ORIGINAL ARTICLE

Assessment of Psychological Well-being Among Medical Professionals Working with Patients Who Suffer from Physical Trauma: An Observational Study from India

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Abstract

Background: Healthcare providers working with victims of physical trauma are exposed to significant human suffering at work. This may place them at risk of burnout, secondary traumatic stress (STS), and other psychological disturbances. This study aimed to evaluate the professional quality of life and psychological well-being among trauma professionals.

Methodology: This was a cross-sectional study conducted among 153 staff members (nursing officers, resident doctors, and faculty) of a Level 1 trauma center in North India. The Professional Quality of Life (ProQoL-5) and Depression, Anxiety, and Stress (DASS-21) Scales were used.

Results: More than 50% of the participants had a moderate risk of burnout and STS. In addition, 54% of participants reported having anxiety, 40% stress, and 36% depressive symptoms. Depression, anxiety, and stress were all strongly predicted by burnout and STS.

Conclusion: Psychological distress symptoms were seen in a significant portion of professionals working in the trauma center. Workplace interventions for the promotion of psychological well-being among trauma professionals are recommended.

Keywords: Burnout, Healthcare professionals, Professional quality of life, Secondary traumatic stress, Trauma.

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Highlights

- Healthcare providers caring for victims of physical trauma are exposed to challenging working conditions which may affect their mental health.
- This study indicates the risk of psychological disturbances in a large number of trauma professionals.
- Workplace-based interventions for improving the professional quality of life of trauma professionals are recommended.

Introduction

The practice of medicine, while purposeful and fulfilling, is a demanding and challenging profession. Particularly, for surgical and emergency-related fields, which are almost synonymous with long and often unpredictable working hours, highly stressful working conditions, limited opportunities for recreation, and exposure to grave human suffering and misery for prolonged periods.[1,2] Direct exposure to stressful events for extended periods, as seen in first responders to a traumatic event (such as Firemen, Policemen, and Emergency Medical Staff), has garnered research interest for 30 years or so and has often been associated with anxiety disorders, depressive disorders, post-traumatic stress disorders among other psychiatric illnesses.[3,4] However, recent literature also reports the effects of exposure to second-hand trauma on the quality of life of healthcare providers.[5,6]

Secondary traumatic stress (STS) describes the adverse impact of repeated empathic engagement with trauma survivors and associated cognitive, schematic, and other psychological effects.[6] Secondary traumatic stress may present as emotional exhaustion, emotional detachment, irritability, sleeplessness, anxiety, depressive and suicidal ideas, a diminished sense of purpose or enjoyment in work, and an increase in self-destructive behaviors.[5] Burnout has been well-documented in healthcare professionals, mostly among emergency and critical care specialties, as a state of physical, emotional, and mental exhaustion caused by long-term involvement in emotionally demanding situations.[2,7,8] Common symptoms of burnout include headache, fatigue, insomnia, diminished satisfaction with work, and emotional instability.[9,10]

These factors, along with compassion satisfaction (pleasure derived from the alleviation of patient suffering and positive work experience) are often measures to estimate the professional quality of life, which refers to total positive and negative emotions, in that a professional comes across in the context of work as a helper.[11,12] It is composed of two opposing constructs, compassion satisfaction, and compassion fatigue, which in turn comprised STS

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and burnout.[10,13,14] Professional quality of life affects and is affected by professional well-being and performance, and yet remains neglected in the stressful working conditions of most medical specialties.[12,14,15] In the climate of increasing suicidal deaths among physicians, along with the well-researched psychological impact of COVID-19 pandemic on the mental health of medical professionals, a paradigm shift is necessary for medical educators and policy-makers to understand that the professional well-being of medical trainees and professionals plays a significant role in their education and future career.[8,16,17]

Trauma surgery and critical care is an upcoming surgical specialty in India, with super-specialty (Master of Chirurgiae) programs currently running in three medical institutes under the Central Government. Training in this specialty is made additionally challenging in India due to the tremendous caseload, limited resources, and a small force of skilled care providers.[18,19] It is essential that at this nascent stage in the development of the field, measures are taken to promote physical as well as psychological well-being in the healthcare providers because personal well-being is strongly associated with empathy, which is associated with a healthy doctor–patient relation and ethical medical practice in future.[18,20,21]

This study aimed to evaluate the professional quality of life among medical professionals (doctors and nurses) working at a Level 1 trauma center at an apex medical institute in India and to examine its association with their psychological health.

Methodology

This was a cross-sectional observational study conducted among the staff and trainees of a Level 1 trauma center at an apex medical institute located in North India. The sample collection commenced after written approval from Institutional Ethics Committee was obtained (Ref. no. IECPG-740/27/10/2022 The sample size was calculated using a study conducted on similar lines among 282 nursing professionals and medical social service officers working in a trauma center in Baltimore that reported at least one symptom of STS in 70.2% of the participants. At a 95% confidence interval and a 5% margin of error, using Kelsey's formula for sample size calculation, a sample size of 153 was obtained. A convenience sampling method was used. Both male and female healthcare providers, aged more than 18 years and working in the trauma center for at least 1 month were included in the study. After obtaining informed consent, the participants were required to respond to the study questionnaire, whose responses were collected and analyzed using SPSS v26.0. Since the data followed a normal distribution (p-values on Kolmogorov–Smirnoff test ranged from 0.014 to 0.005), Pearson's correlation coefficient (r) was used to determine correlations, and p-value of less than 0.05 was considered significant.

The questionnaire consisted of:

- **Semi-structured Proforma:** It is composed of sociodemographic details, professional details, and questions pertaining to workplace satisfaction.
- **Professional Quality of Life Scale-5 (ProQoL):** This is a validated, 30-item measure of the positive effects of working with those who have experienced traumatic stress in the last 1 month. The ProQOL has subscales for compassion satisfaction, burnout, and compassion fatigue. Responses are measured on a 5-point Likert scale, where a higher score on each subscale indicates greater perceived compassion satisfaction, burnout, and compassion fatigue, respectively. The scale has been widely used among medical professionals in various countries including India to assess the quality of life with respect to the professional environment.[22,23]
- **Depression, Anxiety, and Stress Scale (DASS-21):** It is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety, and stress in the last 1 month. It has been widely used for research among the Indian population, with good internal consistency and criterion validity for the identification of depression, anxiety, and stress.[24,25]

Table 1: Sociodemographic details

Parameter	*Category*	*Frequency (%)/mean (±SD)*
Gender	Male	70 (45.8)
	Female	83 (54.2)
Age (years)		32.3 (±7.0)
Marital status	Unmarried	76 (49.7)
	Married	77 (50.3)
	Separated/ divorced/widowed	0
Family structure	Nuclear	117 (76.5)
	Joint	36 (23.5)
Living arrangement	Alone	43 (28.1)
	With friend/ roommate	22 (14.4)
	With family	88 (57.5)

Results

Sociodemographic Profile

A total of 153 trauma professionals were included in the study, out of which 70 (45.8%) were males and 83 (54.2%) were females. Among them, 77 (50.3%) were unmarried and 76 (49.7%) were married. The majority of professionals belonged to nuclear families (n = 117, 76.5%). More than half of the respondents lived with their family members (n = 88, 57.5%). The mean age of the sample was 32.3 (±7.0) years. Sociodemographic and work profiles have been presented in Tables 1 and 2, respectively.

In terms of designation, 78 (51.0%) of the respondents were nursing officers, 35 (22.9%) respondents were senior and junior residents each and 5 (3.3%) were faculty members. The mean duration of experience at the trauma center was 5.2 (±2.9) years. Trainees reported spending a mean of 10.5 (±4.0) hours per day at work and did a mean 6.5 (±2.2) 24-hour duties in the past month. They also reported witnessing a mean 5.5 (±2.6) mortalities, 3.1 (±1.7) mass casualties, and 7.8 (±3.4) incidences of physical violence at work in the past month. The staff took a mean 4.0 (±3.6) days off work in the last 30 days. A large number of the staff members often felt deprived of sleep personal time and time with their families.

Workplace Satisfaction

While assessing workplace satisfaction, most of the participants appeared somewhat satisfied with the general workplace environment (n = 63, 41.2%), their interpersonal relations with other staff members (n = 78, 41.2%), conflict resolution approach (n = 47, 30.7%), infrastructure and facilities provided (n = 53, 34.6%), time

Table 2: Work profile

Parameter	*Category*	*Frequency (%)/ mean (±SD)*
Designation	Nursing officers	78 (50.9)
	Junior resident doctors	35 (22.9)
	Senior resident doctors	35 (22.9)
	Faculty	5 (3.3)
Years of experience at trauma center		5.2 (±2.9)
Hours spent at work per day in the last month		10.5 (±4.0)
Number of night duties in the last month		6.5 (±2.2)
Mortalities witnessed at work in the last month		5.5 (±2.6)
Incidences of violence at work in last month		7.8 (±3.4)
Mass casualties witnessed at work in the last month		3.1 (±1.7)
Number of holidays availed in the last month		4.0 (±3.6)
Sleep deprivation (lack of adequate sleep: 5–7 hours/day)	Never	14 (9.2)
	Sometimes	32 (20.9)
	Often	70 (45.8)
	All the time	37 (24.1)
Food deprivation (lack of time or opportunity to have at least 3 meals/day)	Never	31 (20.3)
	Sometimes	41 (26.8)
	Often	60 (39.2)
	All the time	21 (13.7)
Deprivation of family time (lack of adequate time with family- at least 1 hour/day excluding bedtime)	Never	16 (10.5)
	Sometimes	33 (21.6)
	Often	63 (41.2)
	All the time	41 (26.8)
Deprivation of personal time (lack to time or opportunity for personal activities)	Never	14 (9.2)
	Sometimes	32 (20.9)
	Often	73 (47.7)
	All the time	34 (22.2)

Table 3: Workplace satisfaction

Parameter	*Category*	*Frequency (%)*
General environment	Not at all satisfied	2 (1.3)
	Little satisfied	27 (17.6)
	Somewhat satisfied	63 (41.2)
	Quite satisfied	56 (36.6)
Interpersonal relations	Not at all satisfied	2 (1.3)
	Little satisfied	11 (7.1)
	Somewhat satisfied	78 (50.9)
	Quite satisfied	62 (40.5)
Conflict resolution	Not at all satisfied	32 (20.9)
	Little satisfied	46 (30.1)
	Somewhat satisfied	47 (30.7)
	Quite satisfied	28 (18.3)
Departmental infrastructure and facilities	Not at all satisfied	25 (16.3)
	Little satisfied	52 (33.9)
	Somewhat satisfied	53 (34.6)
	Quite satisfied	23 (15.0)
Time granted off work	Not at all satisfied	16 (10.5)
	Little satisfied	48 (31.4)
	Somewhat satisfied	61 (39.9)
	Quite satisfied	28 (18.3)
Time for recreational activities	Not at all satisfied	1 (0.7)
	Little satisfied	27 (17.6)
	Somewhat satisfied	57 (37.3)
	Quite satisfied	22 (14.4)
Academic standards	Not at all satisfied	16 (10.5)
	Little satisfied	43 (28.1)
	Somewhat satisfied	46 (30.1)
	Quite satisfied	48 (31.4)
Concern for staff's psychological well-being	Not at all satisfied	45 (29.4)
	Little satisfied	52 (33.9)
	Somewhat satisfied	32 (20.9)
	Quite satisfied	24 (15.7)

granted off work ($n = 61$, 39.9%) and time for recreational activities ($n = 57$, 37.3%). Most of the participants were quite satisfied with the standard of academic activities in the department ($n = 63$, 41.2%) and expressed low satisfaction over superiors' concern over staff's psychological well-being ($n = 52$, 20.9%). The findings are presented in Table 3.

In terms of designation, one-way ANOVA indicated no difference among nursing officers, junior residents, senior residents, and faculty members in terms of number of daily working hours in the past month [$F(3, 149) = 2.41$, $p = 0.06$]. Junior residents had a significantly greater number of night duties in a month [$F(3, 149) = 5.09$, $p = 0.002$] as compared with senior residents, faculty, and nursing officers. Senior residents took a significantly lesser number of days off work [$F(3, 149) = 39.61$, $p = 0.001$] in comparison with junior residents, faculty members, and nursing officers. In the assessment of workplace satisfaction, a significantly greater number of nursing officers expressed little satisfaction with academic standards [$\chi^2(df) = 34.98(9)$, $p = 0.001$] and departmental concern for staff's psychological well-being [$\chi^2(df) = 25.11(9)$, $p = 0.003$] as compared with residents and faculty. There were no significant differences among nursing officers, residents, and faculty in other domains of workplace satisfaction (Table 4).

Psychological Profile

The psychological profile was assessed using the DASS-21 and the ProQoL-5 scales. Depression, anxiety, and stress scores obtained on the DASS-21 scale were classified into severity categories as per the scale's standard interpretation system and have been presented in Table 5. Majority of the participants had scores within the normal range for depression, anxiety, and stress. However, 21 (13.7%) participants showed signs of mild, 19 (12.4%) of moderate, 10 (6.5%) of severe, and 5 (3.3%) of extremely severe depression. The most common psychological symptoms reported were of anxiety.

Table 4: Group differences in work profile and workplace satisfaction

		Frequency (%)					
Parameter	*Category*	*Nursing officers (n = 78)*	*Junior resident (n = 35)*	*Senior resident (n = 35)*	*Faculty (n = 5)*	*F(df)/χ^2(df)*	*p-value*
Daily working hours		9.2 (±2.7)	8.4 (±1.9)	16.1 (±8.5)	9.0 (±0.7)	2.41 (3,149)	0.069
Duties per month		5.9 (±1.4)	7.6 (±2.3)	6.9 (±2.8)	6.2 (±1.6)	5.09 (3,149)	0.002*
Holidays per month		6.3 (±3.1)	0.9 (±1.6)	0.7 (±1.1)	3.2 (±0.9)	39.61 (3,149)	0.001**
Workplace satisfaction							
General environment	Not at all satisfied	2 (2.6)	0	0	0	11.71 (9)	0.230
	Little satisfied	17 (21.7)	6 (17.1)	4 (11.4)	0		
	Somewhat satisfied	36 (46.1)	12 (34.3)	19 (54.3)	1 (20)		
	Quite satisfied	23 (29.4)	17 (48.6)	12 (34.3)	4 (80)		
Interpersonal relations	Not at all satisfied	1 (1.3)	1 (2.9)	0	0	13.67 (9)	0.135
	Little satisfied	7 (8.8)	0	4 (11.4)	0		
	Somewhat satisfied	42 (53.8)	14 (40)	21 (60)	1 (20)		
	Quite satisfied	28 (35.9)	20 (57.1)	10 (28.6)	4 (80)		
Conflict resolution	Not at all satisfied	21 (26.9)	5 (14.3)	6 (17.1)	0	6.34 (9)	0.706
	Little satisfied	24 (30.7)	10 (28.6)	11 (31.4)	1 (20)		
	Somewhat satisfied	21 (26.9)	13 (37.1)	11 (31.4)	2 (40)		
	Quite satisfied	12 (15.4)	7 (20)	7 (20)	2 (40)		
Departmental infrastructure facilities	Not at all satisfied	18 (23.1)	6 (17.1)	1 (2.9)	0	16.13 (9)	0.064
	Little satisfied	27 (34.6)	11 (31.4)	13 (37.1)	1 (20)		
	Somewhat satisfied	26 (33.3)	9 (25.7)	16 (45.7)	2 (40)		
	Quite satisfied	7 (8.9)	9 (25.7)	5 (14.3)	2 (40)		
Time granted off work	Not at all satisfied	6 (7.7)	4 (11.4)	6 (17.1)	0	16.71 (9)	0.058
	Little satisfied	20 (25.6)	13 (37.1)	14 (40)	1 (20)		
	Somewhat satisfied	33 (42.3)	13 (37.1)	14 (40)	1 (20)		
	Quite satisfied	19 (24.4)	5 (14.3)	1 (2.9)	3 (60)		
Time for recreational activities	Not at all satisfied	9 (11.5)	1 (2.9)	1 (2.9)	1 (20)	7.53 (9)	0.582
	Little satisfied	26 (33.3)	15 (42.9)	15 (42.9)	1 (20)		
	Somewhat satisfied	30 (38.5)	13 (37.1)	16 (45.7)	2 (40)		
	Quite satisfied	13 (16.7)	6 (17.1)	3 (8.6)	1 (20)		
Academic standards	Not at all satisfied	15 (19.2)	1 (2.9)	0	0	34.98 (9)	0.001*
	Little satisfied	30 (38.5)	4 (11.4)	9 (25.7)	0		
	Somewhat satisfied	19 (24.4)	12 (34.3)	14 (40)	1 (20)		
	Quite satisfied	14 (17.9)	18 (51.4)	12 (34.3)	4 (80)		
Concern for staff's psychological well-being	Not at all satisfied	31 (39.7)	2 (5.7)	11 (31.4)	1 (20)	25.11 (9)	0.003*
	Little satisfied	26 (33.3)	10 (28.6)	14 (40)	2 (40)		
	Somewhat satisfied	14 (17.9)	12 (34.3)	6 (17.1)	0		
	Quite satisfied	7 (8.9)	11 (31.4)	4 (11.4)	2 (40)		

*Indicates *p*-value of less than 0.05 (statistically significant)

Eighteen (11.8%) participants each reported mild and severe levels of anxiety, 30 (19.6%) reported moderate anxiety, and 17 (11.1%) reported extremely severe anxiety symptoms. Symptoms of mild stress were reported by 36 (23.5%), moderate stress by 16 (10.5%), severe stress by 5 (3.3%), and extremely severe stress was reported by 3 (1.9%) participants.

Using the ProQol-5 scale, scores in the three domains of compassion satisfaction, burnout, and STS were obtained, and categorized into low, average, and high as per the scale's scoring instructions. A total of 50 (32.7%) participants scored high on compassion satisfaction, 100 (65.4%) scored average, and only 3 (1.9%) had low scores. Sixty-nine (45.1%) scored low on the burnout subscale and 84 (54.9) had average scores. On scores of the STS subscale, 69 (45.1) scored low, 81 (52.9%) scored average, and only 3 (1.9%) had high scores.

While comparing the risk of depression, anxiety stress, burnout, and STS between nursing officers, junior and senior residents, and faculty, it was observed that the only domain showing a significant

Table 5: DASS-21 and ProQol-5 score categories

				Frequency (%)					
Scale	*Parameter*	*Category*	*Total*	*Nursing officer (n = 78)*	*Junior resident (n = 35)*	*Senior resident (n = 35)*	*Faculty (n = 5)*	χ^2 *(df)*	*p-value*
DASS-21	Depression	Normal	98 (64.1)	53	25	17	3	15.28 (12)	0.226
		Mild	21 (13.7)	8	4	7	2		
		Moderate	19 (12.4)	6	5	8	0		
		Severe	10 (6.5)	7	1	2	0		
		Extremely severe	5 (3.3)	4	0	1	0		
	Anxiety	Normal	70 (45.8)	36	18	14	2	9.73 (12)	0.639
		Mild	18 (11.8)	11	3	3	1		
		Moderate	30 (19.6)	12	6	11	1		
		Severe	18 (11.8)	7	6	4	1		
		Extremely severe	17 (11.1)	12	2	3	0		
	Stress	Normal	93 (60.8)	51	21	18	3	9.64 (12)	0.657
		Mild	36 (23.5)	14	8	12	2		
		Moderate	16 (10.5)	7	6	3	0		
		Severe	5 (3.3)	4	0	1	0		
		Extremely severe	3 (1.9)	2	0	1	0		
ProQoL-5	Compassion satisfaction	Low	3 (1.9)	2	1	0	0	3.48 (6)	0.746
		Average	100 (65.4)	49	21	27	3		
		High	50 (32.7)	27	13	8	2		
	Burnout	Low	69 (45.1)	37	19	11	2	4.06 (3)	0.255
		Average	84 (54.9)	41	16	24	3		
		High	0	0	0	0	0		
	Secondary traumatic stress	Low	69 (45.1)	27	18	23	1	13.30 (6)	0.039*
		Average	81 (52.9)	48	17	12	4		
		High	3 (1.9)	3	0	0	0		

*Indicates *p*-value of less than 0.05 (statistically significant)

difference was STS, where a significantly greater number of nursing officers were at a higher risk as compared with junior residents, senior residents and faculty members [χ^2(df) = 13.30(6), $p = 0.039$]. No other domains showed statistically significant differences in distribution between various groups.

Correlations

Correlations of psychological symptoms and determinants of professional quality of life were examined with the sociodemographic and work profiles of the participants, as presented in Table 6.

Depression score had a significant positive correlation with food deprivation ($r = 0.280$, $p < 0.001$), deprivation of time with family ($r = 0.197$, $p = 0.031$), and deprivation of personal time ($r = 0.209$, $p = 0.042$). Significant negative correlations of depression scores were observed with frequency of engagement in recreational activities ($r = -0.218$, $p = 0.023$) and several domains of workplace satisfaction, including general environment of the department ($r = -0.236$, $p < 0.001$), interpersonal relations with colleagues ($r = -0.322$, $p < 0.001$), conflict resolution system in the department ($r = -0.220$, $p < 0.001$), infrastructural facilities provided ($r = -0.245$, $p < 0.001$), time granted off work ($r = -0.162$, $p = 0.004$) and academic standards ($r = -0.269$, $p < 0.001$) maintained in the department.

Scores on anxiety subscale had significant positive correlations with sleep deprivation ($r = 0.215$, $p < 0.001$), food deprivation ($r = 0.274$, $p < 0.001$), deprivation of family time ($r = 0.230$, $p < 0.001$) and deprivation of personal time ($r = 0.197$, $p = 0.031$). Significant negative correlations of anxiety scores were observed with age ($r = -0.235$, $p < 0.001$) frequency of engagement in recreational activities ($r = -0.312$, $p = 0.027$), and several domains of workplace satisfaction, including the general environment of the department ($r = -0.230$, $p < 0.001$), interpersonal relations with colleagues ($r = -0.272$, $p < 0.001$), conflict resolution system in the department ($r = -0.182$, $p = 0.021$), infrastructural facilities provided ($r = -0.198$, $p = 0.038$), time granted off work ($r = -0.189$, $p = 0.007$) academic standards ($r = -0.193$, $p = 0.016$) and departmental concern for staff's psychological well-being ($r = -0.364$, $p < 0.001$).

Stress scores had significant positive correlations with number of hours at work ($r = 0.571$, $p = 0.026$), sleep deprivation ($r = 0.266$, $p < 0.001$). food deprivation ($r = 0.301$, $p < 0.001$), deprivation of family time ($r = 0.237$, $p < 0.001$) and deprivation of personal time ($r = 0.232$, $p < 0.001$). Significant negative correlations of stress

Table 6: Correlations

Parameter	*Depression*	*Anxiety*	*Stress*	*Compassion satisfaction*	*Burnout*	*Secondary traumatic stress*
Age	–0.152	–0.194*	–0.235**	0.251**	–0.286**	–0.095
Experience	–0.061	0.016	0.003	0.202**	–0.221**	0.051
Hours at work	–0.063	–0.069	0.571*	0.054	–0.113	0.479**
Night duties	–0.093	–0.088	0.104	–0.087	0.131	0.110
Mortalities	0.068	0.107	0.121	0.029	0.005	0.114
Violence	0.080	0.676	0.727	0.826	0.701	0.545
Mass casualty	0.021	–0.020	–0.025	0.142	0.034	0.328*
Holidays	0.074	0.055	0.080	0.012	0.025	–0.197*
Sleep deprivation	0.197	0.215**	0.266**	–0.108	0.251**	0.052
Food deprivation	0.280**	0.274**	0.301**	–0.117	0.317**	0.202*
Family time deprivation	0.197*	0.230**	0.273**	–0.173*	0.353**	0.024
Personal time deprivation	0.209**	0.197*	0.232**	0.138	0.396**	0.165
Recreation frequency	–0.218*	–0.312*	–0.471**	0.019	–0.424*	0.172
General environment	–0.236**	–0.230**	–0.248**	0.423**	–0.382**	–0.152
Interpersonal relations	–0.322**	–0.272**	–0.257**	0.420**	–0.436**	–0.212**
Conflict resolution	–0.220**	–0.182*	–0.200*	0.238**	–0.268**	–0.77
Department facilities	–0.245**	–0.198*	–0.267**	0.193**	–0.301**	–0.114
Time off work	–0.162*	–0.189*	–0.073	0.071	–0.086	–0.116
Academic standards	–0.269**	–0.193*	–0.142	0.062	–0.119	–0.101
Concern	0.153	–0.364**	–0.714**	0.381*	–0.415**	–0.406**

*Indicates *p*-value of less than 0.05 (statistically significant); **Indicates *p*-value of less 0.001 (Statistically highly significant)

scores were observed with age ($r = -0.235$, $p < 0.001$) frequency of engagement in recreational activities ($r = -0.471$, $p < 0.001$) and several domains of workplace satisfaction, including general environment of the department ($r = -0.248$, $p < 0.001$), interpersonal relations with colleagues ($r = -0.272$, $p < 0.001$), conflict resolution system in the department ($r = -0.200$, $p = 0.021$), infrastructural facilities provided ($r = -0.267$, $p = 0.038$), time granted off work ($r = -0.189$, $p < 0.001$), and departmental concern for staff's psychological well-being ($r = -0.714$, $p < 0.001$).

Compassion satisfaction had significant positive correlations with age ($r = 0.251$, $p < 0.001$), years of experience in working in the field of trauma and critical care ($r = 0.202$, $p < 0.001$), satisfaction with general environment of the department ($r = 0.432$, $p < 0.001$), interpersonal relations ($r = 0.420$, $p < 0.001$), conflict resolution ($r = 0.238$, $p < 0.001$), infrastructural facilities provided ($r = 0.193$, $p < 0.001$) and departmental concern for staff's psychological well-being (v–0.381, $p < 0.001$). Deprivation of time with family had a significant negative correlation with compassion satisfaction ($r = -0.173$, $p = 0.042$).

Burnout had significant positive correlations with sleep deprivation ($r = 0.251$, $p < 0.001$). food deprivation ($r = 0.317$, $p < 0.001$), deprivation of family time ($r = 0.353$, $p < 0.001$) and deprivation of personal time ($r = 0.396$, $p < 0.001$). Significant negative correlations were observed with age ($r = -0.286$, $p < 0.001$), years of experience ($r = -0.211$, $p < 0.001$), frequency of recreational activities ($r = -0.424$, $p = 0.017$) general workplace environment ($r = -0.382$, $p < 0.001$), interpersonal relations ($r = -0.436$, $p < 0.001$), infrastructural facilities provided ($r = -0.301$, $p < 0.001$) and departmental concern for staff's psychological well-being ($r = -0.415$, $p < 0.001$).

Table 7: Correlations between psychological symptoms and professional quality of life

	Compassion satisfaction	*Burnout*	*Secondary traumatic stress*
Depression	–0.380**	0.587**	0.507**
Anxiety	–0.415**	0.599**	0.503*
Stress	–0.406*	0.612**	0.486**

*Indicates *p*-value of less than 0.05 (statistically significant); **Indicates *p*-value of less than 0.001 (statistically highly significant)

Secondary traumatic stress had positive correlations with the number of hours spent at work in a month ($r = 0.479$, $p < 0.001$), mass casualties witnessed in a month ($r = 0.328$, $p = 0.004$) and food deprivation ($r = 0.202$, $p = 0.024$). Negative correlations were observed between STS and interpersonal relations ($r = -0.212$, $p < 0.001$) and departmental concern for staff's psychological well-being ($r = -0.406$, $p < 0.001$).

Correlations were also drawn between psychological symptoms and determinants of workplace satisfaction. Depression, anxiety, and stress scores had significant positive correlations with burnout as well as STS and significant negative correlations with compassion satisfaction, as shown in Table 7.

Regression Analysis

After the preliminary assumptions were met, multiple linear regression was performed to predict the levels of different determinants of professional quality of life (compassion satisfaction, burnout and STS) using sociodemographic details and workplace

Table 8: Multiple linear regression analysis

Outcome variable	*Predictor variables*	*Unstandardized coefficient (Std. error)*	*Standardized coefficient*	*95% Confidence interval*	*t*	*p-value*
Compassion satisfaction	Constant	20.87 (5.70)		9.57–32.16	3.65	0.001
	Age	0.31 (0.15)	0.33	0.18–0.61	2.10	0.013
	Marital status	3.97 (1.45)	0.29	1.08–6.85	2.72	0.007
	Violence	0.23 (0.09)	0.19	0.05–0.42	2.53	0.013
	General environment	2.28 (0.82)	0.25	0.65–3.88	2.78	0.006
	Interpersonal relations	2.23 (0.91)	0.22	0.42–4.40	2.44	0.016
Burnout	Constant	20.30 (4.23)		21.92–38.66	7.17	0.001
	Age	–0.26 (0.11)	–0.31	0.38–0.47	0.31	0.022
	Personal time Deprivation	1.55 (0.54)	0.23	0.48–2.62	2.87	0.005
	Interpersonal relations	–1.48 (0.68)	–0.15	0.14–2.82	2.18	0.031
Secondary traumatic stress (STS)	Constant	22.10 (5.93)		10.35–33.85	3.72	0.001
	Hours/day	1.05 (0.45)	0.29	1.38–3.48	1.07	0.005
	Sleep deprivation	1.49 (0.40)	0.23	0.11–2.88	2.14	0.034
Depression	Constant	7.64 (3.61)		0.49–14.80	2.12	0.036
	Food deprivation	0.81 (0.38)	0.21	0.04–1.58	2.08	0.039
	Sleep deprivation	1.40 (0.38)	0.18	1.05–1.85	1.49	0.044
	Burnout	0.21 (0.09)	0.32	0.03–0.39	2.27	0.025
	STS	0.18 (0.05)	0.31	0.06–0.28	3.22	0.002
Anxiety	Constant	–2.31 (1.77)		–11.72–7.31	0.48	0.029
	General environment	–0.47 (0.04)	–0.01	–1.02–0.91	–1.16	0.005
	Burnout	0.23 (0.09)	0.36	0.04–0.24	2.48	0.014
	STS	0.15 (0.05)	0.26	0.04–0.26	2.69	0.008
Stress	Constant	–4.96 (2.95)		–4.35–5.51	–0.94	0.017
	Hours/day	0.21 (0.02)	0.04	–0.03–0.06	0.54	0.024
	Burnout	0.28 (0.10)	0.37	0.07–0.49	2.67	0.009
	STS	0.16 (0.06)	0.24	0.04–0.28	2.59	0.011

satisfaction (Table 8). Compassion satisfaction had an *R*-value of 0.690, indicating a good level of prediction and coefficient of determination, and R^2 indicated that the variables of age, marital status, incidences of violence witnessed at work, satisfaction with the general workplace environment, and satisfaction with interpersonal relations with colleagues, predicted about 47.7% of the variability in compassion satisfaction. F (113.42) and *p*-value (< 0.001) indicated an extremely good fit for the data. Burnout had an *R*-value of 0.738, indicating a good level of prediction and coefficient of determination. R^2-value indicated that the variables of age, deprivation of personal time, and satisfaction with interpersonal relations with colleagues, predicted about 61.3% of the variability in compassion satisfaction. F (108.22) and *p*-value (< 0.001) indicated an extremely good fit for the data. Secondary traumatic stress had an *R*-value of 0.640, indicating a good level of prediction and coefficient of determination. R^2 value indicated that the variables of hours spent at work per day in the last 1 month and sleep deprivation could predict 41% of the variability. F (93.64) and *p*-value (< 0.001) indicated a good fit for the model.

Multiple linear regression was also performed to predict the occurrence of psychological disturbances in the participants using sociodemographic variables, workplace satisfaction, and determinants of professional quality of life (Table 7). Depression had an *R*-value of 0.676 and R^2-value of 0.457 indicating that food deprivation, sleep deprivation, burnout, and STS could predict 45.7% variability in depression scores. F (63.64) and *p*-value (< 0.001) indicated the average fit of the model. Anxiety had an *R*-value of 0.660 and an R^2-value of 0.435 indicating that general workplace environment, burnout, and stress could predict 43.5% variability in anxiety scores. F (82.46) and *p*-value (< 0.001) indicated a good fit for the model. Stress had an *R*-value of 0.691 and an R^2-value of 0.478 indicating that general workplace environment, burnout, and stress could predict 47.8% variability in anxiety scores. F (97.42) and *p*-value (< 0.001) indicated a good fit for the model.

Model Summary

- Compassion satisfaction: $R = 0.690$, $R^2 = 0.477$, F (29, 3.861) = 113.42, *p*-value < 0.001.
- Burnout: $R = 0.783$, $R^2 = 0.613$, F (29, 6.710) = 108.22, *p*-value < 0.001.
- Secondary traumatic stress: $R = 0.640$, $R^2 = 0.410$, F (29, 2.944) = 93.646, *p*-value < 0.001.

- Depression: R = 0.676, R^2 = 0.457, F (29, 3.575) = 63.641, p-value < 0.001.
- Anxiety: $R = 0.660$, $R^2 = 0.435$, F (29, 3.150) = 82.464, p-value < 0.001.
- Stress: $R = 0.691$, $R^2 = 0.478$, F (29, 3.886) = 97.429, p-value < 0.001.

Discussion

This was a cross-sectional study conducted among the employees of a level 1 Trauma Center in an apex medical institution located in North India. A majority of the participants were in their 30s, married, lived with their families in a nuclear setup, working in the field of trauma for a mean of 5 years, and spent a mean of 10.5 hours at work every day, witnessing and managing patient mortality, mass casualties, and incidences of violence as part of their profession. A large percentage of participants experienced frequent sleep deprivation, food deprivation, and deprived of personal and family time. Most of the participants were somewhat satisfied with their working conditions but expressed dissatisfaction with the general concern shown by the department over the mental well-being of the staff members. Most of the participants had good levels of compassion satisfaction, indicating a sense of reward and fulfilment in their role as healthcare providers to victims of physical trauma. However, more than 50% of the participants were at moderate risk of suffering from burnout and STS. Also, about 54% of the participants had symptoms of anxiety, 40% had symptoms indicative of stress, and 36% had depressive symptoms. Correlations and multiple linear regression findings indicated that determinants of professional quality of life, such as burnout and STS, which were affected by strenuous working conditions and lack of personal time, in turn, affected the psychological health of the participants. Findings also suggest that higher compassion satisfaction, engagement in recreational activities, and greater workplace satisfaction were associated with lower depression, anxiety, and stress scores, thus acting as protective factors against psychological distress.

A recent systematic review of 14 studies on STS and burnout among Indian mental health professionals indicated moderate to severe levels of burnout and STS in a large majority of mental healthcare providers.[26] Studies conducted on healthcare workers during COVID-19 pandemic using similar study instruments, also reported a high prevalence of burnout and STS, which were also associated with depression and anxiety.[12,27] In this context, a greater number of studies have focussed on mental health care workers while professionals working with victims of physical trauma have not been given due importance.[6,28,29] In one of the few studies that exclusively examined the emotionally disturbing incidences experienced by 38 trauma professionals, mass casualties, burns, injury to children, injuries sustained in sexual assault, suicidal attempts, and grievous physical assault were reported to exert adverse psychological effects on vicariously exposed medical staff.[3] Another study from Arizona, conducted among 22 attending surgery consultants and trainees, also presented high levels of stress experienced during their rotational posting in Trauma sub-specialty.[1] However, these studies had a small sample size and did not use standardized study instruments, indicating a need for larger scale, in-depth studies focussing on trauma professionals.

This was the first study conducted on these lines among trauma professionals in India, a small workforce of professionals providing healthcare to victims of physical trauma in resource-limited settings, long and difficult working hours, and often without frequent breaks.[9] Prolonged exposure to human suffering and misery with added perceived stress of building personal and professional accomplishments is associated with psychological distress and decrease in empathy among medical students as well as professionals.[18,20,30] This finding is important not only for those in training but also for those who have advanced in their medical career and for whom working through personal distress may have become the normal way of life, as this may lead to expecting others (patients, colleagues, and subordinates) to deal with distress in the same manner.[19,20] This may have adverse outcomes on their relationship with their patients and their social and familial relationships.[30]

Our study also reported a significant impact of professional quality of life on symptoms of psychological distress, including stress, anxiety and depression. These observations stand in agreement with an earlier study conducted among 331 trauma professionals in Iran, which reported a significant relationship between professional quality of life with general as well as psychological health, measured using the General Health Questionnaire-28. Another study conducted among 282 nursing professionals working with physical trauma victims reported significantly greater use of unhealthy coping strategies among those with high STS scores, a relationship mediated by environmental and personal stressors.[31]

It is thus recommended that due consideration be given to the psychological well-being of medical professionals and trainees working with victims of physical trauma.[32] It may be desirable to institute hospital-based employee mental health programs designed specifically to the different needs of different specialties. A suitable example is the Worksite Wellness Education Program at a medical university in Egypt, aimed at improving employees' knowledge of workplace stress, addressing various stress factors, such as sleep disruption, substance use, fear of malpractice litigation, and healthy coping strategies through presentations, posters, role play, group discussion, and video films. A study conducted among 108 Emergency Department staff who were enrolled in this program reported improved post-interventional professional quality of life.[15] Other measures aimed at not only the reduction of work-related stress but also at improving resilience and healthy coping among trauma professionals are also warranted. Improving division of departmental duties, providing suitable on-duty facilities, such as comfortable duty rooms, 24-hour working cafeterias with nutritious food, scheduling regular breaks for personal and family time, faculty with an empathic and understanding approach toward issues faced by the trainees and junior staff and periodic mental health promotional activities in the department may help toward creating a mental health friendly environment at the workplace. Initiation of a student/employee wellness program aimed at providing psychological support to employees in need with the provision of referral to specialized professional help as required may prove instrumental in the promotion of mental well-being as well as the prevention of psychological crises and untoward events.

This study suffered from a few limitations, such as being a single-center study, with a cross-sectional design, relying solely on self-report, and no comparisons made with other medical/surgical specialties. This limits the generalizability of our findings. The study instruments were self-administered and the study offered no incentive, thus there was no way to vouch for the reliability and truthfulness of the responses.

However, this study provides an insight into the psychological state of medical professionals working with victims of physical trauma and some probable modifiable and non-modifiable factors that these conditions may be attributed to. This study may pave the way for further in-depth research on specific factors that may affect the mental health of trauma professionals. This study also builds a case for workplace interventions, such as resident wellness programs, tailored to the institutional infrastructure, work environment, and needs of healthcare providers.

Conclusion

This study indicated that while working with victims of physical trauma is fulfilling for healthcare providers, but they are at a significant risk of burnout and STS. The presence of psychological distress was observed in a large percentage of trauma professionals, which was affected by professional quality of life. Workplace-based interventions for the improvement of professional quality of life and promotion of psychological well-being among trauma professionals are recommended.

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References

1. Joseph B, Parvaneh S, Swartz T, Haider AA, Hassan A, Kulvatunyou N, et al. Stress among surgical attending physicians and trainees: A quantitative assessment during trauma activation and emergency surgeries. J Trauma Acute Care Surg 2016;81(4):723–728. DOI: 10.1097/TA.0000000000001162.
2. Stehman CR, Testo Z, Gershaw RS, Kellogg AR. Burnout, drop out, suicide: physician loss in emergency medicine, Part I. West J Emerg Med 2019;20(3):485–494. DOI: 10.5811/westjem.2019.4.40970.
3. Crabbe JM. Are health professionals getting caught in the crossfire? The personal implications of caring for trauma victims. Emerg Med J 2004;21(5):568–572. DOI: 10.1136/emj.2003.008540.
4. Berg GM, Harshbarger JL, Ahlers-Schmidt CR, Lippoldt D. Exposing compassion fatigue and burnout syndrome in a trauma team: a qualitative study. J Trauma Nurs 2016;23(1):3–10. DOI: 10.1097/JTN.0000000000000172.
5. Jacobowitz W, Moran C, Best C, Mensah L. Post-traumatic stress, trauma-informed care, and compassion fatigue in psychiatric hospital staff: A correlational study. Issues Ment Health Nurs 2015;36(11):890–899. DOI: 10.3109/01612840.2015.1055020.
6. Jenkins SR, Baird S. Secondary traumatic stress and vicarious trauma: a validational study. J Trauma Stress 2002;15(5):423–432. DOI: 10.1023/A:1020193526843.
7. De Hert S. Burnout in healthcare workers: prevalence, impact and preventative strategies. Local Reg Anesth 2020;13:171–183. DOI: 10.2147/LRA.S240564.
8. Newell JM, MacNeil GA. Professional burnout, vicarious trauma, secondary traumatic stress, and compassion fatigue: a review of theoretical terms, risk factors, and preventive methods for clinicians and researchers. Best Pract Ment Health Int J 2010;6:57–68. Corpus ID: 147731744.
9. Quenot JP, Rigaud JP, Prin S, Barbar S, Pavon A, Hamet M, et al. Suffering among carers working in critical care can be reduced by an intensive communication strategy on end-of-life practices. Intensive Care Med 2012;38(1):55–61. DOI: 10.1007/s00134-011-2413-z.
10. Cetrano G, Tedeschi F, Rabbi L, Gosetti G, Lora A, Lamonaca D, et al. How are compassion fatigue, burnout, and compassion satisfaction affected by quality of working life? Findings from a survey of mental health staff in Italy. BMC Health Serv Res 2017;17(1):755. DOI: 10.1186/s12913-017-2726-x.
11. Baqeas MH, Davis J, Copnell B. Compassion fatigue and compassion satisfaction among palliative care health providers: a scoping review. BMC Palliat Care 2021;20:88. DOI: 10.1186/s12904-021-00784-5.
12. Buselli R, Corsi M, Baldanzi S, Chiumiento M, Del Lupo E, Dell'Oste V, et al. Professional quality of life and mental health outcomes among health care workers exposed to Sars-Cov-2 (Covid-19). Int J Environ Res Public Health 2020;17(17):6180. DOI: 10.3390/ijerph17176180.
13. Sprang G, Clark JJ, Whitt-Woosley A. Compassion fatigue, compassion satisfaction, and burnout: factors impacting a professional's quality of life. J Loss Trauma 2007;12(3):259–280. DOI: 10.1080/15325020701238093.
14. Zhang Y ying, Zhang C, Han XR, Li W, Wang Y lei. Determinants of compassion satisfaction, compassion fatigue and burn out in nursing. Medicine (Baltimore). 2018;97(26):e11086. DOI: 10.1097/MD.0000000000011086.
15. El-Shafei DA, Abdelsalam AE, Hammam RAM, Elgohary H. Professional quality of life, wellness education, and coping strategies among emergency physicians. Environ Sci Pollut Res 2018;25(9):9040–9050. DOI: 10.1007/s11356-018-1240-y.
16. Bhatia G, Sharma P, Pal A, Parmar A. The silent epidemic: Death by suicide among physicians. Asia-Pac Psychiatry Off J Pac Rim Coll Psychiatr 2023;15(1):e12522. DOI: 10.1111/appy.12522.
17. Sunil R, Bhatt MT, Bhumika TV, Thomas N, Puranik A, Chaudhuri S, et al. Weathering the storm: psychological impact of COVID-19 pandemic on clinical and nonclinical healthcare workers in India. Indian J Crit Care Med Peer-Rev Off Publ Indian Soc Crit Care Med 2021;25(1):16–20. DOI: 10.5005/jp-journals-10071-23702.
18. Han JL, Pappas TN. A review of empathy, its importance, and its teaching in surgical training. J Surg Educ 2018;75(1):88–94. DOI: 10.1016/j.jsurg.2017.06.035.
19. Fennern E, Sur MD. Surgical Empathy. In: Lonchyna VA, Kelley P, Angelos P, editors. Difficult Decisions in Surgical Ethics: An Evidence-Based Approach [Internet]. Cham: Springer International Publishing; 2022 [cited 2023 Feb 9]. pp. 131–43. (Difficult Decisions in Surgery: An Evidence-Based Approach). DOI:10.1007/978-3-030-84625-1_10.
20. Bhatia G, Shetty JV. Trends of change in empathy among Indian medical students: a two-year follow-up study. Indian J Psychol Med 2023;45(2):162–167. DOI: 10.1177/02537176221104688.
21. Shoji K, Lesnierowska M, Smoktunowicz E, Bock J, Luszczynska A, Benight CC, et al. What comes first, job burnout or secondary traumatic stress? Findings from two longitudinal studies from the U.S. and Poland. PLOS One 2015;10(8):e0136730. DOI: 10.1371/journal.pone.0136730.
22. Narukurthi P, Macharapu R, Mallepalli PKR, Babu RS. The relationship between professional quality of life and general health of postgraduates in a Tertiary Care Hospital. Arch Ment Health 2018;19(2):141. DOI: 10.4103/AMH.AMH_32_18.
23. Galiana L, Oliver A, Arena F, De Simone G, Tomás JM, Vidal-Blanco G, et al. Development and validation of the Short Professional Quality of Life Scale based on versions IV and V of the Professional Quality of Life Scale. Health Qual Life Outcomes 2020;18(1):364. DOI: 10.1186/s12955-020-01618-3.
24. Sharma MK, Hallford DJ, Anand N. Confirmatory factor analysis of the depression, anxiety, and stress scale among Indian adults. Indian J Psychiatry 2020;62(4):379–383. DOI: 10.4103/psychiatry.IndianJPsychiatry_313_19.
25. Moya E, Larson LM, Stewart RC, Fisher J, Mwangi MN, Phiri KS. Reliability and validity of depression anxiety stress scale (DASS)-21 in screening for common mental disorders among postpartum women in Malawi. BMC Psychiatry 2022;22(1):352. DOI: 10.1186/s12888-022-03994-0.
26. Bhagwagar H. Secondary trauma, burnout and resilience among mental health professionals from India: a review of research. Asian J Psychiatry 2022;76:103227. DOI: 10.1016/j.ajp.2022.103227.

27. Khasne RW, Dhakulkar BS, Mahajan HC, Kulkarni AP. Burnout among healthcare workers during COVID-19 pandemic in India: results of a questionnaire-based survey. Indian J Crit Care Med Peer-Rev Off Publ Indian Soc Crit Care Med 2020;24(8):664–671. DOI: 10.5005/jp-journals-10071-23518.
28. Kader N, Elhusein B, Chandrappa NSK, Nashwan AJ, Chandra P, Khan AW, et al. Perceived stress and post-traumatic stress disorder symptoms among intensive care unit staff caring for severely ill coronavirus disease 2019 patients during the pandemic: a national study. Ann Gen Psychiatry 2021;20(1):38. DOI: 10.1186/s12991-021-00363-1.
29. Kanmani TR, Thimmappur RM, Birudu R, Reddy N K, Raj P. Burden and psychological distress of intensive care unit caregivers of traumatic brain injury patients. Indian J Crit Care Med Peer-Rev Off Publ Indian Soc Crit Care Med 2019;23(5):220–223. DOI: 10.5005/jp-journals-10071-23164.
30. Kamhi SV, Begunova Y, Tang S, Rodríguez Jiménez RS, Soybel DI. Clinical empathy for the surgical patient: lessons from W.H. Auden's Prose and Poetry. Ann Surg Open 2021;2(3):e083. DOI: 10.1097/AS9.0000000000000083.
31. Von Rueden KT, Hinderer KA, McQuillan KA, Murray M, Logan T, Kramer B, et al. Secondary traumatic stress in trauma nurses: prevalence and exposure, coping, and personal/environmental characteristics. J Trauma Nurs 2010;17(4):191–200. DOI: 10.1097/JTN.0b013e3181ff2607.
32. Jenkins SR, Baird S. Secondary traumatic stress and vicarious trauma: a validational study. J Trauma Stress 2002;15(5):423–432. DOI: 10.1023/A:1020193526843.