

# Linking PTSD with Empathy in Hospital Staff: A cross-sectional study focusing on Surgical Department in Iraqi Hospitals

Ali Abdulhussain Fadhil<sup>1</sup>, Ali Hamid AbdulHussein<sup>2</sup>, Mohammed Abdulkreem Salim<sup>3</sup>, Ahmed Ali Amir<sup>4</sup>, Sarmad Dheyaa Noori<sup>5</sup>, **Bashar Shaker Mahmood<sup>6</sup>**, Nidhal Hassan Sayyid<sup>7</sup>, Sarah A. Hamood<sup>8</sup>, Wissam Hamid Al-janabi<sup>9</sup>

<sup>1</sup> College of Medical Technology/ Medical Lab techniques, ; Al-Farahidi University/Iraq

<sup>2</sup> Department of Pharmaceutics, College of Pharmacy, University of Al-Ameed, Karbala, Iraq

<sup>3</sup> Al-Manara College For Medical Sciences/ (Maysan)/Iraq

<sup>4</sup> Department of Medical Laboratories Technology, / AL-Nisour University College/ Baghdad/ Iraq

<sup>5</sup> Pharmaceutical Chemistry Department, College of Pharmacy, Al-Ayen University, Thi-Qar, Iraq

<sup>6</sup> Department of Anesthesia Techniques, AlNoor University College, Nineveh, Iraq

<sup>7</sup> College of pharmacy/ National University of Science and Technology, Dhi Qar, Iraq

<sup>8</sup> Department of Anesthesia Techniques, Al-Esraa University College, Baghdad, Iraq

<sup>9</sup> Department of Dentistry, Al-Zahrawi University College, Karbala, Iraq

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## ABSTRACT

There is a growing concern about the impact of occupational stressors on the well-being of healthcare professionals, especially in critical and challenging departments such as surgery. The study aimed to investigate the prevalence and risk factors of compassion fatigue, compassion satisfaction, and secondary traumatic stress among surgeons and nurses in the surgical department in Iraqi hospitals. A sample of 336 surgeons and nurses from four general hospitals in Basra, Iraq, was selected through convenience sampling. Data were analyzed through multiple linear regression analysis. The study's results indicated medium levels of compassion satisfaction, burnout, and secondary traumatic stress. The findings showed that negative coping strategies such as substance use, denial, distraction, and disengagement in work reduce compassion satisfaction, whereas positive coping strategies increase compassion satisfaction. The study's findings provide valuable insights into the risk factors. The study's findings indicate the high prevalence of compassion fatigue and secondary traumatic stress among surgeons and nurses in Iraqi hospitals. The hospital's senior management and healthcare departments must implement positive interventions and coping strategies to support and increase the occupational quality of life in the surgical department in Iraqi hospitals.

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## Introduction

People who experience horrific, surprising incidents may develop post-traumatic stress disorder (PTSD). The main drivers of PTSD are emotional stressors that have been linked with PTSD in the past as well[1]. Anxiety is common before, during, and afterward, a horrific tragedy. The body changes as a result of anxiety in numerous ways that help the body fight itself or escape a threat. Two-thirds of young people experience trauma throughout their developmental years, yet many acquire PTSD as a consequence[2]. People who have been through trauma often have a range of symptoms afterward. Some people will gradually get better over time, but others may continue to

experience problems. This might be because they have PTSD. People with PTSD might feel anxious or afraid even when not in danger. Post-traumatic stress disorder (PTSD), a persistent and often severe psychiatric disorder, can be driven by a horrible life incident, such as a military war, natural catastrophes, physical molestation, or the sudden loss of a loved one [3]. For effective delivery and treatment, the likelihood of post-traumatic stress disorder (PTSD) must be determined quickly. The most common psychopathy effect of horrific memories is post-traumatic stress disorder (PTSD). Chronic PTSD is persistent, crippling, and often untreatable. Early PTSD symptoms can accurately predict persistent PTSD, although they are not precise. Over 70% of

those who exhibit them get a reduction in symptoms, while just a few initially asymptomatic victims experience postponed PTSD[4].

After a horrific incident, interactions with close relatives and friends are frequently particularly challenging and complex. It is generally established that contacts among trauma survivors with post-traumatic stress disorder (PTSD) and close relatives and friends, in addition to the acceptance of interpersonal support by sufferers, play an essential role in the absorption of the stressful incident. These advantages, nevertheless, may be diminished or eliminated in PTSD patients who frequently exhibit deficits in psychological relationships and issues relating to close friends and family members, such as spouses. Lowered empathy can affect relationships in a variety of ways. Post-traumatic stress disorder (PTSD) is one of the most common adverse psychological effects that sufferers of workplace violence experience, along with sadness, anxiety, and exhaustion. Healthcare personnel who endure verbal abuse have low empathy for patients and incur pressure while delivering medical services can be used to build practical therapy approaches and policies [5]. Given that it is customary for healthcare workers (HCWs) to experience violence at work as a consequence of their employment, they frequently underreport workplace violence.

Numerous studies have shown that the loss of independence, isolation from dear ones, ambiguity about the disease's prognosis, and unease have detrimental psychological effects on human health. Tragic occurrences like suicide, psychiatric disorder, addictions, and self-harm could result from this misery[6-8]. Due to their excessive workloads and elevated anxiety levels brought on by the crisis, healthcare professionals (HPs) appear to be the most impacted[9]. Dealing with trauma survivors can cause healthcare practitioners to experience unpleasant side effects. One of the critical risk factors for medical proficiency and outcomes of patients is empathy. Healthcare providers are partially equipped to handle the mental stress of seeing patients suffer and die up close. Frontline healthcare staff may find it exceedingly difficult to perform their duties due to PTSD symptoms. Employers and organizations must proactively offer evidence-based care to recover and retain professional healthcare employees. According to a study, some nurses who worked in the conflicts in Iraq and Afghanistan went through post-traumatic growth. Medical practitioners must be aware of their susceptibility to trauma and the possibility of developing PTSD when caring for victims[10]. Health professionals tried to develop an emotional bond with patients during the pandemic. In a situation where they are viewed as heroes, professionals might feel incapable of managing their own emotions and those of others. They might as well save lives and offer emotional support, despite likely experiencing the same anxiety and fear as everyone else. This disorder has the potential to cause significant emotional distress.

The main aim of this cross-sectional study is to determine the prevalence and factors in accordance with compassion fatigue, satisfaction, and secondary traumatic stress among healthcare professionals in surgical department hospitals in Iraq.

The literature is reviewed in section 2. In section 3, the research technique is covered before the conclusions. The study's findings are explored, and its conclusion offers applications and suggestions for the future.

## Literature Review

An unmanageable danger to a person's existence or physical integrity is typically present in traumatic events, which can take the shape of violence, sexual misconduct, burglary, terrorist assaults, natural catastrophes, or other events. This illness is categorized as "emotional numbness," which is the inability to feel anything. Some people may have post-traumatic signs of stress while merely having an indirect engagement in a traumatic encounter, and not each possibly traumatic incident would have lengthy physical and mental repercussions on the afflicted person. Traumatic events have the potential to disturb interdependent reality. A feeling of disassociation, separation or a sense of isolation is frequently mentioned in tales of post-traumatic suffering. The main contributor to pain for the traumatized person is the perception that they are incapable of building deeper relationships with others. Trauma can profoundly alter a person's perspective of the world, oneself, and others. It affects the person's perspective of another person and their capacity for empathy rather than being a condition of the inner person. It is interdependent psychopathy in this respect. Empathy is thought of as a way of perceiving. It allows people to comprehend the mental state of someone else. Despite being accepted for granted in "typical" situations, this way of experience is, in reality, subject to disruptions. When someone has Post-traumatic stress, they may find it difficult to sympathize with anyone else or to see them as just another person with whom they can interact.[11-14] Evidence suggests that PTSD sufferers may have trouble empathizing because they find it hard to feel closeness and compassion and occasionally feel detached from themselves. Not only does EN appear to be essential for the emergence and persistence of post-traumatic manifestations, but also the impairment of self-regulation. Furthermore, less compassion in PTSD patients may be an unintentional way to cope developed by the nervous system that keeps the person from being overtaken by difficult circumstances. There is still disagreement about whether a lack of empathy is a potential condition for PTSD or a result of its manifestations. Additionally, it is projected that individuals with higher empathy abilities would be more disturbed during conflicts, such as troops during the war, and more likely to exhibit PTSD signs than individuals with lower empathy levels.[14, 15] Another example could be given for healthcare professionals here. Due to their involvement in patients' suffering and feelings of empathy for them, healthcare workers who assist those who have experienced trauma and anguish develop traumatic memories. The term "secondary traumatic stress" describes the unfavorable emotion brought on by the traumatic recollections created by sensitivity to other individuals' suffering and empathy with other people's tragic occurrences. Secondary traumatic stress indicators include emotional and mental distress. These professionals try to minimize their engagement in order to protect themselves, which lessens empathy and awareness of other people's pain and fosters disregard for humanistic treatment. Hence it can be said that their empathic feelings made them more vulnerable to experiencing traumatic stress, which also reduced their compassion and sympathy. The suppression of feelings further persists in their traumatic stress[16]. On the other hand, some studies found that higher amounts of affective and cognitive empathy may help lessen the correlation between emotional impairments and post-traumatic indicators in trauma

encounters.[17] Since empathy is now regarded as a multifaceted notion that includes reactions in both the cognitive and emotive areas. The term “cognitive empathy” relates to recognizing others’ emotional conditions. Comprehension is said to be natural and dependent on one’s capacity to adopt the viewpoint of another. In comparison, affective empathy entails feeling another person’s emotions metaphorically. Furthermore, reacting in this area entails an emotional condition that promotes social ties and the display of support instead of just experiencing similar emotions that both parties share, such as regret in response to another’s admission of guilt.[18]

The exact effects of post-traumatic aggressiveness, restlessness, hyper-arousal, shock, concentration issues and sleep disturbances on overall social performance are still being studied. Findings also suggested that the relationship between arousal-reactivity and impaired interpersonal functioning can be reduced by affective empathy. Strong correlations between arousal reactivity and decreased performance for individuals with weak to medium degrees of empathic reaction to the highly affective picture have also been shown by studies. There is a chance that affective empathy can protect long-term social functioning from the negative effects of arousal-reactivity in emotionally charged settings. It is crucial to remember, too, that the data’s evidence for buffering impacts was restricted to individuals with substantially high emotional empathy.[17, 19] However, the studies mainly used self-reported research instruments.

Further, the respondents of some studies were limited to English and non-Hispanic women. Specific cultures and genders could have specific impacts on the results. For instance, research shows that women are usually more empathetic than men. Hence further research is required with balanced gender respondents and within the context of different cultures to generalize the results.

## Method

### Study Design

A cross-sectional survey was conducted in the present study. For this study, convenience sampling was carried out, and participants (including surgeons and nurses) were selected from the surgical department of four general hospitals in Basra, Iraq. Essential inclusion criteria were determined for this study, including (a) qualification certificates of nurses and surgeons, (b) experience of at least one year in the surgical department, and (c) the selected healthcare professionals must speak Iraqi Arabic. However, the surgeons and nurses in training and were interns were not included in this study.

For this study, multiple linear regression analysis was used. The number of independent variables was 26 for this study. Based on the attrition rate (20%), 336 individuals were selected for this study.

### Instruments

The following instruments were considered for this study:

- *Work-related and Demographics Characteristics*

The demographics and work-related characteristics of selected individuals included their age, gender, educational level, experience years, and professional title.

- *Life Scale: Professional Quality (Pro-QoL)*

This scale was used for measuring compassion fatigue and satisfaction. It includes 3 subscales: burnout, compassion satisfaction, and secondary traumatic stress. Therefore, secondary traumatic stress and burnout were considered to measure compassion fatigue. It includes 30 items. In order to measure these items, a “5-point Likert scale, ranging from 1 = never to 5 = always” was used. Every subscale having a 22 score was considered to be low[20]. In contrast, every subscale having a 23 to 41 score was considered to be medium, and a 42 score was stated as high. The Iraqi version of Pro-QoL was utilized for this research. The entire scale had Cronbach’s alpha ( $\alpha$ ) value of 0.715. However, Cronbach’s  $\alpha$  values for subscales were 0.911, 0.812, and 0.799.

- *Cope Style Questionnaire (CSQ)*

The brief version of the cope inventory questionnaire, CSQ “Brief CSQ”[21] was used in the study. It included 28 items that were created in association with transactional theory. For this purpose, 14 behavioral categories in coping with stress were determined. All of these strategies included two items each and were measured by using a “4-point Likert scale” ranging from 0 = “not at all” to 3 = “often.” The coefficient of Cronbach’s  $\alpha$  was 0.855 for this study.

- *CD-RISC-25*

The “Connor-Davidson Resilience Scale” (CD-RISC-25)[22] was used to determine resilience. The Iraqi version included 25 items focused on three subscales (optimism, strength, and tenacity). In order to measure these items, a “5-point Likert scale, ranging from 1 = never to 5 = always” was used. The Cronbach’s  $\alpha$  values for subscales were 0.967, 0.948, 0.934, and 0.714.

### Data Collection Procedure

For this research study, the data was collected via e-mail. Initially, a consent form was sent to every participant, who was guided regarding the study’s purpose. A total of 400 questionnaires were distributed, and an online survey was conducted. Three hundred seventy questionnaires were received. They were analyzed properly; the final sample selected for this study was 336. Approval from the ethical committee of the healthcare sector in Iraq was also taken before collecting the required data.

### Data Analysis

For the present study, statistical analysis was conducted. For this purpose, SPSS (version 25) was used. In order to describe compassion fatigue and satisfaction and demographics, descriptive statistics were utilized. “Shapiro–Wilk test” was used for determining normality. Mean, and standard deviation was also determined. For this study, t-test and one-way ANOVA were utilized. The correlation was examined using “Pearson correlation analysis,” and the significance level was set as  $p \leq 0.05$ .

## Results

This section includes the results in association with compassion fatigue (burnout (BO) and secondary traumatic stress (STS)), resilience, compassion satisfaction (CS), and coping strategies in the context of the present research study.

### Characteristics of Respondents

Table 1 shows the characteristics of the respondents. It has been

observed that 40.4% of the respondents were surgeons, while 59.5% were nurses from the surgical department in the selected hospitals. 159 of 336 respondents were 29 to 38 years older. About 58.3% of these respondents were male, and 41.6% were female. 38.9% of respondents had a Master's degree, and only

26.7% had a Doctorate degree. 41% of these respondents had an experience of 4 to 9 years, while only 8.9% of respondents had an experience of more than 17 years.

**Table 1:** Characteristics of respondents

Factors	Category	(N= 336) (n)	(%)
Profession	Surgeons	136	40.4
	Nurses	200	59.5
Age (years)	≤ 28	119	35.4
	29 to 38	159	47.3
	39 to 48	58	17.2
	≥ 49	44	13
Gender	Male	196	58.3
	Female	140	41.6
Education level	Bachelor's degree	115	34.2
	Master's degree	131	38.9
	Doctorate degree	90	26.7
Experience years in the surgical department (years)	≤ 4	115	34.2
	4.2 to 9	140	41.6
	10 to 16	51	15.1
	≥ 17	30	8.9

**Compassion Fatigue (CF) and Satisfaction (CS) Prevalence**

Table 2 shows the prevalence of CF and CS for the selected surgeons and nurses in the context of the present study. Most of

the respondents for the present study fall into the medium level of CS, BO, and STS, with a score of 78.2%, 63%, and 75.5%, respectively.

**Table 2:** Compassion Fatigue (CF) and satisfaction (CS) prevalence

CS		CF								
		Surg.			Nur.			T		
		Surg.			Nur.			T		
L	(n)	2	3	5	23	101	124	14	63	77
	(%)	2.12	1.2	1.4	24.7	41.5	36.9	14.8	26	22.9
M	(n)	78	185	263	70	142	212	78	176	254
	(%)	82.9	76.4	78.2	75.2	58.4	63	82.9	72.7	75.5
H	(n)	14	54	68	0	0	0	2	3	5
	(%)	14.8	22.3	20.2	0	0	0	2.1	1.2	1.4
T	(n)	94	242	336	93	243	336	94	242	336
	(%)	100	100	100	100	100	100	100	100	100

CS= compassion satisfaction; CF= compassion fatigue; H= high; M= medium; L= low; Surg.= surgeons; Nur= nurses; T= total; BO= burnout; STS= secondary traumatic stress

**One-ANOVA Test**

Table 3 shows the results of the "one-way ANOVA test." The

values obtained from this test showed no statistical significance, as the value of p was found to be more than 0.05 for all cases.

**Table 3:** One-ANOVA test

Factors	Category	CS			CF					
		M±SD	t/F	p	BO			STS		
					M±SD	t/F	p	M±SD	t/F	p
Profession	Surgeons	35.33 ± 6.38	-1.076	0.284	26.87± 4.91	0.256	0.082	26.83± 5.78	1.472	0.143
	Nurses	36.18 ± 6.89			25.82 ± 5.11			25.83 ± 5.57		
Age (years)	≤ 28	35.98 ± 6.61	6.236	0.000*	25.94 ± 5.44	1.386	0.248	25.91 ± 6.07	1.601	0.188
	29 to 38	35.95 ± 7.24			25.91 ± 4.65			25.89 ± 5.41		

	39 to 48	36.25 ± 6.17			26.48 ± 5.07			26.62 ± 5.27		
	≥ 49	34.78 ± 4.18			29.16 ± 5.82			28.68 ± 5.68		
Gender	Male	34.88 ± 7.06	-1.178	0.241	27.16 ± 5.26	1.513	0.132	26.63 ± 6.59	0.676	0.501
	Female	36.13 ± 6.71			25.95 ± 5.02			26.02 ± 5.48		
Education level	Bachelor's degree	36.48 ± 6.63	0.912	0.435	25.51 ± 4.81	0.451	0.719	24.86 ± 5.88	1.192	0.314
	Master's degree	34.98 ± 6.73			26.52 ± 5.23			26.25 ± 6.28		
	Doctorate degree	37.31 ± 5.76			26.66 ± 4.83			27.58 ± 4.61		
Experience years in the surgical department (years)	≤ 4	34.64 ± 5.88	3.964	0.004*	26.91 ± 4.68	1.973	0.097	26.37 ± 5.72	0.674	0.612
	4.2 to 9	37.63 ± 7.59			24.94 ± 5.13			25.42 ± 5.32		
	10 to 16	38.56 ± 8.01			25.25 ± 5.61			27.15 ± 6.52		
	≥ 17	38.01 ± 5.35			25.87 ± 4.78			25.72 ± 4.93		

CS= compassion satisfaction; CF= compassion fatigue; BO= burnout; STS= secondary traumatic stress; M= mean

#### Correlation between CF, CS, and Resilience

The correlation between CF, CS, and resilience is observed in table 4. The results showed that CS, STS, resilience, and coping styles significantly correlated. In the case of coping styles, CS was significantly correlated to planning, acceptance, instrumental support use, self-distraction, and positive reframing. CS was correlated with denial, substance use, and

behavioral disengagement negatively. Burnout was positively correlated with every coping style instead of self-distraction. STS was also correlated with every coping style instead of instrumental support use. All resilience subscales were positively correlated with CS ( $p < 0.01$ ) but insignificantly correlated with burnout and STS.

**Table 4:** Correlation between CF (BO & STS), CS, and Resilience

Variables	CS	CF (BO)	CF (STS)
	<i>r</i>	<i>r</i>	<i>r</i>
<b>Coping styles</b>			
AC	0.517**	-0.463**	-0.153**
Plan.	0.352**	-0.375**	0.056
ISU	0.282**	-0.113*	0.092
ESU	0.072	0.176**	0.292**
PR	0.544**	-0.458**	-0.133*
Rel.	0.011	0.223**	0.297**
Accep.	0.502**	-0.394**	-0.091**
Hu.	-0.139*	0.345**	0.381**
Vent.	0.013	0.155**	0.306**
BD	-0.298**	0.536**	0.467**
Den.	-0.193**	0.418**	0.502**
SU	-0.233**	0.455**	0.417**
SB	-0.082	0.354**	0.426**
SD	0.198**	0.022	0.265**
<b>Resilience</b>			
Ten.	0.634**	-0.562**	-0.227**
Stren.	0.685**	-0.618**	-0.284**
Opt.	0.548**	-0.486**	-0.188**

AC= active coping; PR= positive reframing; Stren= strength; opt= optimism; ISU= instrumental support use; ESU= emotional support use; Rel= religion; Accep= acceptance; Vent= venting; BD= behavioral disengagement; SA= substance abuse; SB= self-blame; SD= self-destruction; Ten= tenacity



## Regression Analysis

Table 5 shows the results of the multiple regression analysis. It shows that strength, active coping, and positive reframing were significantly associated with CS, as the value of p was less than

0.05. Self-blame and substance abuse were also associated with burnout positively, as the value of p was less than 0.05. Finally, self-blame, denial, strength, venting, and substance abuse were positively associated with STS.

**Table 5:** Multiple linear regression

Variables	B	SB	b	t	P	R2	Adjusted R2	F	P
CS						0.512	0.487	20.897	<0.002
Constant	10.634	2.619	–	4.064	0.001				
AC	0.805	0.298	0.156	2.715	0.008				
PR	0.654	0.322	0.125	2.045	0.043				
Stren.	0.328	0.125	0.278	2.637	0.008				
BO						0.478	0.452	18.224	<0.0011
Constant	32.671	1.425	–	22.948	0.001				
SU	0.474	0.189	0.138	2.515	0.013				
SB	0.543	0.204	0.138	2.668	0.009				
STS						0.403	0.377	15.489	<0.0012
Constant	21.278	1.692	–	12.585	0.0001				
Vent.	0.585	0.241	0.142	2.439	0.016				
Denial	1.173	0.249	0.282	4.723	0.001				
SU	0.475	0.224	0.125	2.147	0.034				
SB	0.603	0.242	0.138	2.506	0.014				
Stren.	-0.238	0.115	-0.241	-2.075	0.038				

AC= active coping; PR= positive reframing; Stren= strength; Vent= venting; SA= substance abuse; SB= self-blame; SD= self-destruction; Ten= tenacity

## Discussion

The present study evaluated the prevalence and factors, including compassion fatigue, compassion satisfaction, and secondary traumatic stress (STS) among surgeons and nurses in the surgical department in Iraqi hospitals. The results showed that the prevalence rates of compassion satisfaction, exhaustion, and STS among Iraqi surgeons and nurses in the surgical department are 78.2%, 63%, and 75.5%, respectively. Compared to previous studies, our findings showed similar results regarding the prevalence of STS and fatigue among surgeons and nurses[23, 24]. Healthcare staff in the surgical department are exposed to stressful situations and complicated medical procedures that increase the likelihood of secondary trauma stress. This is confirmed by previous studies that surgeons and nurses face challenges during surgical procedures, increasing their fatigue and stress levels [25, 26]. Surgeons and nurses must deal with and care for traumatized patients, which can be exhausting and draining[27]. Research has also elaborated that high-risk surgeries and life-threatening conditions induce higher stress levels among surgeons and amplify trauma exposure[26, 28].

The study's results revealed a significant impact of compassion fatigue, burnout, and STS levels on nurses and surgeons. Nurses in the surgical department have to handle complicated situations and emergency calls and provide support for critically ill patients, increasing compassion satisfaction[29]. However, other studies have shown that surgical nurses experience greater compassion fatigue than satisfaction[30]. The prevalence of secondary traumatic stress in surgical nurses is higher than fatigue[29]. Furthermore, there is a shortage of qualified oncologists, medical physicians, and surgeons[31], which increases the pressure on current surgeons and nurses in Iraqi hospitals. The surgical procedures are intricate and may increase

the stress levels of surgeons and nurses during the procedures[26]. Studies have discussed medical errors, complications, and deaths of patients increase the risk of STS among doctors and nurses[32, 33]. During the pandemic, surgeons in the neurosurgeon department were burdened with increased stress due to increased workload, critical conditions of patients, and numerous deaths every day, which caused STS[33].

Furthermore, the higher prevalence of compassion fatigue and STS can be accounted for by the higher number of surgeries performed in a day is associated with increased fatigue and traumatic stress. The exposure to stressful situations and traumatized patients significantly increases with the increased number of surgeries performed, leading to secondary traumatic stress[34]. Similarly another study also revealed that surgeons in the pediatric unit exposed to working long hours with trauma patients and increased frequency of on-call duties experience burnout and compassion fatigue[35]. Long working hours result in exhaustion among nurses due to lack of sleep leading to reduced compassion satisfaction[36]. Previous research has shown that nurses spend much more time with patients, resulting in increased compassion fatigue and secondary traumatic stress[37]. On the other hand, surgeons are tasked with making crucial decisions and performing critical and intricate surgical procedures that directly impact the patient's life. Therefore, the burden of lawsuits, death of a patient, and complications lie with the surgeons[26, 38].

The coping strategies of surgeons and nurses in Iraqi hospitals were also analyzed. It was revealed that resilience positively relates to compassion satisfaction, whereas no significant association with burnout and STS was observed. Compassion satisfaction is reduced by using substances, being in denial, and disengaging with work. This is confirmed by existing literature that disengagement is linked with fatigue among surgeons,

which reduces compassion satisfaction [39]. Instrumental support use, positive reframing, planning, and acceptance were positively related to compassion satisfaction. Self-distraction was positively linked with burnout. Previous studies have found that positive reframing and strategic planning are useful in reducing burnout and stress [40]. A study conducted in the United Kingdom revealed that self-distraction was the most adopted coping strategy [41]. Surgeons and nurses are exposed to psychological stress and traumatic conditions of patients, which negatively impact their health and increase the likelihood of developing traumatic stress disorders. The prevalence of stress in healthcare can be reduced with effective programs to mitigate risks and provide supportive tools to enhance coping strategies among surgeons and nurses in Iraq.

### Conclusion

Stress evaluation and regulation are critical for healthcare professionals in the surgical department as they are exposed to traumatic situations daily. The current study evaluated the association between compassion fatigue, compassion satisfaction, and secondary traumatic stress among surgeons and nurses in the surgical department in Iraqi hospitals. Results showed a medium prevalence of compassion fatigue, compassion satisfaction, and secondary traumatic stress among the healthcare professionals in the surgical department of Iraqi hospitals. Furthermore, our study assessed the coping styles among surgeons and nurses. Compassion satisfaction increases with planning, accepting, and positively reframing the situation. Substance use, denial, distraction, and behavior disengagement significantly lower compassion satisfaction. However, self-distraction is positively linked with fatigue. Instrumental support use is found to be associated with secondary traumatic stress. Therefore, it can be observed that the prevalence of compassion fatigue and secondary traumatic stress is high among surgeons and nurses in Iraqi hospitals. Effective coping strategies are required to efficiently deal with the stress encountered in work-related tasks.

### Practical Implications

The study has provided theoretical knowledge to the existing literature. The study provides valuable insights into the risk factors for secondary traumatic stress, compassion satisfaction, and burnout. Working in the surgical department is stressful due to the pressure and intricate nature of the work. The study's findings are beneficial for healthcare professionals to develop effective strategies for coping and interventions, such as acceptance, positive reframing, and instrumental support use. Furthermore, substance use and disengagement practices should be identified and discouraged. Hospitals and healthcare institutions must create awareness of the risk factors and coping strategies to prepare professionals in case a stressful situation arises. Furthermore, surgical departments should prepare interventions to minimize compassion fatigue and burnout by promoting a culture of communicating and expressing grief. Furthermore, mental health promotion should be prioritized in Iraq, and assistance should be provided to healthcare professionals in need to improve their quality of life.

### Limitations and future research recommendations

The study has several limitations that should be highlighted. The study is limited in the generalizability of the results as a convenience sampling method was utilized in hospitals in Iraq.

Secondly, the research is based on cross-sectional data; therefore, it cannot be utilized to infer causality among the factors. Future research is required to conduct longitudinal studies that can develop the cause and effect of the relationship. Furthermore, the study does not consider any pre-existing mental health issues of the surgeons and nurses. It should be noted that the measures were self-reported, and the participants may have responded with a bias. Further research on the topic can adopt a qualitative analysis for a comprehensive and in-depth analysis of the concerns and stresses of surgeons and nurses in Iraq.

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