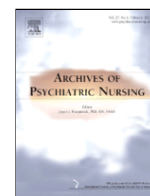




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Post-traumatic Stress Disorder Among Health Care Providers Two Years Following the Israeli Attacks Against Gaza Strip in August 2014: Another Call for Policy Intervention

Nasser Ibrahim Abu-El-Noor^{a,*}, Yousef Ibrahim Aljeesh^b, Abdal-Karim Said Radwan^b,
Mysoon Khalil Abu-El-Noor^b, Ibrahim Abdel-Ilhady Qddura^b, Khalid Jamal Khadoura^b,
Samer Khader Alnawajha^c

^a College of Nursing, Islamic University of Gaza, P.O. Box 108, Gaza, Gaza Strip, State of Palestine

^b College of Nursing, Islamic University of Gaza, State of Palestine

^c University College of Applied Sciences, State of Palestine

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Introduction

Post-traumatic stress disorder (PTSD) is a common, disabling disorder that appears after the exposure to a traumatic experience (Nemeroff et al., 2006). Post-traumatic stress leads to a pattern of symptoms that include a delayed response to an acute stressful and a life-threatening event or situation, such as combat exposure during war time (Lavoie, Talbot, & Mathieu, 2011). These symptoms may appear either during or immediately after the occurrence of the event, or several days later. The symptoms include initially intense fear, helplessness, or horror. Later, the individual develops a response to the stressful event that is characterized by persistently re-experiencing the event, with resultant symptoms of numbness, avoidance and hyper-arousal (Risser, Hetzel-Riggin, Thomsen, & McCanne, 2006). According to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), diagnostic criteria for PTSD require the onset of 17 characteristic symptoms following exposure to an extreme stressor (Criterion A1) and a reaction to that stressor that involves fear, helplessness, or horror (Criterion A2). Further, post-traumatic symptoms must be present for more than one month and include intrusive recollections of the traumatic event (Criterion B; at least 1 symptom), avoidant symptoms (Criterion C; at least 3 symptoms), and hyperarousal symptoms (Criterion D; at least 2 symptoms) (American Psychiatric Association, 2000). A few years later, the fifth edition of the DSM (American Psychiatric Association, 2013) proposed four distinct diagnostic clusters instead of three: re-experiencing symptoms (at least 1 symptom), avoidant symptoms (at least 1 symptom), negative alter-

ations in cognitions and mood (at least 2 symptoms), and arousal symptoms (at least 2 symptoms). According to both editions of the DSM, symptoms of PTSD must persist for more than one month and must cause clinically significant distress or impairment in functioning.

After exposure to a stressful or a traumatic event, one usually experience agitation, anxiety and sleep disturbance (McCarthy, 2001). Half of those who experience posttraumatic nightmares may have dreams that exactly replicate the traumatic event (Davis, Byrd, Rhudy, & Wright, 2007; Wittmann, Schredlm, & Kramer, 2007). Moreover, they may have trouble in concentration and they try to avoid reminders of the event (American Psychiatric Association, 2000). In the last two decades, research revealed that traumatic events occur far more often than what it was previously assumed (Kessler, 2000; Weathers & Keane, 2007) and that PTSD is a highly prevalent condition with great impact on human and society well-being and costs (Kessler, 2000).

Individuals exposed to combat exposure in a war zone are not only at risk to experience trauma but typically they may experience multiple traumatic experiences (Rossignol & Chandler, 2010). The combination of the stressful hospital environment during a war time and the individual experiences outside the work could expose nurses and other health care providers to a greater number of traumatic stressors which subsequently could lead to PTSD (Hodgetts, Broers, Godwin, Bowering, & Hasanovic, 2003). Hospital personnel are considered at high risk for severe injuries and mortality as part of their work, especially during war time. They will deal with masses of wounded people who are admitted to the hospital in a relatively short time. The increased number of admissions and the type of casualties during war time creates an extreme pressure on hospital personnel (Ben-Ezra, Palgi, & Essar, 2008).

* Corresponding author.

Email addresses: naselnoor@iugaza.edu.ps (N.I. Abu-El-Noor); yjeesh@iugaza.edu.ps (Y.I. Aljeesh); arodwan@iugaza.edu.ps (A-K-S Radwan); maziz@iugaza.edu.ps (M.K. Abu-El-Noor); iqddura@iugaza.edu.ps (I-A-I Qddura)

Besides the extra physical stress during such times, the extreme exposure of hospital personnel to repeated and continued high number of casualties and dead bodies is directly related to worsened functioning (March, 1993). Moreover, witnessing death and serious injuries to others is a sufficient stressful event to cause PTSD (Carson et al., 2000).

Posttraumatic stress symptoms among hospital personnel are relatively understudied (Ben-Ezra et al., 2008; Kerasiotis & Motta, 2004; Luce, Firth-Cozens, Midgley, & Burges, 2002). Several studies revealed that hospital personnel exposed to war experience had developed PTSD. For example, one study revealed that > 30% of American nurses who served during Vietnam war experienced PTSD-related symptoms (Paul, 1985). Another study revealed that 3.3% of those nurses who still in active duty had PTSD 20 years after the war (Stretch, Vail, & Maloney, 1985). A more recent study revealed that 10.5% of Israeli physicians and 35.7% of nurses who were working in Ramabm Hospital in Haifa during the war between Israel and Lebanon (July 12, 2006-August 14, 2006) experienced PTSD (Ben-Ezra et al., 2008). Nurses who were involved in Vietnam War with chronic PTSD reported abandoning nursing career, on-going, struggles with anger, involving in relationships in which they could not receive love, and a foreboding sense in their current lives (Buechler, 2007). Furthermore, being under direct threat toward one's life, family members, and friends while treating others is known to enhance emotional distress, burnout, and other negative consequences among mental health workers (Dekel & Baum, 2009).

Studies within the Palestinian context related to trauma are limited. One study was conducted by Alhajjar (2014a, 2014b) and aimed to examine the relationship between exposure to war stress and post-traumatic symptoms among nurses in all Gaza hospitals after the Israeli war on Gaza on 2012. Results revealed that 69.4% of nurses suffered from high levels of PTSD symptoms. In another study, results revealed that about 70.1% of children and adolescents between the ages of 9 and 18 years who were exposed to the on-going Israeli-Palestinian conflict to have PTSD (Thabet, Abu Tawahina, El Sarraj, & Vostanis, 2008). Similarly, Elbedour, Onwuegbuzie, Ghannam, Whitcome, and Abu Hein (2007) found that 68.9% of Palestinian adolescents (age 15–19 years) living in Gaza Strip have PTSD (Elbedour et al., 2007). Moreover, a comparative study conducted by Pat-Horenczyk et al. (2009) revealed that 37.2% of Palestinian adolescents compared to 6.8% of Israeli adolescents met the criteria for PTSD.

In the last decade, Gaza Strip was a target for four offensives by Israel during the years 2006, 2008, 2012, and 2014. The last war continued from July, 7th until August, 26th, 2014. According to the Palestinian Center for Human Rights (2014), the war left 2191 deaths (2205 according to OCHA (United Nations Office for the Coordination of Humanitarian Affairs), 2014a) and 10,895 wounded. Approximately, 30% of wounded people were children. About 18,000 housing units were destroyed or severely damaged and about 108,000 Palestinians became homeless as they were forced to evacuate their houses and moved to shelter areas (OCHA (United Nations Office for the Coordination of Humanitarian Affairs), 2014a). People living in Gaza Strip encountered a wide variety of psychological and physical distress during that time which could affect all domains of their quality of life (QOL).

During this war, 33 health care providers were killed and 251 were injured (Ministry of health-Palestinian Health Information Center, 2015). Moreover, 17 hospitals and 50 primary health care centres have reported damage to their infrastructure (OCHA (United Nations Office for the Coordination of Humanitarian Affairs), 2014b).

Hospital personnel working on Gaza hospitals have encountered several stressors during the war time that included personal threats to their lives, their families and their clients, especially that many hospitals were targets for bombardment by the Israelis.

In spite of the abundant studies about PTSD, only a few number of them have systematically examined the effect of health care providers and hospital personnel's exposure to extreme stress (Ben-Ezra, Palgi, &

Essar, 2007a, 2007b; Hodgetts et al., 2003; Luce et al., 2002). In a previous study, we aimed to assess the level of PTSD and to examine the relationship between exposure to war stress and posttraumatic symptoms among health care providers following Israeli offensives against Gaza Strip in 2014. Data were collected three months after the offensives. Results revealed that 89.8% of participants suffered from PTSD (Abu-El-Noor et al., 2016). In this study, we aimed to examine if there were any changes of our previous results after two years of the war.

Materials and methods

A cross-sectional design was used to conduct this study. The target population for the study was all nurses and doctors who were working at emergency rooms, operation rooms, intensive care units (ICU), surgical departments, and burn units during the 2014 war. These departments were chosen because they received most of the victims of the 2014 war. Therefore, nurses and doctors who started working at these units after August 2014 were excluded from this study. We used a census population that included all nurses and doctors who were working during the war time in the same departments and in the same three hospitals that were used in our previous study (Abu-El-Noor et al., 2016).

Instrument

The Impact Event Scale-Revised (IES-R) was used in this study (Weiss & Marmar, 1997). The original Impact Event Scale (IES) predated the introduction of the diagnosis of PTSD. It is comprised of 15 items that measure two symptom clusters of PTSD; seven items measure intrusions and eight items measure avoidance related to a negative event (Horowitz, Wilner, & Alvarez, 1979). The revision of the original IES was done by Weiss and Marmar to better match the DSM-IV criteria for PTSD. As a result, a third cluster of symptoms that consists of seven items (hyperarousal subscale) was added to the original IES and its now known as IES-R.

The IES-R is a self-report questionnaire that consists of 22 items measuring post-traumatic stress symptoms in three clusters: intrusion (seven items), avoidance (eight items) and hyperarousal (seven items). Participants are asked to rate how frequently each symptom has been distressing for each participant during the past seven days with respect to the specified potentially stressful event on a 5-point Likert scale (where 0 - not at all, 1 = a little bit, 2 = moderately, 3 = quite a bit, and 4 = extremely).

The IES-R has demonstrated good psychometric properties (Weiss, 2004). Briere (1977) reported that the internal consistency of the three subscales were found to be very high, with intrusion Cronbach's alphas ranging from 0.87 to 0.92, avoidance Cronbach's alphas ranging from 0.84 to 0.86, and hyperarousal Cronbach's alphas ranging from 0.79 to 0.90. Currently, IES-R is considered one of the most widely used measures to assess posttraumatic stress symptoms (Elhai, Gray, Kashdan, & Franklin, 2005).

The cut-off score for IES-R varies between 22 and 44 with a score above the cut-off indicating a person at a high risk for psychological problems (Dyregrov & Gjestead, 2003). Considering the variations of cut-off points used in different studies in different groups of participants and different cultures, the investigators chose a cut-off point of 35 for severe posttraumatic symptoms. Choosing a score of 35 as a cut point was because it relatively falls in the middle of the recommended range between 22 and 44. Moreover, it was used in a similar study by Alhajjar (2014a, 2014b) and in our previous study (Abu-El-Noor et al., 2016).

The instrument was translated into the Arabic language in our previous study (Abu-El-Noor et al., 2016) by two independent bilingual researchers. Then the two Arabic versions were compared and double checked for accuracy until common agreement about a final translation was agreed upon. Conceptual rather the literal meaning was the goal of

the translation. The final Arabic version was then back translated into the English language by a third bilingual researcher. Back-translation is a standard procedure for translating a research questionnaire from English to other languages (Kim, Schwartz-Barcott, Holter, & Lorensen, 1995). Reliability Coefficients (Cronbach's alpha) of the Arabic IES-R subscales were: 0.817, 0.779, 0.713 respectively, and 0.892 for total IES-R (Abu-El-Noor et al., 2016).

Statistical Analysis

The Statistical Package for Social Science (SPSS) version 18 was used to analyse data. Data were cleaned and checked for meeting statistical assumptions for normal distribution and homogeneity. Data analysis procedures included basic descriptive statistics (mean, range, standard deviation, and percentage) and frequency distribution tables. ANOVA and t-test were used to compare means. Pearson's correlation was used to test correlations among study variables.

Ethical Considerations

Prior to conducting this research study, approval of the research committee at the Palestinian Ministry of Health was obtained. After explaining the purpose of the study and reassuring participants about confidentiality of data, each participant was asked to sign a consent paper prior to participation.

Results

Characteristics of Participants

A total of 302 questionnaires were distributed to potential participants. Only 244 participants returned completed questionnaires with a response rate of 80.8%. The great majority were males (88.3%, N = 196) and married (82.2%, N = 202). Nurses made the bulk of the sample (N = 179, 73.4%) while physicians made the rest of the sample (N = 65, 26.6%). Most of the participants (N = 133, 54.5%) hold a bachelor degree while only 13 (5.3%) of them hold a doctoral degree. Age of participants ranged between 20 and 56 years with a mean of

Table 1
Characteristics of participants.

Variable		Frequency	Percentage
Sex	Male	196	80.3
	Female	48	19.7
Marital status	Single	42	17.2
	Married	202	82.8
Hospital	Hospital A	97	39.8
	Hospital B	95	38.9
	Hospital C	52	21.3
Occupation	Nurse	179	73.4
	Physician	65	26.6
Level of education	Diploma	62	25.4
	Bachelor	133	54.5
	High diploma	11	4.5
	Master	24	9.8
Received support	Doctorate	13	5.3
	Yes	33	13.6
	No	210	86.4

Table 2
Means and standard deviations of trauma symptoms by subscales.

	Score	Std. deviation	Minimum	Maximum	N	Cronbach's alpha
Intrusion	19.99	5.39	0.00	32.00	244	0.815
Avoidance	17.60	5.16	4.00	30.00	244	0.725
Hyper-arousal	14.12	4.46	0.00	24.00	244	0.769
Total IES-R	51.71	13.34	8.00	80.00	244	0.859

34.42 (SD ± 8.83) and their working experience ranged between one year and 35 years with a mean of 8.92 (AD ± 6.86). The majority of participants (n = 210, 86.4%) did not receive any kind of counselling or support after the war had ended. This support was offered by some international organizations that provide support to the Palestinian people and mostly the support was done only in one meeting. Table 1 summarizes demographic characteristics of the participants.

Analysis of IES-R Scale

The results of our study revealed that the great majority of the participants (N = 218, 89.3%) had scores > 35 (threshold cut-off) on IES-R scale. Of them was 163 nurses (prevalence rate 91.06%), 55 doctors (prevalence rate 84.61%) and three participants did not identify their jobs.

Table 2 summarizes the results of the IES-R scale and its subscales. The highest mean of the subscales belongs to "Intrusion" (mean = 19.99) followed by "Avoidance" (mean = 17.60) while the least frequently reported symptoms were related to hyper-arousal subscale (mean = 14.12).

Table 3 shows the results for each item of the IES-R scale. The highest scores for the most stressful symptoms of trauma, as ranked by the participants, were "I had waves of strong feelings about it" (mean = 3.40), followed by "I felt irritable and angry" (mean = 3.16), and "Pictures about it popped into my mind" (mean = 3.00). The least frequent symptoms of trauma were "My feelings about it were kind of numb" (mean = 1.71) and "Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea or a pounding heart" (mean = 1.55).

Independent t-test revealed that there were statistically significant differences between male and female participants in the means of IES-R and intrusion and hyper-arousal subscales. Female participants had higher level of PTSD (Table 4). Also, there was a statistically significant differences in hyper-arousal subscale among nurses (mean = 14.48) and physicians (mean = 13.12) with a p value of 0.035. On the other hand, independent t-test revealed that there were no statistically significant differences among single and married participants and among participants who received some psychological support and those who did not in total IES-R and all of its subscales.

One way ANOVA test showed that there were no statistically significant differences among scores of IES-R scale and its subscales among participants in relation to place of living (p value ranged between 0.114 and 0.417), the hospital they work at (p value ranged between 0.067 and 0.352), nor the department they work at (p value ranged between 0.161 and 0.409). However, one way ANOVA revealed that there were statistically significant differences among the scores of total IES-R and the hyper-arousal subscale in relation to level of education. Post hoc results revealed that these differences were between participants who hold a master's degree and those who hold a bachelor degree. The total IES-R mean score for participants who hold a bachelor degree was 53.41 while the mean for participants who hold a master's degree was 54.33 (p = 0.004). The mean score for hyper-arousal subscale was 14.76 for those who hold a bachelor degree and 12.21 for those who hold a master's degree (p = 0.003).

Correlation results revealed that there was a negative correlation between total IES-R and its three subscales and age and years of experi-

Table 3
Means & SD of trauma symptoms by items (descending order).

	Statement	Mean	SD
1	I had waves of strong feelings about it	3.34	0.73
2	I felt irritable and angry	3.16	0.87
3	Pictures about it popped up into my mind	3.00	0.91
4	I felt watchful or on-guard	2.59	1.00
5	Any reminder brought back feelings about it	2.91	0.96
6	I avoided letting myself get upset when I thought about it or remembered it	2.46	0.97
7	I tried to remove it from my memory	2.59	0.99
8	I had trouble falling asleep	2.55	1.12
9	Other things kept making me think about it	2.47	0.95
10	I tried not to think about it	2.47	1.07
11	I thought about it when I didn't mean to	2.16	1.14
12	I was aware that I still had a lot of feelings about it, but I didn't deal with them	2.28	1.09
13	I was jumpy and easily startled	2.20	1.14
14	I had trouble concentrating	2.07	1.14
15	I tried not to talk about it	2.16	1.11
16	I stayed away from reminders about it	2.15	1.07
17	I had dreams about it	2.10	1.16
18	I found myself acting or feeling as if I was back at that time	2.07	1.06
19	I had trouble staying asleep	1.87	1.19
20	I felt as if it hadn't happened or wasn't real	1.77	1.28
21	My feelings about it were kind of numb	1.72	1.22
22	Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea or a pounding heart	1.55	1.23

ence of participants. However, these correlations were not statistically significant.

When the results of this study (data were collected two years after the war) were compared with our previous study (data were collected 2 months after the war), it is noticed that the mean scores for the total IES-R and all of its three subscales (Table 5) were very close. Moreover, there were no statistically significant differences among the results of the two studies.

Discussion

This study is a follow up of our previous study which was conducted two months following the attacks against Gaza Strip (Abu-El-Noor et al., 2016). In this study, we assessed posttraumatic symptoms among nurses and doctors in three hospitals two years after the August 2014 Israeli war against the Gaza Strip. Table 5 compares the results of the two studies. As noticed from the table, the scores of the three domain of the IES-R were very close with no statistically significant difference.

The results of this study revealed that the great majority of the participants (N = 218, 89.3%) had scores > 35 (threshold cut-off) on IES-R scale. These results are very close to those reported in our previous

studies where 291(89.8%) participants had a high level of PTSD. There are several potential reasons for the similarity of the results of the two studies. First, there were no specific treatment and/or counselling programs offered to the health care professionals with a few exceptions as only 34 (13.6%) of participants were offered some kind of help and counselling by some international organizations that are working in the Gaza Strip. A second possible reason could be that participant did not seek treatment. According to Yehuda (2002), usually victims of PTSD are hesitant to seek treatment. A final possible reason could be related to the fact that these health care professionals had experienced several offensive attacks against the Gaza Strip in the last decade, which will allow them to anticipate a new attack at any given time. Such anticipation will put them under continues threats to pass through a similar experience. According to Yehuda (2002, p. 108), "many persons with prior exposure to traumatic events may have a recrudescence of PTSD symptoms triggered by news of catastrophic events and their distressing effects."

Our results are consistent with the results of several studies that were conducted in the area. A previous study that was conducted by (Alhajjar, 2014a, 2014b) revealed that 69.4% of nurses reported to have PTSD after the Israeli offensive against Gaza Strip in 2008. Shamia, Thabet, and Vostanis (2015) used the Gaza Traumatic Events Checklist, PTSD Checklist, and Posttraumatic Growth Inventory. The aim of their study was to establish the association between war traumatic experiences, PTSD symptoms and post-traumatic growth among nurses in the Gaza Strip, 2 years after the 2008 war against Gaza Strip. Their results revealed that 19.7% of the nurses in the Gaza Strip reported full PTSD. In another study conducted by Ben-Ezra et al. (2007a, 2007b) who examined posttraumatic symptoms among nurses and doctors at the last few days of the war erupted between Israel and Lebanon, they found that 10.5% of physicians and 35.7% of nurses had high levels of PTSD symptoms. Ben-Ezra et al. concluded that nurses were 5.28 times more likely to endorse high levels of PTSD symptoms. The prevalence of PTSD among participants of Ben Ezra et al. is much less than reported in our study. Both studies revealed that nurses were at higher risks than doctors to develop PTSD. A few other studies reported higher prevalence of posttraumatic stress among nurses in comparison to doctors after exposure to single trauma (Grieger, Fullerton, Ursano, & Reeves, 2003; Luce et al., 2002; Maunder, 2004).

Such differences can be attributed to several reasons. First, as nurses spend more time with their clients than doctors do, they have more sympathy to their patients and they will be subject to more traumatic narratives as part of their duty, which can lead to more identification with their clients (Ben-Ezra et al., 2007a, 2007b). According to Regehr, Goldberg, and Hughes (2002), such sympathy and identification is assumed to put nurses at higher risk to develop PTSD. Second, as part of their medical training, doctors are exposed to cadavers and dead bodies which help them to develop coping strategies which resolved in higher resilience during the exposure to victims during war time (Weiniger et al., 2006). Finally, nurses have different responsibili-

Table 4
Comparison of IES-R and its subscales in relation to different variables.

Variable	IES-R								
	Intrusion		Avoidance		Hyper-arousal		Total IES-R		
	Score	p	Score	p	Score	p	Score	p	
Gender	Male	19.66	0.047	17.41	0.218	13.74	0.003	50.82	0.021
	Female	21.31		18.35		15.67		55.33	
Marital status	Single	19.45	0.458	17.07	0.444	13.64	0.392	50.16	0.353
	Married	20.10		17.72		14.21		52.03	
Job	Nurse	20.35	0.088	17.83	0.237	14.48	0.043	52.67	0.065
	Physician	18.98		16.95		13.12		47.38	
Received support	Yes	20.28	0.73	17.51	0.92	14.48	0.56	52.27	0.76
	No	19.92		17.60		14.04		51.17	

Table 5
Comparison between current study and our previous study.

	Previous study	Current study	p value
Intrusion	20.04	19.99	0.808
Avoidance	17.83	17.60	0.946
Hyper-arousal	14.27	14.12	0.959
Total IES-R	52.13	51.71	0.929

ties while taking care of the health status of their clients with less forensic responsibility and authority compared to doctors. Therefore; there is a higher possibility that doctors will perceive control over the event in such situations which may reduce their feelings of helplessness in comparison to nurses (Luce et al., 2002). The high prevalence of PTSD among nurses and other health care providers in this study and other studies (Alhajjar, 2014a, 2014b; Ben-Ezra et al., 2007a, 2007b; Ben-Ezra et al., 2008) may question the common notion of resilience among hospital nurses and other health care providers (Luce et al., 2002).

The result of this study showed that female health care providers had higher scores of the IES-R than male health care providers. Consistently, other studies (Abu-El-Noor et al., 2016; Alhajjar, 2014a, 2014b; Ben-Ezra et al., 2007a, 2007b; Bryant & Harvey, 2003; Shamia et al., 2015) reported similar finding that female health care providers had higher scores of PTSD than male health care providers.

Regardless that other several studies explored the prevalence of PTSD among nurses and other health workers after exposure to different types of traumas, the prevalence of PTSD among participants of this study still much higher than those reported by all of these studies. For example, prevalence of PTSD was 13.7% among nurses who had encountered patient suicide (Takahashi et al., 2011), 21% among nurses who had been exposed to verbal abuse or violence (Inoue, Tsukano, Muraoka, Kaneko, & Okamura, 2006), 64.5% among health care workers working in a high-risk units during the severe acute respiratory syndrome (SARS) outbreak (Styra et al., 2008), 29–35% among health care providers during severe SARS (Maunder, 2004), 24–29% among ICU nurses (Mealer, Shelton, Berg, Rothbaum, & Moss, 2007), 22% among nurses (Mealer, Burnham, Goode, Rothbaum, & Moss, 2009), 20% among nurses (Battles, 2007), 51% of nurses exposed to trauma (Niiyama et al., 2009), 26.3% of deployed military healthcare officers (Hickling, Gibbons, Barnett, & Watts, 2011), 26.7% of healthcare workers (Weinberg & Creed, 2000), and 9% among health care workers deployed to combat setting (Kolkow, Spira, Morse, & Grieger, 2007).

Furthermore, the results of this study revealed that level of education had effect on level of hyper-arousal subscale. Moreover, age and experience were found to have inversely correlation with level of PTSD. The results were supported by Abu-El-Noor et al. (2016), Alhajjar (2014a, 2014b), Ben-Ezra et al. (2007a, 2007b), and Lavoie et al. (2011).

Conclusions and recommendations

Like our previous study (Abu-El-Noor et al., 2016), this study had revealed a high prevalence of PTSD among health care providers two years after exposure to traumatic situations during the 2014 Israeli offensive against Gaza Strip. Such high prevalence rates may have negative consequences in the coming future on nurses and doctors, who constitute the back bone of the Palestinian health care system. Literature has connected PTSD with negative health outcomes (Wolfe, Schnurr, Brown, & Furey, 1994) and adverse psychological disorders (Gibbons, Hickling, & Watts, 2012) such as the existence of acute depression (Hickling et al., 2011; O'Donnell, Creamer, & Pattison, 2004), anxiety, and adverse psychosocial impact (Hickling et al., 2011; Weinberg & Creed, 2000). Similarly, Weinberg and Creed (2000) added

that health workers with post traumatic distress are more vulnerable to psychiatric disorders and ongoing social stress outside of work. Furthermore, the analysis of a study conducted by Niiyama et al. (2009) revealed that only 17% of nurse recovered from traumatic stress while the other 83% had persistent traumatic stress. Moreover; studies showed that prevalence of PTSD is associated with burn out syndrome, which together has a great impact on work and non-work related activities and perceptions (Mealer et al., 2009).

The results of this study should increase awareness of PTSD symptoms among health care workers. Although in our previous study (Abu-El-Noor et al., 2016) we called for immediate interventions from health care policy makers and hospital administrations and to offer adequate treatment and counselling for those affected by the war stress and to take further interventions to improve their mental health, to reduce the incidence of chronic PTSD and other possible psychiatric disorders, improve their job satisfaction and reduce burn out to retain them in their professions, but on the ground, there were no actions taken. The only actions that were taken were sporadic interventions that were taken by international organizations, such as Doctors of Spain. We believe that this was not enough. There are several possible reasons that health policy makers did not intervene to offer help and counselling to health care providers affected by the war. First, it is possible that health policy makers are not aware of the impact of PTSD. A second possible reason is lack of financial resources. Gaza Strip passes through crises and under siege for the last decade. Financial resources are very limited; therefore, priorities are in a continuous dramatic change. Meeting physical needs such as water, food, and electricity supplies come first in the priority list of the government. A third possible reason is that international health organizations are not engaged in offering such help as they are also considering meeting physical needs as a priority. Only a few number of organizations had offered counselling to health care professionals after the war. A final possible reason could be related to the gap between research and policy makers as some policy makers don't take seriously the results of research studies into their considerations. The literature described the gap between research and practice in health care and public health as large and troubling (Glasgow & Emmons, 2007; Lenfant, 2003). Again, we encourage our health policy makers to reconsider their policy and to intervene to save these doctors and nurses from chronic complications to PTSD.

Uncited references

Caabu, 2013
Polit and Beck, 2006

References

- Abu-El-Noor, N.I., Aljeesh, Y.I., Radwan, A.S., Abu-El-Noor, M.K., Qddura, I.A.I., Khadoura, K.J., Alnawajha, S.K., 2016. Post-traumatic stress disorder among health care providers following the Israeli attacks against Gaza Strip in 2014: A call for immediate policy actions. *Archives of Psychiatric Nursing* 30 (2), 185–191.
- Alhajjar, B., 2014. Gaza nurses after war: Are they traumatized?. *Procedia - Social and Behavioral Sciences* 114, 802–809.
- Alhajjar, B., 2014. Gaza nurses after war: Are they traumatized?. *Procedia - Social and Behavioral Sciences* 114, 802–809.
- American Psychiatric Association, 2000. *Diagnostic and statistical manual of mental disorders*, 4th ed. American Psychiatric Association, Washington, D.C..
- American Psychiatric Association, 2013. *Diagnostic and statistical manual of mental disorders*, 5th ed. American Psychiatric Association, Arlington.
- Battles, E.D., 2007. An exploration of post-traumatic stress disorder in emergency nurses following Hurricane Katrina. *Journal of Emergency Nursing* 33 (4), 314–318. <https://doi.org/10.1016/j.jen.2007.01.008>.
- Ben-Ezra, M., Palgi, Y., Essar, N., 2007. Impact of war stress on posttraumatic stress symptoms in hospital personnel. *General Hospital Psychiatry* 29 (3), 264–266.
- Ben-Ezra, M., Palgi, Y., Essar, N., 2007. Impact of war stress on posttraumatic stress symptoms in hospital personnel. *General Hospital Psychiatry* 29 (3), 264–266. <https://doi.org/10.1016/j.genhospsych.2007.03.001>.
- Ben-Ezra, M., Palgi, Y., Essar, N., 2008. The impact of exposure to war stress on hospital staff: A preliminary report. *Journal of Psychiatric Research* 42 (5), 422–423. <https://doi.org/10.1016/j.jpsychires.2007.02.004>.
- Briere, J., 1977. Psychological assessment of adult posttraumatic states. *American Psychological Association*, Washington, DC.

- Bryant, R.A., Harvey, A.G., 2003. Gender differences in the relationship between acute stress disorder and posttraumatic stress disorder following motor vehicle accidents. *Australian and New Zealand Journal of Psychiatry* 37 (2), 226–229.
- Buechler, D., 2007. Experience of posttraumatic stress disorder for female Vietnam nurse veterans. Walden University Ann Arbor, (Doctorate Dissertation).
- Caabu, 2013. Humanitarian factsheet: From “Cast Lead” to “Pillar of Defence”. Retrieved from <http://www.caabu.org/what-we-do/gaza/factsheet-humanitarian-situation-cast-lead-pillar-defense>.
- Carson, M.A., Paulus, L.A., Lasko, N.B., Metzger, L.J., Wolfe, J., Orr, S.P., Pitman, R.K., 2000. Psychophysiological assessment of posttraumatic stress disorder in Vietnam nurse veterans who witnessed injury or death. *Journal of Consulting and Clinical Psychology* 68 (5), 890–897.
- Davis, J., Byrd, P., Rhudy, J., Wright, D., 2007. Characteristics of chronic nightmares in a trauma-exposed treatment-seeking sample. *Dreaming* 17, 187–198.
- Dekel, R., Baum, N., 2009. Intervention in a shared traumatic reality: A new challenge for social workers. *British Journal of Social Work* 24, 1–18.
- Dyregrov, A., Gjestad, R., 2003. A maritime disaster: Reactions and follow-up. *International Journal of Emergency Mental Health* 5 (1), 3–14.
- Elbedour, S., Onwuegbuzie, A.J., Ghannam, J., Whitcome, J.A., Abu Hein, F., 2007. Post-traumatic stress disorder, depression, and anxiety among Gaza Strip adolescents in the wake of the second Uprising (Intifada). *Child Abuse and Neglect* 31 (7), 719–729. <https://doi.org/10.1016/j.chiabu.2005.09.006>.
- Elhai, J.D., Gray, M.J., Kashdan, T.B., Franklin, C.L., 2005. Which instruments are most commonly used to assess traumatic event exposure and posttraumatic effects?: A survey of traumatic stress professionals. *Journal of Traumatic Stress* 18 (5), 541–545. <https://doi.org/10.1002/jts.20062>.
- Gibbons, S.W., Hickling, E.J., Watts, D.D., 2012. Combat stressors and post-traumatic stress in deployed military healthcare professionals: An integrative review. *Journal of Advanced Nursing* 68 (1), 3–21. <https://doi.org/10.1111/j.1365-2648.2011.05708.x>.
- Glasgow, R.E., Emmons, K.M., 2007. How can we increase translation of research into practice? Types of evidence needed. *Annual Review of Public Health* 28, 413–433.
- Grieger, T.A., Fullerton, C.S., Ursano, R.J., Reeves, J.J., 2003. Acute stress disorder, alcohol use, and perception of safety among hospital staff after the sniper attacks. *Psychiatric Services* 54 (10), 1383–1387.
- Hickling, E.J., Gibbons, S., Barnett, S.D., Watts, D., 2011. The psychological impact of deployment on OEF/OIF healthcare providers. *Journal of Traumatic Stress* 24 (6), 726–734. <https://doi.org/10.1002/jts.20703>.
- Hodgetts, G., Broers, T., Godwin, M., Bowering, E., Hasanovic, M., 2003. Post-traumatic stress disorder among family physicians in Bosnia and Herzegovina. *Family Practice* 20 (4), 489–491.
- Horowitz, M., Wilner, N., Alvarez, W., 1979. Impact of event scale: A measure of subjective stress. *Psychosomatic Medicine* 41 (3), 209–218.
- Inoue, M., Tsukano, K., Muraoka, M., Kaneko, F., Okamura, H., 2006. Psychological impact of verbal abuse and violence by patients on nurses working in psychiatric departments. *Psychiatry and Clinical Neurosciences* 60 (1), 29–36. <https://doi.org/10.1111/j.1440-1819.2006.01457.x>.
- Kerasiotis, B., Motta, R.W., 2004. Assessment of PTSD symptoms in emergency room, intensive care unit, and general floor nurses. *International Journal of Emergency Mental Health* 6 (3), 121–133.
- Kessler, R.C., 2000. Posttraumatic stress disorder: The burden to the individual and to society. *Journal of Clinical Psychiatry* 61 (Suppl. 5), 4–12, (discussion 13–14).
- Kim, H.S., Schwartz-Barcott, D., Holter, I.M., Lorensen, M., 1995. Developing a translation of the McGill pain questionnaire for cross-cultural comparison: An example from Norway. *Journal of Advanced Nursing* 21 (3), 421–426.
- Kolkow, T.T., Spira, J.L., Morse, J.S., Grieger, T.A., 2007. Post-traumatic stress disorder and depression in health care providers returning from deployment to Iraq and Afghanistan. *Military Medicine* 172 (5), 451–455.
- Lavoie, S., Talbot, L.R., Mathieu, L., 2011. Post-traumatic stress disorder symptoms among emergency nurses: Their perspective and a ‘tailor-made’ solution. *Journal of Advanced Nursing* 67 (7), 1514–1522. <https://doi.org/10.1111/j.1365-2648.2010.05584.x>.
- Lenfant, C., 2003. Clinical research to clinical practice—Lost in translation?. *New England Journal of Medicine* 349 (9), 868–874.
- Luce, A., Firth-Cozens, J., Midgley, S., Burges, C., 2002. After the Omagh bomb: Posttraumatic stress disorder in health service staff. *Journal of Traumatic Stress* 15 (1), 27–30. <https://doi.org/10.1023/a:1014327110402>.
- March, J.S., 1993. What constitutes a stressor? The “Criterion A” issue. In: Davidson, J.R.T., Foa, E.B. (Eds.), *Posttraumatic stress disorder, DSM-IV and beyond*. American Psychiatric Association Press, Washington, DC.
- Maunder, R., 2004. The experience of the 2003 SARS outbreak as a traumatic stress among frontline healthcare workers in Toronto: Lessons learned. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences* 359 (1447), 1117–1125. <https://doi.org/10.1098/rstb.2004.1483>.
- McCarthy, S., 2001. Post-traumatic stress disorder in people with learning disabilities. *Advances in Psychiatric Treatment* 7, 163–169.
- Mealer, M., Burnham, E., Goode, C., Rothbaum, B., Moss, M., 2009. The prevalence and impact of post traumatic stress disorder and burnout syndrome in nurses. *Depression and Anxiety* 26, 1118–1126.
- Mealer, M., Shelton, A., Berg, B., Rothbaum, B., Moss, M., 2007. Increased prevalence of post-traumatic stress disorder symptoms in critical care nurses. *American Journal of Respiratory and Critical Care Medicine* 175 (7), 693–697. <https://doi.org/10.1164/rccm.200606-7350C>.
- Ministry of health-Palestinian Health Information Center, 2015. Annual report: Martyrs and injured people in Gaza Strip. Retrieved from <http://www.moh.gov.ps/portal/wp-content/uploads/%D8%AA%D9%82%D8%B1%D9%8A%D8%B1-%D8%A7%D9%84%D8%B4%D9%87%D8%AF%D9%87.pdf>.
- Nemeroff, C.B., Bremner, J.D., Foa, E.B., Mayberg, H.S., North, C.S., Stein, M.B., 2006. Posttraumatic stress disorder: A state-of-the-science review. *Journal of Psychiatric Research* 40 (1), 1–21. <https://doi.org/10.1016/j.jpsychires.2005.07.005>.
- Niiyama, E., Okamura, H., Kohama, A., Taniguchi, T., Sounohara, M., Nagao, M., 2009. A survey of nurses who experienced trauma in the workplace: Influence of coping strategies on traumatic stress. *Stress and Health* 25 (1), 3–9. <https://doi.org/10.1002/smi.1217>.
- OCHA (United Nations Office for the Coordination of Humanitarian Affairs), 2014a. Gaza crisis: Facts and figures. Retrieved from <http://www.ochaopt.org/content.aspx?id=1010361>.
- OCHA (United Nations Office for the Coordination of Humanitarian Affairs), 2014b. Occupational Palestinian territory: Gaza emergency situation report (as of 4 September 8, 08:00 hrs). Retrieved from <http://unispa.un.org/UNISPAL.NSF/0/90164F24E91DC62A85257D490067170F>.
- O’Donnell, M.L., Creamer, M., Pattison, P., 2004. Posttraumatic stress disorder and depression following trauma: Understanding comorbidity. *American Journal of Psychiatry* 161 (8), 1390–1396. <https://doi.org/10.1176/appi.ajp.161.8.1390>.
- Palestinian Center for Human Rights, 2014. Statistics: Victims of the Israeli offensive on Gaza since 08 July 2014. Retrieved from http://www.pchrgaza.org/portal/en/index.php?option=com_content&view=article&id=10491:statistics-victims-of-the-israeli-offensive-on-gaza-since-08-july-2014&catid=145:in-focus.
- Pat-Horenczyk, R., Qasrawi, R., Lesack, R., Haj-Yahia, M., Peled, O., Shaheen, M., ... Abdeen, Z., 2009. Posttraumatic symptoms, functional impairment, and coping among adolescents on both sides of the Israeli-Palestinian conflict: A cross-cultural approach. *Applied Psychology* 58 (4), 688–708. <https://doi.org/10.1111/j.1464-0597.2008.00372.x>.
- Paul, E.A., 1985. Wounded healers: A summary of the Vietnam Nurse Veteran Project. *Military Medicine* 150 (11), 571–576.
- Polit, D.F., Beck, C.T., 2006. The content validity index: Are you sure you know what’s being reported? Critique and recommendations. *Research in Nursing and Health* 29 (5), 489–497. <https://doi.org/10.1002/nur.20147>.
- Regehr, C., Goldberg, G., Hughes, J., 2002. Exposure to human tragedy, empathy, and trauma in ambulance paramedics. *American Journal of Orthopsychiatry* 72 (4), 505–513.
- Risser, H.J., Hetzel-Riggan, M.D., Thomsen, C.J., McCanne, T.R., 2006. PTSD as a mediator of sexual revictimization: The role of reexperiencing, avoidance, and arousal symptoms. *Journal of Traumatic Stress* 19 (5), 687–698. <https://doi.org/10.1002/jts.20156>.
- Rossignol, M., Chandler, H., 2010. Recognising posttraumatic stress disorder in military veterans. *American Nurse Today* 5, 2.
- Shamia, N., Thabet, A., Vostanis, P., 2015. Exposure to war traumatic experiences, post-traumatic stress disorder and post-traumatic growth among nurses in Gaza. *Journal of Psychiatric and Mental Health Nursing* 22 (10), 749–755.
- Stretch, R.H., Vail, J.D., Maloney, J.P., 1985. Posttraumatic stress disorder among Army nurse corps Vietnam veterans. *Journal of Consulting and Clinical Psychology* 53 (5), 704–708.
- Styra, R., Hawryluck, L., Robinson, S., Kasapinovic, S., Fones, C., Gold, W.L., 2008. Impact on health care workers employed in high-risk areas during the Toronto SARS outbreak. *Journal of Psychosomatic Research* 64 (2), 177–183. <https://doi.org/10.1016/j.jpsychores.2007.07.015>.
- Takahashi, C., Chida, F., Nakamura, H., Akasaka, H., Yagi, J., Koeda, A., ... Sakai, A., 2011. The impact of inpatient suicide on psychiatric nurses and their need for support. *BMC Psychiatry* 11, 38. <https://doi.org/10.1186/1471-244x-11-38>.
- Thabet, A.A., Abu Tawahina, A., El Sarraj, E., Vostanis, P., 2008. Exposure to war trauma and PTSD among parents and children in the Gaza strip. *European Child and Adolescent Psychiatry* 17 (4), 191–199. <https://doi.org/10.1007/s00787-007-0653-9>.
- Weathers, F.W., Keane, T.M., 2007. The criterion a problem revisited: Controversies and challenges in defining and measuring psychological trauma. *Journal of Traumatic Stress* 20 (2), 107–121. <https://doi.org/10.1002/jts.20210>.
- Weinberg, A., Creed, F., 2000. Stress and psychiatric disorder in healthcare professionals and hospital staff. *Lancet* 355 (9203), 533–537. [https://doi.org/10.1016/s0140-6736\(99\)07366-3](https://doi.org/10.1016/s0140-6736(99)07366-3).
- Weiniger, C.F., Shalev, A.Y., Ofek, H., Freedman, S., Weissman, C., Einav, S., 2006. Posttraumatic stress disorder among hospital surgical physicians exposed to victims of terror: A prospective, controlled questionnaire survey. *Journal of Clinical Psychiatry* 67 (6), 890–896.
- Weiss, D., 2004. The impact of event scale-revised. In: Wilson, J.P., Keane, T.M. (Eds.), *Assessing psychological trauma and PTSD: A practitioner's handbook*. Guilford Press, New York, pp. 168–189.
- Weiss, D., Marmar, C., 1997. The impact of event scale-revised. In: Wilson, J., Keane, T. (Eds.), *Assessing psychological trauma and PTSD*. The Guilford Press, New York, pp. 399–411.
- Wittmann, L., Schredlm, M., Kramer, M., 2007. Dreaming in posttraumatic stress disorder: A critical review of phenomenology, psychophysiology and treatment. *Psychotherapy and Psychosomatics* 76, 25–39.
- Wolfe, J., Schnurr, P.P., Brown, P.J., Furey, J., 1994. Posttraumatic stress disorder and war-zone exposure as correlates of perceived health in female Vietnam war veterans. *Journal of Consulting and Clinical Psychology* 62 (6), 1235–1240.
- Yehuda, R., 2002. Post-traumatic stress disorder. *The New England Journal of Medicine* 346 (2), 108–114.