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## Prevalence of Post-traumatic Stress Disorder and its Risk Factors Among Emergency Care Workers Following Mass Casualty Incidents

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### KEYWORDS

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### DECLARATIONS

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### ABSTRACT

**Background:** Emergency care personnel are at an increased risk of developing post-traumatic stress disorder due to their frequent exposure to traumatic events. **Objective:** To determine the risk factors of post-traumatic stress disorder among emergency care workers following mass casualty incidents. **Methodology:** A cross-sectional research of emergency care professionals across many departments investigated the prevalence of post-traumatic stress disorder and associated risk factors. Medical personnel, including nurses, paramedics, and emergency medical technicians were selected by stratified random sampling. The depression, anxiety, and stress scale-21, a validated instrument, assessed symptoms, while a comprehensive questionnaire gathered demographic information, work characteristics, and health history, including chronic illnesses and mental medication usage. Logistic regression models in SPSS and R STUDIO revealed significant associations between post-traumatic stress disorder and risk factors, controlling for confounding variables. One-way ANOVA, linear regression, and multiple logistic regression were employed. **Results:** Chronic disease status, job experience, and shift number were significantly associated with mental health outcomes, with p-values of 0.007, 0.003, and 0.000, respectively. The use of psychotropic medication and its status also influenced mental health scores. The regression analysis revealed that designation and employment experience significantly positively influenced anxiety ratings ( $B=1.032$ ,  $p=0.034$ ) and exhibited negative correlations with chronic disease ( $B=-1.431$ ,  $p=0.002$ ) and psychotropic drug use ( $B=-1.406$ ,  $p=0.000$ ). Key predictors of depression included employment experience ( $B=0.579$ ,  $p=0.017$ ) and psychotropic drug use ( $B=-0.335$ ,  $p=0.000$ ), with an  $R^2$  value indicating substantial variance explanation. **Conclusion:** Long shifts, chronic disease, and extensive working experience were strongly related to higher anxiety and depression in healthcare workers. Psychotropic pharmaceutical use, especially antidepressants and mood stabilisers, increased mental health difficulties, underlining the need for focused mental health treatments for healthcare personnel.

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## INTRODUCTION

Post-traumatic stress disorder (PTSD) is characterized by the direct experience of traumatic events or the continual observation, acquisition, or involvement with their specifics. The severity of trauma, life-threatening situations, and post-traumatic elements such as insufficient coping strategies, lack of social support, and repeated trauma exposure elevate the likelihood of PTSD.<sup>1</sup> Emergency Medical Technicians (EMT) and Emergency Medical Services (EMS) professionals encounter stress resulting from trauma, critical illnesses, impairments, or deaths. Moreover, prolonged exposure to potentially stressful situations may increase the likelihood of severe psychiatric disorders.

PTSD may adversely affect the well-being of EMS and EMT staff, as well as the quality of patient care.<sup>2</sup> Jonsson et al. found that 62% of paramedics in emergency teams experienced stressful situations during their jobs, with a notable percentage of these cases involving children.<sup>3</sup> The anxiety and tension encountered by paramedics, as demonstrated by a study conducted by AlEnzie in Saudi Arabia<sup>4</sup>, are the primary elements leading to their inadequate performance and inability to meet given responsibilities. However, there is a lack of research on the prevalence of PTSD among paramedics in Saudi Arabia. In 2012, the worldwide prevalence of PTSD was 10%.<sup>1</sup>

The incidence rates in Europe, Asia, and Africa are inferior to that of the United States, which is approximately 8.7%.<sup>1,5-7</sup> Results from a PTSD assessment revealed that 26% of emergency medical services professionals in Saudi Arabia are impacted by the disorder.<sup>7</sup> This matter requires immediate action, including the establishment of psychological rehabilitation programs for EMS staff and the commencement of routine psychological evaluations. Generalization would be inappropriate due to the study's confinement to a particular urban centre.<sup>8</sup> Mental illness in the workplace can result in various problems, including an increased likelihood of clinical errors, impaired communication, reduced clinical capacity, absenteeism, lower productivity, and raised turnover rates. Adverse impacts on mental health can create a cascading effect on patient safety

and the quality of care. Consequently, to address these issues, healthcare providers must identify mental diseases at an early stage.<sup>9</sup> Individuals may get PTSD from factors other than directly witnessing or experiencing a distressing incident. Thus, recognizing risk variables beyond exposure to traumatic events, including personal and occupational traits that could predict the development of PTSD, may enhance the management and alleviation of prehospital emergency stress in emergency responders. Evaluating the mental health of EMTs and identifying personnel at increased risk for PTSD is crucial, given that EMTs demonstrate the greatest prevalence of post-traumatic stress disorder (11-35%) among prehospital healthcare workers.<sup>10,11</sup>

Emergency medical service personnel in Saudi Arabia lack awareness regarding the prevalence and impact of PTSD on their mental health and the quality of care provided to patients.<sup>12</sup> To deliver superior care, EMS staff must have proficiency in stress management and an understanding of PTSD symptoms. Burnout, reduced productivity, and early retirement may all stem from inadequate information. With suitable training, people will become more proficient in handling occupational stress and preserving their health. This may negatively impact their mental health, hence reducing their motivation and the quality of care they provide to patients.<sup>13-16</sup> This study aims to assess the frequency of PTSD among emergency medical service personnel in Riyadh, Saudi Arabia, and to identify the primary risk factors linked to this condition.<sup>17,18</sup>

It is hypothesized that the incidence of PTSD would be heightened among emergency care providers due to their recurrent exposure to traumatic events. Additional research is essential to clarify the prevalence of PTSD among EM practitioners, according to the limited number of published studies in this area. Understanding the incidence and prevalence of PTSD, as well as appropriate management strategies, is critically important. To comprehensively understand mental health awareness and strategies for overcoming psychological barriers, it is essential to conduct research in Asia. No study has quantified the prevalence of PTSD among paramedics in Pakistan. This study aims to assess the psychological stress levels encountered by

emergency medical service personnel in hospital environments.

## METHODOLOGY

This descriptive cross-sectional study aims to investigate the prevalence of PTSD among EMS personnel in Peshawar, Khyber Pakhtunkhwa (KPK), Pakistan. The research was conducted over six months in the emergency departments of various tertiary care hospitals in KPK, including Lady Reading Hospital, Hayatabad Medical Complex, Khyber Teaching Hospital, Rehman Medical Institute, Northwest General Hospital and Maqsood Medical Complex. The sample size was calculated using OpenEpi, an online tool, based on a previous study's prevalence estimate of 14%, with a confidence level of 95% and a margin of error of 0.5%, yielding a sample size of 186.

A convenience sampling strategy was utilized to recruit participants, primarily focusing on full-time emergency personnel including physicians, nurses, and emergency medical technologists or technicians with more than one year of experience. Individuals in the emergency department with less than one year of experience and visiting personnel were excluded from the study. Data collection occurred in the emergency departments during designated breaks or after work hours to minimise disturbance to routine operations. Participants were informed of the study's purpose, assured confidentiality, and obtained informed consent before the distribution of the survey questionnaires. The completed surveys were collected and securely stored for analysis.

The study utilized key tools to collect relevant data: a demographic and occupational questionnaire, in addition to the Depression, Anxiety, and Stress Scale (DASS-21).<sup>19</sup> The demographic and occupational questionnaire collected critical background information, including age, gender, marital status, years of experience, job title, work hours, and shifts, all of which may affect PTSD risk. The DASS-21, a validated self-report instrument consisting of 21 items, was utilised to evaluate levels of depression, anxiety, and stress, with each subscale containing seven items assessed on a 4-point Likert scale. The PCL-C was employed to assess PTSD symptoms in subjects. This 17-item

instrument enabled participants to self-report trauma exposure symptoms, offering a systematic method to assess PTSD prevalence and severity within a civilian healthcare setting. The analysis was conducted using the Statistical Package for the Social Sciences (IBM® SPSS® Statistics, Version 26, IBM Corp, Armonk, NY, USA) and R Studio. Descriptive characteristics were reported as frequencies, percentages, means, and standard deviations (SD). The Chi-square test was utilised to evaluate relationships between dependent variables, including depression, anxiety, stress status, and demographic variables. Linear regression analysis was employed to investigate the correlations among continuous variables. Multiple logistic regression was performed among dependent and independent variables. All data was displayed in graphs and charts for clarity and thorough visualisation.

## RESULTS

The table delineates the distribution of stress levels (normal, mild, moderate) across various demographic and occupational characteristics, with statistical significance evaluated through p-values. Gender, designation, marital status, monthly income, and qualification level exhibited no significant variations in stress levels, as evidenced by p-values exceeding 0.05, suggesting that these characteristics may not substantially affect stress intensity in this population. Conversely, chronic disease ( $p=0.007$ ), work experience ( $p=0.003$ ), psychotic status ( $p=0.001$ ), number of shifts ( $p<0.001$ ), and psychotropic drug usage ( $p<0.001$ ) exhibited significant correlations with stress levels.

Individuals without chronic diseases exhibited largely normal stress scores, but those with over five years of job experience or psychotic disorders demonstrated elevated stress levels. A greater number of changes correlated with increased stress severity, and individuals on psychotropic drugs, especially mood stabilisers, reported higher stress levels than those on other medication kinds. These findings underscore particular aspects that may contribute to increased stress among participants. In Figure 1, the bar chart illustrates the distribution of psychological health status by gender, comparing males and females across five categories: Normal, Mild, Moderate, Severe, and Extremely Severe.

Both genders have a similar total number of participants, with approximately 80 individuals each.

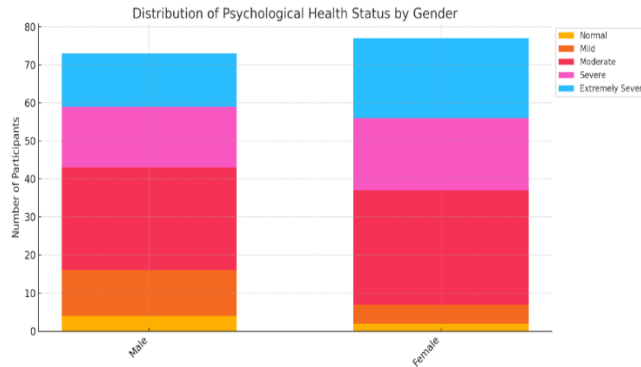
The distribution of psychological health status appears relatively balanced between males and females, with no significant gender-based differences in the proportions of participants in each category. Both genders show a substantial

number of participants in the Moderate, Severe, and Extremely Severe categories, indicating a high prevalence of psychological health challenges across both groups. The Normal and Mild categories have fewer participants for both genders. Married individuals form the largest group with approximately 90 participants, followed by Single individuals with about 55 participants, and Divorced individuals represent

**Table 1: Distribution of psychological health status (stress) among emergency care workers by demographic and health characteristics**

Variables	Category	Normal	Mild	Moderate	Total	p-value
Gender	Male	46	31	21	98	0.316
	Female	39	36	13	88	
Designation	Physician	22	15	5	42	0.670
	Nurse	37	27	17	81	
	EMT	26	25	12	63	
Marital status	Single	45	31	16	92	0.396
	Married	39	31	16	86	
	Divorced	1	5	2	8	
Chronic disease	Hypertension	1	4	5	10	0.007
	Diabetes Mellitus	0	2	3	5	
	Cardiac Diseases	1	0	0	1	
	None of These	83	61	26	170	
Working experience	<5 Years	57	35	12	104	0.003
	5-10 Years	26	31	18	75	
	>10 Years	2	1	4	7	
Psychotic status	Yes	2	7	8	17	0.001
	No	83	60	26	169	
Number of shifts	<12	40	19	12	71	0.000
	13-16	13	32	18	63	
	>16	32	16	4	52	
Monthly income	<50,000	36	19	10	65	0.355
	60,000-100,000	37	38	20	95	
	>100,000	12	10	4	26	
Qualification level	Diploma/ Certification	15	15	3	33	0.512
	Bachelor's Degree	58	41	26	125	
	Master's Degree	12	11	5	28	
Use of psychotic medication	Antidepressants	3	8	6	17	0.000
	Mood Stabilizers	0	10	8	18	
	Antipsychotic Medication	4	2	3	9	
	None of These	78	47	17	142	

**Figure 1: Distribution of psychological health status by gender**



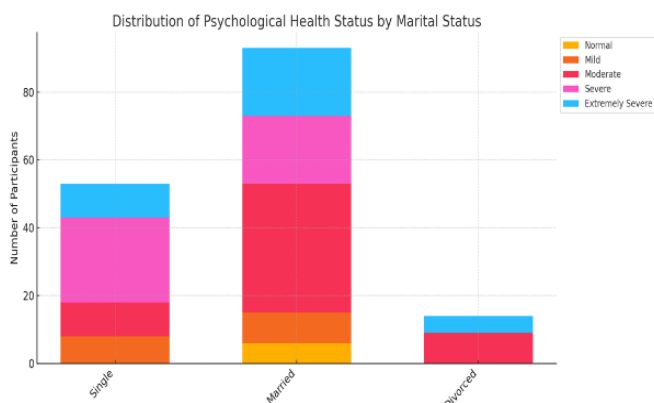
the smallest group with roughly 15 participants. The psychological health status is categorized into five levels: Normal (yellow), Mild (orange), Moderate (red), Severe (pink), and Extremely Severe (light blue). Married individuals show the highest absolute numbers across all severity levels, with a notable concentration in the Moderate and Severe categories. Single individuals demonstrate a similar pattern but with lower absolute numbers, while divorced individuals show the smallest numbers but still maintain a concerning proportion of Moderate to Extremely Severe cases.

The stacked bar chart shows the distribution of psychological health status across three healthcare designations: Physicians, Nurses, and EMTs. Nurses represent the largest group with approximately 70 participants, followed by EMTs with about 55 participants, and physicians with roughly 35 participants. The psychological health status is categorized into five levels: Normal (yellow), Mild (orange), Moderate (red), Severe (pink), and Extremely Severe (light blue). Notably, nurses show the highest overall number of cases across all severity levels, with a

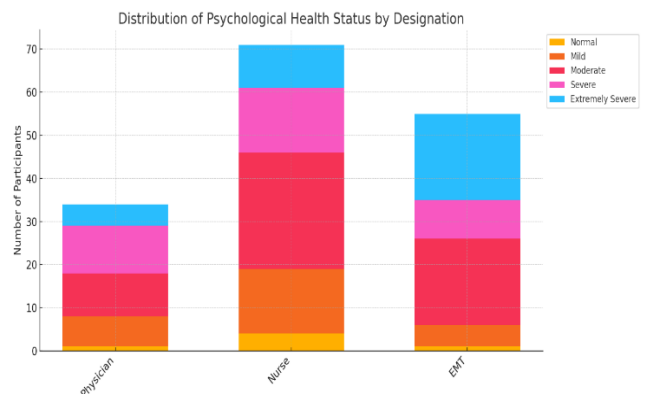
significant proportion in the moderate to extremely severe categories. EMTs demonstrate a particularly high number of extremely severe cases, while physicians show a more balanced distribution across severity levels but with a smaller total sample size. This table explores anxiety severity levels (Normal, Mild, Moderate, Severe, and Extremely Severe) across diverse demographic and health-related variables, accompanied by p-values denoting statistical significance. Gender, designation, marital status, and qualification level exhibited no significant correlation with anxiety severity, as evidenced by p-values over 0.05, indicating that these factors may not be primary predictors of stress in this population.

In contrast, chronic disease ( $p=0.001$ ), work experience ( $p=0.010$ ), psychotic status ( $p=0.022$ ), number of shifts ( $p<0.001$ ), monthly income ( $p=0.041$ ), and psychotropic medication usage ( $p=0.001$ ) exhibited significant associations with anxiety levels. Individuals with hypertension or diabetes, as well as those with extensive work experience, were more likely to report heightened anxiety levels. A significant

**Figure 2: Psychological health status across three marital status**



**Figure 3: Distribution of psychological health status across three healthcare designations**



correlation was seen between elevated work shifts and diminished income levels and increased anxiety severity. Individuals administered psychotropic drugs, particularly mood stabilisers, had elevated anxiety levels relative to those not receiving such treatments.

These findings highlight specific health and occupational problems as significant contributors to increased anxiety. Table 2 explores the distribution of depression severity (normal, mild, moderate, and severe) across several demographic and health-related variables, accompanied by p-values that denote statistical significance. Gender, designation, marital status, monthly income, qualification level, and psychotic status exhibit no significant correlation with depression severity, indicated by p-values over 0.05, implying these characteristics may not be pivotal in determining depression levels within this cohort. Conversely, chronic disease ( $p=0.032$ ), work experience ( $p<0.001$ ), number of shifts ( $p<0.001$ ), and use of psychotropic medication ( $p=0.001$ ) exhibit significant correlations with the degree of depression.

Individuals with hypertension and diabetes, possessing 5-10 years of job experience, and experiencing numerous shifts (13-16 per month) exhibited elevated levels of despair. Furthermore, individuals taking psychotropic drugs, especially mood stabilisers, demonstrated increased severity of depression relative to those not receiving these treatments. This indicates that specific health conditions and occupational factors may have an impact on depression levels within this cohort. The ANOVA findings demonstrate differing levels of significance among several variables concerning the investigated outcome. Most variables, including designation ( $p=0.509$ ), qualification level ( $p=0.576$ ), number of shifts ( $p=0.767$ ), monthly income ( $p=0.148$ ), and married status ( $p=0.96$ ), do not exhibit statistically significant variations across groups, since their p-values beyond the 0.05 threshold. Nonetheless, certain variables exhibit substantial impacts, particularly psychotic status, administration of psychotropic medication and chronic illness ( $p=0.001$ ). These characteristics certainly exhibit significant variations among groups, with psychotic states and the use of psychotropic medication demonstrating particularly robust relationships due to their low p-values. Furthermore, the

employment experience demonstrates a trend approaching significance ( $p=0.063$ ), indicating a potential relationship that may require additional examination. The regression analysis demonstrates multiple significant results.

No group of healthcare designations demonstrates notable differences in risk, as indicated by nonsignificant p-values (e.g., EMT  $OR=1.28$ ,  $p=0.6$ ). The categories of marital status exhibit little statistical significance, while divorced persons demonstrate reduced odds of risk ( $OR=0.45$ ,  $p=0.317$ ), albeit not significantly. Chronic disorders yield significant results: hypertension ( $OR=2.12$ ,  $p=0.034$ ) markedly elevates risk, but diabetes mellitus ( $OR=3$ ,  $p=0.067$ ) nears significance. Professional experience considerably affects risk; possessing fewer than 5 years of experience markedly elevates the risks ( $OR=3.32$ ,  $p<0.001$ ). The presence of a psychotic state offers substantial protection for individuals without psychosis ( $OR=0.22$ ,  $p=0.014$ ). Shift employment influences risk, with fewer than 12 shifts correlating with a notable increase in risk ( $OR=2.22$ ,  $p=0.015$ ).

Income, qualification levels, and the majority of psychotropic medication categories exhibit no significant impacts, except antidepressants, which are linked to a substantial increase in risk ( $OR=4.48$ ,  $p=0.003$ ). Chronic disease, low work experience, psychosis, and antidepressant usage are significant factors affecting risk in this analysis (Table 4). The regression analysis indicates a significant positive correlation between depression and anxiety scores, evidenced by a coefficient of feelings regarding work-related stresses, which contributes to the scarcity of data on PTSD 0.9147. Furthermore, a minor positive correlation exists between age and anxiety scores, as evidenced by a coefficient of 0.0281, suggesting a slight increase in anxiety with advancing age. The model's  $R^2$  value of 0.6908 indicates that about 69.08% of the variance in anxiety scores is attributable to the combined effects of age and depression scores, highlighting the significant impact of these factors on anxiety. The intercept of 1.1412 establishes a baseline level of anxiety when both age and depression scores are zero.

## DISCUSSION

Post-traumatic stress lowers motivation an

**Table 2: Distribution of psychological health status (anxiety) among emergency care workers by demographic and health characteristics**

Variables	Category	Normal	Mild	Moderate	Severe	Extremely severe	p-value
<b>Gender</b>	Male	5	9	35	35	14	.834
	Female	4	12	27	30	15	
<b>Designation</b>	Physician	4	6	11	16	5	.433
	Nurse	4	11	28	27	11	
	EMT	1	4	23	22	13	
<b>Marital Status</b>	Single	5	10	35	24	18	.455
	Married	4	10	25	37	10	
	Divorced	0	1	2	4	1	
<b>Chronic Disease</b>	Hypertension	0	0	1	5	4	.001
	Diabetes Mellitus	0	0	0	1	4	
	Cardiac Diseases	0	1	0	0	0	
	None of These	9	20	61	59	21	
<b>Working Experience</b>	<5 Years	7	12	45	27	13	.010
	5-10 Years	2	9	15	36	13	
	>10 Years	0	0	2	2	3	
<b>Psychotic Status</b>	Yes	0	0	4	6	7	0.022
	No	9	21	58	59	22	
<b>Number of Shifts</b>	<12	3	8	33	19	8	0.000
	13-16	0	6	9	32	16	
	>16	6	7	20	14	5	
<b>Monthly Income</b>	<50,000	1	5	33	17	9	0.041
	60,000-100,000	6	14	22	37	16	
	>100,000	2	2	7	11	4	
<b>Qualification Level</b>	Diploma/ Certification	1	5	12	9	6	0.898
	Bachelor's Degree	6	14	43	44	18	
	Master's Degree	2	2	7	12	5	
<b>Use of Psychotic Medication</b>	Antidepressants	0	1	1	9	6	0.001
	Mood Stabilizers	0	0	1	13	4	
	Antipsychotic Medication	0	1	3	2	3	
	None of These	9	19	57	41	16	

**Table 3: Distribution of psychological health status (depression) among emergency care workers by demographic and health characteristics**

Variables	Category	Normal	Mild	Moderate	Total	p-value
<b>Gender</b>	Male	19	24	48	7	.759
	Female	17	16	48	7	
<b>Designation</b>	Physician	10	9	21	2	.204
	Nurse	18	16	37	10	
	EMT	8	15	38	2	
<b>Marital status</b>	Single	17	24	44	7	.575
	Married	18	16	46	6	
	Divorced	1	0	6	1	
<b>Chronic disease</b>	Hypertension	0	2	6	2	.032
	Diabetes Mellitus	0	0	3	2	
	Cardiac Diseases	1	0	0	0	
	None of These	35	38	87	10	
<b>Working experience</b>	<5 Years	25	28	45	6	0.000
	5-10 Years	11	10	49	5	
	>10 Years	0	2	2	3	
<b>Psychotic status</b>	Yes	0	3	13	1	0.109
	No	36	37	83	13	
<b>Number of shifts</b>	<12	12	22	35	2	0.000
	13-16	4	9	42	8	
	>16	20	9	19	4	
<b>Monthly income</b>	<50,000	14	18	29	4	0.697
	60,000-100,000	17	18	53	7	
	>100,000	5	4	14	3	
<b>Level of qualification</b>	Diploma/Certification	6	7	16	4	0.794
	Bachelor's Degree	27	27	63	8	
	Master's Degree	3	6	17	2	
<b>Use of psychotic medication</b>	Antidepressant	1	1	12	3	0.001
	Mood Stabilizer	0	0	15	3	
	Antipsychotic Medication	2	1	4	2	
	None of These	33	38	65	6	

lower the standard of treatment for patients. The incidence and prevalence of co-occurring disorders, such as PTSD, anxiety, and depression, differs between the genders. The chance of developing PTSD is two times higher in girls than in males, according to the research.<sup>21</sup>

In a similar vein, we found that female EMS workers had a higher workers. Our results are

consistent with those of Jakson et al.,<sup>20</sup> who performed a meta-analysis suggesting that PTSD may be more common in girls than in males, maybe because females experience more anxiety and depression. Research by Darensburg and colleagues, which compared 58 male and 41 female police officers, suggests that women may be more likely to suffer from PTSD than men since they are often expected to take on more



**Table 4: Analysis of variance (ANOVA) results on factors influencing psychological health in emergency care workers**

ANOVA		Sum of Squares	Df	Mean Square	F	p-value
Designation	Between Groups	9.62	18	0.534	0.96	0.509
	Within Groups	93.009	167	0.557		
	Total	102.629	185			
Working experience	Between Groups	8.918	18	0.495	1.607	0.063
	Within Groups	51.496	167	0.308		
	Total	60.414	185			
Level of qualification	Between Groups	5.396	18	0.3	0.903	0.576
	Within Groups	55.47	167	0.332		
	Total	60.866	185			
No of shifts	Between Groups	8.937	18	0.496	0.739	0.767
	Within Groups	112.122	167	0.671		
	Total	121.059	185			
Monthly income	Between Groups	10.72	18	0.596	1.379	0.148
	Within Groups	72.103	167	0.432		
	Total	82.823	185			
Psychotic status	Between Groups	4.228	18	0.235	3.497	0.00
	Within Groups	11.218	167	0.067		
	Total	15.446	185			
Use of psychotic medication	Between Groups	39.17	18	2.176	2.501	0.001
	Within Groups	145.281	167	0.87		
	Total	184.452	185			
Marital status	Between Groups	3.11	18	0.173	0.489	0.96
	Within Groups	58.955	167	0.353		
	Total	62.065	185			
Chronic disease	Between Groups	22.04	18	1.224	2.558	0.001
	Within Groups	79.923	167	0.479		
	Total	101.962	185			

caregiving roles at home. In addition, women may be more prone to having PTSD due to physiological variables including hormone fluctuations, the effects of reproductive events like menopause and delivery, and elevated emotional reactions.<sup>22,23</sup> Following prior studies, our findings indicate that age may have minimal impact on the incidence of PTSD; nevertheless, the underlying rationale remains ambiguous and necessitates further exploration. Following the occurrence of identical disasters in three nations Norris and associates analyzed the prevalence of PTSD about the ages of the participants.<sup>24</sup> No association was identified between age and the occurrence of PTSD. Variables beyond chronological age significantly influence the prevalence of PTSD in regions affected by natural

catastrophes. Although we found no association between age and PTSD symptoms. Darensburg et al.<sup>25</sup> noted that as individuals age, they encounter increased stress from both occupational and familial sources.

Glaesmer and colleagues<sup>26</sup> propose that the decline in physical function and quality of life linked to ageing may explain any discrepancies. We contend that younger healthcare professionals are at an elevated risk for PTSD. This may result from their ignorance, incapacity to manage, or past experiences of direct trauma. Veteran medical staff may be susceptible to PTSD due to cumulative stressors. Assist individuals in the medical profession, irrespective of age, who exhibit symptoms of PTSD and facilitate

treatment if required. The hospital score fell beneath the threshold, indicating a low incidence rate. However, in specific regions, the demand for emergency medical care may diminish due to an enhancement in the quality of life. A significant contingent of physicians and nurses employed in hospitals may potentially contribute. The hospital's extensive medical facilities may play a role. Further investigation is required to discern discrepancies among hospitals. Stress, extended hours, and adverse work situations can precipitate PTSD in the workplace.

Furthermore, our results suggest that employment position may affect PTSD symptoms and overall score. There were significant differences among the groups ( $p=0.001$ ). The incidence of PTSD symptoms among healthcare professionals differs by occupation and exposure to stressful incidents, such as patient fatalities or serious accidents. Individuals engaged in prolonged shifts or confronted with significant situations daily may exhibit a higher propensity for PTSD compared to the general populace. The standard weekly hours worked by practitioners were considered. Statistically significant differences were observed across the groups ( $p=0.001$ ), indicating that average weekly working hours may affect the overall PTSD score.

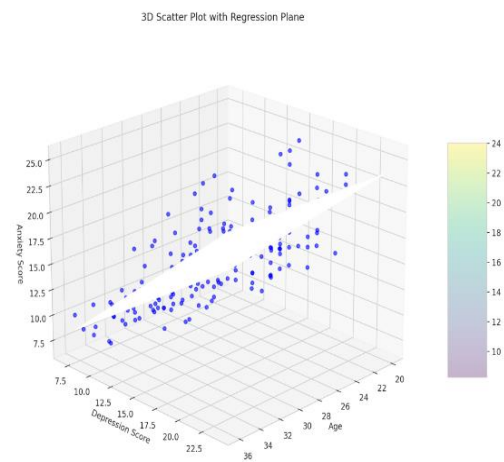
Previous research by Jackson et al.<sup>20</sup> suggests that surgical residents may experience a higher prevalence of PTSD than the general population. According to Li et al.<sup>27</sup>, there was no correlation between the classification of practitioners' working hours and the incidence of PTSD during COVID-19. Methodological or hospital/practice-specific factors may explain the observed disparity in outcomes. The average amount of working hours per week may affect the prevalence of PTSD, as evidenced by our statistically significant variations across groups ( $p=0.001$ ). Our data suggests that healthcare practitioners are more prone to experiencing PTSD with extended working hours. The likelihood of developing post-traumatic stress disorder is greatest among healthcare workers who work over 40 hours weekly.

Medical personnel may exhibit a reduced susceptibility to PTSD if they have already encountered stressful experiences. Regardless of an individual's proficiency, distressing events such as patient fatalities, medical errors, and

exposure to infectious agents can affect mental health.<sup>27</sup> Our findings suggest that previous work experience may not influence the occurrence of PTSD. No substantial differences were detected between the groups ( $p=0.083$ ). The conclusions of Robinson and co-investigators concerning police officers are refuted by the current investigation. The prevalence of PTSD may increase over time due to the incompetence and inexperience of individuals with less than eleven years of service.<sup>28</sup>

This disparity may be attributed to methodological differences, as we categorized our participants as possessing less than ten years of experience. Our data indicates that PTSD is a tangible risk for healthcare workers at all levels. Therapists and physicians want to seek assistance for PTSD. Our findings suggest that previous work experience may not influence the occurrence of PTSD. The incidence of PTSD was greatest among emergency medical workers, ranging from 11% to 35%.<sup>9,11</sup> This claim is substantiated by our study's findings that 33.7% of participants were emergency services practitioners. Alakeel and colleagues<sup>7</sup> discovered that 25% of the KAMC EMS staff exhibited positive results for post-traumatic stress disorder. To address this issue, he suggested that EMS personnel engage in psychological rehabilitation programs and undergo regular psychiatric assessments. Additionally, among Iranian Red Crescent volunteers, a frequency of 25% was observed.<sup>(29)</sup> The study revealed that

**Figure 1: The 3D scatter plot with regression plane shows the relationships between Age, Depression Score, and Anxiety Score**



**Table 5: Multiple logistic regression analysis of the dependent variable (stress) with demographic variables**

Variable	Category	Coefficient (B)	Odds Ratio (OR)	Standard Error	P Value
Designation	Physician	-0.45	0.64	0.5	0.377
	Nurse	0.1	1.1	0.42	0.804
	EMT	0.25	1.28	0.47	0.6
Marital Status	Single	0.15	1.16	0.4	0.71
	Married	0.12	1.13	0.38	0.756
	Divorced	-0.8	0.45	0.8	0.317
Chronic Disease	Hypertension	0.75	2.12	0.35	0.034
	Diabetes Mellitus	1.1	3	0.6	0.067
	Cardiac Diseases	-0.5	0.61	0.7	0.475
Working Experience	<5 Years	1.2	3.32	0.3	0
	5-10 Years	0.45	1.57	0.25	0.058
	>10 Years	-0.6	0.55	0.5	0.23
	None of These	Reference	1		
Psychotic Status	Yes	-1.5	0.22	0.6	0.014
	No	Reference	1		
Number of Shifts	<12	0.8	2.22	0.35	0.015
	13-16	0.5	1.65	0.28	0.07
	>16	-0.3	0.74	0.4	0.45
Monthly Income	<50,000	-0.1	0.9	0.25	0.681
	60,000-100,000	0.2	1.22	0.3	0.506
	>100,000	0.5	1.65	0.45	0.293
Qualification Level	Diploma/Certification	-0.25	0.78	0.4	0.533
	Bachelor's Degree	0.35	1.42	0.28	0.193
	Master's Degree	0.9	2.46	0.7	0.185
Use of Psychotic Medication	Antidepressant	1.5	4.48	0.5	0.003
	Mood Stabilizer	0.25	1.28	0.45	0.577
	Antipsychotic Medication	-0.45	0.64	0.6	0.457

21% of EMS workers developed PTSD. The frequency among firefighters was 29.3%.<sup>38</sup> According to the study, police officers exhibited a prevalence of 13%, whereas 200 Saudi firefighters demonstrated a prevalence of 57%.<sup>28,31</sup> Nevertheless, in comparison to the prevalence rates among participants, the overall score in this study appears to be elevated. The participants operated in healthcare facilities characterized by numerous traumatic events, frequently encountering adversities, dismembered corpses, horrific scenes, and direct death threats, among other distressing situations, which may elucidate this occurrence rate.

## CONCLUSION

The impact of demographic, occupational, and psychological variables on healthcare professionals' anxiety and depression levels was the primary focus of this research. Extended working experience, frequent and lengthy shifts, and the presence of chronic disease were found to be strongly related to heightened anxiety and sadness, according to the study. The lack of statistical significance for gender, marital status, and monthly income suggests that these variables have a more complex function in determining mental health outcomes. Particularly among people who take

antidepressants or mood stabilizers, there was a correlation between psychotropic medication use and increased anxiety and depression. In light of these results, it is clear that people dealing with long-term health issues, demanding jobs, and the usage of psychotropic medications require specialized mental health services. Improved patient care could result from healthcare workers experiencing less stress, better mental health, and more general well-being as a result of focused treatments implemented in healthcare settings.

## DECLARATIONS

**Consent to participate:** Written consent had been taken from patients. All methods were performed following the relevant guidelines and regulations.

**Availability of data and materials:** Data will be available on request. The corresponding author will submit all dataset files.

**Competing interests:** None

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