderate burnout. With respect to personal accomplishment component of the MBI, 41 (66.1%)

had high-level of burnout, 17 (27.4%) had moderate burnout while 4 (6.5%) had low-level of burnout. [Table 3]

The details of Oldenburg Burnout Inventory (OBI) is given in the above table. The mean Disengagement score was 17.37 ± 4.22 with a range of 4 to 30 score. The mean Exhaustion score was 18.67 ± 3.98 with a range of 8 to 30 score. The mean total Oldenburg Burnout Inventory score was 36.04 ± 6.50 with a range of 17 to 52 score. [Table 4]

The details of Perceived stress scale (PSS) is given in the above table. With respect to this scale, 41 (66.1%) had high-level of burnout, 18 (29.0%) had moderate burnout while 3 (4.8%) had low-level of burnout. [Table 5]

The correlation between Cohen PSS and the three domains of Maslach burnout inventory was evaluated. It was found that there was NO statistically significant ($p>0.05$) correlation between Cohen PSS and the three domains of Maslach Burnout Inventory. [Table 6]

The correlation between Cohen PSS and OBI was evaluated. It was found that there was statistically significant ($p=0.032$) weak positive correlation between Cohen PSS and OBI ($R=0.272$). Between Cohen Perceived helplessness and OBI Disengagement domain, there was statistically significant ($p=0.001$) moderate positive correlation ($R=0.427$). Other correlation between Cohen PSS and OBI domains did NOT show any statistically significance ($p>0.05$). [Table 7]

The relationship between mean stress scores and gender was evaluated. It was found that there was statistically significant ($p=0.012$) mean difference in OBI disengagement domain score between gender. Higher OBI disengagement domain scores were seen in males (18.50 ± 3.52) than females (15.80 ± 4.66). None of the other stress scores showed any

significant difference ($p>0.05$) between males and females. [Table 8]

The correlation between age and stress scores was evaluated. It was found that there was NO statistically significant ($p>0.05$) correlation seen between age and stress scores. [Table 9]

The relationship between mean stress scores and SES was evaluated. It was found that there was NO statistically significant difference ($p>0.05$) in mean stress scores among SES of study participants. [Table 10]

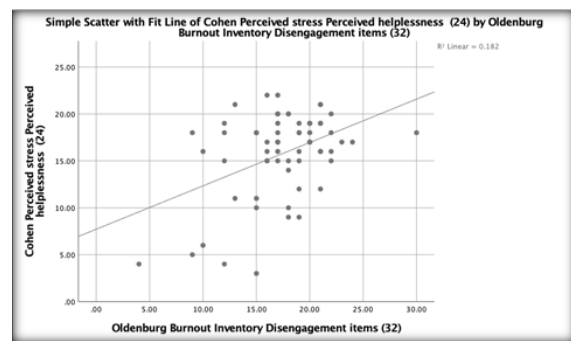


Figure 1: Scatter plot showing correlation between Cohen Perceived helplessness and OBI Disengagement

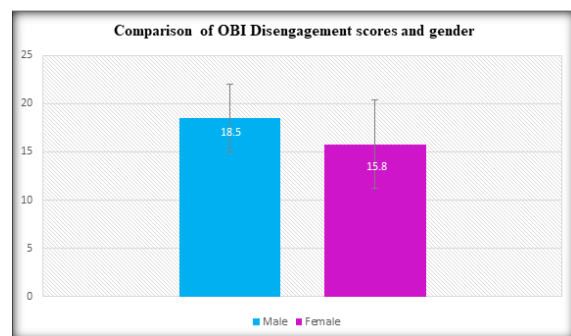


Figure 2: Comparison of OBI Disengagement scores and gender

Table 1: Demographic details of the study participants

Variables	n	%
Gender		
Male	36	58.1
Female	26	41.9
Married		
Yes	26	41.9
No	36	58.1
Religion		
Hindu	52	83.9
Muslim	4	6.5
Sikh	4	6.5
Christian	2	3.2
Profession		
Nursing Staff	14	22.6
Specialist - Junior Resident Doctor	39	62.9
Specialist – MD	9	14.5
Socioeconomic status		
Upper	1	1.6
Upper Middle	31	50.0
Middle	28	45.2
Upper Lower	2	3.2
Lower	0	0.0
Type of family		
Joint	15	24.2

Nuclear	43	69.4
Extended	4	6.5
Place of residence		
Rural	5	8.1
Urban	57	91.9

Table 2: History of psychiatric illness of the study participants

Variables	n	%
Personal History		
Yes	2	3.2
No	60	96.8
Family History		
Yes	5	8.1
No	57	91.9

Table 3: Results of the Maslach Burnout Inventory

Variables	n	%
Emotional Exhaustion		
Low-level Burnout	0	0.0
Moderate Burnout	19	30.6
High-level Burnout	43	69.4
Depersonalisation		
Low-level Burnout	0	0.0
Moderate Burnout	2	3.2
High-level Burnout	60	96.8
Personal Accomplishment		
Low-level Burnout	4	6.5
Moderate Burnout	17	27.4
High-level Burnout	41	66.1

Table 4: Results of the Oldenburg Burnout Inventory

Variables	N	Mean	S.D.	Range
Disengagement items	62	17.37	4.22	4-30
Exhaustion items	62	18.67	3.98	8-30
Total	62	36.04	6.50	17-52

Table 5: Results of the Perceived stress scale

Variables	N	%
Low stress	3	4.8
Moderate stress	18	29.0
High Perceived stress	41	66.1
Total	62	100.0

Table 6: Correlation between Cohen Perceived Stress Scale and the three domains of Maslach burnout inventory

Cohen PSS	Emotional Exhaustion			Depersonalisation			Personal Accomplishment		
	Low-level Burnout	Moderate Burnout	High-level Burnout	Low-level Burnout	Moderate Burnout	High-level Burnout	Low-level Burnout	Moderate Burnout	High-level Burnout
Low stress	0	1	2	0	0	3	0	0	3
	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
Moderate stress	0	8	10	0	0	18	3	1	14
	0.0%	44.4%	55.6%	0.0%	0.0%	100.0%	16.7%	5.6%	77.8%
High stress	0	10	31	0	2	39	1	16	24
	0.0%	24.4%	75.6%	0.0%	4.9%	95.1%	2.4%	39.0%	58.5%
χ^2 p-value	0.305			0.589			0.023		
Pearson's R	0.193			0.178			0.173		
p-value	0.136			0.169			0.182		

Table 7: Correlation between Cohen PSS and Oldenburg Burnout Inventory

Correlation Items	N	R-value	p-value
Cohen PSS with OBI	62	0.272	0.032†
Cohen Perceived helplessness with OBI Disengagement	62	0.427	0.001†
Cohen Perceived helplessness with OBI Exhaustion	62	0.052	0.688
Cohen Lack of self-efficacy with OBI Disengagement	62	0.197	0.126
Cohen Lack of self-efficacy with OBI Exhaustion	62	-0.045	0.727

#P-value derived from Pearson's Correlation test, †significant at p<0.05

Table 8: Comparison of mean stress scores and gender

Variables	Gender	N	Mean	S.D.	p-value
MBI Emotional exhaustion	Male	36	29.33	6.75	0.084
	Female	26	32.73	8.44	
MBI Depersonalisation	Male	36	17.52	5.50	0.631
	Female	26	18.15	4.29	
MBI Personal Accomplishment	Male	36	27.41	8.09	0.102
	Female	26	30.69	6.98	
OBI Disengagement	Male	36	18.50	3.52	0.012[†]
	Female	26	15.80	4.66	
OBI Exhaustion	Male	36	19.00	3.37	0.458
	Female	26	18.23	4.74	
OBI Total	Male	36	37.50	5.66	0.038
	Female	26	34.03	7.15	
Cohen Perceived helplessness	Male	36	15.94	4.42	0.685
	Female	26	15.46	4.83	
Cohen Lack of self-efficacy	Male	36	11.38	1.94	0.363
	Female	26	10.80	3.04	
Cohen PSS	Male	36	27.33	5.50	0.502
	Female	26	26.26	6.90	

#P-value derived from Independent sample t-test, †significant at p<0.05

Table 9: Correlation between age and stress scores

Correlation Items with Age	N	R-value	p-value
MBI Emotional exhaustion	62	0.264	0.038
MBI Depersonalisation	62	0.004	0.973
MBI Personal Accomplishment	62	0.154	0.232
Cohen PSS	62	-0.176	0.171
Cohen Perceived helplessness	62	-0.091	0.482
Cohen Lack of self-efficacy	62	-0.170	0.186
OBI Disengagement	62	0.176	0.172
OBI Exhaustion	62	0.074	0.567
OBI Total	62	0.161	0.210

#P-value derived from Pearson's Correlation test

Table 10: Comparison of mean stress scores and Socio economic status

Variables	SES	N	Mean	S.D.	p-value
MBI Emotional exhaustion	Upper	1	31.00	-	0.254
	Upper Middle	31	30.41	7.85	
	Middle	28	30.35	7.15	
	Upper Lower	2	41.50	9.19	
MBI Depersonalisation	Upper	1	18.00	-	0.268
	Upper Middle	31	17.87	5.98	
	Middle	28	17.21	3.61	
	Upper Lower	2	24.50	0.70	
MBI Personal Accomplishment	Upper	1	29.00	-	0.458
	Upper Middle	31	28.29	8.48	
	Middle	28	28.71	7.05	
	Upper Lower	2	37.50	3.53	
OBI Disengagement	Upper	1	16.00	-	0.557
	Upper Middle	31	17.25	4.53	
	Middle	28	17.82	3.89	
	Upper Lower	2	13.50	4.94	
OBI Exhaustion	Upper	1	16.00	-	0.118
	Upper Middle	31	18.64	3.47	
	Middle	28	19.25	4.30	
	Upper Lower	2	12.50	3.53	
OBI Total	Upper	1	32.00	-	0.116
	Upper Middle	31	35.90	5.83	
	Middle	28	37.07	6.77	
	Upper Lower	2	26.00	8.48	
Cohen Perceived helplessness	Upper	1	17.00	-	0.653
	Upper Middle	31	15.00	5.29	
	Middle	28	16.42	3.83	
	Upper Lower	2	17.00	1.41	
Cohen Lack of self-efficacy	Upper	1	14.00	-	0.389
	Upper Middle	31	10.74	2.71	
	Middle	28	11.39	2.14	
	Upper Lower	2	12.50	2.12	
Cohen PSS	Upper	1	31.00	-	0.472
	Upper Middle	31	25.74	6.73	

	Middle	28	27.82	5.44	
	Upper Lower	2	29.50	3.53	

#P-value derived from ANOVA test

DISCUSSION

This study assessed the prevalence of stress and burnout among healthcare workers who are working in Intensive Care Unit by using variables like gender, age and socioeconomic status.

Based on our findings of study, some important observations can be made.

In our study, the results of Maslach Burnout Inventory (MBI) with respect to emotional exhaustion component of the MBI, 19 participants had moderate burnout while 43 participants had high-level of burnout. The depersonalization component indicated most participants with high-level of burnout while 2 had moderate burnout. With respect to personal accomplishment component of the Maslach Burnout Inventory, 41 (66.1%) had high-level of burnout, 17 had moderate burnout while 4 had low-level of burnout.

Our study is having similar result with the research indicating that these professionals had a nearly 50% or more frequency of burnout syndrome, particularly those who provide direct patient care.^[14-19]

Burnout syndrome raises the possibility of mistakes occurring during medical operations and has a detrimental effect on patients, health organizations, and systems.^[15,17] Physicians are susceptible to Burnout Syndrome due to a variety of factors, such as excessive workloads (such as long, stressful night shifts), disagreements at work, increased digitization and bureaucracy, and a lack of autonomy, support from coworkers, and ongoing education.^[15-17,20]

Nursing was the second most prevalent professional category in the research. Despite the low pay granted to them, these professionals are also subjected to a higher workload and emotional pressures due to their closeness to patients and the fact that they frequently operate in diverse work situations.

In our study, the first variable used is gender. The relationship between mean stress scores and gender was evaluated. It was found that there was statistically significant ($p=0.012$) mean difference in Oldenburg Burnout Inventory disengagement domain score between gender. Higher Oldenburg Burnout Inventory disengagement domain scores were seen in males (18.50 ± 3.52) than females (15.80 ± 4.66). None of the other stress scores showed any significant difference ($p>0.05$) between males and females. The correlation between age and stress scores was evaluated. It was found that there was NO statistically significant ($p>0.05$) correlation seen between age and stress scores. This contrasted with other studies. A study titled “Stress and Burnout among Intensive Care Unit Healthcare Professionals in an Indian Tertiary Care Hospital” by Lakshmikanthcharan Saravanabavan.^[20]

In terms of demographic information, the study titled “Burnout among medical students of a medical college in Kathmandu; A cross-sectional study” by Dhan Bahadur Shrestha et al concluded that gender does not significantly correlate with burnout,^[24-26] . Contrary to the other studies which show high burnout in females compared to males.^[23,27] Additionally, no significant correlation was discovered between the various age groups, which is in contrast to the results of the prior study by O'Connor (2018),^[16] and similar to the findings of a previous study conducted by Dyrbye (2014).^[28]

The relationship between mean stress scores and Socio Economic Status was evaluated. In this study, it was found that there was NO statistically significant difference ($p>0.05$) in mean stress scores among Socio Economic Status of study participants.

Our study is not in line with the study titled “Socioeconomic status, social-cultural values, life stress and health behaviours in a national sample of adolescents” by Goran Milas et al, 2019 April. The conclusion of the study showed that stress levels are correlated with lower socioeconomic status which aligns with the substantial amount of current research on stress and health. A significant factor in determining health is socioeconomic status (SocioEconomicStatus; Marmot, 2017; Wilkinson & Marmot, 2003). Research has linked lower SES to difficulties with mental and physical health (Kessler & Cleary, 1980; McLeod & Kessler, 1990; Manrique-Garcia et al., 2011). It is unclear which pathways make people with lower SES more susceptible to stress, but it has been hypothesised that people with higher Socio Economic Status may be less physiologically reactive to stress and may be able to handle stressors better because they have access to more material resources and larger support networks (Matthews & Gallo, 2011; Slavich, in press).

The correlation between Cohen Perceived Stress Scale and Oldenburg Burnout Inventory was evaluated. It was found that there was statistically significant ($p=0.032$) weak positive correlation between Cohen Perceived Stress Scale and Oldenburg Burnout Inventory ($R=0.272$). Between Cohen Perceived helplessness and Oldenburg Burnout Inventory: Disengagement domain, there was statistically significant ($p=0.001$) moderate positive correlation ($R=0.427$). Other correlation between Cohen Perceived Stress Scale and Oldenburg Burnout Inventory domains did NOT show any statistical significance ($p>0.05$).

This study is in line with the study titled “Exploring Job Stress among Public Health Workforce in Northeastern Malaysia” by Amer Taufek Abd Wahab et al. The goal of the study was to give a thorough investigation of important elements

connected to jobs for public health workers (PHW) in Terengganu, Malaysia. In this study, it is discovered that the incidence of occupational stress among PHWs in Terengganu was somewhat lower than that of healthcare workers (HCWs) in Kelantan, Malaysia, according to a different study conducted by Ab Aziz et al, where the incidence was 28.5%.

CONCLUSION

This was a cross sectional study, the sample taken will include all doctors (Faculties, Senior Residents and Junior residents) and nurses working in the I.C.U. of Santosh Medical College and Hospital, Ghaziabad by using sample size 62 by using the following psychiatric scales:

1. Semi structured proforma for Socio demographic data
2. Cohen Perceived Stress Scale
3. Maslach Burnout Inventory Scale (MBI)
4. Oldenburg Burnout Inventory (OBI)

The finding of this study suggests moderate to severe intensity of burnout and stress among Intensive care unit healthcare workers irrespective of gender, age group, socioeconomic status.

The psychological welfare and work satisfaction of healthcare professionals can be enhanced by routinely evaluating burnout in them, modifying risk factors, and halting the transmission of infection to patients and oneself. High-burnout Health Care Professionals may benefit from psychological counseling to practice coping mechanisms and make lifestyle adjustments.

Further Recommendations

- This was a cross-sectional study we recommend longitudinal studies to be conducted.
- Our study had small sample size we recommend to increase the sample size.
- Our study did not compare stress and burnout between the professions of doctors and nurses. we recommend this comparison to be studied.
- The statistical tests to determine cause and effect relationship between stress and burnout should be applied.

Ethics approval

Approval was obtained from the Institutional Ethics Committee (IEC) of Santosh Medical College and Hospital (SU/2022/3108[60]). The study was registered under (SU/2022/3108[60])before the commencement of the study.

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Conflicts of interest: There are no conflicts of interest.

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