Posttraumatic Stress among Undergraduate Emergency Nursing Students

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Abstract: Undergraduate emergency nursing students are often exposed to stress when helping patients in emergency situations. Emergency nursing students are vulnerable to the development of symptoms of post-traumatic stress Disorder (PTSD). Stress reactions among helpers can be regarded as a natural behavior and reaction when experiencing a traumatizing event and by the stress resulting from helping or wanting to help a traumatized or distressed person. Any trauma exposure can trigger post traumatic stress disorder. Selley reiterates that health workers as well as primary victims are at risk of developing PTSD. The aim of this study was to examine posttraumatic stress among undergraduate emergency nursing students. Methods: The sample of this study consisted of 250 undergraduate students attended and studied emergency nursing course during the period from February till May 2009. Two instruments were used to measure reactions to traumatic events, Impact of Event Scale Revised (IES-R) and the Post Traumatic Symptom Scale (PTSDS). Results: Of those who reported a traumatic situation the majority of them scored 30 or more on the IES-R subscale. Scores over 30 indicate a stress reaction with certain likelihood of post-traumatic disorder. On the PTSDS-subscale the majority of students scored 5 or more, which indicates a relative strong reaction. Conclusion: The high prevalence of post-traumatic stress in undergraduate emergency nursing students indicates an inability to cope with stress in daily life.
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1. Introduction:

The way in which stress is experienced by students in higher education has

been a topic which has raised increasing interest, leading to the need of identifying stressors and their consequences on students' health and well-being. Stress is defined as the physiological, psychological and behavioral response of an individual attempting to adapt to internal and external pressure [1, 2]. Researchers have found that the perception of high stress levels in students can lead to poor academic performance, depression, attrition and serious health problems. Nursing students have higher perceived stress levels than the general student population [2,3]. It has been widely recognized by those engaged in nursing education that clinical practice is a significant and essential part of a student nurses' education. The clinical setting is fundamental to the nursing students learning because it offers opportunities for them to work with 'real' patients with real problems. It is commonly accepted that nursing profession by its nature, place personnel at risk of experiencing critical incidents[4, 5]. One of the nursing specialties that considered as most stressful is emergency nursing.

Emergency nursing is a specialty area of the nursing profession that deals with human responses to any trauma or sudden illness and requires immediate intervention to prevent imminent severe damage or death. Undergraduate emergency nursing students are often exposed to traumatic stress when helping patients in emergency situations. Emergency nursing students face many challenges on a day to day basis; seeing victims of shooting and stabbing; persons who are burned or beaten, accident victims, and every conceivable acute cardiac emergency and serious illness. These stressful situations let nursing students to report the resurgence of painful life events or symptoms of psychological injury when learning about or witnessing critical symptoms[6-8].

Any event which is outside of the realm of normal human experience and very distressing is considered a traumatic stressor or critical incident. Such events usually involve a perceived threat to the physical integrity of the individual and evoke reactions of intense fear, horror and/or helplessness. In times of stress, a student normally engages in certain coping strategies to handle the stressful situations and the associated emotions. The more an individual adopts adaptive coping strategies, the less his/her stress, and better his/her mental health [2]. Psychological and behavioral responses of persons after exposure to a traumatic situation may be no reaction, a normal stress response, psychological and behavioral syndrome or may lead to psychological disorders. If unmanaged, approximately 22% of persons who experience critical incident stress will still be symptomatic for 6 - 12 months after the event

and approximately 4% will be at risk for developing post-traumatic stress disorder (PTSD) [9] .

Posttraumatic stress disorder (PTSD) is an anxiety disorder. Anxiety is derived from the Greek root meaning "to press tight". It is generally considered a healthy adaptive response to stress, anxiety is experienced by all individuals during their life and follows fear, threat, danger, and/or the absence of an environment that signifies safety. In the *Diagnostic and Statistical Manual of Mental Disorders*[ ] , the criteria for diagnosis of PTSD are defined as (1) exposure to a traumatic event, with a response including fear, helplessness, or horror; (2) reexperiencing the event in a variety of subjective experiences that may include intrusive recollections of the event and psychological distress; (3) persistent avoidance of stimuli associated with the trauma accompanied by 3 or more of the following symptoms: avoidance of emotions and activities that arouse recollections of the event, memory impairment related to the event, diminished interests, detachment, restricted affect, and unrealistic perception of the future; and (4) increased level of arousal evidenced by symptoms that include sleep disturbance, startle response, emotional instability, hypervigilance, and difficulties in concentration. These criteria and symptoms are then classified as affecting a person by impairing the person's level of function.. PTSD is considered acute if symptoms persist for at least 1 month and is classified as chronic if symptoms persist longer than 3 months[10].

The lifetime prevalence of PTSD is 1%-3% in the general population, 15%-20% in emergency response personnel, nursing and 26%-30% in Vietnam War Veterans, [9]. Selley reiterates that health workers as well as primary victims are at risk of developing PTSD. Hamaideh & Ammouri, [11] found that nurses experience high levels of job stressors in highly stressful areas of work such as Intensive Care Units. Clinical experience in such stressful area is one of the most anxiety producing components of the nursing program which has been identified by nursing students (11). Nursing programs have one of the highest dropout rates because of burnout. Students who cannot handle the stress often become exhausted and quit [12] . Untreated PTSD is disabling, and firm recommendations exist for early treatment to prevent reduction in the quality of life. Therefore, the aim of this study was to examine posttraumatic stress among undergraduate emergency nursing students.

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Research questions:

1- What are the most perceived stressful events among undergraduate emergency nursing students?

2- What are the post-traumatic symptoms experienced by emergency nursing students during their clinical experiences?

2. Materials and Methods:

Study design:

A descriptive design was used in this study.

Setting:

The study was conducted at the Faculty of Nursing, Alexandria University, at Critical Care & Emergency Nursing Department.

Subject:

All undergraduate nursing students (250) who attending and studying emergency nursing course were included during the period from February till May 2009. All students were studying the emergency nursing course for the first time and had no experience in caring for emergency or critically ill patients. Also, they were trained in the same clinical areas during their studying of emergency nursing course.

Tool:

The tool used in this study was "Post-traumatic Stress among Undergraduate Emergency Nursing Students structured interview schedule"

"This tool consisted of three parts:

The first part of the tool is the Impact of Event Scale Revised (IES-R). The IES-R is a self-administered, 22-item questionnaire based on three clusters of symptoms identified in the Diagnostic and Statistical Manual of Mental Disorders, third edition (DSM-III), as indicators of posttraumatic stress disorder (PTSD). Intrusion is assessed with eight items on the scale. Avoidance is assessed with eight items on the scale. Hyperarousal is assessed with six items on the scale. The IES-R is used widely to evaluate acute stress symptoms, and post-traumatic symptoms. This scale is based on the Horowitz *et al.*,[ ], original Impact of Event Scale (IES), [9-13, 20].

The original IES consisted of items used to assess only two of the three symptom categories of PTSD (re-experience and avoidance) and, thus, while valid for use in assessing post-traumatic stress symptoms, it was not a valid measure of PTSD because it did not assess hyperarousal symptoms that are included in the most recent diagnosis criteria.13 Subsequently, the IES was revised (IES-R) and now comprises 22 items covering three symptom categories including eight re-experience/intrusion

items, eight avoidance items, and six hyperarousal items.

The IES-R is not a diagnostic or screening tool for PTSD; rather, it relies on a patient's own report of symptoms and is used to gauge response no sooner than two weeks after a traumatic event, as well as to evaluate recovery. It is used to rate the severity of intrusion (dreams about the event), avoidance and numbing (effort to avoid reminders of the event), and hyperarousal symptoms (feeling watchful and on guard as anger, irritability, hypervigilance, difficulty concentrating,) on a five-point severity scale (0 = not at all; 4 = extremely; alpha = 0.92).The total score is the sum of all items (range 0 --88). Total scores >30 indicate the existence of a clinical level of distress.

The second part of the tool is the Post Traumatic Stress Syndrome Questions Inventory (PTSS), a self-report scale based on the Diagnostic and Statistical Manual for PTSD[7,21]. This questionnaire is commonly used in a variety of patient populations and has excellent sensitivity and specificity for PTSD. The PTSS-10 is a questionnaire assessing 10 common symptoms of PTSD. The measure range is from 1 point (none) to 7 points (always). The total score ranges from 10 to 70, with higher scores indicating more symptoms; A total score of greater than 35 is associated with a high probability that the person fulfills the diagnostic criteria for PTSD [7, 21].

In addition to the data regarding demographic factors and students characteristics, including age, sex, clinical trauma experience and students' descriptions of a traumatic event will be obtained.

Methods:

Official permission to conduct the study was obtained from the head of Critical Care & Emergency Nursing Department. The content validity of the tool was tested by experts in the field of critical care and nursing education and necessary modifications were done. Internal consistency of the subscales of IES-R (The first part of the tool) was calculated using Cronbach's Alpha. It was found to be consistent (intrusion = 0.86, avoidance = 0.92, hyperarousal = 0.83). The reliability of the PTSS- 10 {the second part of the tool} was measured (Cronbach alpha was 0.92) , indicating a high internal consistency and the test-retest reliability provided good support for the internal consistency and stability(test retest reliability, r =0.89). Explanation of the aim of the study for students was done and the written consent to participate in the study was obtained. The anonymity and confidentiality of responses, voluntary participation and right to refuse to participate in the study were emphasized to students.

A pilot study was carried out on a sample of ten students who were selected randomly to ascertain the clarity and applicability of the tool and the necessary modifications were done. The students were classified into ten groups each group contains 25 students and it was interviewed once by the researcher using the tool. Each interview lasted from1 to 2 hours.

Statistical analysis:

The raw data were coded and transformed into coding sheets. The results were checked. Then, the data were entered into SPSS system files (SPSS package version 13) using personal computer. Output drafts were checked against the revised coded data for typing and spelling mistakes. Finally, analysis and interpretation of data were conducted.

The following statistical measures were used:

- Numbers and percentage: used for describing and summarizing quantitative data.
- Range, arithmetic mean (X) and standard deviation (SD) used for normally distributed quantitative data.
- P value of 0.05 was used to assess the significance of the result.
- Statistical tests used in the present study were Student t- test was used for comparing between two means

3. Results:

The majority of the students were females (75.6%) and less than 20 years old (67.2%). Table (1) shows the students' descriptions of the most stressful events in their clinical experience which include : seeing patients die (43.2%), stress related to feeling overworked (42.8%) , trauma-related injuries (36.4%) performing cardiopulmonary resuscitation (30.4%) , and feeling unable to save a specific patient (28%) . Table (2) reveals that nearly two thirds of the emergency nursing students (60%) had high level of post traumatic stress {Impact of Event Scale Revised (IES-R)} with Mean ± SD {47.00 ± 11.31} which indicated the existence of a clinical high level of distress. More than half of the emergency nursing students (56.4%) had high level of hyperarousal symptoms, nearly half of them had high level of avoidance and intrusion symptoms (48.8 & 46.4, respectively). Table (3) illustrates that female students experienced a higher level of stress symptoms than male students and a statistically significant relation was found between sex and intrusion, avoidance, hyperarousal, and the total score of stress symptoms ($\chi 2$=23.212 & t= 5.481, $\chi 2$= 0.051 & t= 0.598, $\chi 2$= 6.705 & t= 3.234 and $\chi 2$=12.417 &t= 4.038 respectively). Table (4) reveals that Less than half of the students (43.3%) who

experienced high level of stress symptoms were in the age of 20 years or less with a statistically significant relation was found between age and total score of stress symptoms (t=2.099*, p=0.037) . Table (5) shows that students had score in Post Traumatic Stress Syndrome Questions Inventory (PTSS) as follows low score 56.4%, moderate score 4.0 % and high score 39.6 % respectively. In addition , Table(6) shows that more than one third of female students (34%) fulfill the diagnostic criteria for PTSD in a higher level than male students (5.6%) with a statistically significant difference was found between sex and (PTSS) (χ2= 11.942 at p= 0.003 and t= 4.223 at p <0.001respectively). Concerning the relation between age and (PTSS), table (7) illustrates that there was no statistically significant relation was found (t=0.150, p=0.881).

Table (1): Distribution of students according to their description of traumatic event.

Descriptions traumatic event	No.	%
Seeing patients die	108	43.2
Open wounds	33	13.2
Massive bleeding	35	14.0
Trauma-related injuries	91	36.4
Performing "futile" care to patients	57	22.8
Performing cardiopulmonary resuscitation	76	30.4
Stress related to feeling overworked	107	42.8
Stress related to not being able to save a specific patient	70	28.0
Verbal abuse from family members	12	4.8
Verbal abuse from other nurses	1	0.4

Table (2): Distribution of the students according to their level of post-traumatic symptoms using Impact of Event Scale Revised (IES-R)

Item	Scale subcategories						Scale (total)	
	Intrusion		Avoidance		Hyperarousal			
	N	%	N	%	N	%	N	%
Low	102	40.8	112	44.8	58	23.2	86	34.4
Moderate	32	12.8	16	6.4	51	20.4	14	5.6
High	116	46.4	122	48.8	141	56.4	150	60.0
Range	1.00-30.00		5.00-30.00		3.00-24.00		18.00-77.00	
Mean ± SD	16.56 ± 5.50		16.16 ±4.92		14.28 ± 4.04		47.00 ± 11.31	

Table (3): Relation between sex and intrusion, avoidance, Hyperarousal, and scale1.

		Low		Moderate		High		($\bar{X}$ ± SD)
		No.	%	No.	%	No.	%	
Intrusion	Male	40	16.0	1	0.4	20	8.0	13.38 ± 4.56
	Female	62	24.8	31	12.4	96	38.4	17.58 ± 5.40
	Test of sig.	χ^2=23.212*, p <0.001						t= 5.481*, p <0.001
Avoidance	Male	28	11.2	4	1.6	29	11.6	15.84 ± 5.38
	Female	84	33.6	12	4.8	93	37.2	16.27 ± 4.77
	Test of sig.	χ^2= 0.051, p= 0.975						t= 0.598, p= 0.550
Hyperarousal	Male	21	8.4	8	3.2	32	12.8	12.85 ± 4.17
	Female	37	14.8	43	17.2	109	43.6	14.74 ± 3.90
	Test of sig.	χ^2= 6.705*, p= 0.035						t= 3.234*, p= 0.001
Scale 1	Male	31	12.4	0	0.0	30	12.0	42.07 ± 10.90
	Female	55	22.0	14	5.6	120	48.0	48.59 ± 11.00
	Test of sig.	χ^2=12.417*, p= 0.002						t= 4.038*, p <0.001

χ^2: Chi square test t: Student t-test *: Statistically significant at p ≤ 0.05

Table (4):Relation between age intrusion, avoidance, Hyperarousal, scale1

Age		Low		Moderate		High		($\bar{X}$ ± SD)
		No.	%	No.	%	No.	%	
Intrusion	≤ 20	64	25.6	22	8.8	82	32.8	16.96 ± 5.41
	> 20	38	15.2	10	4.0	34	13.6	15.72 ± 5.64
	Test of sig.	χ^2= 1.594, p= 0.451						t=1.685, p=0.093
Avoidance	≤ 20	73	29.2	13	5.2	82	32.8	16.51 ± 4.91
	> 20	39	15.6	3	1.2	40	16.0	15.46 ± 4.89
	Test of sig.	χ^2= 1.641, p= 0.440						t=1.578, p= 0.116
Hyperarousal	≤ 20	35	14.0	37	14.8	96	38.4	14.57 ± 3.80
	> 20	23	9.2	14	5.6	45	18.0	13.68 ± 4.46
	Test of sig.	χ^2= 1.949, p= 0.377						t=1.638, p=0.103
Scale 1	≤ 20	52	20.8	8	3.2	108	43.2	48.04 ± 10.79
	> 20	34	13.6	6	2.4	42	16.8	44.87 ± 12.09
	Test of sig.	χ^2= 3.980, p= 0.137						t=2.099*, p=0.037

χ^2: Chi square test t: Student t-test *: Statistically significant at p ≤ 0.05

Table (5):Distribution of the students according to Post Traumatic Stress Syndrome Questions Inventory (PTSS)

(PTSS) Scale2	No.	%
Low	141	56.4
Moderate	10	4.0
High	99	39.6
Range	0.00-66.00	
Mean ± SD	33.88 ± 10.87	

Table (6): Relation between sex and Post Traumatic Stress Syndrome Questions Inventory (PTSS) {scale 2}

		Low		Moderate		High		($\bar{X}$ ± SD)
		No.	%	No.	%	No.	%	
Scale 2	Male	46	18.4	1	0.4	14	5.6	28.93 ± 10.20
	Female	95	38.0	9	3.6	85	34.0	35.48 ± 10.63
	Test of sig.	χ^2= 11.942*, p= 0.003						t= 4.223*, p <0.001

χ^2: Chi square test t: Student t-test * : Statistically significant at p ≤ 0.05

Table (7):Relation between age and Post Traumatic Stress Syndrome Questions Inventory (PTSS) {scale 2}

		Low		Moderate		High		($\bar{X}$ ± SD)
		No.	%	No.	%	No.	%	
Scale 2	≤ 20	94	37.6	6	2.4	68	27.2	33.95 ± 10.52
	> 20	47	18.8	4	1.6	31	12.4	33.73 ± 11.63
	Test of sig.	χ^2= 0.353, p= 0.838						t=0.150, p=0.881

χ^2: Chi square test t: Student t-test * : Statistically significant at p ≤ 0.05

4. Discussion

Nursing is generally considered a stressful profession. Nurses by virtue of their work may be occasionally or routinely exposed to stressful and sometimes traumatic situations in their work especially in emergency care .Within emergency care context, traumatic incidents may include situations such as being threatened or assaulted, witnessing an assault, being held hostage or providing care in the wake of a disaster. Individual nurses may exhibit symptoms similar in both nature and severity to PTSD after repeated exposure to these stressful situations[11]. Nursing students who attend emergency nursing specialty also facing various kinds of stressors such as workload, inadequate preparation, and dealing with issues of death and

dying. Besides, they exposed to various academic stressors as other college students such as midterm and final examinations, paper works and assignments. Exposure to a traumatic incidents will inevitably leads to psychological complications such as post traumatic stress, anxiety and depressive disorders. These complications may persist for years after the original trauma and resurface in response to other stressful situations. High stress levels in nursing students may affect memory, concentration, and problem-solving ability. It may lead to poor academic performance and scholastic achievement [2, 3].

In the current study, it was noted that the emergency nursing undergraduate students face a lot of academic stressors, as they described that the most stressful events in their experience are seeing patients die, stress related to feeling overworked and trauma-related injuries. This result is supported by Walton[6] , Seyedfatemi *et al.*,[2] and Burnard *et al.*,[13] who found that the most frequent academic source of stress was "increased class workload" and the most frequent environmental sources of stress were being "placed in unfamiliar situations which indicate the existence of a high clinical level of distress. Students have a large amount of preparatory work during their clinical training. As in their clinical rotations, students must exhibit a high level of responsibility and accountability in dealing with patients. Students often perform procedure that can cause serious harm to their patients and fear making a mistake. They use highly technical equipment. Time management can be a pressure as they have many tasks that must be accomplished in a short period of time. They deal with patients that are seriously ill or often dying.

The results of the current study revealed that students have high level of stress symptoms and this can be explained that the emergency nursing students have had specialized education, training, and experience to gain expertise in assessing and identifying patients' health care problems in crisis situations. In addition, the emergency nurse establishes priorities, monitors and continuously assesses acutely ill and injured patients, supports and attends to families, supervises allied health personnel, and teaches patients and families within a time limited, high-pressured care environment. This is in line with many studies which indicate that nursing students may be more prone to stress during their clinical practice in highly stressful specialties such as ICUs, ER, OR, and Psychiatric Units than other students [11,12]. Emergency nursing students ranked coping with 'death and dying' more highly as a source of distress than did those in other specialties[12-14].

In the present study, many of the items ranked as stressful by the nursing students were also identified by other populations, such as amount of material to learn, examinations and lack of timely feedback from faculty. In addition, the nursing students identified feelings of inadequacy in dealing with acutely ill patients. This is in line with Jonsson *et al.*,[7] who studied post-traumatic stress among Swedish ambulance personnel and reported their scores 31 or more on the IES-15 subscale. Scores over 31 indicate a stress reaction with certain likelihood of post-traumatic disorder[7].

In the present study, more than half of students had low (PTSS) score and more than thirty had high (PTSS) score .The low score of (PTSS) among nursing students could possibly be explained in several ways. The fact that they are most of the time under close observation & supervision and support from their clinical instructors in the clinical areas. Regarding the high score of (PTSS) for some students, this can be due to the presence of individual differences among nursing students, students are different in their identification of stressors especially with the complex and frequently changing healthcare environment such as Intensive Care Units and Emergency Departments .The variation between individuals in term of the perceptions of stress is most likely to arise from differences in personal factors as the ability to cope and levels of companionship during clinical practice . Because personal factors influence the perceptions of stress, it is important for the emergency nursing educators to consider how emergency nursing students might be supported, and what are the most effective coping strategies that should be utilized to overcome or decrease the stress levels of these students.

In the current study, the score of (IES-R) differs according to students' gender, PTSD was significantly higher in female than in male students. This is in agreement with Girard *et al.*,[15] who found that women were significantly more likely than men to have high levels of PTSD symptoms after critical illness. Several studies have demonstrated that women are more vulnerable to PTSD, even after controlling for differences in the type of trauma, and a higher incidence of pre-existing anxiety and/or depression disorders is postulated to play some role in the difference in PTSD rates between the sexes [16-18].

In the present findings, the rates of PTSD symptoms are most prevalent in younger age students. It may be attributed to students' lack of experience to cope with stressful situations in the emergency clinical setting. On the same line, Eckardt,[19] found that the prevalence of post-traumatic stress disorder was high in younger age because they tend be more exposed to precipitating situations.

Conclusion:

It is obvious from these findings that the emergency nursing students are exposed to a variety of stressors and suffer from PTSS. Also, This study Provides evidence for nursing educators that helping students to overcome stress during their emergency clinical practice is important.

Recommendations:

Orientation programs for first-year students should include stress management as a topic of discussion, workshops on stress and strategies to cope with stress. Such workshops might also be conducted during the academic year. Counseling center should introduce effective coping strategies through counseling programs for new students and support at risk students during their clinical practice. The availability of student counseling service, peer learners, and preceptor-ship may be helpful for increasing adaptive coping and decreasing stress. Students should be informed of the presence of counseling center and counseling team in the faculty. Clinical instructors should discuss with the emergency nursing students the most commonly identified sources of stress. The training in emergency nursing specialty should be postponed to the fourth year. Faculty administrators should consider incorporating stress management training into orientation activities for nursing students.

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