

Trauma surgeons experience compassion fatigue: A major metropolitan area survey

Lea Hoefer, MD, Leah C. Tatebe, MD, Purvi Patel, MD, Anna Tyson, MD, Samuel Kingsley, MD, Grace Chang, MD, Matt Kaminsky, MD, James Doherty, MD, and David Hampton, MD, MEng, FACS,
Chicago, Illinois

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

Accreditation

In support of improving patient care, this activity has been planned and implemented by CineMed and the American Association for the Surgery of Trauma. CineMed is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

AMA PRA Category 1 Credits™

CineMed designates this enduring material for a maximum of 1 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



JOINTLY ACCREDITED PROVIDER™
INTERPROFESSIONAL CONTINUING EDUCATION

Objectives

After reading the featured articles published in the *Journal of Trauma and Acute Care Surgery*, participants should be able to demonstrate increased understanding of the material specific to the article. Objectives for each article are featured at the beginning of each article and online. Test questions are at the end of the article, with a critique and specific location in the article referencing the question topic.

Disclosure Information

In accordance with the ACCME Accreditation Criteria, CineMed must ensure that anyone in a position to control the content of the educational activity (planners and speakers/authors/discussants/moderators) has disclosed all financial relationships with any commercial interest (termed by the ACCME as “ineligible companies”, defined below) held in the last 36 months (see below for definitions). Please note that first authors were required to collect and submit disclosure information on behalf of all other authors/contributors, if applicable.

Ineligible Company: The ACCME defines an “ineligible company” as any entity producing, marketing, selling, re-selling, or distributing health care goods or services used on or consumed by patients. Providers of clinical services directly to patients are NOT included in this definition.

Financial Relationships: Relationships in which the individual benefits by receiving a salary, royalty, intellectual property rights, consulting fee, honoraria, ownership interest (e.g., stocks, stock options or other ownership interest, excluding diversified mutual funds), or other financial benefit. Financial benefits are usually associated with roles such as employment, management position, independent contractor (including contracted research), consulting, speaking and teaching, membership on advisory committees or review panels, board membership, and other activities from which remuneration is received, or expected.

Conflict of Interest: Circumstances create a conflict of interest when an individual has an opportunity to affect CME content about products or services of a commercial interest with which he/she has a financial relationship.

The ACCME also requires that CineMed manage any reported conflict and eliminate the potential for bias during the session. Any conflicts noted below have been managed to our satisfaction. The disclosure information is intended to identify any commercial relationships and allow learners to form their own judgments. However, if you perceive a bias during the educational activity, please report it on the evaluation. All relevant financial relationships have been mitigated.

AUTHORS/CONTRIBUTORS

Lea Hoefer, Leah C. Tatebe, Intuitive, Proctoring payment, Proctor; Sharon Gautschi, Purvi Patel, Syker/Ethicon/Davol/Poly/Novo/ZimmerBiomet/KLS Martin/Medical Device Business Services, Travel/Food and Beverage, Travel stipend/Educational participant, Sharon Gautschi, Anna Tyson, Samuel Kingsley, Grace Chang, Matt Kaminsky, James Doherty, and David Hampton have nothing to disclose.

EDITOR-IN-CHIEF/DEPUTY EDITORS/ ASSOCIATE EDITORS

Conflict of Interest forms for all Journal of Trauma and Acute Care Editors have been supplied and are provided as Supplemental Digital Content (<http://links.lww.com/TA/D55>).

Claiming Credit

To claim credit, please visit the AAST website at <http://www.aast.org/> and click on the “e-Learning/MOC” tab. You must read the article, successfully complete the post-test and evaluation. Your CME certificate will be available immediately upon receiving a passing score of 75% or higher on the post-test. Post-tests receiving a score of below 75% will require a retake of the test to receive credit.

Credits can only be claimed online

Cost

For AAST members and Journal of Trauma and Acute Care Surgery subscribers there is no charge to participate in this activity. For those who are not a member or subscriber, the cost for each credit is \$25.

Questions

If you have any questions, please contact AAST at 800-789-4006. Paper test and evaluations will not be accepted.

| | |
|---------------------------|---|
| INTRODUCTION: | Compassion fatigue (CF), the physical, emotional, and psychological impact of helping others, is composed of three domains: compassion satisfaction (CS), secondary traumatic stress (STS), and burnout (BO). Trauma surgeons (TSs) experience work-related stress resulting in high rates of CF, which can manifest as physical and psychological disorders. We hypothesized that TSs experience CF and there are potentially modifiable systemic factors to mitigate its symptoms. |
| METHODS: | All TSs in a major metropolitan area were eligible. Personal and professional demographic information was obtained. Each participant completed six validated surveys: (1) Professional Quality of Life scale, (2) Perceived Stress Scale, (3) Multidimensional Scale of Perceived Social Support, (4) Adverse Childhood Events Questionnaire, (5) Brief Coping Inventory, and (6) Toronto Empathy Questionnaire. Compassion fatigue subscale risk scores (low, <23; moderate, 23–41; high, >41) were recorded. Linear regression analysis assessed the demographic and environmental factors association with BO, STS, and CS. Variables significant on univariate analysis were included in multivariate models to determine the independent influence on BO, STS, and CS. Significance was $p \leq 0.05$. |
| RESULTS: | There were 57 TSs (response rate, 75.4% [n = 43]; White, 65% [n = 28]; male, 67% [n = 29]). Trauma surgeons experienced CF (BO, 26 [interquartile range (IQR), 21–32]; STS, 23 [IQR, 19–32]; CS, 39 [IQR, 34–45]). The Perceived Stress Scale score was significantly associated with increased BO (coefficient [coef.], 0.52; 95% confidence interval [CI], 0.28–0.77) and STS (coef., 0.44; 95% CI, 0.15–0.73), and decreased CS (coef., –0.51; 95% CI, –0.80 to –0.23) ($p < 0.01$). Night shifts were associated with higher BO (coef., 1.55; 95% CI, 0.07–3.03; $p = 0.05$); conversely, day shifts were associated with higher STS (coef., 1.94; 95% CI, 0.32–3.56; $p = 0.03$). Higher Toronto Empathy Questionnaire scores were associated with greater CS (coef., 0.33; 95% CI, 0.12–0.55; $p < 0.01$). |
| CONCLUSION: | Trauma surgeons experience moderate BO and STS associated with modifiable system- and work-related stressors. Efforts to reduce CF should focus on addressing sources of workplace stress and promoting empathic care. (<i>J Trauma Acute Care Surg.</i> 2024;97: 183–188. Copyright © 2024 American Association for the Surgery of Trauma.) |
| LEVEL OF EVIDENCE: | Prognostic and Epidemiological; Level III. |
| KEY WORDS: | Trauma; surgeon; compassion; fatigue. |

Compassion fatigue (CF) is defined as an indifference or loss of empathy that develops from prolonged care of patients experiencing traumatic or stressful events. This psychological insult has been documented in nurses, physicians, mental health providers, and social workers who directly interact with patients.^{1–4} Compassion fatigue is consisted of three domains: burnout (BO), secondary traumatic stress (STS), and compassion satisfaction (CS).^{1,5,6}

Burnout, a state of physical or emotional exhaustion, is the most well-recognized domain. Those affected by BO experience a sense of reduced accomplishment, ineffectiveness, or depersonalization as a consequence of environmental or internal stressors.⁷ Burnout is a pervasive phenomenon, as environmental and internal stressors are often present for all individuals across a job setting.⁵ Secondary traumatic stress is a posttraumatic stress disorder

syndrome that develops as a result of exposure to traumatic or distressing events experienced by patients. Symptoms can include irritability, hypervigilance, exhaustion, and sleep disruption.^{5,8} Compassion satisfaction is an altruistic quality that describes feelings of self-appreciation and fulfillment resulting from caring for others. Compassion fatigue has an inverse relationship with CS and is thought to be protective against it.^{1,9,10}

This multifaceted syndrome manifests with physical (headaches, gastrointestinal disturbances, insomnia, and alcohol or drug dependence) and emotional (irritability, depression, anger, anxiety, and decreased attention) symptoms.^{5,9,11–13} These manifestations can contribute to increased absenteeism and high occupational turnover rates,^{14,15} to poor patient care delivery,^{1,6,16} and to increased rates of medical errors.^{17,18} Given BO is a pervasive symptom throughout every medical specialty, it cannot be excluded as a contributing factor to the rising US health care system cost. In 2022, these expenses were approximately \$20 billion.¹⁹ In addition, higher levels of CF have been linked to suicidal ideation.²⁰ As a result, CF has rapidly become a major concern for health care systems.

Our group has previously demonstrated that STS and BO are present across all emergency department occupational roles. As compared with nurses and emergency department technicians, attending physicians were found to have higher levels of CS and lower levels of STS. Conversely, moderate levels of BO and STS were seen in supportive staff with indirect clinical care roles such as environment service and registration staff, and public safety officers. The duration of clinical time or absent knowledge of a patient's outcome may result in increased CF.²¹ Prior studies of subspecialty surgeons in oncology, vascular, and plastic surgery have demonstrated that average rates of BO were between 20% and 40%, often with variation across surgical specialty and demographic groups.^{22–25} Notably, one study by the American College of Surgeons found that trauma surgeons

Submitted: August 14, 2023, Revised: November 1, 2023, Accepted: November 16, 2023, Published online: January 10, 2024.

From the Department of Surgery (L.H.), University of Chicago Medicine, Chicago, IL; Department of Surgery (L.C.T.), Northwestern University, Chicago, IL; Department of Surgery (P.P.), Loyola University Medical Center, Maywood, IL; Department of Surgery (A.T.), Northshore University Health System, Evanston, IL; Department of Surgery (S.K.), Advocate Health Care, Chicago, IL; Department of Surgery (G.C.), Mount Sinai Hospital, Chicago, IL; Department of Trauma and Burn Surgery (M.K.), John H. Stroger Jr. Hospital of Cook County, Chicago, IL; Department of Surgery (J.D.), Advocate Christ Medical Center, Chicago, IL; and Department of Surgery (D.H.), University of Chicago Medicine and Section of Trauma and Acute Care Surgery, Chicago, IL.

This study was presented at the 82nd Annual Meeting of the American Association for the Surgery of Trauma and Clinical Congress of Acute Care Surgery, September 20–23, 2023, in Anaheim, California.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text, and links to the digital files are provided in the HTML text of this article on the journal's Web site (www.jtrauma.com).

Address for correspondence: David Hampton, MD, MEng, FACS, Department of Surgery, University of Chicago Medicine and Biological Sciences, 5841 S Maryland Ave, MC 5033, Chicago, IL 60637; email: dhampton2@bsd.uchicago.edu.

DOI: 10.1097/TA.0000000000004223

(TSs) trended toward lower levels of CS, and female TSs had higher levels of BO.²⁶

To date, data on TSs and the potential factors influencing CF remain sparse. Therefore, we sought to describe the degree of BO, STS, and CS in TSs working at level 1 trauma centers across a major metropolitan area and elicit personal and professional factors associated with these three domains. We hypothesized that surgeons across all institutions would experience CF and that these syndromes would be associated with job-related rather than personal factors.

PATIENTS AND METHODS

We performed a cross-sectional survey of all TSs at seven Illinois Department of Public Health level 1 trauma centers within a single major metropolitan area. The trauma centers included academic and community-based hospitals that are geographically distributed throughout the city. The organizing center's institutional review board approval was obtained for this study (IRB 21-1426). The Checklist for Reporting of Survey Studies guideline was used to ensure proper reporting of methods, results, and discussion (Supplemental Digital Content, Supplementary Data 1, <http://links.lww.com/TA/D487>).

Participants were recruited over a 2-month period via email and completed an online survey through Research Electronic Data Capture (Research Electronic Data Capture consortium, Vanderbilt University).²⁷ Each institution was provided with a unique survey link. Response rates were monitored to ensure that duplicate submissions did not occur. Personal and professional demographic information was obtained including sex, race, years in practice, hours per week worked, number of clinical shifts per month, and participation in clinical, research, teaching, and administrative job roles. However, to protect individual participant identities, individual identifying information was not collected.

The Professional Quality of Life (Pro-QOL) survey was used to measure our primary outcomes: BO, STS, and CS. The Professional Quality of Life Scale, version 5 is a 30-question survey and is commonly used to quantify CF. Participants are asked to rate how often they experienced various workplace conditions or phenomena on a 5-point Likert scale. This provided a numerical score for each of the three domains.^{7,28} The scores are stratified as low (<23), moderate,²³⁻⁴¹ and high (>41) based on recommendations by the Professional Quality of Life Scale, version 5 publishers. Lower BO and STS scores are associated with lower CF. Conversely, a lower CS score is associated with higher CF.²⁸

In addition to the Pro-QOL survey, participants completed five additional validated surveys to measure personal and workplace factors that may be associated with the CF domains. First, the Perceived Stress Scale 10 (PSS-10) measured the degree to which individuals perceive stress in their personal and professional lives using a 10-item Likert scale questionnaire (rating the frequency which they experienced a particular statement from 1 [never] to 5 [very often]).²⁹ Next, the Multidimensional Scale of Perceived Social Support (MPSS) survey measured three domains of potential perceived social support—family, significant other, and friends.³⁰ The Adverse Childhood Events Questionnaire (ACEs) identified occurrences of historical childhood events known to adversely impact physical and mental

health.^{31,32} The Brief Coping Inventory (Brief Cope), which includes examples of both adaptive and maladaptive coping strategies, examined the extent to which respondents rely on three coping strategies: emotional, avoidant, and problem-focused coping.³³ Finally, the Toronto Empathy Questionnaire (TEQ) assessed empathy and has been validated across a wide range of populations including health care providers.³⁴⁻³⁶ It includes questions that cover emotional contagion, emotion comprehension, sympathetic physiological arousal, nonspecific altruism, emotional states, and the frequency of empathic response to generate a measure of one's response. Scores for all tools were generated using their published scoring systems.

Shapiro-Wilk tests were used to assess continuous variables for normality with a significance of $p > 0.05$ indicating normally distributed data. Once normality was confirmed, one-way analysis of variance was used to determine differences between institutions. Linear regression analysis identified associations between the CF domains and TSs' personal and professional demographic variables, institutional factors, and survey instrument scores. Variables significant on univariate analysis were included in multivariate models to determine their independent influence upon BO, STS, and CS. All statistical analyses were performed using R (R Foundation, Vienna, Austria).³⁷ Significance was $p \leq 0.05$.

RESULTS

There were 57 TSs within the metropolitan area. The final response rate was 75.4% ($n = 43$). Three of the 43 respondents completed demographic information but did not complete all survey instruments; therefore, they were not included in the BO, STS, or CS regression analysis. The majority of the participating TSs were White ($n = 28$ [65%]) and male ($n = 29$ [67%]). Most participants were engaged in clinical work ($n = 42$ [98%]) and teaching ($n = 34$ [79%]). Forty percent of the surgeons performed research. The majority of participants worked greater than 50 hours per week. Forty percent of TSs worked three to five night shifts per month, and an additional 30% worked six to seven night shifts per month (Table 1).

Participants demonstrated moderate BO (score, 26; interquartile range [IQR], 21–31) and moderate STS (score, 23; IQR, 19–32) (Table 2). Conversely, the participants reported a high-moderate CS (score, 39; IQR, 34–45). On multivariate regression, higher PSS-10 scores were associated with higher levels of BO (coefficient [coef.], 0.52; 95% confidence interval [CI], 0.28–0.77; $p < 0.001$) and STS (coef., 0.44; 95% CI, 0.15–0.73; $p = 0.006$) and decreased levels of CS (coef., –0.51; 95% CI, –0.80 to –0.23; $p = 0.001$). Working more night shifts in a month was associated with higher BO (coef., 1.55; 95% CI, 0.07–3.03; $p = 0.05$), whereas more day shifts were associated with higher STS (coef., 1.94; 95% CI, 0.32–3.56; $p = 0.03$). Higher TEQ scores were associated with greater CS (coef., 0.33; 95% CI, 0.12–0.55; $p = 0.005$) (Table 3). Univariate analysis of the Brief Coping Inventory and Multidimensional Scale of Perceived Support coping and interpersonal support scores, respectively, demonstrated that BO, STS, and CS were significant; however, they were not significant when multivariate regressions were performed. Adverse Childhood Events scores, sex, race, years in practice, and participation in job roles

TABLE 1. Job Characteristics of Attending TSs

| | n | % |
|--------------------------------------|----|----|
| Job roles | | |
| Clinical | 42 | 98 |
| Research | 17 | 40 |
| Teaching | 34 | 79 |
| Trauma center administration | 14 | 33 |
| Teaching/academic administration | 15 | 35 |
| Institutional service/administration | 16 | 37 |
| Years in practice | | |
| 1–2 | 7 | 6 |
| 3–5 | 5 | 12 |
| 6–10 | 12 | 28 |
| 11–15 | 7 | 16 |
| >15 | 12 | 28 |
| Average hours per week | | |
| 31–40 | 2 | 5 |
| 41–50 | 4 | 9 |
| 51–60 | 12 | 28 |
| >60 | 25 | 58 |
| Night shifts per month | | |
| 0–2 | 2 | 5 |
| 3–5 | 17 | 40 |
| 6–7 | 13 | 30 |
| 8–10 | 7 | 16 |
| >10 | 4 | 9 |
| Day shifts per month | | |
| 0–2 | 1 | 2 |
| 3–5 | 2 | 5 |
| 6–7 | 8 | 19 |
| 8–10 | 14 | 33 |
| >10 | 18 | 42 |

such as teaching, research, or administration were not significantly associated with any of our outcomes.

On analysis of variance analysis, the TEQ scores demonstrated an institutional effect ($p = 0.017$). Univariate linear regression demonstrated that the mean institutional TEQ score was associated with the number of trauma faculty (coef., 1.27;

TABLE 2. Survey Instrument Scores

| | Minimum | Q1 | Median | Q3 | Maximum |
|------------------------|---------|------|--------|-----|---------|
| ProQoL-5 | | | | | |
| BO | 12 | 21 | 26 | 31 | 38 |
| STS | 12 | 19 | 23 | 32 | 41 |
| CS | 28 | 34 | 39 | 45 | 50 |
| MPSS | 1.9 | 4.33 | 5.9 | 6.5 | 7 |
| PSS-10 | 0 | 12 | 19 | 23 | 32 |
| TEQ | 24 | 44 | 49 | 54 | 63 |
| Brief cope | | | | | |
| Emotion-focused coping | 12 | 23 | 26 | 30 | 37 |
| Problem-focused coping | 7 | 14 | 16 | 19 | 28 |
| Avoidant coping | 8 | 10 | 13 | 16 | 25 |

n = 40.

MPSS, Multidimensional Scale of Perceived Support.

TABLE 3. Factors Associated With BO, STS, and CS

| | Coef. | 95% CI | p |
|------------------------|-------|-----------|--------|
| BO | | | |
| PSS score | 0.52 | 0.28–0.77 | <0.001 |
| Night shifts per month | 1.55 | 0.07–3.03 | 0.05 |
| STS | | | |
| PSS score | 0.44 | 0.15–0.73 | 0.006 |
| Day shifts per month | 1.94 | 0.32–3.56 | 0.03 |
| CS | | | |
| PSS score | –0.51 | –0.57 | 0.001 |
| TEQ score | 0.33 | 0.12–0.55 | 0.005 |

95% CI, 0.38–2.17; $p = 0.04$). The same effect was not seen in the shift worked (day shift vs. night shift, $p = 0.25$) or PSS-10 scores ($p = 0.7$).

DISCUSSION

This is the first study to investigate CF in TSs practicing in a major metropolitan area. Our findings demonstrate that, regardless the institution and clinical practice, CF was present. Our results also suggest that there are potentially intervenable workplace and health care system factors, which could be leveraged to mitigate the CF experienced by care providers.

Burnout, the CF domain most commonly discussed, has received criticism for placing the focus on the individual. Building personal resilience has been the primary intervention. This individual-focused approach ignores adverse systems-based and environmental factors distressing health care workers. In our study, we did not see an association between factors that typically may be considered as contributing to one's resilience such as coping strategies, social support, or history of adverse childhood events with BO and STS. Rather, we found that perceived stress and the number of day and night shifts worked by TSs contributed to BO and STS.

Night shift work has been previously linked to worse mental health and disrupted circadian rhythms.^{38,39} The physical symptoms of circadian disruption can include sleep disturbances, decline in cognitive or work function, and worse mental health.³⁸ A recent meta-analysis that included more than 28,000 subjects across multiple industries found higher rates of mental health decline in shift workers and a higher incidence of depressive symptoms. It was hypothesized that, in addition to circadian rhythm disruption, night shift work posed a challenging obstacle to participating in daytime social and family activities, potentially leading to social isolation and poor mental health.³⁹ The link between night shift work and mental health syndromes has been demonstrated. A 2008 American College of Surgeons' study demonstrated that a higher number of night shifts per week was associated with higher BO.¹⁸ Analogously, a recent study investigating acute care surgery (ACS) shift work identified that the sleep interruptions associated with in-house call and decreased time between calls were also associated with BO.⁴⁰ The ACS model has become commonplace within academic and community hospitals. This all-encompassing surgeon as a solution to clinical coverage deficits may be adversely influencing their mental health.

High patient volume centers require 24-hour staffing regardless of their trauma designation. Defining a “full-time” ACS position has been elusive. Prior studies have identified disparate staffing and compensation models, and variations in operative trauma volume may drive the discrepancies between the current and potentially ideal solutions.⁴¹ While our study identified surgeons primarily in their roles as TSs, in actuality, most have a practice that also includes emergency general surgery and surgical critical care. During the evolutionary process to define an ACS full-time equivalent and refine the shift-work model, the association between clinical engagement and the development of BO and STS must be entertained. An equitable distribution of this workload among an adequate number of staff may help decrease the absolute number and frequency of psychological insults an individual may experience.

Among our study population, institutional TS staffing was directly associated with mean empathy score. Previous studies found that empathy was protective against CF and improved patient outcomes.^{42,43} Gleichgerricht and Decety⁴² studied more than 7,500 respondents using the Pro-QOL survey and the Interpersonal Reactivity Inventory. The Interpersonal Reactivity Inventory examines empathy through the domains of empathic concern, personal distress, and perspective taking. Higher CS was noted in participants with higher empathy and perspective, and lower distress.⁴² In a separate investigation, a systematic review of general practitioners found that higher levels of empathy were associated with higher patient satisfaction and improved outcomes.⁴³ Our TEQ survey results may be a product of physician recruitment or workplace environment. Institutions with an empathic culture may recruit additional staff with similar personalities to promote or accentuate the patient's experience.

Finally, the surgeons' perceived stress exacerbated all three CF domains. Our investigation did not determine a stressors' etiology; however, prior studies provided evidence that interpersonal workplace dynamics and common coping mechanisms can influence an individual's stress. A nursing study found that PSS-10 and BO scores were linked to incivility in the workplace and lack of supportive workplace environments.⁴⁴ Analogous factors may drive physician stress. Conversely, a study of intensive care unit nurses demonstrated that acceptance as a coping mechanism was associated with lower stress compared with coping behaviors such as disengagement or self-blame.⁴⁵ Improving workplace relationships, building a supportive and collegial culture, and encouraging positive coping mechanisms may help to decrease workplace stress and CF.

There are several limitations to our study. First, our response rate was 75%. The TS selection bias to complete the survey may have influenced our results. Nonrespondents may represent those with higher levels of BO and STS. They may be less engaged at work and reluctant to participate in research surveys. Therefore, our results could underestimate levels of BO and STS. Second, we did not collect institutional trauma patient volumes, common mechanisms of injury, or other patient demographics. These institutional factors could help support or refute our assumed associations with the CF domains. Lastly, while we were able to collect a sample of practicing TSs across a major metropolitan area, our results are specific to our city, which experiences a high rate of penetrating trauma and interpersonal violence. Ultimately, these results may not be generalizable to all trauma centers.

CONCLUSION

Trauma surgeons experience CF. Its outward presentation has been observed, underacknowledged, and largely accepted as common practice. Addressing institutional characteristics and cultures that promote CF may help mitigate its adverse effects. Regardless of ongoing research efforts, acceptance of this problem and supporting our colleagues should be the first step in its resolution.

AUTHORSHIP

L.H. participated in the literature search, study design, data collection, data analysis, data interpretation, manuscript writing, and critical revisions. L.C.T. participated in the data collection, data interpretation, and critical revisions. P.P. participated in the data collection, data interpretation, and critical revisions. A.T. participated in the data collection, data interpretation, and critical revisions. S.K. participated in the data collection, data interpretation, and critical revisions. G.C. participated in the data collection, data interpretation, and critical revisions. M.K. participated in the data collection, data interpretation, and critical revisions. J.D. participated in the data collection, data interpretation, and critical revisions. D.H. participated in the literature search, study design, data collection, data analysis, data interpretation, manuscript writing, and critical revisions.

ACKNOWLEDGMENTS

This project was a product of the Chicago Committee on Trauma C4STAR (Chicago for the Surgery of Trauma, Advocacy, and Research) collaborative.

DISCLOSURE

Conflicts of Interest: Author Disclosure forms have been supplied and are provided as Supplemental Digital Content (<http://links.lww.com/TA/D488>).

REFERENCES

1. Hunsaker S, Chen HC, Maughan D, Heaston S. Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. *J Nurs Scholarsh*. 2015;47(2):186–194.
2. Figley CR. Compassion fatigue: psychotherapists' chronic lack of self care. *J Clin Psychol*. 2002;58(11):1433–1441.
3. Alosaimi FD, Almufleh A, Kazim S, Aladwani B. Stress-coping strategies among medical residents in Saudi Arabia: a cross-sectional national study. *Pak J Med Sci*. 2015;31(3):504–509.
4. Alosaimi FD, Alawad HS, Alamri AK, Saeed AI, Aljuaydi KA, Alotaibi AS, Alotaibi KM, Alfari EA. Stress and coping among consultant physicians working in Saudi Arabia. *Ann Saudi Med*. 2018;38(3):214–224.
5. Hinderer KA, VonRueden KT, Friedmann E, McQuillan KA, Gilmore R, Kramer B, Murray M. Burnout, compassion fatigue, compassion satisfaction, and secondary traumatic stress in trauma nurses. *J Trauma Nurs*. 2014;21(4):160–169.
6. Sinclair S, Raffin-Bouchal S, Venturato L, Mijovic-Kondejewski J, Smith-MacDonald L. Compassion fatigue: a meta-narrative review of the healthcare literature. *Int J Nurs Stud*. 2017;69:9–24.
7. Figley C. Compassion fatigue as secondary traumatic stress disorder: an overview. Compassion fatigue: coping with secondary traumatic stress disorder in those who treat the traumatized. New York, NY: Taylor & Francis Group; 1995:1–20.
8. Baird K, Kracen AC. Vicarious traumatization and secondary traumatic stress: a research synthesis. *Couns Psychol Q*. 2006;181–188.
9. Zhang YY, Han WL, Qin W, Yin HX, Zhang CF, Kong C, Wang YL. Extent of compassion satisfaction, compassion fatigue and burnout in nursing: a meta-analysis. *J Nurs Manag*. 2018;26(7):810–819.
10. Walden M, Adams G, Annesley-Dewinter E, Bai S, Belknap N, Eichenlaub A, Green A, Huett A, Lea K, Lovenstein A, et al. The emotional cost of caring for others: one pediatric Hospital's journey to reduce compassion fatigue. *J Nurs Adm*. 2018;48(11):545–552.
11. Jonson C. Coping with compassion fatigue. *Nursing*. 1992;22(4):116–118, 120.
12. Coetzee SK, Klopper HC. Compassion fatigue within nursing practice: a concept analysis. *Nurs Health Sci*. 2010;12:235–243.

13. Wentzel D, Brysiewicz P. The consequence of caring too much: compassion fatigue and the trauma nurse. *J Emerg Nurs*. 2014;40(1):95–97.
14. Mattioli D, Walters L, Cannon EJ. Focusing on the caregiver: compassion fatigue awareness and understanding. *Med-Surg Nurs J*. 2018;323–328.
15. Sorenson C, Bolick B, Wright K, Hamilton R. An evolutionary concept analysis of compassion fatigue. *J Nurs Scholarsh*. 2017;49(5):557–563.
16. Kelly LA, Lefton C. Effect of meaningful recognition on critical care nurses' compassion fatigue. *Am J Crit Care*. 2017;26(6):438–444.
17. Hewitt DB, Ellis RJ, Chung JW, Cheung EO, Moskowitz JT, Huang R, Merkow RP, Yang AD, Hu YY, Cohen ME, et al. Association of surgical resident wellness with medical errors and patient outcomes. *Ann Surg*. 2021;274(2):396–402.
18. Shanafelt TD, Balch CM, Bechamps G, Russell T, Dyrbye L, Satele D, Collicott P, Novotny PJ, Sloan J, Freischlag J. Burnout and medical errors among American surgeons. *Ann Surg*. 2010;251(6):995–1000.
19. Li CJ, Shah YB, Harness ED, Goldberg ZN, Nash DB. Physician burnout and medical errors: exploring the relationship, cost, and solutions. *Am J Med Qual*. 2023;38(4):196–202.
20. Renkiewicz GK, Hubble MW. Secondary traumatic stress in emergency services systems (STRESS) project: quantifying and predicting compassion fatigue in emergency medical services personnel. *Prehosp Emerg Care*. 2022;26:652–663.
21. Bales M, DeAlmeida K, Oei CE, Hampton D, Bohr NL. Quantifying compassion fatigue in ancillary and clinical staff in an adult emergency department. *West J Emerg Med*. 2022;23(6):841–845.
22. Drudi LM, Mitchell EL, Chandra V, Coleman DM, Hallbeck MS, Mannoia K, Money SR, Brown KR, SVS Wellness Task Force. A gender-based analysis of predictors and sequelae of burnout among practicing American vascular surgeons. *J Vasc Surg*. 2022;75(4):1422–1430.
23. Guest RS, Baser R, Li Y, Scardino PT, Brown AE, Kissane DW. Cancer surgeons' distress and well-being. II: modifiable factors and the potential for organizational interventions. *Ann Surg Oncol*. 2011;18(5):1236–1242.
24. Qureshi HA, Rawlani R, Mioton LM, Dumanian GA, Kim JYS, Rawlani V. Burnout phenomenon in U.S. plastic surgeons: risk factors and impact on quality of life. *Plast Reconstr Surg*. 2015;135(2):619–626.
25. Sarosi A, Coakley BA, Berman L, Mueller CM, Rialon KL, Brandt ML, Heiss K, Weintraub AS. A cross-sectional analysis of compassion fatigue, burnout, and compassion satisfaction in pediatric surgeons in the U.S. *J Pediatr Surg*. 2021;56(8):1276–1284.
26. Wu D, Gross B, Rittenhouse K, Harnish C, Mooney C, Rogers FB. A preliminary analysis of compassion fatigue in a surgeon population: are female surgeons at heightened risk? *Am Surg*. 2017;83(11):1302–1307.
27. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377–381.
28. Stamm BH. *The Concise ProQoL Manual*. 2nd ed. ProQoL website. 2010. Available at: <https://proqol.org/proqol-manual>. Accessed August 24, 2022.
29. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983;24(4):385–396.
30. Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric characteristics of the multidimensional scale of perceived social support. *J Pers Assess*. 1990;55(3–4):610–617.
31. Finkelhor D, Shattuck A, Turner H, Hamby S. A revised inventory of adverse childhood experiences. *Child Abuse Negl*. 2015;48:13–21.
32. Finkelhor D, Turner HA, Shattuck A, Hamby SL. Prevalence of childhood exposure to violence, crime, and abuse: results from the National Survey of Children's exposure to violence. *JAMA Pediatr*. 2015;169(8):746–754.
33. Carver CS. You want to measure coping but your protocol's too long: consider the brief COPE. *Int J Behav Med*. 1997;4(1):92–100.
34. Spreng RN, McKinnon MC, Mar RA, Levine B. The Toronto empathy questionnaire: scale development and initial validation of a factor-analytic solution to multiple empathy measures. *J Pers Assess*. 2009;91(1):62–71.
35. Alhadidi MMB, Abdalrahim MS, Al-Hussami M. Nurses' caring and empathy in Jordanian psychiatric hospitals: a national survey. *Int J Ment Health Nurs*. 2016;25(4):337–345.
36. Kourmoussi N, Amanaki E, Tzavara C, Merakou K. The Toronto Empathy Questionnaire: Reliability and validity in a nationwide sample of Greek teachers. *Soc Sci*. 2017;6:1–14.
37. Team RCD. R: A Language and Environment for Statistical Computing. Vienna, Austria: R Foundation for Statistical Computing; 2010.
38. Boivin DB, Boudreau P, Kosmadopoulos A. Disturbance of the circadian system in shift work and its health impact. *J Biol Rhythms*. 2022;37(1):3–28.
39. Torquati L, Mielke GI, Brown WJ, Burton NW, Kolbe-Alexander TL. Shift work and poor mental health: a Meta-analysis of longitudinal studies. *Am J Public Health*. 2019;109(11):e13–e20.
40. Coleman JJ, Robinson CK, von Hippel W, Holmes KE, Kim J, Pearson S, Lawless RA, Hubbard AE, Cohen MJ. What happens on call doesn't stay on call. The effects of in-house call on acute care surgeons' sleep and burnout: results of the Surgeon Performance (SuPer) trial. *Ann Surg*. 2023;278(4):497–505.
41. Murphy PB, Coleman J, Karam B, Morris RS, Figueroa J, de Moya M. A national study defining 1.0 full-time employment in trauma and acute care surgery. *J Trauma Acute Care Surg*. 2022;92(4):648–655.
42. Gleichgerricht E, Decety J. Empathy in clinical practice: how individual dispositions, gender, and experience moderate empathic concern, burnout, and emotional distress in physicians. *PLoS One*. 2013;8(4):e61526.
43. Derksen F, Bensing J, Lagro-Janssen A. Effectiveness of empathy in general practice: a systematic review. *Br J Gen Pract*. 2013;63(606):e76–e84.
44. Oyeleye O, Hanson P, O'Connor N, Dunn D. Relationship of workplace incivility, stress, and burnout on nurses' turnover intentions and psychological empowerment. *J Nurs Adm*. 2013;43(10):536–542.
45. Alharbi H, Alshehry A. Perceived stress and coping strategies among ICU nurses in government tertiary hospitals in Saudi Arabia: a cross-sectional study. *Ann Saudi Med*. 2019;39(1):48–55.