

# Burnout, Compassion Fatigue, Compassion Satisfaction, and Secondary Traumatic Stress in Trauma Nurses

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## ABSTRACT

The relationship of burnout (BO), compassion fatigue (CF), compassion satisfaction (CS), and secondary traumatic stress (STS) to personal/environmental characteristics, coping mechanisms, and exposure to traumatic events was explored in 128 trauma nurses. Of this sample, 35.9% had scores consistent with BO, 27.3% reported CF, 7% reported STS, and 78.9% had high CS scores. High BO and high CF scores predicted STS. Common characteristics correlating with BO, CF, and STS were negative coworker relationships, use of medicinals, and higher number of hours worked per shift. High CS correlated with greater strength of supports, higher participation in exercise, use of meditation, and positive coworker relationships. Caring for trauma patients may lead to BO, CF, and STS; identifying predictors of these can inform the development of interventions to mitigate or minimize BO, CF, and STS in trauma nurses.

## Key Words

Burnout, Compassion fatigue, Compassion satisfaction, Secondary traumatic stress, Trauma nursing

Repeated exposure to the traumatic injuries of patients in a high-stress environment increases trauma nurses' risk for development of burnout (BO), compassion fatigue (CF), and secondary traumatic stress (STS). Compassion satisfaction (CS) is a positive outcome of caring for trauma patients. Little

is known about the relationship of caring for the trauma patients and BO, CF, CS, and STS in the trauma nursing population. Trauma nursing encompasses the care of a trauma patient through the entire continuum of care. This can include nurses working in specialty trauma departments that range from the emergency department (ED) through critical care and rehabilitation.<sup>1</sup>

## BURNOUT

Burnout encompasses emotional exhaustion, patient depersonalization, negative attitudes toward patients, and diminished feelings of personal and work accomplishments.<sup>2,3</sup> The nature of nursing work and exposure to the illness of others are related to the development of BO.<sup>4,6</sup> One study found that BO was contagious among nurses.<sup>7</sup> Studies have linked BO to the stress of the nursing work environment, workload, patient acuity, coping mechanisms, and years of nursing experience.<sup>8,9</sup> Younger, less experienced nurses, especially those within 2 years of graduation, were at an increased risk of developing BO.<sup>10</sup> A recent study of emergency, intensive care, nephrology, and oncology nurses revealed that approximately 82% of nurses surveyed exhibited moderate to high levels of BO.<sup>11</sup> In institutions where nurse BO was high, patient satisfaction was low.<sup>8</sup> In today's health care environment, this is highly relevant to nursing practice and sustainability. Patient satisfaction, as assessed by the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS), has financial implications for many hospitals receiving reimbursement from the Centers for Medicare and Medicaid Services (CMS).<sup>12</sup>

## Secondary Traumatic Stress and Compassion Fatigue

Nurses who provide care to trauma patients may develop STS.<sup>13</sup> Secondary traumatic stress is the development of posttraumatic stress disorder (PTSD) in health care workers and includes behaviors and emotions experienced as a result of exposure to another's trauma. Those experiencing STS may exhibit symptoms such as irritability, inability to concentrate, anger, intrusive or recurrent disturbing thoughts, and sleep disturbances.<sup>9,14</sup> Nurses

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The authors declare no conflicts of interest.

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DOI: 10.1097/JTN.0000000000000055

caring for patients with traumatic injuries such as motor vehicle crashes, violent crime, and other injuries are at an increased risk of developing posttraumatic stress-like syndromes.<sup>15</sup>

Intensive care unit (ICU) nurses who cared for highly complex critically ill patients had higher levels of traumatic stress than general medical-surgical nurses.<sup>16</sup> In a study of 67 ED nurses, 85% of them had at least one symptom of STS and 33% met the criteria for STS diagnosis.<sup>17</sup> Although the number of exposures to traumatic events increased with years of nursing experience, older emergency nurses had fewer symptoms of STS.<sup>18</sup> Few studies have explored the possibility of the development of STS in nurses who cared exclusively for trauma patients.<sup>19,20</sup>

Figley<sup>13</sup> proposed the use of the term “CF” to describe the effects of traumatic stress on health care workers working with trauma patients. Compassion fatigue is defined as a loss of a nurse’s ability to nurture patients.<sup>21</sup> Those who experience CF may not be able to adequately care for their patients.<sup>13,22</sup> Nurses identified caring for patients as a trigger for CF.<sup>6</sup> In a sample of 114 nurses, 84.4% had moderate to high levels of CF.<sup>11</sup> Gaps remain in the literature as to how and why CF occurs in nurses.<sup>9</sup> Compassion fatigue differs from BO in that it is a direct result of exposure to the trauma of others, whereas BO can develop without exposure to others trauma.<sup>23</sup> The terms “CF” and “STS” are often used interchangeably in the literature.<sup>17</sup> Secondary traumatic stress has been described as a component of CF.<sup>23</sup> For the purposes of this article, the concepts of CF and STS are addressed separately.

### Compassion Satisfaction

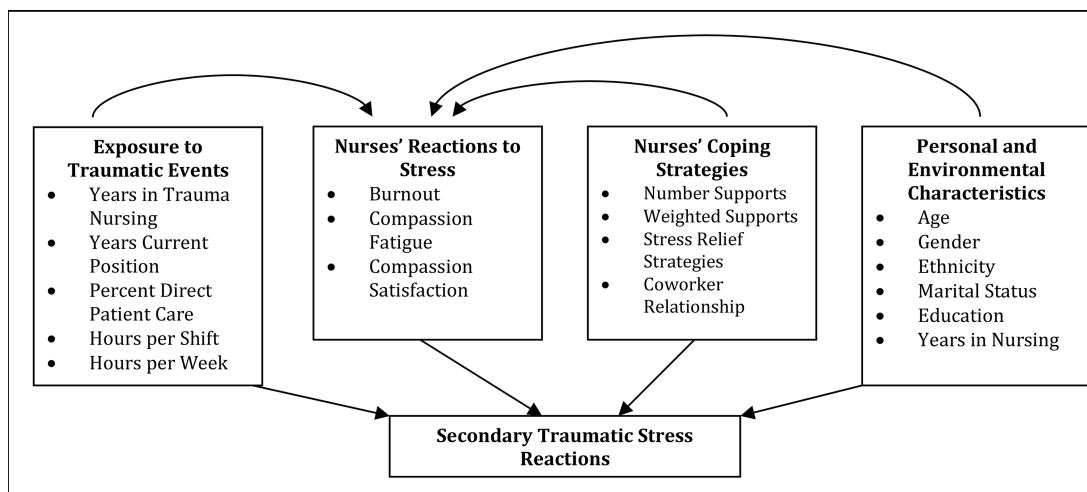
Nurses might experience CS as a positive outcome from working with trauma patients. Compassion satisfaction

is feeling a sense of accomplishment and reward as a result of caring for trauma patients.<sup>24</sup> In those who had specialized training to work with trauma victims, CS may actually be more prevalent than BO and CF. Specialized training was defined as advanced education in working with trauma victims and experience working in a trauma treatment center.<sup>25</sup> In a recent study, 27.5% of the entire sample of emergency, intensive care, nephrology, and oncology nurses reported high CS; however, the ED nurses most frequently reported low CS.<sup>11</sup>

### Theoretical Model

Dutton and Rubinstein’s<sup>26</sup> theory of STS reactions was modified and used as the theoretical basis for this study. Originally used to describe social workers’ psychological responses to caring for trauma victims, this theory was adapted for use with trauma nurses (Figure 1). It is proposed that the development of STS in nurses is a function of 4 key elements: personal/environmental characteristics, the coping strategies of the nurse, exposure to traumatic events, and the reaction of the nurse to the stress of trauma (BO, CF, and CS). In a previous article, we explored how STS reactions might develop from personal/environmental characteristics, coping strategies, and exposure to traumatic events.<sup>20</sup>

In this article, we examine how BO, CF, and CS relate to the development of STS. In addition, the relationship between BO, CF, and CS and personal/environmental characteristics, coping strategies, and exposure to traumatic events in trauma nurses are explored. The results of this article will add to the body of knowledge related to BO, CF, CS, and STS in trauma nurses, a population that has not been well studied.



**Figure 1.** Theoretical model of exposure, coping, personal/environmental characteristics, and stress reactions to secondary traumatic stress. Figure based on Dutton and Rubenstein’s<sup>26</sup> written description of their theory for secondary traumatic stress.

## METHODS

### Sample and Setting

This study used a cross-sectional descriptive design. After institutional review board approval was obtained, this study was conducted at a large urban trauma center in a university hospital in the eastern United States. Annually more than 7500 patients are admitted to this 100-bed trauma facility. Nurses providing direct patient care to trauma patients in all of the units in this trauma center were eligible to participate ( $n = 262$ ). These units included the neurotrauma critical care, neurotrauma intermediate care, multitrauma critical care, multitrauma intermediate care, select trauma critical care, select trauma intermediate care, shock trauma acute care unit, hyperbaric chamber, trauma operating room, trauma resuscitation unit, trauma postanesthesia care unit, and trauma outpatient clinic.

### Procedure

A demographic/behavioral instrument, the Penn Inventory,<sup>27</sup> and the Professional Quality of Life Scale (ProQOL)<sup>23</sup> were distributed to all trauma center nurses working in direct patient care roles ( $n = 262$ ). A packet that included the 3 surveys was attached to the payroll envelopes of eligible staff nurses. A letter describing the purpose of the study and consent was included in the packet. Nurses were encouraged to return surveys in drop boxes placed on each of the trauma units. No identifying information was included on any of the forms.

### Instruments

#### Demographic/Behavioral Instrument

Responses from a focus group of staff nurses and clinical nurse specialists in the trauma center were used to develop the demographic/behavioral instrument. The instrument assessed demographics, personal/environmental characteristics (age, years nursing, sex, ethnicity, education, and marital status), coping strategies (stress relief strategies, support systems, and relationship with coworkers), and exposure to traumatic events (years trauma nursing, years current position, percentage of time in direct patient care, hours per shift, hours worked per week, and unit). Multiple-choice and Likert-style items were included in the instrument. The instrument is described in detail elsewhere.<sup>20</sup>

#### Professional Quality of Life Scale

The ProQOL<sup>23</sup> was used to assess BO, CF, and CS in this study. The ProQOL is a 30-item tool that uses Likert-type responses, which range from 0 (never) to 5 (very often). The ProQOL has 3 subscales: compassion satisfaction (CS),

compassion fatigue (CF), and burnout (BO). Compassion satisfaction subscale scores of 33 or higher tend to reflect professional satisfaction. CF subscale scores of greater than 17 may be indicative of CF. Burnout subscale scores of greater than 22 may indicate BO or a higher risk of BO. The ProQOL is a reliable measure of BO, CF, and CS in nursing populations. Reliability of the ProQOL, reported in Cronbach alpha, is as follows for each of the subscales: CS = 0.87, CF = 0.80, and BO = 0.72. Construct validity has been established.<sup>23</sup> The Cronbach alpha in the current sample was 0.669 for the entire instrument and as follows for the subscales: CS = 0.92, CF = 0.83, and BO = 0.75.

#### Penn Inventory

The Penn Inventory, a 26-item multiple-choice survey, originally designed to measure PTSD, measured STS in this sample of trauma nurses.<sup>27</sup> For each item, there are a group of statements representing a construct; respondents are asked to choose which statement best matches their feelings in relationship to the particular construct. Use of this survey to assess STS in trauma nurses is described in detail elsewhere.<sup>20</sup> Scores on the Penn Inventory range from 0 to 78. Scores of 35 or greater signify symptoms consistent with PTSD or STS. The Penn Inventory has high internal consistency and validity with 0.90 to 0.97 sensitivity, 0.61 to 1.0 specificity, and 0.94 efficiency.<sup>27</sup> The Cronbach alpha in the current sample was 0.857.

#### Data Analysis

Data were coded and placed into SPSS. Data analyses were performed using SPSS version 15.0 (Chicago, IL). Descriptive statistics were used to assess all variables for normality and missing values. Demographic variables were assessed with descriptive statistics. Pearson correlations were used to assess the relationships of BO, CF, and CS with STS and exposure to traumatic events, coping strategies, and personal and environmental characteristics. Linear regression was used to assess whether BO, CF, and CS predicted STS.

## RESULTS

### Study Population Characteristics

The response rate for this study was 49% ( $n = 128$ ). Age of the sample ranged from 22 to 61 years (mean =  $37 \pm 10.7$  years). The majority of the participants were white (84.4%), female (62.5%), and married or partnered (53.9%). Nurses practiced an average of 12 ( $\pm 10.7$ ) years, with an average of 8.7 ( $\pm 9.2$ ) years of trauma nursing experience. The sample was well educated, and most held a bachelor's degree or above (72.7%). Demographics are further outlined in Table 1.

**TABLE 1 Demographic Characteristics of Trauma Nurses (n = 128)<sup>a</sup>**

	Range	Mean (SD)	n (%)
Personal and environmental characteristics			
Age, yr	22-61	37.0 (10.7)	
Nursing, yr	0.46-39.0	12.0 (10.7)	
Sex			
Male			20.0 (15.6)
Female			80.0 (62.5)
Ethnicity			
White			104.0 (84.4)
African American			10.0 (7.8)
Others			6.0 (4.7)
Education			
Diploma or ADN			32.0 (25.0)
BS/BA			83.0 (64.8)
MS/MA or higher			10.0 (7.9)
Marital status			
Married/partnered			69.0 (53.9)
Single			46.0 (35.9)
Separated/divorced			11.0 (8.6)
Exposure to traumatic events			
Years trauma nursing	0.16-35.0	8.7 (9.2)	
Years current position	0.16-30.0	5.7 (7.2)	
Percentage of time in direct patient care			
<75%			34.0 (26.6)
≥75%			79.0 (61.7)
Hours per shift			
8			5.0 (3.9)
12			115.0 (89.8)
Hours worked per week			
<32			15.0 (11.7)
32-40			76.0 (59.4)
>40			35.0 (27.3)
Unit			
Critical care			40.0 (34.5)
Intermediate care			18.0 (14.1)
Trauma resuscitation			17.0 (14.7)
Acute care			13.0 (11.2)
Operating room			11.0 (9.5)
Postanesthesia care			10.0 (8.6)
Shock trauma clinic			4.0 (3.4)
Hyperbaric chamber			3.0 (2.6)

*(continues)*

**TABLE 1 | Demographic Characteristics of Trauma Nurses (n = 128)<sup>a</sup> (Continued)**

	Range	Mean (SD)	n (%)
Coping strategies			
Stress relief strategies			
Hobbies			84.0 (65.6)
Exercise			78.0 (60.9)
Travel			58.0 (45.3)
Religion			31.0 (24.2)
Alcohol			25.0 (19.5)
Meditation			18.0 (14.2)
Professional counseling			11.0 (8.6)
Medicinal			6.0 (4.7)
Support systems			
Family			116.0 (90.6)
Friends			105.0 (82.0)
Coworkers			91.0 (71.1)
Pet(s)			59.0 (46.1)
Religious connections			34.0 (26.6)
Clubs			10.0 (7.8)
Other			5.0 (3.9)
Relationship with coworkers			
1 (negative/difficult) to <3			3.0 (2.5)
3 to <4			14.0 (11.7)
4 to <5			48.0 (40.4)
5 (good/positive)			54.0 (45.4)

<sup>a</sup>Not all respondents answered every question.

Abbreviations: ADN, Associate Degree in Nursing; SD, standard deviation.

### ProQOL and Penn Inventory Scores

Burnout subscale scores ranged from 2 to 38, with a mean score of 20.56 ( $\pm 6.34$ ). In this sample, 35.9% (n = 48) of nurses had BO scores of greater than 22, suggestive of BO or a higher risk of BO. Compassion fatigue subscale scores ranged from 1 to 39, with a mean score of 13.94 ( $\pm 7.19$ ). Compassion fatigue, as indicated by subscale scores of greater than 17, was reported by 27.3% (n = 35) of trauma nurses. Compassion satisfaction subscale scores ranged from 9 to 50 (mean = 37.96  $\pm$  7.62). The majority of the sample, 78.9% (n = 101), demonstrated above average CS, whereas 21.1% (n = 27) of nurses had scores less than 32, which indicated low CS. Scores on the Penn Inventory ranged from 1 to 54, with a mean of 18.5 ( $\pm 10.24$ ). Nine nurses (7%) had Penn scores greater than 35, consistent with STS.

### Relationship of Burnout, Compassion Fatigue, and Compassion Satisfaction With Secondary Traumatic Stress

Pearson correlations were used to examine the interrelationships of the 3 components of the ProQOL scale (BO, CF, and CS). Burnout and CF both correlated negatively with CS ( $p \leq .000$ ). Thus, higher BO and CF scores were associated with lower CS scores. Burnout and CF correlated positively ( $p \leq .000$ ). Trauma nurses with higher BO scores tended to have higher CF scores.

Pearson correlations were conducted to evaluate the relationship of the components of the ProQOL scale (BO, CF, and CS) to the Penn Score (STS) (Table 2). Both BO and CF correlated to STS ( $p \leq .000$ ). Higher CS was associated with lower STS ( $p \leq .000$ ).



**TABLE 2** Correlation of Burnout, Compassion Fatigue,<sup>a</sup> and Compassion Satisfaction With Secondary Traumatic Stress<sup>a</sup>

Variable	Pearson <i>r</i>	<i>p</i>
Burnout (BO)	0.551	≤.000
Compassion Fatigue (CF) <sup>a</sup>	0.421	≤.000
Compassion Satisfaction (CS) (RF)	0.465	≤.000

<sup>a</sup>Square root transformation for normality.  
“(RF)” variable was reflected; hence, a positive number indicates a negative correlation.

### Burnout, Compassion Fatigue, and Compassion Satisfaction as Predictors of Secondary Traumatic Stress

Linear regression analyses were performed to examine whether BO, CF, and CS, as assessed with scores on the ProQOL, predicted STS as measured by Penn Scores (Table 3). The model was significant— $F(122,3) = 22.202$ ;  $p \leq .000$ —and predicted 35.9% of the variability in STS. Within the model, BO and CS were significant predictors of STS. Trauma nurses with higher levels of BO had higher STS ( $p = .001$ ). Conversely, those nurses with higher CS had lower STS ( $p = .006$ ).

### Relationship of Burnout and Personal/Environmental Characteristics, Coping Strategies, and Exposure to Traumatic Events

Pearson correlations were used to examine the relationship of BO to personal/environmental characteristics, coping strategies, and exposure to traumatic events (Table 4). No significant correlations existed among BO and personal/environmental characteristics.

The variable “supports” represented weighted support, the number of support systems combined with the reported strength of support. Within coping strategies,

BO was negatively correlated with supports ( $p < .0002$ ), exercise ( $p \leq .000$ ), and meditation ( $p \leq .000$ ). Burnout positively related to the coping strategies of seeking professional counseling ( $p = .022$ ) and use of medicinals ( $p = .001$ ). Burnout correlated with coworker relationships ( $p \leq .000$ ). Nurses with greater BO reported poorer coworker relationships. Within exposure to trauma category, BO related to years in current position ( $p = .037$ ), hours per shift ( $p = .005$ ), and percentage of time in direct patient care ( $p = .006$ ). A higher percentage of time in direct patient care, more years in current position, and more hours per shift (12 hours vs 8 hours) were associated with greater BO.

In summary, trauma nurses with greater BO sought professional counseling, reported using medicinals, had more years in their current position, more time in direct patient care, and worked more hours per shift. These nurses also reported that they had fewer supports, got less exercise, had poorer coworker relationships, and used less meditation.

### Relationship of Compassion Fatigue and Personal/Environmental Characteristics, Coping Strategies, and Exposure to Traumatic Events

Pearson correlations were used to examine the relationship of CF to personal/environmental characteristics, coping strategies, and exposure to traumatic events (Table 4). Compassion fatigue did not correlate significantly with personal/environmental characteristics.

Within the coping strategy category, CF correlated negatively with hobbies ( $p = .022$ ) and coworker relationships ( $p = .001$ ). Thus, trauma nurses with higher CF had fewer hobbies and reported weaker coworker relationships. Trauma nurses with greater CF used more medicinals ( $p = .006$ ). Within the exposure to the traumatic event category, CF correlated with working more hours per shift ( $p = .006$ ).

In summary, trauma nurses with greater CF reported higher use of medicinals and worked more hours per shift (12 hours vs 8 hours). Nurses with lower CF used hobbies as a coping strategy and reported positive coworker relationships.

**TABLE 3** Results of Regression to Predict Secondary Traumatic Stress

Model	Unstandardized Coefficients		Standardized Coefficients		<i>p</i>
	<i>B</i>	Standard Error	<i>B</i>	<i>t</i>	
Constant	1.308	0.381	3.429	0.001	
Burnout	0.064	0.019	0.342	3.027	.001
Compassion fatigue <sup>a</sup>	0.167	0.109	0.141	1.541	.126
Compassion satisfaction (RF)	0.265	0.095	0.240	2.779	.006

<sup>a</sup>Square root transformation for normality.

“(RF)” variable was reflected; hence, a positive number indicates a negative correlation.

**TABLE 4** Burnout, Compassion Fatigue, and Compassion Satisfaction Correlations With Personal and Environmental Characteristics, Coping Strategies, and Exposure to Traumatic Events

Variable	Burnout Pearson <i>r</i> ( <i>p</i> )	Compassion Fatigue <sup>a</sup> Pearson <i>r</i> ( <i>p</i> )	Compassion Satisfaction (RF) Pearson <i>r</i> ( <i>p</i> )
Personal/environmental			
Characteristics	-0.150 (.151)	-0.121 (.857)	-0.236 (.039)
Age	-0.119 (.193)	-0.015 (.872)	-0.145 (.110)
Years nursing	-0.128 (.158)	-0.029 (.752)	-0.083 (.360)
Marital status	0.000 (.998)	-0.025 (.787)	0.022 (.812)
Ethnicity	0.124 (.173)	0.087 (.345)	0.316 (≤.000)
Education	0.099 (.336)	0.078 (.454)	0.157 (.122)
Sex	0.157 (.122)		
Coping strategies			
Supports	-0.280 (.002)	-0.110 (.228)	-0.356 (≤.000)
Exercise	-0.362 (≤.000)	-0.113 (.219)	-0.183 (.042)
Hobbies	-0.130 (.157)	-0.209 (.022)	-0.163 (.071)
Religion	-0.041 (.655)	0.050 (.586)	-0.078 (.391)
Meditation	-0.238 (.008)	-0.097 (.288)	-0.326 (≤.000)
Travel	0.031 (.730)	-0.039 (.671)	-0.034 (.711)
Professional counseling	0.206 (.022)	0.124 (.177)	0.087 (.334)
Alcohol	-0.048 (.595)	0.115 (.210)	0.094 (.299)
Medicinals	0.309 (.001)	0.250 (.006)	0.202 (.024)
Coworker Relationships (RF)	0.396 (≤.000)	0.309 (.001)	0.483 (≤.000)
Exposure to traumatic events			
Years trauma nursing	-0.002 (.984)	0.075 (.415)	-0.066 (.469)
Years current position	0.192 (.037)	0.158 (.089)	-0.034 (.716)
Percentage of time in direct patient care (RF)	-0.257 (.006)	-0.043 (.656)	-0.099 (.297)
Hours per shift	0.254 (.005)	0.255 (.006)	0.133 (.448)
Hours per week part-time	-0.040 (.660)	-0.118 (.196)	-0.129 (.152)
Hours per week full-time	-0.123 (.175)	-0.066 (.470)	-0.070 (.440)

<sup>a</sup>Square root transformation for normality.

"(RF)" variable was reflected; hence, a positive number indicates a negative correlation.

### Relationship of Compassion Satisfaction and Personal/Environmental Characteristics, Coping Strategies, and Exposure to Traumatic Events

Pearson correlations were used to examine the relationship of CS to personal/environmental characteristics, coping strategies, and exposure to traumatic events (Table 4). Within personal/environmental characteristics, greater

age ( $p = .039$ ) and lower education levels ( $p \leq .000$ ) correlated with CS. Within the coping category, CS correlated with number and strength of supports ( $p \leq .000$ ). Higher reported strength and numbers of supports were positively related to higher CS and fewer supports related to lower CS. Nurses who used more exercise as a coping strategy had higher CS ( $p = .042$ ). Use of meditation as a coping

strategy was associated with higher CS ( $p \leq .000$ ). Use of medicinals as a coping strategy associated with lower CS ( $p = .024$ ). Finally, trauma nurses reporting weaker coworker relationships had lower CS ( $p \leq .000$ ). There were no significant correlations between CS and the exposure to traumatic events variables.

In summary, within this sample of trauma nurses, greater CS related to older age, greater strength and numbers of supports, use of exercise and meditation, and more positive coworker relationships. Lower CS related to higher levels of education and use of medicinals.

## DISCUSSION

Our study findings of trauma nurses from a large, urban, academic medical center supported our theoretical model; we found relationships among BO, CF, CS, and STS in trauma nurses. A large percentage of nurses in this study, 35.9%, had ProQOL scores consistent with BO or high risk of BO, whereas 27.3% reported CF, and 9% had scores consistent with STS. More than 75% of trauma nurses in this study experienced CS related to caring for traumatically injured patients. These results are comparable to those of a study of nurses from ED, critical care (ICU), oncology, and nephrology units that also used the ProQOL survey. Compared with the current investigation, this smaller study reported slightly lower percentages of ED and ICU nurses with BO (22% and 34%) and similar percentages of nurses with CF (ED 29%, ICU 28%).<sup>11</sup> Unlike the current study, previous research found higher levels of CF than BO.<sup>6,11</sup>

Of the relationships between BO, CF, and STS in this sample of trauma nurses, BO and CF had the strongest correlation. This in part may be the result of the strain and fast pace related to solely caring for trauma patients on a daily basis. However, CS was high in the majority of respondents, suggesting that nurses in this sample derived significant professional satisfaction from their work in a trauma center. High CS was also negatively related to BO, CF, and STS. As in our study, Yoder<sup>6</sup> reported that nurses with higher CS scores had lower BO and CF scores of the ProQOL. Similarly, intensivists that reported lower levels of personal accomplishment in their work had higher levels of BO.<sup>28</sup> As indicated in our theoretical model, BO and CS were predictive of STS. Higher BO scores predicted higher STS in our sample. Conversely, a high CS score was the strongest predictor of STS. Nurses with higher CS scores were less likely to develop STS. This may be indicative of the nature of nurses who choose to work exclusively with trauma patients; however, studies are needed that compare trauma nurses with those working in other specialty areas.

Burnout in trauma nurses, although unrelated to any personal/environmental characteristics, was related to certain types of coping strategies such as use of medic-

inals and seeking counseling. It also related to greater exposure to trauma patients, for example, from working more hours per shift. This same finding was reported in ED and ICU nurses.<sup>11</sup>

Coworker relationships seem to have a significant influence on BO. ED nurses reported the use of colleague support and supportive social networks to prevent BO.<sup>18</sup> The association of BO with less support from coworkers and negative relationships with coworkers is a consistent finding among ED and critical care practitioners<sup>28-31</sup> A large study of 95 499 nurses supported these findings: nurses with poor work environments and more time in direct patient care had higher levels of BO.<sup>7</sup> Studies of intensivists, critical care nurses, and new graduate nurses with fewer years of experience had higher levels of BO.<sup>10,28,30,31</sup> Our sample was unique in that nurses with more years in their current position had higher BO scores. The uniqueness of the trauma work environment and years in nursing in this sample may have influenced BO.

Compassion fatigue was less prevalent than BO in this study and was related to hours per shift, work relationships, and coping mechanisms. Similar to the factors influencing BO, CF occurred in those trauma nurses who reported fewer hobbies, weaker coworker relationships, working 12 rather than 8-hour shifts, and using medicinals. In a mixed method study of clinicians working with trauma survivors, having lower emotional self-awareness predicted higher CF.<sup>32</sup> Nurses reported that caring for challenging patients, futile care, work environment stressors, and personal experience triggered CF.<sup>6</sup> Health care providers working with trauma survivors identified "work drain" as predictive of CF, whereas self-care strategies, such as addressing personal needs, helped them to avoid CF.<sup>32</sup> The stress of working in an environment that entirely serves trauma victims combined with more work hours of exposure to trauma patients may, in part, explain why trauma nurses in this study had more CF with increased hours per shift.

An important finding of our study was the high prevalence of CS in this sample of trauma nurses. Personal/environmental characteristics of greater age and lower education correlated with CS. In mental health professionals, increased age predicted CS<sup>25,33</sup> and those with trauma training had higher CS scores on the ProQOL.<sup>25</sup> In our sample, those with higher levels of education had less CS, which may have been a reflection of a limited professional advancement model that was in place at our institution at the time of data collection. Nurses with higher levels of education had limited opportunities for professional advancement, and this may have contributed to decreased satisfaction. Interestingly, others have reported that ICU nurses with higher levels of education (bachelor's and above) suffered more moral distress or higher levels of BO than those with associate degrees.<sup>34</sup>



Not surprisingly, trauma nurses in this study who reported stronger support systems, use of exercise and meditation, and positive coworker relationships had higher CS. Similarly, a study of clinicians working with trauma survivors noted that increased social support, fewer hours per week, and an internal sense of control over work environment were associated with CS.<sup>32</sup> Stronger coworker relationships may create a more positive work milieu that impacts the reported satisfaction from caring for trauma victims in a high-stress environment.

The current study had several limitations that must be acknowledged. Although we had nearly a 50% response rate, the sample of nurses (n = 128) from a single trauma center was relatively small and homogeneous. Limitations in self-report data such as social desirability cannot be overlooked. There may be differences among those nurses who responded to the survey and those who did not. Findings in relationship to STS must be interpreted with caution as the actual number of nurses within our sample that exhibited scores consistent with STS was relatively low. The tool used to assess STS in nurses, the Penn Inventory, although recommended as an instrument to assess stress in working with the traumatized,<sup>9</sup> has not been widely validated in nursing populations.<sup>35,36</sup> There are limited instruments that are specific to nursing that assess STS, and none of these instruments are specific to the trauma nursing population.<sup>9</sup> The reliability on the ProQOL BO, CF, and CS subscales was slightly higher than previously reported.<sup>23</sup> The Penn Inventory and the ProQOL require further investigation and validation in the trauma nurse population. Despite these limitations, this study represents an important preliminary step in identifying factors related to BO, CF, CS, and STS in trauma nurses and highlights the need for more research in this area.

Additional research may elucidate why some trauma nurses develop BO, CF, and STS, whereas others report high levels of CS. Exploration of coping strategies and interventions to reduce BO, CF, and STS and to maximize CS is necessary. Longitudinal studies, including nurses from multiple trauma centers, may better define the effects of caring for trauma patients over years of nursing practice. Studies are needed that compare trauma nurses with nontrauma nurses to explore whether these findings are unique to the trauma nursing population. Motivation for working in trauma nursing also needs to be explored. In our sample, BO and CF were not related to personal/environmental characteristics but were related to coping and exposure to trauma—two areas in which interventions could be developed to potentially mitigate BO, CF, and STS in trauma nurses. Hospitals serving large trauma populations may benefit from examining strategies that increase CS in nurses while decreasing the negative effects of caring for trauma patients such

as BO, CF, and STS. Future research could also explore whether there is a link between BO, CF, STS, CS and patient satisfaction scores. Staff support programs, such as access to resources and education, may help nurses experiencing the effects of caring for patients with traumatic injuries.<sup>37</sup> One of the most consistently reported characteristics that reduces BO, CF, and STS, and is positively associated with CS, is the strength of relationships with coworkers. Strategies that enhance a healthy work environment merit deliberate attention and further exploration.

## CONCLUSIONS

Caring for trauma patients on a daily basis can be rewarding and is associated with a high degree of CS. Conversely, trauma nurses may experience BO, CF, and STS. Although the relationships of BO, CF, and STS to each other were supported by our study, further investigation is needed to explore why these develop in some nurses and not in others. A better understanding of the causes of BO, CF, and STS may enable nurses to take necessary steps for prevention and recognition of impending development of BO, CF, and STS. The concept of CS also requires more consideration in both trauma nurses and the general nursing population. This study highlights a need for additional research in nurses caring for trauma patients and development of interventions, institutional policies, and support programs related to BO, CF, CS, and STS.

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