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The prevalence and impact of post traumatic stress disorder and burnout syndrome in nurses

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Abstract

Objective—To determine whether post-traumatic stress disorder (PTSD) and burnout syndrome (BOS) are common in nurses, and whether the co-existence of PTSD and BOS is associated with altered perceptions of work and non-work related activities.

Methods—University hospital Nurses were administered four validated psychological questionnaires.

Results—The response rate was 41% (332/810). Twenty two percent (73/332) had symptoms of PTSD, 18% (61/332) met diagnostic criteria for PTSD, and 86% (277/323) met criteria for BOS. Ninety eight percent (59/60) of those fulfilling diagnostic criteria for PTSD were positive for BOS. When grouped into three categories: positive for PTSD and BOS (n=59), positive for BOS and negative for PTSD (n=217), and negative for both BOS and PTSD (n=46), there were significant differences in the years of employment as a nurse ($p < 0.0001$), perceptions of collaborative nursing care ($p = 0.006$), confidence in physicians ($p = 0.01$), and perception that their work impacted patient outcomes ($p = 0.01$). Nurses with BOS and PTSD were significantly more likely to have difficulty in their life outside of the work environment when compared to those with BOS alone.

Conclusions—We identified that PTSD and BOS are common in nurses and those with PTSD will almost uniformly have symptoms of BOS. Co-existence of PTSD and BOS has a dramatic effect on work and non-work related activities and perceptions.

Keywords

Burnout Syndrome; Post Traumatic Stress Disorder; and Nursing

Introduction

Hospitals are stressful places of employment due to the increased complexity and demands of most job descriptions, the unpredictable changes in one's daily work routine, unrealistic expectations from patients and their families, and common encounters with ethical and end of life issues. Of all of the various types of hospital employees, nurses are often exposed to

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many of these stressors and may be predisposed to develop work-related psychological disorders such as symptoms of post-traumatic stress disorder (PTSD) and burnout syndrome (BOS). PTSD is a psychiatric disorder caused by exposure to a traumatic event or extreme stressor that is responded to with fear, helplessness, or horror. In the United States, 8–10% of the general population have developed PTSD at some point in their lives, making it the fourth most common psychiatric disorder (1–3).

BOS occurs in response to interpersonal and emotional stressors that are experienced in the workplace and are characterized by emotional exhaustion, depersonalization, and lack of personal accomplishment. Emotional exhaustion is defined as being overwhelmed by work and is considered the first stage of burnout. Depersonalization refers to impersonal feelings towards those receiving care and reduced personal accomplishment refers to negative self-evaluation and a perception of reduced achievement in working with people. As mounting expectations and inherent stresses are increasingly common in the workplace environment, BOS is reaching epidemic proportions in the United States (4–6).

We have previously reported that symptoms of PTSD are common among inpatient nurses (7). There has been extensive research on burnout in nurses as BOS is hypothesized to occur most frequently in caring professions (8–12). Sometimes referred to as work stress in this literature, BOS is prevalent among nurses, especially those who work in the intensive care unit (ICU) (13–15). However there are presently no studies that have determined the actual incidence of a diagnosis of PTSD or whether symptoms of PTSD and BOS co-exist in individual nurses. In addition, the impact of PTSD and BOS on work and non-work related activities and perceptions in nurses is presently unknown. Furthermore, the specific work related triggers for symptoms of PTSD and BOS have not been adequately delineated.

To address these issues, we distributed a survey to a variety of nurses at a university hospital with the goal of obtaining a more complete psychological assessment of nursing-related PTSD, BOS, and other psychological disorders. The primary aim of this study was to determine the incidence of a PTSD diagnosis and BOS in the nursing profession and to elucidate the relationship between PTSD and BOS with life functioning outside of the work environment. We hypothesized that nurses with PTSD would represent a subset of those with BOS and that nurses with BOS alone would experience less discord outside of work.

Methods

This study was conducted between July 2007 and February 2008 and involved nurses employed at the University of Colorado Hospital, a tertiary care level II trauma facility. Prior to the initiation of this study, approval was obtained from the Colorado Multiple Institutional Review Board. Informed consent was waived with the understanding that the voluntary nature of this investigation would be discussed with the participants. In order to maintain participant anonymity and ensure candid responses, 810 questionnaires were delivered to each unit's nurse manager who subsequently distributed the forms to the specific nurses who worked on that particular unit. The questionnaire included a cover letter specifying that completed surveys should be placed in a sealed envelope and returned to a designated area where they were collected by study personnel.

Nurses were divided into four pre-defined categories: ICU, inpatient non-ICU in high stress areas, other inpatient non-ICU, and outpatient nurses. Non-ICU high stress areas were defined as the bone marrow transplant unit, high-risk obstetrics unit, the operating room, postoperative anesthesia unit (PACU), and the emergency room. A total of 267 questionnaires were distributed to ICU nurse managers, 184 to the nurse managers in the

inpatient non-ICU in high stress areas, 253 to the other non-ICU nurse managers, and 106 to outpatient nurse managers.

Features of the Questionnaire

The questionnaires consisted of items regarding demographic variables and information about the work environment. The following four validated surveys were also included in the survey:

1. The **Hospital Anxiety and Depression Scale (HADS)** is a 14-item self-report screening scale originally developed to indicate the possible presence of anxiety and depression states in the setting of a medical, nonpsychiatric outpatient clinic. HADS consists of a 7-item anxiety subscale and a 7-item depression subscale. A score of > 8 identifies those with a positive history for anxiety and/or depression (16). The validity of the HADS has been extensively studied for identifying anxiety and depression disorders in a variety of populations including the general population, general practice and psychiatric patients (16;17).
2. The **PTSS-10** is a 10-item, self-report scale described in the Diagnostic and Statistical Manual, 4th edition (DSM-IV) to assess symptoms of post traumatic stress disorder (PTSD). Symptoms are rated using a scale from 1 (never) to 7 (always). PTSD symptoms include: sleep disturbance, nightmares, depression, hyperalertness, withdrawal, generalized irritability, frequent changes in mood, guilt, avoidance of activities promoting recall of the traumatizing event, and increased muscle tension. A total score of ≥ 35 is defined as *potentially* consistent with PTSD (18) suggesting the need for further professional assessment. This questionnaire is commonly used in a variety of patient populations and has excellent sensitivity and specificity for PTSD (18;19). In addition, the PTSS-10 has previously been reported to have high internal consistency reliability (Cronbach's $\alpha= 0.92$) and stability (test-retest reliability $r= 0.89$) (19).
3. The **Posttraumatic Diagnostic Scale (PDS)** is a self-report tool that yields both a PTSD diagnosis according to DSM-IV criteria and a measure of PTSD symptom severity. It consists of Criterion A, a checklist of 12 traumatic events (including an "other" category), and Criteria B, C, and D that assess the 17 DSM-IV symptoms by using a 4-point scale (0=not at all or only one time; 3=five or more times a week/almost always). A total score is calculated by: having had a traumatic event, feeling helpless or terrified during the event (criterion A), and at least one episode of a *re-experiencing* symptom (criterion B) three *avoidance* symptoms (criterion C) and two *arousal* symptoms (criterion D). Symptom severity can be calculated by summing scores of the 17 items addressed in Criterion B, C, and D. For the purpose of this study, Criterion A was assumed to be a traumatic incident(s) that occurred while working in the hospital, and nurses were asked to fill out Criteria B, C, and D based upon traumatic events experienced while working in the hospital environment. The PDS is a well accepted and validated survey instrument to diagnose individuals with PTSD (20) with high internal consistency reliability (Cronbach's α range 0.78–0.92). In addition, test-retest reliability coefficients of the total PDS score demonstrated satisfactory reliability: 0.83 for total symptom severity, 0.77 for reexperiencing, 0.81 for avoidance, and 0.85 for arousal (20).
4. The **Maslach Burnout Inventory (MBI)** is a 22-item self-report questionnaire consisting of three independently scored dimensions (4;6). The questionnaire includes questions regarding the frequency of experiencing certain feelings related to a participant's work environment on a 7-point Likert scale. The emotional exhaustion (EE) scale, consisting of 9 items, identifies those individuals who are

emotionally exhausted or overextended at work. The depersonalization (DP) scale, consisting of 5 items, identifies those individuals who have an impersonal response towards recipients of their efforts. The personal accomplishment (PA) scale, consisting of 8 items, assesses lack of accomplishment and success related to work. For this investigation, we scored subjects as having moderate to high levels of BOS with the following values: EE 17, DP 7, and PA 31 (5), (MBI-Human Services Survey, copyright 1986 by CPP, Inc.). The MBI is a burnout tool that has been extensively tested for reliability and validity; and internal consistency. Previous reported values for Cronbach's coefficient alpha have been in the range of 0.71–0.90 (21–23). (Appendix A)

We included a variety of questions asking the nurses how they felt about their work environment. The responses of the nurses to these questions were scored using a 5 point Likert scale from never to very likely. We asked the nurses if they had nightmares or anxiety related to their job description or environment. If nurses reported symptoms of nightmares or anxiety, they were asked to identify the primary work related trigger associated with each symptom.

Statistical Analysis

Normally distributed data were reported as means and compared using a student's T test (2-tailed), a chi² analysis, or Fisher's exact test. ANOVA analysis was performed to compare three or more group means on a single response variable. Cronbach's alpha was computed for the PTSS-10, PDS and MBI instruments in order to assess internal reliability of the questions. The range of Cronbach's alpha is 0 to 1.0, with larger values indicating good internal reliability of the instrument (i.e. all items in an instrument are measuring the same underlying construct). Exploratory factor analysis using principal components with varimax rotation was first used to assess construct validity of the instruments. Essentially, this type of analysis attempts to separate the items of an instrument into independent underlying constructs. Scree plots and Wrigley's criterion (unique factor loadings > 0.30) were used to determine the number of factors to be retained. Because variables tended to load on more than one factor, principal components analysis with promax rotation was used in order to allow for correlated factors.

Because our data is cross sectional, we were limited in our ability to assess causal factors of PTSD in nurses. However we modeled the effect of various potential risk factors on the probability (i.e. prevalence) of developing PTSD using logistic regression models. The risk factors we included in our analysis were: number of years practicing as a nurse (continuous variable), age in years (continuous variable), how often the nurse was assigned to be the charge nurse (ordinal variable using a Likert scale of 1–5 where 1 = never and 5 = very often), whether the charge nurse also routinely took patient assignments (ordinal variable using a Likert scale of 1–5 where 1 = never and 5 = very often), the pre-defined category for the type of unit (nominal variable of ICU, inpatient non-ICU in high stress areas, other inpatient non-ICU, and outpatient nurses), and marital status (nominal variable of married or unmarried).

A p value of 0.05 was considered to be significant in the comparison of results. All computations were done in SPSS (SPSS, Inc, Chicago, IL) or JMP (SAS Institute, Inc., Cary, NC).

Results

Of the 810 surveys distributed to nurse managers, 332 nurses completed the questionnaire, for an overall response rate of 41%. The 332 nurses who responded to the survey were

representative of the age, education and average years experience of the nurses in our system. The response rates for the four groups of nurses were: 37% in the intensive care unit (n=98), 46% in the inpatient non-ICU setting (n = 118), 40% in the high-risk non-ICU (n=74), and 39% in the outpatient setting (n=42). The nurses were predominantly female, the majority of whom had a bachelor's degree in nursing. The demographics of the ICU nurses, non-ICU inpatient nurses, high-risk non-ICU nurses and outpatient nurses are displayed in Table 1. There were significant differences between the four groups of nurses in age ($p < 0.0001$), number of years practicing ($p < 0.0001$), percentage with a bachelors of science in nursing degree ($p = 0.01$), and patient-to-nurse ratio ($p < 0.001$). All of the outpatient nurses had previous working experience as an inpatient nurse and 23% reporting having worked in the ICU.

Table 2 summarizes the results of the reliability/validity analysis for the three instruments PTSS-10, PDS, and the MBI. Cronbach alpha was near 0.90 for each of the three instruments indicating excellent internal consistency for each instrument. Principal component analysis with promax rotation supported 2 correlated factors for the PTSS-10 questionnaire (depression, anxiety), 3 correlated factors for the PDS (depression, trauma, anxiety) and 3 correlated factors for the MBI (general work stress, helpfulness, stress working with others) instruments. The number of factors for each of the instruments was determined using Wrigley's criterion of unique loading's greater than 0.3 on the items within a factor, scree plots of the eigen values, and eigen values greater than 1. By loadings on multiple factors, there was significant correlation among factors for each of the instruments which supports the measurement of one underlying construct for the PTSS-10, PDS and MBI (Table 2).

The prevalence of psychological symptoms was common in all four groups of nurses. Of the 332 nurses who completed the survey, 16% (52/332) were positive for anxiety with a mean HADS score of 11.4 ± 2.3 , and 13% (43/332) were positive for depression with a mean HADS score of 11.3 ± 1.8 . In regard to PTSD, 22% (73/332) of nurses were positive for symptoms of PTSD based on their responses to the PTSS-10 questionnaire with a mean score of 40.6 ± 5.8 and 18% (61/331) of the nurses met the diagnostic criteria for PTSD based on responses to the PDS. All of the nurses who met diagnostic criteria for PTSD endorsed being exposed to a traumatic event including: seeing patients die, massive bleeding, open surgical wounds, trauma related injuries and performing futile care to critically or terminally ill patients. Overall, 61% (37/61) of nurses with a diagnosis of PTSD had symptoms greater than 6 months, 26% (16/61) had symptoms for 1–3 months and 13% (8/61) had symptoms for less than 1 month. A total of 86% (277/323) of nurses had symptoms consistent with moderate burnout and were positive for at least one of the three types of BOS: 73% (239/327) were positive for emotional exhaustion with a mean score of 31.5 ± 9.1 , 48% (155/321) were positive for symptoms of depersonalization with mean score of 13.1 ± 5.0 and 60% (190/319) were positive for a lack of personal accomplishment with a mean score of 30.9 ± 5.4 . Overall, 87% (290/332) of nurses had symptoms of anxiety, depression, PTSD, or BOS based on having a positive response to at least one of the questionnaires.

There were no differences in the prevalence of anxiety or depression symptoms between the four groups of nurses (see Table 3). However, there were significant differences between the four groups of nurses in the prevalence of PTSD symptoms as assessed by the PTSS-10, and in the prevalence of a PTSD diagnosis based on their results on the PDS. When the subgroup of outpatient nurses were compared to all of the other nurses combined, outpatient nurses had a significantly lower prevalence of a PTSD diagnosis (5%, 2/42) when compared to all of the inpatient nurses (20%, 58/288), $p = 0.006$. There were no differences in the prevalence of any of the three types of BOS between the four groups of nurses.

We also conducted univariate analyses to determine whether specific risk factors were significantly associated with the prevalence of PTSD. We found that years practicing as a nurse, the age of the nurse, and how often a nurse is the charge nurse were all significantly associated with the prevalence of PTSD (Table 4). The prevalence odds ratio for PTSD decreased by 5% per year increase in years practicing nursing and by 4% per year increase in age of the nurse. The odds of PTSD was twice as large for those nurses who were never the charge nurse when compared to nurses who were very likely to be a charge nurse. When we included these three covariates in an adjusted model none of these covariates was significantly associated with prevalence of PTSD (Table 4).

Overall, 98% (59/60) of nurses who fulfilled the diagnostic criteria for PTSD were also positive for at least one of the three types of BOS. However, not all nurses with symptoms of BOS fulfilled the criteria for a diagnosis of PTSD. Only 21% (59/276) of those nurses who tested positive for one of the three types of BOS also met criteria for a PTSD diagnosis by the PDS.

The cohort of nurses was subsequently stratified into three groups: those who were positive for PTSD and BOS (n=59), those who were positive for BOS and negative for PTSD (n=217), and those who were negative for both BOS and PTSD (n=46). We excluded the one individual who was positive for PTSD but negative for BOS from this analysis. There were significant differences in the age of these three groups of nurses: those with both BOS and PTSD (34.4 ± 8.2 years), those with BOS alone (37.4 ± 10.2 years), and those with neither BOS nor PTSD (46.2 ± 11.9 years), $p < 0.0001$, and in their number of years of employment as a nurse: those with both BOS and PTSD (8.0 ± 7.9 years), those with BOS alone (11.7 ± 9.3 years), and those nurses with neither BOS nor PTSD (19.6 ± 12.5 years), $p < 0.0001$. There were differences between these three groups of nurses in their perception of how well nurses on their unit worked collectively to care for patients ($p = 0.006$). There were significant differences in regard to their confidence in the physicians with whom they worked ($p = 0.01$), and the perception that the work they performed on their unit was a primary factor in the outcome of their patients ($p = 0.01$) (See Table 5). There was no difference in the perception of the three groups of nurses regarding their confidence in the other nurses on their unit ($p = 0.1$).

As a result of their work related psychological symptoms, nurses with both BOS and PTSD were more likely to have perceptions of difficulty in a variety of areas of their life when compared to those nurses with BOS alone. Nurses with both BOS and PTSD were statistically more likely to report that their work related problems had interfered with their ability to complete household chores and duties ($p < 0.0001$), their relationships with friends ($p < 0.0001$), the participation in fun and leisure activities ($p < 0.0001$), their schoolwork ($p = 0.001$), their relationships with their family ($p < 0.0001$), their sex life ($p < 0.0001$), their general satisfaction with life ($p < 0.0001$), and their overall level of functioning in all areas of their life ($p < 0.0001$) (Table 6).

Overall 35% (115/325) of the nurses reported having nightmares that were related to their experiences at work. The primary triggers for nightmares were performing end of life issues in 40% of the nurses (n=46), feeling overextended in 33% of the nurses (n=38), caring for combative patients or family members in 8% of nurses (n=9), visualizing open wounds or massive bleeding in 5% of nurses (n=5), and other issues in 14% of the nurses (n=17) (see Figure 1a). ICU nurses who had nightmares were more likely to have nightmares related to end of life issues (56%, 23/41) when compared to non-ICU nurses who were having nightmares (31%, 23/75) $p = 0.008$. Overall 19% (63/325) of nurses reported having feelings of anxiety that were related to their experiences at work. The primary trigger for their anxiety was feeling over-extended at work in 56% of the nurses (n=35), end of life issues in 27% of

nurses (n=17), combative patients or family members in 10% of nurses (n=6), and other issues in 7% of the nurses (n=5) (see Figure 1b).

Discussion

In this single center survey, we identified that psychological symptoms including BOS, PTSD, anxiety, and depression are common in nurses. Our results are similar to previously reported levels of burnout in the nursing population (9–11). We also identified important variability in the prevalence of symptoms and a diagnosis of PTSD based on the primary type of unit where the nurse is employed. Nurses who work in the outpatient setting are significantly less likely to have a diagnosis of PTSD when compared to inpatient nurses. Additionally, nurses who fulfill the diagnostic criteria for PTSD almost uniformly will have symptoms of BOS. However the opposite is not always true, as only 21% of all nurses with BOS will carry a concurrent diagnosis of PTSD. Our findings suggest that nurses who have developed PTSD represent a subset of those with BOS. Furthermore, a concurrent diagnosis of both PTSD and BOS appears to have a dramatic effect on nurses in regard to their perception of their work and home environment. In the work environment, nurses with PTSD and BOS have more negative opinions regarding both the doctors and nurses with whom they work. Outside of the hospital, the presence of a combination of PTSD and BOS in nurses also affects their perception of life including feelings concerning relationships with friends and family, their sex life, and their leisure activities when compared to nurses with BOS alone. Finally, nurses with both PTSD and BOS have worked on average 11.6 fewer years as a nurse when compared to those nurses who did not have either PTSD or BOS, which may be caused by nurses who develop these symptoms leaving the nursing work force at an earlier time. It is also possible that nurses learn to adapt and cope more effectively over time.

We identified specific work related triggers for symptoms of PTSD including nightmares and anxiety. Nightmares were most commonly related to the involvement of nurses with end of life issues, and anxiety was related to perceptions of being overextended at work in over 50% of nurses. ICU nurses were significantly more likely to have nightmares related to involvement with end of life issues when compared to those non-ICU nurses who complained of nightmares. These findings reveal that there are differences in the specific triggers of symptoms of PTSD depending upon the symptom (nightmares vs. anxiety) and the specific nursing work environment (ICU vs. non-ICU).

As hospitals strive to provide high quality care in the changing U.S. healthcare environment, the nursing supply remains insufficient and is becoming a national emergency (24). Although issues surrounding the nursing shortage are multifaceted, it is important for nursing management and administrators to understand reasons for nursing turnover to help prevent departure of experienced nurses (24;25). Modification of the working environment or instruction in coping skills for the hospital environment could be helpful to treat and prevent the development of PTSD and BOS. Our study identifies areas where environmental modification could be implemented. One of the strategies to treat or prevent nursing-related BOS is to effect individual change through teaching coping strategies (13–15). However, given the high prevalence of a concurrent PTSD diagnosis among nurses who have BOS, this focus alone may not be adequate. Symptoms of PTSD including severe panic or anxiety and nightmares were associated with triggers such as providing futile care and care of dying patients. Improved communication between nurses and doctors when the provision of care appears futile, or support groups to address grieving over dying patients are potential methods to improve nursing job satisfaction. Previous treatment strategies for PTSD have primarily been focused on individuals who were exposed to a single catastrophic stressor (26–28). In the hospital environment, repeated exposure to sub-catastrophic stressors may

potentially result in the same diagnosis. As a result, modifying individual coping mechanisms without modification of the working environment may not be adequate to treat PTSD in nurses or prevent its development. Creating awareness that PTSD and BOS is common in nurses and taking a proactive approach to this disorder has the potential to help with the growing nursing shortage. Finally, the identification and institution of effective treatment strategies for PTSD and BOS in nurses is of particular importance as nurses are at increased risk for both substance abuse (29;30) and suicide(31).

The results of our study are not without limitations. This survey was administered to a homogeneous sample of nurses within a single hospital setting in an urban area, and thus may not be generalizable to other facilities. Nevertheless, the prevalence of PTSD symptoms and our results related to both the PTSS-10 survey and the BOS assessment are similar to findings previously reported in other studies evaluating ICU nurses that further enhances the validity of our results (7;14). Individuals were diagnosed with PTSD using a self-report diagnostic tool (PDS) instead of the examination of a trained clinician. However, the PDS has an advantage over other self-report measures for PTSD because it corresponds with all six criteria of the DSM-IV diagnosis and it is a well-validated tool with excellent reliability and accuracy (20). We did not ask this cohort of nurses if they had ever been exposed to a traumatic event outside of the work environment. This is a limitation to our study as determining the lifetime history of trauma exposure has important implications for predisposition to subsequent development of PTSD. In addition, all of outpatient nurses had previously worked in an inpatient setting, occasionally as an ICU nurse. We were unable to determine whether these outpatient nurses represent a more resilient group. However, the decrease in odds of PTSD with increasing age and years practicing could indicate that the most resilient nurses who stay in the profession have lesser probability of developing PTSD. Because we do not know the outcome for nurses who left the profession and were not included in the current study, it is not possible to establish causal risk factors with this data. Longitudinal studies where the temporal relationship between development of PTSD and differences in risk factors will be required to address such issues.

Our response rate was 41%, and accordingly, our results should be interpreted with caution. Therefore, our findings may have overestimated the problem of PTSD and BOS as subjects with more severe symptoms may have been inclined to participate in answering the survey questions than those without any or only minimal symptoms. However, it is also possible that our results underestimated the problem of PTSD and BOS if those with more severe symptoms avoided participating in the survey. Our response rate was reasonable, particularly given that participation was voluntary and uncompensated.

In conclusion, psychological symptoms are common among nurses. A concurrent diagnosis of PTSD and BOS alters the perception of these nurses in regard to both their work environment and life outside of the hospital and may result in the exodus of individuals from the nursing profession. Novel therapies and interventions are needed that will improve the working environment for nurses, improve their job satisfaction, and reduce the growing exodus of nursing from their profession.

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Appendix A: SAMPLE ITEMS FOR THE MASLACH BURNOUT INVENTORY “Human Services Survey”

by Christina Maslach and Susan E. Jackson

Directions: The purpose of this survey is to discover how various persons in the human services or helping professions view their jobs and the people with whom they work closely. Because persons in a wide variety of occupations will answer this survey, it uses the term “recipients” to refer to the people for whom you provide your service, care, treatment, or instruction. When you answer this survey please think of these people as recipients of the service you provide, even though you may use another term in your work.

Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, write a “0” (zero) before the statement. If you have had this feeling, indicate how often you feel it by writing the number (from 1 to 6) that best describes how frequently you feel that way.

How Often:	0	1	2	3	4	5	6
	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

I. Depersonalization

5. I feel I treat some recipients as if they were impersonal objects.

II. Personal Accomplishment

9. I feel I’m positively influencing other people’s lives through my work.

III. Emotional Exhaustion

20. I feel like I’m at the end of my rope.

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Figure 1a

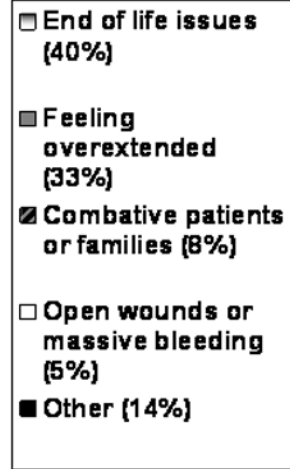
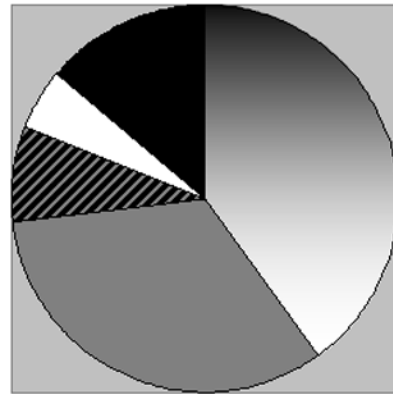


Figure 1b

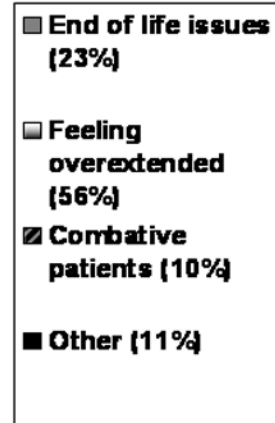
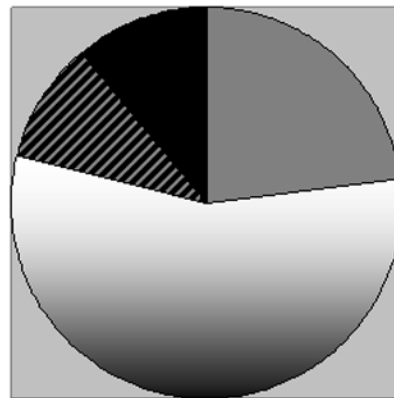


Figure 1. Distribution of triggers for symptoms of nightmares (1a) and symptoms of anxiety (1b) in nurses

Table 1

Demographic Information for the Four Groups of Nurses

	ICU Nurses (n=98)	Inpatient non-ICU nurses in high stress areas (n=74)	Other inpatient non-ICU nurses (n=118)	Outpatient nurses (n=42)	P value
Age (in years)	38.9 ± 11.0	37.0 ± 10.6	35.2 ± 9.5	46.6 ± 9.2	< 0.0001
Gender, % women	97 % (95/98)	89% (66/74)	89% (105/118)	98% (41/42)	0.05
Marital status, % married	56 % (55/98)	51% (38/74)	60% (71/118)	56% (27/42)	0.33
Race, % white	97% (95/98)	89% (66/74)	89% (105/118)	98% (41/42)	0.05
Degree, % with BSN	79% (77/98)	80% (59/74)	84% (99/118)	60% (25/42)	0.01
Number of years practiced	13.8 ± 10.9	11.0 ± 9.6	8.8 ± 8.3	20.4 ± 9.4	< 0.0001
Patient-to-nurse ratio	2.4 ± 0.7	2.6 ± 1.5	4.1 ± 1.1	N/A	<0.001

Table 2

Reliability Validity Analysis of PTSS-10, PDS, MBI

Scale	Cronbach's Alpha	Range of Factor Loadings
PTSS-10 ¹	0.89	-
Depression	-	0.687 – 0.883
Anxiety	-	0.566 – 0.666
PDS ²	0.91	-
Depression	-	0.738 – 0.836
Trauma	-	0.693 – 0.826
Anxiety	-	0.596 – 0.809
MBI ³	0.90	-
General Work Stress	-	0.605 – 0.885
Helpfulness	-	0.489 – 0.748
Stress working with others	-	0.550 – 0.798

¹Correlation between factors: $r = 0.565$ (Depression vs Anxiety)

²Correlation between factors: $r = 0.395$ (Depression vs Trauma); $r = 0.445$ (Depression vs Anxiety); $r = 0.495$ (Trauma vs Anxiety)

³Correlation between factors: $r = 0.396$ (General Work Stress vs Helpfulness); $r = 0.509$ (General vs Others); $r = 0.381$ (Helpfulness vs Others)

Table 3

Prevalence of Psychological Symptoms for the Four Groups of Nurses

	ICU Nurses (n=98)	Inpatient non-ICU nurses in high stress areas (n=74)	Other inpatient non-ICU nurses (n=118)	Outpatient nurses (n=42)	P value
HADS: Anxiety Symptoms	11%	16%	17%	21%	0.44
HADS: Depression Symptoms	13%	11%	15%	10%	0.72
PTSS-10: PTSD Symptoms	33%	20%	14%	22%	0.01
PDS: PTSD Diagnosis	23%	22%	18%	5%	0.04
BOS: Emotional Exhaustion Symptoms	67%	77%	76%	71%	0.45
BOS: Depersonalization Symptoms	49%	46%	45%	60%	0.42
BOS: Personal Accomplishment Symptoms	62%	56%	63%	50%	0.44
Any BOS Symptoms	81%	85%	90%	83%	0.25
Any Psychological Symptoms	87%	84%	91%	86%	0.53

Table 4
Univariate and Multivariable Analysis of Risk Factors for the Development of PTSD

Covariate	Univariate				Multivariate			
	OR	95% LL	95% UL	p-value	OR	95% LL	95% UL	p-value
Years practicing*	0.95	0.92	0.98	0.002	0.96	0.90	1.02	0.19
Age*	0.96	0.93	0.99	0.007	1.01	0.96	1.07	0.70
How often charge nurse				0.014				0.10
1 vs 5	2.01	0.82	4.89		1.72	0.69	4.27	
2 vs 5	0.47	0.11	1.96		0.50	0.12	2.10	
3 vs 5	0.74	0.26	2.09		0.79	0.27	2.28	
4 vs 5	0.57	0.11	3.04		0.52	0.10	2.79	
Charge Nurse with Patient Assignment				0.648				-
1 vs 5	0.63	0.18	2.15		-	-	-	
2 vs 5	1.56	0.63	3.85					
3 vs 5	1.12	0.50	2.51					
4 vs 5	0.98	0.39	2.47					
Unit				0.12				-
1 vs 4	4.33	0.97	19.34		-	-	-	
2 vs 4	5.87	1.31	26.23					
3 vs 4	5.52	1.20	25.33					
Marital Status				0.15				-
Married vs Not	0.67	0.38	1.16		-	-	-	

* odds ratio estimate per year increase in covariate value

- not included in multivariate model

Table 5

Differences in Nursing Perceptions Stratified by the Presence of BOS or PTSD

	Nurses with both BOS and diagnosis of PTSD (n = 59)	Nurses with BOS but no diagnosis of PTSD (n = 217)	Nurses without BOS or diagnosis of PTSD (n = 46)	P value
Age (in years)	34.4 ± 8.2	37.4 ± 10.2	46.2 ± 11.9	< 0.0001
Number of years practiced	8.0 ± 7.9	11.7 ± 9.3	19.6 ± 12.5	< 0.0001
Likelihood of nurses helping each other with patient care	4.1 ± 0.8	4.3 ± 0.8	4.6 ± 0.7	0.006
Amount of confidence in the nurses with whom they work	3.8 ± 0.8	4.1 ± 0.8	4.2 ± 0.9	0.1
Amount of confidence in the doctors with whom they work	3.7 ± 0.6	3.8 ± 0.7	4.2 ± 0.8	0.03
Care that the nurses provide is one of the primary factors that affects patient outcome	4.2 ± 0.6	4.2 ± 0.6	4.5 ± 0.7	0.01

Table 6

Effects on life outside of the hospital during the past month in nurses with both PTSD and BOS compared nurses with BOS alone. (Expressed as percentage of nurses with a positive response)

	Nurses with both BOS and diagnosis of PTSD (n = 59)	Nurses with BOS but no diagnosis of PTSD (n = 217)	P value
Household Chores and duties	51%	22%	< 0.0001
Relationships with friends	58%	16%	< 0.0001
Fun and leisure activities	54%	20%	< 0.0001
Schoolwork	15%	3%	0.001
Relationships with their family	49%	17%	< 0.0001
Sex life	53%	16%	< 0.0001
General satisfaction in life	76%	25%	< 0.0001
Overall level of functioning in all areas of their life	64%	16%	< 0.0001