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Gaza Nurses After War: Are They Traumatized?

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Abstract

Studies related to trauma among nurses in Palestine are not available, but few studies about PTSD among Palestinian adolescents and other groups have been conducted. This study examines the relationship between exposure to war stress and posttraumatic symptoms among nurses in all Gaza hospitals after the Israeli war on Gaza. All available hospital nurses who were exposed to war stress (n=1130) were assessed for posttraumatic stress disorder (PTSD) symptoms one year after the war between Israel and Gaza erupted. Arabic version of Impact Event Scale-Revised (IES-R) was used in this study with a mean score of 35 as cut-off point for severe posttraumatic symptoms in nurses. High levels of PTSD symptoms were found in 69.4% of nurses. The most frequent symptoms of trauma subscales appears to be “Intrusion” (mean=15.5) followed by “Avoidance” (mean=14.9), and then “Hyper-arousal” (mean=11.4). These findings show that nurses suffered from severe posttraumatic symptoms after exposure to prolonged war stress. This level of trauma among nurses warrants intervention programs to reduce stress and trauma among Gaza nurses after the war.

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1. Introduction

Post-traumatic stress is a pattern of symptoms result as a delayed response to an acute stressful and life threatening event or situation, such as combat exposure in a war zone (Lavoie et al, 2011). These symptoms are observed either during or immediately after the event, or several days later. The person initially responds with intense fear, helplessness, or horror and later develops a response to the event that is characterized by persistently re-experiencing the event, with resultant symptoms of numbness, avoidance and hyperarousal (Risser et al., 2006).

Combat exposure in a war zone not only qualifies as trauma but typically involves multiple traumatic experiences (Rossignol & Chandler, 2010). After stressful or traumatic events, one usually has agitation, anxiety and sleep disturbance (McCarthy, 2001). Half of those who experience posttraumatic nightmares may have dreams that

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exactly replicate the traumatic event (Davis et al, 2007; Wittmann et al., 2007). They may have trouble in concentration and try to avoid reminders of the event (American Psychiatric Association, 2000).

The combination of the hospital environment during a war and personal experiences outside of work could expose nurses to a greater number of traumatic stressors that subsequently could lead to PTSD (Hodgettsa et al., 2003). Studies of stress in US military nursing in the combat zone has been limited to retrospective studies of military nurses who served in Vietnam (Scannell-Desch, 2000). Of two studies that consider American nurses in Vietnam, one determined that >30% of the nurses experienced PTSD-related symptoms (Paul, 1985), while the other found that 3.3% of nurses still on active duty had PTSD nearly 20 years after the war (Stretch et al, 1985). Carson et al (2000) found that witnessing death and serious injury to others is sufficiently stressful to cause PTSD. A study by Buechler (2007) aimed to explore the possible presence of significant emotional and interpersonal sequel and other persistent issues of living with chronic PTSD. Six female Vietnam veteran nurses with chronic PTSD were interviewed via telephone. Results revealed a history of abandoned nursing careers, relationships in which participants could not receive love, on-going struggles with anger, and a foreboding sense in their current lives. Ben-Ezra et al (2008) examined the relationship between exposure to war stress and posttraumatic symptoms among 80 Israeli nurses and physicians in a general hospital exposed to missile attacks a month after the war between Lebanon and Israel (July 12, 2006-August 14, 2006). Prevalence of PTSD was 10.5% in physicians and 35.7% in nurses using the IES-R. In another study, Ben-Ezra et al (2007) found that nurses were five times more likely than physicians to experience clinically significant symptoms of posttraumatic stress.

Studies related to trauma among nurses in Palestine are not available, but few studies about PTSD among Palestinian adolescents and other groups have been conducted. Thabet et al. (2008) estimated that in the Gaza Strip, 70.1% of 9-18-year olds exposed to the on-going Israeli-Palestinian conflict were found to have PTSD. Similarly, Elbedour et al (2007) found that 68.9% of Palestinian adolescents (age 15-19 years) living in the Gaza Strip have PTSD. Pat-Horenczyk et al. (2009) compared Israeli and Palestinian adolescents, finding that 6.8% of Israeli adolescents and 37.2% of Palestinian adolescents met the criteria for PTSD (although the IES-R was not used). Zachariae et al. (2011) found that Palestinian breast cancer patients and survivors in Gaza had considerably higher levels (42.6%) of cancer-related posttraumatic stress symptoms than Danish women (14.3%) with comparable disease severity assessed at equivalent time points following their treatment. IES-R was used with cut-off ≥ 35 .

2. Design

2.1. Instrument

The IES-R was developed by Daniel Weiss and Charles Marmar in 1997 to parallel the DSM-IV criteria for PTSD. Following DSM-IV criteria, hyperarousal subscale was added to IES and its name changed to IES-R (Beck et al, 2008). The IES-R is a self-report questionnaire that is comprised of 22 items on a 5-point scale (0=Not at all, 1=a little bit, 2=moderately, 3=quite a bit and 4=Extremely) and measures how frequently each of 22 difficulties identified in the scale has been distressing for the individual in the past 7 days with respect to the specified potentially stressful event. The internal consistency of the 3 subscales was found to be very high, with intrusion alphas ranging from 0.87 to 0.92, avoidance alphas ranging from 0.84 to 0.86, and hyperarousal alphas ranging from 0.79 to 0.90 (Briere, 1997). In other nursing studies, Cronbach alpha was as follows: 0.87 (Inoue et al, 2006) and 0.79 to 0.92 for subscales (Maunder, 2004). The cut-off score for IES-R varies between 25 and 40 with a score above the cut-off indicating a person at a high risk for psychological problems (Dyregrov & Gjestad, 2003). Different threshold cut-off points have been used in different studies and among different groups. Considering that this study was conducted few months after the war, the investigator has chosen a mean score of 35 as cut-off point for severe posttraumatic symptoms in nurses. The Impact of Event Scale--Revised (IES-R) is an internationally validated and non-culturally specific inventory. IES-R was translated into Arabic by two independent translators. Each translation was compared and double checked for accuracy and the communication of the Arabic meaning for

the words. As the questionnaire translation was reviewed, the meaning, clarity and the appropriateness to the cultural values of the intended subjects were assured. The final Arabic version was then translated back into English by two Arabic experts who were fluent in both the English and Arabic languages, and checked against the original English version.

2.2. Participants

The response rate among the hospital nurses in Gaza was 75.53%; 1133 out of 1500 nurses returned the completed surveys. Five hundred and sixty eight (50.3%) were males and 561 (49.7%) were females. About 55% of participants were less than 30 years old and more than 44% had experience of less than 5 years. The highest number of participants was from 'surgical' departments (18.4%). Most of nurses were from public hospitals (93.6%), while 6.4% were from private hospitals. Most of nurses (76.5%) were married and few nurses were divorced/widowed (3.3%). More than 48% of nurses work 6 nights or more per month, while 26% of nurses do not work any night. More than 47% of nurses had bachelor degree in nursing while few had postgraduate degrees (3.5%).

2.3. Data analysis

SPSS.16 (SPSS Inc., Chicago, IL, USA) statistical system was used to analyse the data in this study. Statistical assumptions were tested prior to running the analyses, and all variables were found to satisfy the assumptions for the normal distribution, homogeneity of variance and independence of observations. Reliability Coefficients (Cronbach's Alpha) of the IES-R subscales were: 0.86, 0.81, 0.84 respectively, and 0.85 for total IES-R.

3. Results

The results show that 69.4% of participants had scores more than 35 (threshold cut-off) on IES-R scale. Table (1) shows that the most frequent symptoms of trauma subscales appears to be "Intrusion" (mean=15.5) followed by "Avoidance" (mean=14.9). The least frequently reported symptom of trauma is "Hyper-arousal" (mean=11.4).

Table (1) Means and standard deviations of trauma symptoms by subscales

<i>Subscale</i>	<i>Mean</i>	<i>SD</i>	<i>Maximum</i>	<i>Minimum</i>	<i>N</i>
Intrusion	15.5	5.2	30.00	1.00	1130
Avoidance	14.9	5.3	31.00	0.00	1126
Hyper-arousal	11.4	4.3	24.00	0.00	1130
IES-R (total)	41.7	12.9	78.00	0.00	1133

Also, table (2) shows that the greatest symptom of trauma appears to be "I had waves of strong feelings about it" (mean=2.15), followed by "I felt irritable and angry" (mean=2.13), and "Pictures about it popped into my mind" (mean=2.07). The least frequent symptom of trauma is "My feelings about it were kind of numb".

Table (2) Means & standard deviations of trauma symptoms by items (descending order)

<i>Rank</i>	<i>Statement</i>	<i>Mean</i>	<i>SD</i>
1	I had waves of strong feelings about it	2.15	1.094
2	I felt irritable and angry	2.13	1.075
3	Pictures about it popped into my mind	2.07	1.078
4	I had trouble falling asleep	2.01	1.201
5	I was jumpy and easily startled	1.99	1.179
6	Any reminder brought back feelings about it	1.98	1.014
7	I tried to remove it from my memory	1.98	1.163

8	I avoided letting myself get upset when I thought about it or was reminded of it	1.97	0.997
9	I tried not to think about it	1.95	1.124
10	I was aware that I still had a lot of feelings about it, but I didn't deal with them	1.94	1.052
11	Other things kept making me think about it	1.94	0.988
12	I found myself acting or feeling as though I was back at that time	1.89	1.128
13	I had trouble staying asleep	1.88	1.133
14	I tried not to talk about it	1.86	1.071
15	I had trouble concentrating	1.85	1.122
16	I thought about it when I didn't mean to	1.85	1.011
17	I felt as if it hadn't happened or wasn't real	1.83	1.112
18	I stayed away from reminders about it	1.83	1.067
19	I felt watchful or on-guard	1.81	1.085
20	I had dreams about it	1.77	1.163
21	My feelings about it were kind of numb	1.56	1.192
22	Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart	1.56	1.127

The independent sample t-test output table (3) shows that level of trauma is similar among male and female nurses (P=0.222, trivial effect size= 0.04). It shows that nurses in private hospitals expressed more trauma symptoms than those in public hospitals (P=0.003, small effect size= 0.42). Also, it shows that level of trauma is similar among nurses who work and do not work extra time (P=0.169, trivial effect size= 0.13). Finally, it shows that psychological trauma is higher among nurses who work more than 5 nights per month (P=0.002, trivial effect size= 0.19).

Table (3): Differences in IES-R due to gender, hospital type, extra work and night shifts

IES-R		N	Mean	SD	t value	P	Diff-means (95% CIs)	D
Gender	Male	568	41.3	13.2	-1.222	0.222	-0.9 (-2.4, 0.6)	0.04
	Female	561	42.2	12.5				
Hospital type	Public	1061	41.4	13.0	2.992	0.003	-4.7(-7.7, -1.6)	0.42
	Private	72	46.1	9.4				
Night shifts	0-5	583	40.6	12.8	-3.041	0.002	-2.3(-3.8, -0.8)	0.19
	>5	545	43	12.9				

Cohen's d (effect size): Trivial <0.20, Small 0.20-0.49, Medium 0.50-0.79, Large ≥0.80

The ANOVA output table (4) shows no significant differences (F=1.702, p=0.165, trivial effect size: 0.005) in age, specialization (F=0.839, p=0.580, trivial effect size= 0.007), qualifications (F=2.132, p=0.075, trivial effect size= 0.007), and marital status (F=1.183, p=0.315, trivial effect size= 0.003) of nurses regarding the IES-R. It shows significant differences (F=3.502, p=0.015, small effect size= 0.009) in experience of nurses regarding the IES-R. Scheffe test output shows statistically significant effects were located among the experience (6-10) and (>15) with mean differences 3.42, which means that trauma is higher among nurses with (6-10) years of experience.

Table (4): Differences in IES-R due to age, experience, specialization, qualifications and marital status

IES-R		N	Mean	SD	F (df)	P	Eta-squared (η ²)
Age	19-30	612	42.0	12.9	1.702 (3, 1117)	0.165	0.005
	31-40	244	42.4	12.1			
	41-50	222	40.9	13.6			
	51-60	43	38.3	13.6			
Experience	1-5	497	41.9	12.6	3.502 (3, 1119)	0.015	0.009
	6-10	271	42.9	13.2			
	11-15	130	43.0	12.4			

Specialization	>15	225	39.5	13.2	0.839 (9, 1116)	0.580	0.007
	Medical	167	42.7	13.1			
	Surgical	207	42.7	12.5			
	Pediatric	169	41.8	13.1			
	Operating room	83	41.3	12.9			
	Maternity	137	41.4	13.7			
	ICU	129	40.3	11.6			
	Office	84	39.5	13.8			
	Emergency	84	43.2	12.2			
	Outpatient clinics	44	41.4	14.1			
Qualifications	Psychiatric	22	42.9	10.8	2.810 (3, 1120)	0.038	0.007
	Associate diploma	376	41.6	13.0			
	3years diploma	177	44.2	13.0			
	Bachelor	531	41.1	12.6			
Marital status	Postgraduate	40	40.1	15.5	1.634 (2, 1121)	0.196	0.003
	Single	227	41.6	12.2			
	Married	860	41.6	13.1			
	Others (divorced/widowed)	37	45.5	11.0			

η^2 effect size: Trivial < 0.001, Small 0.01-0.05 Medium, 0.06-0.13, Large ≥ 0.14

When tested against the dependent variable (IES-R), only 3 independent variables elicited a p value ≤ 0.15 . These variables-potential predictors-formed the basis of the preliminary regression model (Model 1). From this preliminary model, another model was considered. Details of the actual variables employed in both models are summarized in table (5).

Table (5) Predictors for IES-R included in the logistic regression models

<i>Potential predictor</i>	<i>Model</i>	
	1	2
Gender (male, female)*		
Age (19-30, 31-40, 41-50, 51-60)*		
Marital status (single, married, widowed/divorced)*		
Qualification (associate degree, 3 years diploma, bachelor, postgraduate degree)*	X	
Experience (1-5, 6-10, 11-15, >15)*		
Night shifts (0-5, >5)*	X	
Specialization (medical, surgical, paediatric, operating room, maternity, ICU, office, emergency, clinics, psychiatric)*		
Hospital type (public, private)	X	X
Total predictors	3	1

Note. Potential predictors that are categorical variables have their categories listed in brackets; all other predictors are scale variables. Preliminary analyses indicated that variables marked * were unlikely to be predictors.

Model 2 of IES-R predictors is merely reruns of, respectively, models 1 with predictors with non-significant ($p > 0.05$) Wald statistics removed. The variables in the equation for Model 2 are summarized in table (6).

Table (6) Logistic regression results for IES-R (caseness)

<i>Predictor</i>	<i>B</i>	<i>Wald</i>	<i>P</i>	<i>Odds ratio (with 95% confidence limits)</i>		
Qualifications		5.884	0.117			
Associate degree vs. 3 years diploma	0.044	0.013	0.910	1.045	0.489	2.230

Associate degree vs. bachelor degree	0.487	1.412	0.235	1.628	0.729	3.637
Associate degree vs. postgraduate degree	-0.037	0.010	0.921	0.963	0.459	2.021
Night shifts (0-5, >5)	-0.258	3.089	0.079	0.773	0.579	1.030
Hospital type (public vs. private)	-1.833	11.931	0.001	0.160	0.057	0.453
Constant	0.656	0.671	0.413	1.928		

Note. B is the logistic regression coefficient.

p values of 0.000 are not absolutely zero; they appear so because of an artifact of reporting to three decimal places.

Risk factors for IES-R caseness in hospital nurses were not detected. Protective factor seems to be hospital type. Nurses who work in public hospitals have around one sixth of the odds of being traumatized (OR=0.160) compared with those who work in private hospitals.

4. Discussion

One of main findings in this survey of hospital nurses were that more than two in three (69.4%) showed evidence of trauma as identified by the IES-R (threshold cut-off >35). Nurses are prone to develop more sympathy as they spend more time with the patients which might result in higher risk for the development of posttraumatic stress symptoms (Regehr et al., 2002). These results may question the common notion of resilience among hospital nurses (Luce et al., 2002). In addition, nurses, as part of their nursing training, were not prepared to deal with war situations in order to develop coping strategies that resolved in higher resilience after exposure to victims of attacks (Weiniger et al., 2006). Buechler (2007) indicated that the experience of military nurses caring for wounded and dying soldiers in a war zone changes them emotionally and that the changes commonly result in chronic PTSD. The result of this study was higher than the results of most of available studies: 13.7% (Takahashi et al, 2011), 21% (Inoue et al, 2006), 64.5% (Styra et al., 2008), 36% (Maunder, 2004), 24% (Mealer et al., 2007), 22% Mealer, 2009), 20% (Battles, 2007), 30% (Paul, 1985), 35.7% (Ben-Ezra et al, 2008). Only a study by (Niiyama et al., 2009) was higher than this study with 83% prevalence. Trauma among nurses in Palestine has not been studied before, but for the purpose of comparison different studies among different targets in Gaza were reviewed. Three studies were conducted among adolescents in Gaza by (Thabet et al., 2008; Elbedour et al., 2007; Pat-Horenczyk et al., 2009) with the results (70.1%, 68.9%, 37.2%) respectively. One study found prevalence of trauma among Palestinian breast cancer patients and survivors in Gaza was 42.6% (Zachariae et al., 2011).

The result shows that nurses who work in 'private' hospitals reported more trauma than nurses who work in 'public' hospitals and nurses working more than 5 nights per month reported more trauma than nurses working less than 5 nights per month. Also, the result shows that nurses with 5-15 years of experience reported more trauma than older nurses. This result was supported by Lavoie et al (2011). The result shows that nurses with 6-10 years of experience reported more trauma than nurses with more and less years of experience. However, the regression models suggest that hospital type is protective against trauma.

Limitation

Notwithstanding its strengths, the current study has some limitations. The questionnaires relating to trauma were only received by nurses who were in employment in the hospitals. A selection bias may have occurred because the investigator could not make contact with the nurses who were absent from work during data collection because of the recent strike of more than 300 nurse due to political issues. The numbers of participants from private hospitals were limited as one of these hospitals could not be reached for safety reasons and another one was affected seriously during the last war against Gaza and was not working fully during data collection. The cross sectional design that used in this study cannot conclude relationship between exposure and disease if exposure is a changeable characteristic. The last limitation is that no actual psychiatric diagnosis was made.

5. Recommendations

This study implies that PTSD should be recognized as a possible consequence of traumatic events experienced by nurses in their practice; strategies should be implemented to facilitate early recognition of potential traumatic events and PTSD symptoms; peer support, psycho-education and events simulations could be promising strategies for helping nurses to cope with their demanding jobs. Since this was the first quantitative study on PTSD among nurses in Gaza, the investigator suggests a future qualitative study to grasp the current PTSD situation in nurses.

6. Conclusion

This study has provided useful information on trauma among Gaza hospital nurses by using the IES-R inventory. In the next future, a focus groups discussion should be performed as a follow-up to explore further the actual level of trauma. The recommendations arising from this study include the need for a supportive environment and implementing interventions to deal with the stressful and traumatic situation in Gaza.

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