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Abstract

Emergency department nurses are required to deal with emotional trauma issues on a daily basis, which may result in them experiencing symptoms of secondary traumatic stress, a consequence of stress experienced when helping or wanting to help a person traumatised or suffering. This study measured emergency department nurses' self-reported levels of secondary traumatic stress. Registered nurses (n=117) working at three emergency departments in the Western geographical region of Ireland were invited to complete the secondary traumatic stress scale (STSS). A response rate of 90% (n=105) was achieved. Most participants (n=67/64%) met the criteria for secondary traumatic stress. A statistically significant finding was that the highest proportion (82%) of secondary traumatic stress existed in the staff nurse group (p=0.042). Moreover, for those nurses reporting secondary traumatic stress, statistical significance was found for the variables 'change of career considered' (p=.017) and 'finds alcohol helpful in alleviating work-related stress' (p=.004), when compared with nurses not reporting secondary traumatic stress. The findings suggest the need to examine current crisis management interventions and introduce new systems to support nurses in Irish emergency departments. Moreover, because different types of traumatic events in the ED require different types of interventions, the prevention and

management of STS among emergency department nurses must be tackled using a variety of approaches.

Introduction

Emergency department nurses are at the frontline of a demanding healthcare system and are required to deal with emotional trauma issues on a daily basis, which may result in them experiencing symptoms of secondary traumatic stress (STS). STS is defined by Figley (1995, p. 7) as a natural consequence of stress experienced when 'helping or wanting to help a traumatized or suffering person'. Workplace stressors in the emergency department have been explored extensively. Reported stressors for emergency department nurses include violence against staff (Gillespie et al., 2013), death or sexual abuse of a child (Jonsson and Halabi, 2006; Adriaenssens et al., 2012), and interpersonal conflicts (Laposa et al., 2003; Healy and Tyrell, 2011; Neilsen et al., 2013). Secondary traumatic stress among emergency department nurses can result in physical symptoms of stress (Joen and Ha, 2012) and feelings of depression, sadness, fear and shock (Van der Wath et al., 2013).

Background

The effects of stress on emergency department nurses have been extensively reported. For instance, Gillespie and Melby's (2003) study reported that stress causing emotional exhaustion among emergency department nurses resulted in feelings of distress or anger, often leading to absenteeism. Work related

stress can also result in individuals displaying short tempered behaviour and irritability (Edwards et al., 2007). One study reported that emergency department nurses are 3.5 times more likely to use illegal drugs such as cocaine or marijuana as a coping strategy when compared to nurses in any other speciality (Trinkoff and Storr, 1998). Moreover, a Greek study reported that female emergency department nurses had higher anxiety scores and exhaustion levels than any other nurses, with 25% exhibiting very severe depressive mood and sleep disorders (Stathopoulou et al., 2011). However, it should be noted that assistant nurses with only two years education were included in this Greek study. Moreover, as emphasised by Stathopoulou et al (2011), nurses working in Greek emergency departments do not require additional specialised education. The findings therefore are not generalisable to emergency departments in UK or Ireland. In addition, contrary to the findings reported by Stathopoulou et al (2011), an exploratory cross sectional study in the USA of emergency department nurses from a level 2 trauma centre reported that all nurses are at the same risk of stress irrespective of their speciality (Hooper et al., 2010).

The psychological effects of direct exposure to traumatic events (e.g. abuse) have been well documented over the past 30 years. However, the traumatic events that affect persons indirectly, has not been researched as extensively.

Nurses' STS has been reported among hospice nurses (Abendroth and Flannery, 2006), nurses in children's intensive care (Meadors and Lamson, 2008), health care professionals at a children's hospital (Robins *et al.* 2009), sexual assault nurses (n=110) (Townsend and Campbell, 2009), oncology nurses (n=42) (Quinal *et al.*, 2009) and emergency nurses (n=67) (Dominguez-Gomez and Rutledge, 2009).

Dominguez-Gomez and Rutledge (2009) reported a high prevalence of STS among emergency department nurses in the US. And while levels of PTSD have recently been reported among emergency department nurses in Belgium (Adriaenssens *et al.*, 2012), the study reported here is the only known European study to specifically measure STS among emergency department nurses.

Method

Design

For this cross sectional study, all registered nurses (n=117) working in three emergency departments attached to public teaching hospitals in the Western region of Ireland were invited to complete the study's questionnaire in February 2013. These three emergency departments are the only centres for major trauma in this region and treat both children and adults. During 2013, the largest department (Emergency Department 1) reported 63,827

attendances. The other two emergency departments reported attendance figures of 23,833 (Emergency Department 2) and 34,194 (Emergency Department 3). Student nurses on placement to the three emergency departments were excluded from the study.

Data collection

The study questionnaire was the secondary traumatic stress scale (STSS) (Bride et al., 2004). This is the only scale that exclusively measures STS (Beck, 2011). Permission to use the STS was granted by Bride. The STSS consists of seventeen items which evaluate the frequency of symptoms among three subscales: intrusion (5 items); avoidance (7 items); and arousal (5 items). The three subscales and the seventeen items correspond with criteria B (re-experiencing), C (avoidance) and D (hyperarousal) in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) necessary for Post Traumatic Stress Disorder (PTSD) diagnosis (Dominguez-Gomez and Rutledge, 2009).

The STSS's psychometric properties were tested on a sample of 287 master's level social workers (Bride, 2007). Cronbach's alpha coefficient for the full STSS was ($\alpha=.93$) (Bride et al., 2004). Further published studies using the STSS have achieved high levels of internal consistency reliability (Stamm, 2002; Perron and Hiltz, 2006; Badger et al., 2008, Dominguez-Gomez and Rutledge,

2009). In addition, Bride et al. (2004) demonstrated evidence for the scale's convergent and discriminant validity.

Respondents rate on the scale how often they experienced each symptom in the last 7 days ranging from never (1), to very often (5). A cut-off score of 38 or more is the criterion used to determine the presence of STS (Bride *et al.* 2004). No reverse scoring is used in the STSS. The STSS measures current rather than cumulative exposure to traumatised patients (Bride et al., 2004).

At the end of the questionnaire (following the scale items on the STSS), respondents were asked a number of demographic questions and were also asked ten questions requesting responses (Y/N) to stress relieving strategies. These questions included 'find alcohol helpful in alleviating work-related stress' and 'sought help from a counsellor for work-related stress'.

Human subjects protection

The study was approved by the ethics committees of the three hospitals.

The study questionnaires were distributed to the three emergency departments. Each questionnaire requested the nurses to indicate their consent and willingness to complete the questionnaire by ticking a box. The data were collected anonymously.

While it was deemed unlikely that participants would become distressed during the questionnaire completion process, consideration was given to its possibility. Therefore, contact details were provided of the relevant employee assistance persons to seek further support and reassurance if needed.

Statistical analysis

Data were analysed using IBM SPSS Statistics 20. The total STS score was calculated by summing the response value for each item (the highest score possible being 85 and the lowest score being 17). The nurses' individual scores were compared with the normative scores proposed by Bride (2007). A cut-off score of 38 or above on the STSS is indicative of PTSD symptomatology (Bride 2007). Pearson's Chi square was used to compare the difference in proportions between categorical variables. Parametric data were assessed using ANOVA and Pearson's correlation, and Binary Logistic Regression was used to predict STS. Statistical significance was established when the 95% confidence interval did not contain zero and (α) level was <0.05 .

Results

One hundred and five questionnaires were returned (n=105) (response rate of 90%); 95.2% (n=100) were female and 4.8% (n=5) were male. The majority were staff nurses (78/74.3%), followed by clinical nurse managers (CNMs)

(21/20%). Only four (3.8%) were paediatric nurses, and two (1.9%) represented advanced nurse practitioners (ANPs). The mean (SD) number of years practicing in emergency nursing was $14\pm(6.9)$, and the mean duration of nursing experience was $19\pm(8.1)$. The average age of the nurses was $40\pm(8.1)$. The youngest aged participant was 21 years old, and the oldest was 60 years. Most of the nurses were married and were educated to postgraduate diploma level (Table 1).

The nurses' scores were examined to determine the presence of diagnostic criteria for PTSD. The presence of PTSD symptoms is indicative of STS. As delineated in the DSM-IV-TR (APA 2000), a person must display at least one re-experiencing (or intrusion) (Criterion B), three avoidance (Criterion C), and two hyper-arousal (Criterion D) symptoms at a level of 3 or higher, to meet the diagnostic criteria for PTSD.

Most participants ($n = 67/64\%$) met the criteria for STS meeting all three core diagnostic criteria for PTSD, scoring greater than or equal to three on each subscale for intrusion (B), avoidance (C), and arousal (D). A number of participants did not meet any of the diagnostic criteria of STS ($38/36\%$).

Scoring for individual symptoms was also examined. The most frequently reported symptoms for intrusion were 'intrusive thoughts about clients' and 'cued psychological distress', with both experienced by 68% of respondents (Table 2).

Among avoidance symptoms, the most commonly reported symptom and highest overall individual score was for the feeling of 'discouraged about the future' (77/73%). Also reported frequently was 'feeling emotionally numb' (69/66%) and 'wanted to avoid working with some patients' (62/59%). Other avoidance symptoms were reported less frequently (Table 2).

Among arousal symptoms, seventy nurses (67%) reported irritability. The least reported arousal symptom was the feeling of being easily startled (42/41%) (Table 2).

ANOVA was performed to compare the average/mean levels of (i) intrusion, (ii) avoidance and (iii) arousal among nurses in each of the emergency departments (Table 3). There was no statistical significance found between the three emergency departments for intrusion (p -value= 0.868), avoidance ($p=0.855$) or arousal ($p=0.443$).

The potential range of scores possible on the STSS is from a base of 17, which indicates no symptoms, to 85, which is the highest possible score. The lowest reported score in this study was 17, and the highest reported score was 80. The majority of nurses were at or above the cut-off score of 38 (74/70%). The mean secondary traumatic stress score was 45.9 ± 14.0 . (Figure 1).

No statistical significant correlation was found between the total score on the STS and number of years working in emergency nursing ($r=0.065$, $p=0.510$), age ($r=0.05$, $p=0.612$) and number of years qualified ($r=0.048$, $p=0.063$). However, a statistically significant finding was that the highest proportion (82%) of STS existed in the staff nurse group ($\chi^2=8.23$, $df=3$, $p=0.042$). (Table 4)

A binary logistic model to predict stress relieving strategies used by nurses who reported STS with those who reported no STS was undertaken. Statistical significance was found for the variables 'change of career considered' ($p=.017$), 'sought help from a counsellor for work-related stress' ($p=.20$) and 'finds alcohol helpful in alleviating work-related stress' ($p=.004$), when compared with nurses not reporting STS. (Table 5).

No statistical significance was found between nurses reporting STS when compared with those not reporting STS across the variables of exercise,

hobbies, member of a professional body, and 'finds best friend/mentor helpful' in alleviating work-related stress.

A Pearson Chi-Square test was performed to determine if there was a statistically significant association between the three emergency departments and the nurses' STS scores. In emergency department 1, 62% (n=34) of nurses reported STS at a diagnostic level and 38% (n=21) of nurses did not have STS. The pattern was fairly similar for emergency department 2. However, in emergency department 3, the incidence of STS was higher with 72% (n=18) of the nurses reporting STS (Table 6). The difference in the proportion of nurses reporting STS and those not reporting STS in the three emergency departments was also examined. No significant difference was found ($p = 0.613$) (Table 6)

Discussion

The results of this study suggest that nurses in Irish emergency departments experience high levels of STS. Emergency nurses in this study experienced almost twice the level of PTSD symptomatology at 64%, when compared with emergency nurses in Dominquez-Gomez and Rutledge's (2009) study where the percentage was 33%. The figure has been reported even lower among

oncology nurses (16%) (Quinal et al., 2009). Furthermore, the average score (SD) on the STSS for this study was 45.9 (14.0), a score also higher than that reported by Dominquez-Gomez and Rutledge (2009) at 37.4 (11.0). In addition, Von Reuden et al. (2010) reported a 7% incidence of STS among nurses (n=262) at a level 1 trauma centre in the US.

A possible explanation for the high level of STS reported here is that debriefing, a form of psychological 'first-aid' strategy long established in the US (Burns and Harm, 1993), and used widely in the UK (Ireland et al., 2008), Australia and New Zealand (Theophilos et al., 2009), is lacking in Irish emergency departments (Healy and Tyrell, 2013). Moreover, the nurses may have been experiencing 'moral distress' as a result of chronic overcrowding (Kilcoyne and Dowling, 2007), a finding reported previously in one of the emergency departments included in the study.

A statistically significant finding was that the highest proportion (82%) of STS existed in the staff nurse group ($p=0.042$). This may be because staff nurses not only care for admissions due to trauma but also chronically ill patients delayed in the emergency department waiting for a hospital bed. Advanced nurse practitioners in these emergency departments manage admissions with minor injuries.

The results also show the importance nurses placed on peer-support in their workplace with 47 (70%) of those reporting STS and 22 (58%) of those not reporting STS stating that they find a best friend/mentor helpful in alleviating stress. A relationship between lack of workplace support and work-related traumatic stress has been reported (Jonsson and Halabi, 2006). Peer support has also been reported by Canadian nurses dealing with traumatic events in the emergency department (Lavoie et al., 2011). Other studies also report the importance emergency nurses place on support from colleagues in managing work-related stress (Moszczynski and Haney, 2002; Laposa et al., 2003).

A considerable number of nurses in this study reported finding alcohol helpful in relieving work-related stress (41/61%). Only 26% (n= 10) who were not suffering from STS found alcohol helpful in alleviating work-related stress. There was a statistically significant difference ($p=0.001$) in the proportions when comparing these two groups. While this finding of emergency department nurses' use of alcohol to relieve stress does not indicate addiction, it does suggest possible risk of alcohol abuse and it has been reported that emergency nurses have high levels of substance abuse (Trinkoff and Storr, 1998).

Another significant finding was the nurses' consideration to change career (Table 5). Planning to change career has also been reported elsewhere among paediatric acute care nurses suffering from PTSD (Czaja et al., 2012).

The study has a number of limitations. The sample only pertains to one geographic region in Ireland and the high levels of STS found may be related to organisational issues and the chronic overcrowding crisis in Irish emergency departments (Dunnion and Griffin, 2010; Breen and McCann, 2013; Gilligan et al., 2013). There also may be selection bias in the sample; nurses who completed the questionnaires may have chosen to do so because they believed they were experiencing more secondary trauma.

The STSS only determines the extent of respondents' reported STS in the past week. It is possible that some participants experienced symptoms of secondary traumatic stress outside of the specified timeframe provided on the STSS. In addition, many of the symptoms measured on the STSS could be due to a number of causes, not related to work.

However, we are of the opinion that the results reliably represent the levels of secondary traumatic stress among emergency nurses in these three teaching hospitals. Moreover, a particular strength of the study is that all nurses

working in emergency in the three hospitals were invited to participate. As noted, the response rate in this study was high (90%).

Implications for practice

The study findings presented here have implications for emergency department nursing. The results show the importance nurses place on peer-support in their workplace and the important role a best friend/mentor can play in alleviating stress among emergency nurses. A significant finding was that nurses in the study reported finding alcohol helpful in relieving work-related stress. This highlights the importance of self-care strategies for emergency nurses which may help prevent STS.

Nurses need to be made more aware on the risk factors and symptoms associated with secondary traumatic stress. Through greater awareness, appropriate self-care strategies among nurses may be developed. Lavoie et al. (2011) recommend that if emergency department nurses know what helps them cope with traumatic events, targeted support programmes for their own emergency department could be developed. Notably, an educational programme with emergency department nurses in Colorado has shown a decrease in nurses' reported levels burnout and STS (Flarity et al., 2013). Based on the findings reported here, an educational programme for nurses in Irish emergency departments should include how to recognise the symptoms of

STS and the role of counselling in alleviating STS. Healthy lifestyle choices should also be part an educational programme.

However, the prevention of secondary traumatic stress is not solely the responsibility of the individual but of the entire organisational structure (Geller et al., 2004). A supportive organisation must offer a safe environment to enable caregivers to disclose their feelings and thoughts regarding their experiences with secondary trauma (Bride and Figley, 2009). Furthermore, because different types of traumatic events in the emergency department require different types of interventions, the prevention and management of STS among emergency department nurses must be tackled using a variety of approaches. These approaches include screening and mentoring of high risk nurses for STS and building skills of coping with stress (Adriaenssens et al., 2012). Supportive and anticipatory leadership is also important (Adriaenssens et al., 2012).

Conclusions

This study reveals that nurses working in Irish emergency departments experience high levels of STS. The scores for STS reported here are higher than those reported by emergency department nurses and oncology nurses in the US. Future research should be directed toward exploring coping strategies identified by emergency department, nurses such as the role of a

mentor. In addition, identifying what coping strategies nurses use who do not develop STS would be useful. Finally, a study of emergency department nurses across Europe would help determine if there are differences between nurses' level of STS and coping strategies internationally.

Conflict of interest

The first author is a staff nurse in one of the emergency departments included in this study.

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Table 1 Nurses' characteristics

	Frequency	%
Marital Status		
Married	67	63.8%
Single	30	28.6%
Cohabiting	4	3.8%
Separated/Divorced	4	3.8%
Highest Educational level		
Postgraduate diploma	58	55.2%
Diploma	21	20%
Bachelors Degree	10	9.5%
Masters Degree	16	15.2%

Table 2: Presence of STS among nursing groups

	STS Present	STS Not Present
Staff Nurse	55 (82.1%)	23 (60.5%)
ANP	0	2 (5.3%)
Paediatric Nurse	2 (3%)	2 (5.3%)
CNM	10 (14.9%)	11 (28.9%)
Total	67 (100%)	38 (100%)

Results are presented as frequency (%),
Pearsons Chi Square value=8.32, df=3 and p=0.042.

Table 3. Frequency of reported STS symptoms

	Never	Rarely	Occasion -ally	Often	Very Often
Criteria B: Intrusive Symptoms	n (%)	n (%)	n (%)	n (%)	n (%)
Intrusive thoughts about patients.	13 (12%)	22 (21%)	29 (28%)	30 (29%)	11 (11%)
Disturbing dreams about patients	36 (34%)	25 (24%)	29 (28%)	12 (11%)	3 (3%)
Sense of reliving patient's trauma	20 (19%)	33 (31%)	24 (23%)	25 (24%)	3 (3%)
Cued psychological distress	11 (11%)	23 (22%)	40 (38%)	20 (19%)	11 (11%)
Cued physiological reaction	17 (16%)	26 (25%)	34 (32%)	23 (22%)	5 (5%)
Criteria C: Avoidance Symptoms					
Avoidance of patients	22 (21%)	21 (20%)	39 (37%)	13 (12%)	10 (10%)
Avoidance of people, places and things	25 (24%)	24 (23%)	31 (30%)	16 (15%)	9 (9%)
Inability to recall patient information	29 (28%)	33 (31%)	25 (24%)	13 (12%)	5 (5%)
Diminished activity level	28 (27%)	29 (28%)	25 (24%)	16 (15%)	7 (7%)
Detachment from others	28 (27%)	29 (28%)	26 (25%)	11 (11%)	11 (11%)
Emotional numbing	11 (11%)	25 (24%)	37 (35%)	28 (27%)	4 (4%)
Foreshortened future	12 (11%)	16 (15%)	31 (30%)	33 (31%)	13 (12%)
Criteria D: Arousal Symptoms					
Difficulty sleeping	15 (14%)	28 (27%)	38 (36%)	17 (16%)	7 (7%)
Irritability	8 (8%)	27 (26%)	40 (38%)	20 (19%)	10 (10%)
Difficulty concentrating	15 (14%)	29 (28%)	34 (33%)	19 (18%)	8 (8%)
Hypervigilance	18 (17%)	27 (26%)	30 (30%)	23 (22%)	7 (7%)

Easily startled	27 (26%)	36 (35%)	22 (21%)	11 (11%)	9 (9%)
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Table 5 Comparison of STS results in ED1, ED2 & ED3

	STS present	STS absent
ED-1	34 (62%)	21 (38%)
ED-2	15 (60%)	10 (40%)
ED-3	18 (72%)	7 (28%)

p-value=0.613 based on X^2 Chi Square test