

Assessing Job Stress Among Emergency Department Healthcare Professionals in India: A Cross-Sectional Study

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ABSTRACT

Background: Emergency healthcare professionals work in high-stress environments, facing long hours, traumatic events, and limited resources, resulting in psychological and physiological distress. This study assesses job-related stress among emergency healthcare providers in India and identifies key stressors.

Methods: A cross-sectional study was conducted from March to June 2024, including 114 emergency healthcare workers. Stress levels were measured using the Stress Parameters and Manifestations Scale (SPMS), a 20-item tool assessing self-awareness, interpersonal relationships, psychosomatic symptoms, and clinical manifestations on a 5-point Likert scale. Higher scores indicate greater stress. Data were analyzed using SPSS 23.0, with t-tests and ANOVA, and significance set at $p < 0.05$.

Results: The cohort comprised 52.2% males, 80.5% doctors, and 71.7% from medical colleges. High workload perception (62.0%), sleep disturbances (41.6%), and low mood post-patient interactions (42.4%) were prevalent. Psychosomatic symptoms such as palpitations (40.7%) and persistent sleepiness (42.5%) were common. Females reported significantly higher self-awareness ($p < 0.001$) and overall stress ($p = 0.023$). Those working over 16 hours daily had the highest stress, particularly in clinical manifestations ($p = 0.017$).

Conclusion: Emergency healthcare workers experience significant occupational stress, highlighting the need for structured schedules, mental health support, and stress management strategies to improve workforce resilience.

Key Words: Occupational stress, Emergency healthcare providers, Workforce resilience, Psychosomatic symptoms, Burnout prevention

DOI:

10.55489/njmr.150220251080

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Date of Submission: 03/02/2025

Date of Acceptance: 08/03/2025

Date of Publication: 01/04/2025

Funding Support:

None Declare

Conflict of Interest:

The authors have declared that no conflicts of interest exist.

How to cite this article:

Maithreyi K, Kumar SSV, Rao HT AP. Assessing Job Stress Among Emergency Department Healthcare Professionals in India: A Cross-Sectional Study. Natl J Med Res 2025;15(02):132-138. DOI: 10.55489/njmr.150220251080

INTRODUCTION

Stress is a state of mental tension and worry arising from challenging situations, a response intrinsic to human survival. Emergency medicine professionals including physicians, nurses, and paramedics stand at the frontline of acute care, often confronting critical situations where immediate action is essential. However, the

nature of this work exposes them to significant stressors that can profoundly impact both their mental well-being and clinical performance. This high-pressure environment is compounded by extended working hours, sleep deprivation, resource limitations, and frequent exposure to traumatic events, all of which contribute to heightened risks of emotional disturbances and professional burnout.[1]

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Publisher: Medsci Publications [www.medscipublications.com]

ISSN: 2249 4995

Official website: www.njmr.in

In such demanding conditions, emergency medical personnel are more susceptible to impaired decision-making abilities, potentially increasing the likelihood of medical errors.[2] This level of occupational stress is associated with physical and psychological consequences, including cardiovascular disease, respiratory distress, and hypertension, as well as emotional issues like anxiety and agitation resulting from public persecution.[3] Identifying the key sources of stress and evaluating job stress levels among emergency healthcare providers is critical to developing effective interventions.[4]

Emergency departments should routinely assess job and organizational factors to identify stress and health issues to implement preventive measures proactively.[5] This study, therefore, aims to assess job-related stress among healthcare professionals in emergency departments across India, contributing to a clearer understanding of the challenges and informing strategies for mitigating their effects on this essential workforce.

This study hypothesizes that emergency healthcare professional in India face significant occupational stress. By identifying key stressors and their impact, it aims to inform policies on workload management and mental health support, enhancing resilience and well-being in emergency care settings.

MATERIALS AND METHODS

Study Design and Participants: This study employed a cross-sectional questionnaire-based study, involving 114 healthcare workers from emergency departments across India, conducted between March 2024 and June 2024. Each participant was informed of the study's purpose and provided written consent prior to enrollment.

Eligibility criteria: Emergency healthcare providers, including doctors, nurses, and paramedics, who consented to participate were included in the study. Participants were required to have a minimum of one year's experience in an emergency department. Additionally, healthcare workers who had taken sick leave due to stress or undergone stress treatment but had worked in the emergency department over the past year were also eligible.

Emergency healthcare workers who did not provide consent were excluded from the study. Additionally, workers with less than one year's experience in the emergency department were not eligible for participation.

Data Collection: Data were collected anonymously following ethical committee approval using an online questionnaire distributed via email, WhatsApp groups, and professional networks to ensure broad geographical and institutional representation across India. For eligible participants a detailed informed consent process was implemented, and follow-up reminders were sent to minimize non-response; those who declined participation were recorded and excluded.

The study employed a self-developed Stress Parameters and Manifestations Scale (SPMS), which was adapted from a scale validated in a Spanish study in 2022 by García-Tudela et al.[1] This validated scale demonstrated strong internal consistency (Cronbach's alpha = 0.908) and excellent predictive performance (c-index = 0.956), effectively identifying stressors and manifestations among emergency department professionals. To ensure the instrument's cultural and contextual relevance for the Indian setting, a panel of 10 experts including registered nurses, emergency physicians, and psychologists with a minimum of three years of experience was convened. Their input led to targeted modifications, including the removal of one redundant item from the original 21-item version, resulting in a streamlined 20-item SPMS. These modifications were made without compromising the scale's integrity or validity, aligning with established practices in cross-sectional, questionnaire-based research where instruments are routinely tailored to reflect local demographics and contextual needs.

The SPMS comprises 20 items scored on a 5-point Likert scale (0 = never, 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree), with higher total scores (maximum of 100) indicating greater perceived stress. The items are organized into four categories: Self-awareness, Interpersonal Relationships, Psychosomatic Symptoms, and Clinical Manifestations. Additional demographic and work-related variables (age, gender, marital status, education, occupation, years of experience, and working hours) were also collected via Google Sheets to facilitate comprehensive analyses of stress correlates among emergency healthcare workers.

Statistical Analysis: Data analysis was performed using SPSS version 23.0. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as means and standard deviations. Group comparisons of stress scores were conducted using the unpaired t-test or one-way ANOVA, as appropriate. A p-value <0.05 was considered statistically significant.

Approval of Institutional Ethical Committee: Approved; KIMS/IEC/PG046/2024-EC/INST/2024/22.53 on 12.02.24

RESULTS

Among the 114 emergency healthcare providers surveyed, there was a predominantly male (52.2%) and unmarried (65.5%), with most participants holding undergraduate (50.4%) or postgraduate degrees (31.9%). A significant majority were doctors (80.5%), primarily employed at medical colleges (71.7%), and nearly 60% reported having less than two years of experience in emergency settings. In terms of workload, 56.6% of respondents worked 8–12 hours per day, 49.6% worked 40–60 hours per week, and 85.8% had three or fewer night shifts weekly. Chronic conditions were reported by some participants, with asthma (30.8%) and back pain (15.4%) being the most common. (Table 1)

Table 1: Demographic Profile of Participants

Parameters	Participant (%)
Gender	
Female	54 (47.8)
Male	59 (52.2)
Marital status	
Married	39 (34.5)
Unmarried	74 (65.5)
Highest level of education	
Degree	19 (16.8)
Fellowship	1 (0.9)
Post graduation	36 (31.9)
Under graduation	57 (50.4)
Occupation	
Doctor	91 (80.5)
EMT	1 (0.9)
Staff nurse	21 (18.6)
Designation	
Medical college Doctors	
Professor	2 (1.8)
Associate Professor	1 (0.9)
Assistant Professor	4 (3.5)
Senior Resident	3 (2.7)
Junior Resident	31 (27.4)
Intern	32 (28.3)
Corporate Hospital Doctors	
Senior Consultant	2 (1.8)
Junior Consultant	2 (1.8)
Resident	14 (12.4)
Nursing supervisor	2 (1.8)
Nursing In charge	1 (0.9)
Nursing staff	18 (15.9)
Technician	1 (0.9)
Working Institution	
Government hospital	16 (14.2)
Medical college	81 (71.7)
Private hospital	16 (14.2)
Years of experience	
<2 yrs	67 (59.3)
2-4 yrs	24 (21.2)
5-8 yrs	8 (7.1)
8-10 yr	3 (2.7)
>10 yrs	11 (9.7)
Working hours per day	
4-8 hrs	15 (13.3)
8-12 hrs	64 (56.6)
12 -16 hrs	26 (23)
>16 hrs	8 (7.1)
Working hours in a week	
<40	8 (7.1)
40-60	56 (49.6)
60-80	21 (18.6)
80-100	22 (19.5)
>100	6 (5.3)
Night shifts in a week	
<=3 hrs	97 (85.8)
>3hrs	16 (14.2)
History of any chronic illness	
Anxiety and insomnia.	1 (7.7)
Asthma	4 (30.8)
Back Pain	2 (15.4)
Diabetes	2 (15.4)
Hypertension	1 (7.7)
Hypertension, Diabetes, Hypothyroidism	1 (7.7)
Hypothyroid	1 (7.7)
Hypothyroidism	1 (7.7)

In the **Self-Awareness** domain, **54.9%** of participants reported feeling restless (**38.1 + 16.8**), while **62.0%** perceived their working hours as excessive (**30.1 + 31.9**). Additionally, **45.1%** experienced difficulty falling asleep (**24.8 + 16.8**), suggesting the negative impact of prolonged shifts on sleep quality. **56.7%** stated they did not get adequate rest after completing a shift (**36.3 + 20.4**), further highlighting concerns about recovery time. Within **Interpersonal Relationships**, **40.8%** felt emotionally affected after interactions with critically ill or trauma patients (**26.5 + 15.9**), while **49.6%** expressed concerns about hospital-acquired infections (**29.2 + 20.4**). Work-related stress also led to compromised self-care, with **73.5%** skipping meals during work hours (**37.2 + 36.3**), reflecting the challenges of maintaining personal well-being. For **Psychosomatic Symptoms**, **42.5%** frequently experienced excessive sleepiness (**22.1 + 20.4**), while **40.7%** reported palpitations (**15.0 + 25.7**), indicating heightened stress responses. Regarding **Clinical Manifestations**, **49.6%** suffered from recurrent headaches (**31.0 + 18.6**), and **34.5%** experienced excessive sweating at work (**21.2 + 13.3**). (Table 2)

Among the clinically significant findings, gender and working hours emerged as key determinants of stress among emergency healthcare professionals. Female participants exhibited significantly higher scores in the Self-Awareness domain (25.61 ± 4.53 vs. 22.00 ± 4.37 ; $p < 0.001$) and overall stress (69.96 ± 12.03 vs. 65.08 ± 10.41 ; $p = 0.023$) compared to male participants, indicating a greater recognition of stress-related factors among females. In contrast, no statistically significant gender differences were observed in the domains of Interpersonal Relationships, Psychosomatic Symptoms, or Clinical Manifestations.

Working hours per day were also associated with stress levels. Participants working over 16 hours per day demonstrated significantly elevated stress scores in the Clinical Manifestations domain (8.25 ± 2.31 vs. 6.20 ± 1.26 in the 4–8 hours group; $p = 0.017$) and higher overall stress scores (75.87 ± 10.92 vs. 63.86 ± 9.74 ; $p = 0.023$). A trend toward increasing stress across the domains was observed with longer working hours, suggesting that prolonged shifts exacerbate stress responses. Other factors, including marital status, educational background, occupational role, and history of chronic illness, did not significantly influence stress parameters ($p > 0.05$ across all comparisons). (Table 3)

Stress levels peak in professionals with 2-4 years of experience (69.625) and are lowest at 8-10 years (57.667). Early-career stress declines in mid-career but rises again after 10+ years (65.000), reflecting career-stage influences. Stress levels rise with longer working hours, peaking at 16+ hours (75.8750) and lowest at 4-8 hours (63.8667), underscoring the impact of excessive work on well-being. Females (69.9630) report higher stress than males (65.0847), suggesting additional responsibilities or workplace challenges. This emphasizes the need for gender-specific stress management (Figure 1).

Table 2: Stress parameters and Manifestations Scale

No	Item	1.Strongly Disagree	2.Disagree	3.Neutral	4.Agree	5.Strongly Agree
1. Self-awareness						
1	I feel restless	0 (0)	18 (15.9)	33 (29.2)	43 (38.1)	19 (16.8)
2	I feel the working hours are more	0 (0)	17 (15.0)	26 (23.0)	34 (30.1)	36 (31.9)
3	I feel overwhelmed with work	0 (0)	12 (10.6)	39 (34.5)	44 (38.9)	18 (15.9)
4	I feel more tired and stressed while working during holidays	38 (33.6)	9 (8.0)	15 (13.3)	30 (26.5)	21 (18.6)
5	I have difficulty in falling asleep	0 (0)	46 (40.7)	20 (17.7)	28 (24.8)	19 (16.8)
6	I am getting angry faster	0 (0)	24 (21.2)	31 (27.4)	41 (36.3)	17 (15.0)
7	I do not get enough time to take resting time after my shift	0 (0)	19 (16.8)	30 (26.5)	41 (36.3)	23 (20.4)
2. Interpersonal relationships						
8	I feel low all the time	0 (0)	30 (26.5)	38 (33.6)	25 (22.1)	20 (17.7)
9	I feel low sometimes after interacting with sick and trauma patients	0 (0)	35 (31.0)	30 (26.5)	30 (26.5)	18 (15.9)
10	I have difficulties interacting with others	0 (0)	48 (42.5)	25 (22.1)	18 (15.9)	22 (19.5)
11	I am not healthy enough to go to work	0 (0)	55 (48.7)	22 (19.5)	15 (13.3)	21 (18.6)
12	I am worried about hospital acquired infections	0 (0)	23 (20.4)	34 (30.1)	33 (29.2)	23 (20.4)
13	I do not attend to my social relationships	0 (0)	28 (24.8)	24 (21.2)	33 (29.2)	28 (24.8)
14	I face communication challenges with healthcare team and patients in high stress situations	0 (0)	34 (30.1)	30 (26.5)	31 (27.4)	18 (15.9)
15	I skip food during working hours	0 (0)	8 (7.1)	22 (19.5)	42 (37.2)	41 (36.3)
3. Psychosomatic symptoms						
16	I feel sleepy all the time	0	34 (30.1)	31 (27.4)	25 (22.1)	23 (20.4)
17	I have palpitations	0	44 (38.9)	23 (20.4)	17 (15.0)	29 (25.7)
18	I have digestive problems	0	35 (31.0)	22 (19.5)	30 (26.5)	26 (23.0)
4. Clinical manifestations						
19	I feel excessively sweaty when i am on work	0	33 (29.2)	41 (36.3)	24 (21.2)	15 (13.3)
20	I get frequent headaches	0	31 (27.4)	26 (23.0)	35 (31.0)	21 (18.6)

Table 3: Comparison of various parameters of stress with demographic profile

Parameters	Self-awareness	Interpersonal relationships	Psychosomatic symptoms	Clinical manifestations	Total
Gender					
Female	25.61 ± 4.53	27.31 ± 4.96	10.44 ± 2.79	6.59 ± 1.38	69.96 ± 12.03
Male	22.00 ± 4.37	26.86 ± 4.90	9.62 ± 2.28	6.59 ± 1.77	65.08 ± 10.41
t value	4.304	0.485	1.71	0.002	2.31
p value	p<0.001	0.629	0.09	0.998	0.023
Marital status					
Married	24.10 ± 4.80	27.07 ± 5.18	9.97 ± 2.83	6.69 ± 1.72	67.84 ± 12.43
Unmarried	23.52 ± 4.80	27.08 ± 4.81	10.04 ± 2.42	6.54 ± 1.53	67.19 ± 10.94
t value	0.605	0.004	0.13	0.481	0.289
p value	0.546	0.997	0.897	0.632	0.773
Education					
Degree	22.63 ± 3.75	25.31 ± 4.60	9.00 ± 2.11	6.05 ± 1.47	63.00 ± 9.59
Post graduation	22.75 ± 5.68	27.52 ± 5.15	9.97 ± 2.95	6.75 ± 1.87	67.00 ± 12.63
under graduation	24.73 ± 4.36	27.40 ± 4.85	10.42 ± 2.37	6.72 ± 1.39	69.28 ± 10.98
F value	1.752	1.013	1.716	1.899	1.635
p value	0.161	0.39	0.168	0.134	0.185
Occupation					
Doctor	23.95 ± 4.91	27.37 ± 4.95	10.13 ± 2.61	6.62 ± 1.63	68.07 ± 11.69
Staff nurse	22.42 ± 3.95	25.61 ± 4.63	9.52 ± 2.40	6.41 ± 1.43	64.00 ± 9.73
t value	1.326	1.479	0.977	0.483	1.482
p value	0.118	0.142	0.331	0.63	0.141
History of chronic illness					
Yes	23.00 ± 6.17	26.91 ± 5.61	10.33 ± 2.71	6.83 ± 1.47	67.08 ± 13.11
No	23.83 ± 4.64	27.11 ± 4.88	10.00 ± 2.56	6.59 ± 1.59	67.53 ± 11.31
t value	0.563	0.128	0.424	0.503	0.127
p value	0.574	0.899	0.672	0.161	0.899
Working hours per day					
4-8 hrs	21.80 ± 3.38	26.46 ± 5.09	9.40 ± 2.47	6.20 ± 1.26	63.86 ± 9.74
8-12 hrs	23.35 ± 4.43	26.26 ± 4.57	9.70 ± 2.48	6.48 ± 1.52	65.81 ± 10.38
12 -16 hrs	25.11 ± 5.90	28.50 ± 5.04	10.62 ± 2.74	6.58 ± 1.45	70.80 ± 13.32
>16 hrs	25.75 ± 4.713	30.12 ± 5.514	11.75 ± 1.98	8.25 ± 2.31	75.87 ± 10.92
F value	2.207	2.505	2.394	3.524	3.321
p value	0.091	0.063	0.072	0.017	0.023

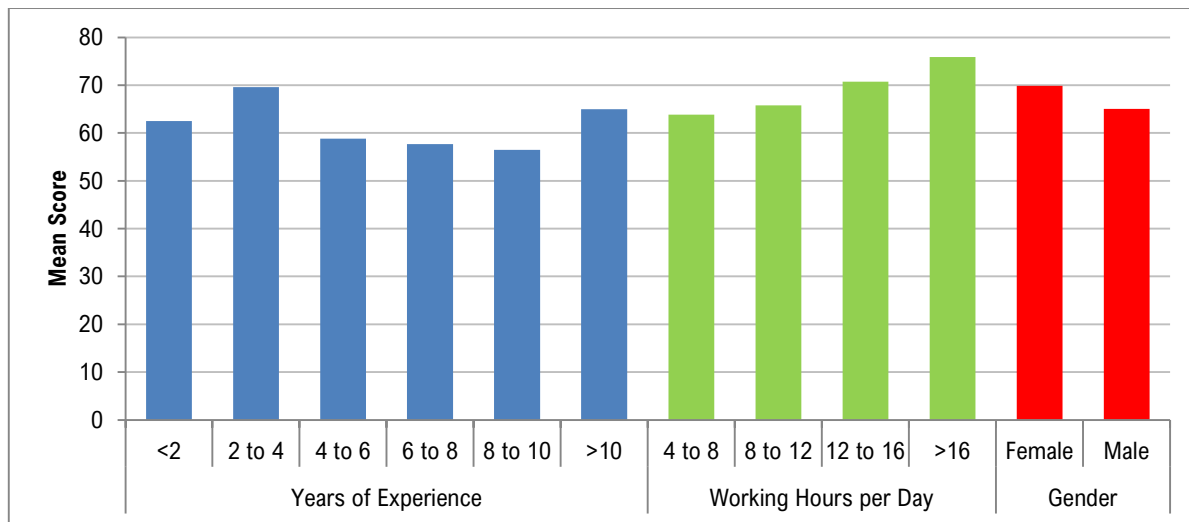


Figure 1: Bar Graphs Showing the Relationship Between Years of Experience, Working Hours, Gender, with Mean score of stress

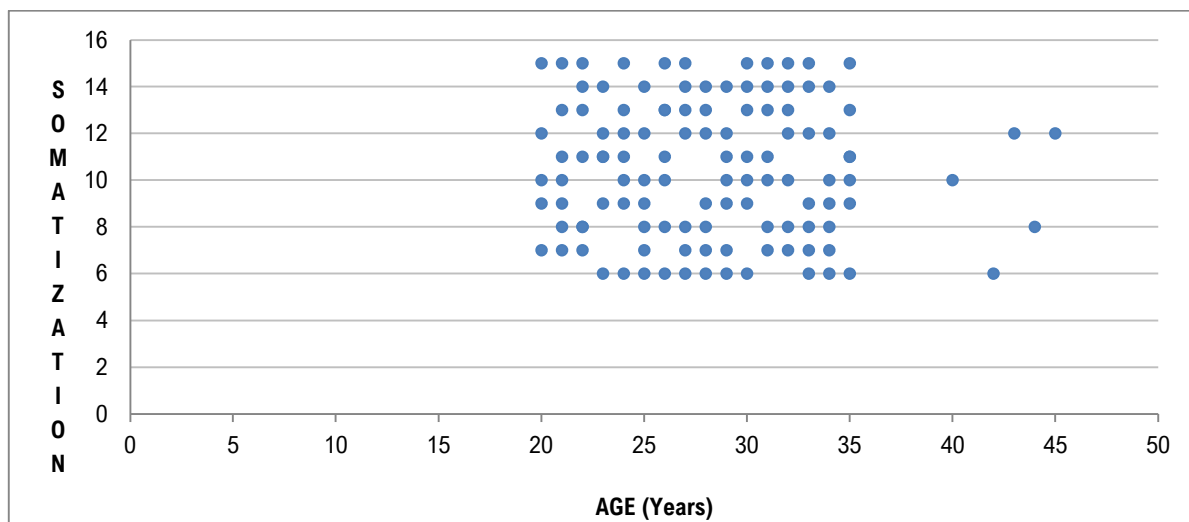


Figure 2: Scatter plot representing the relationship between age and somatization in participants

The scatter plot depicts the distribution of somatization scores across different age groups among 114 participants. The majority fall within the 20–35-year age range, demonstrating scores predominantly between 6 and 15. A subtle downward trend in somatization scores is observed with increasing age; however, this decline does not reach statistical significance. Notably, a few outliers with lower scores appear beyond 40 years, yet the overall concentration remains among younger participants, indicating a higher burden of somatization symptoms in this demographic. (Figure 2)

DISCUSSION

Workplace stress presents a considerable challenge for healthcare workers, particularly for those in emergency medicine.[6,7] Factors such as work fatigue, shift patterns, and exposure to traumatic events can lead to both physical and psychological disorders.[8,9] These stressors often contribute to negative emotions and feelings of

isolation, as emergency personnel frequently experience limited time for social interactions with family and friends.[10] Identifying the specific parameters that contribute to stress is crucial; implementing targeted interventions can enhance the overall well-being of healthcare professionals and effectively address both physical and mental health challenges.[2] Furthermore, the consequences of stress extend beyond the individual, imposing significant financial burdens on healthcare systems due to decreased productivity and diminished job satisfaction.[11] By prioritizing the management of workplace stress, we can foster a healthier work environment that ultimately benefits patients and the healthcare system as a whole.[12]

In the study by Ángel García-Tudela et al. in Spain (2022), participants had a mean age of 41.5 years, with 59.5% being women and 65.4% working in emergency departments.[1] This contrasts with a younger demographic in our study, which featured a predominance of male participants and a higher percentage of doctors

compared to nurses. While the Spain study highlighted the significant role of nurses (41.6%), our focus was primarily on physicians. Additionally, their participants had considerable experience in emergency departments, whereas many participants in our study reported limited experience. These differences likely stem from varying demographics and institutional training approaches, reflecting the evolving landscape of emergency medicine in different contexts.[6] This can also be attributed to differences in demographics, institutional cultures, and training methodologies, which influence job roles and experiences among healthcare workers. Variations in age, gender distribution, and educational backgrounds reflect the unique challenges and perspectives that professionals encounter in their respective healthcare environments.[13]

In a 2022 study by Sami Oqab Alshammari et al. found significant differences in job stress levels among nurses based on experience were highlighted, showing that those with less than one year of experience reported the lowest stress ($P=0.043$).[2] In contrast, our study found that healthcare workers with 2-4 years of experience experienced the highest stress levels, closely followed by those with less than two years. Additionally, while a smaller sample size of healthcare workers with over 10 years of experience indicated elevated stress levels, this warrants further investigation.

Another study by Elvana Podvorica et al. at the Emergency Clinic and Central Intensive Care in Kosovo found that 71.11% of the 90 participants were women, and moderate to high stress levels were prevalent among nurses.[3] The research demonstrated that nurses on 12-hour shifts reported significantly higher stress levels compared to those on 8-hour shifts ($P < 0.002$), as well as increased fatigue ($P < 0.001$). Similarly, our study showed that stress levels were significantly influenced by working hours, with participants on 8–12-hour shifts. These disparities in stress levels across different studies likely stem from variations in experience, working conditions, and institutional practices, highlighting the diverse challenges faced by healthcare workers in different contexts.[14]

This study has several limitations, including its cross-sectional design, which restricts causal inferences between stress levels and influencing factors. The reliance on self-reported measures may introduce bias, as participants might underreport or overreport their stress due to social desirability or stigma. Furthermore, the sample size, while adequate for preliminary findings, may not fully represent the broader population of healthcare workers in emergency departments, affecting the generalizability of the results. Variations in institutional policies, patient loads, and local healthcare contexts may also influence the stress experiences of emergency workers differently across settings. Despite these limitations, the study provides valuable insights into the dynamics of stress among healthcare workers in emergency settings, particularly the impact of working hours and experience. These findings can inform institutional poli-

cies and training programs aimed at mitigating stress, contributing to a growing body of literature on healthcare worker well-being. By focusing on specific demographics such as gender and residency status, the research underscores the importance of understanding how individual characteristics influence stress, facilitating the development of tailored support strategies.

CONCLUSION

This study highlights the critical relationship between stress and the well-being of healthcare workers in emergency settings, with female professionals and junior residents exhibiting heightened stress levels. Extended working hours significantly contribute to increased stress, particularly among those working more than 16 hours, leading to severe clinical symptoms. These findings underscore the necessity for healthcare institutions to regularly evaluate job and organizational factors contributing to stress and health issues. By implementing targeted interventions and support systems, we can create a healthier work environment that not only enhances the well-being of emergency healthcare workers but also improves the quality of patient care. Addressing these factors is essential for sustaining a resilient healthcare workforce capable of effectively meeting the demands of emergency medicine.

Author contribution: **KM:** involved in data collection and manuscript preparation. **VKSS:** involved in study conception, study design and manuscript preparation. **APR:** involved in study design, data analysis and interpretation.

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