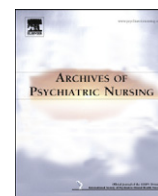




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Post-Traumatic Stress Disorder Among Health Care Providers Following the Israeli Attacks Against Gaza Strip in 2014: A Call for Immediate Policy Actions



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ABSTRACT

Purpose: This study aimed to assess the level of posttraumatic stress disorder 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.

Methodology: A cross-sectional design was used for this study. We targeted all nurses and doctors working in three governmental hospitals in the Gaza Strip and worked with victims of the last war, more specifically, those who were working in emergency departments, intensive care units, operating rooms, surgical departments, and burn units. A demographic sheet and Impact Event Scale–Revised were used in this study. The Impact Event Scale–Revised has three sub-scales; intrusion, avoidance, and hyper-arousal.

Results: The results showed that 291 (89.8%) of 324 participants had scores more than 35 (threshold cut-off point) on the Impact Event Scale–Revised. Scores ranged from zero to 80 with a mean of 52.13. Females had higher levels of stress (55.79) than males (51.63) and nurses (54.85) had more stress than physicians (47.38). The most frequent symptoms of trauma subscales was “avoidance” (mean = 20.04), followed by “intrusion” (mean = 17.83), and then “hyper-arousal” (mean = 14.27). Levels of trauma symptoms were not affected by place of living, hospital of work, while level of education had impacted level of trauma.

Conclusion: The findings showed that health care providers suffered from severe posttraumatic symptoms after exposure to prolonged war stress. This level of trauma among health care providers warrants intervention programs to reduce stress and trauma among Gaza health care providers after the war.

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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 after its occurrence. 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 1 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 alterations 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 1 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

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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, 2000a, 2000b; Weathers & Keane, 2007) and that PTSD is a highly prevalent condition with great impact on human and society well-being and costs (Kessler, 2000a, 2000b).

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 create an extreme pressure on hospital personnel (Ben-Ezra, Palgi, & Essar, 2008).

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 worsen 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 the Vietnam War experienced PTSD-related symptoms (Paul, 1985). Another study revealed that 3.3% of those nurses who are 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 their 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). Moreover; 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. There is only one study that was conducted by Alhajjar (2014) and aimed to examine the relationship between exposure to war stress and posttraumatic 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 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 the Gaza Strip have PTSD. 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 centers 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 exposure to extreme stress on health care providers and hospital personnel (Ben-Ezra, Palgi, & Essar, 2007; Hodgetts et al., 2003; Luce et al., 2002). Therefore, the purpose of this study was 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. The study tried to answer the following questions: (1) what is the level of PTSD among health care providers in Gaza Strip following Israeli offensives against Gaza Strip in 2014, (2) what is the relationship between exposure to stress and posttraumatic symptoms among health care providers following Israeli offensives against Gaza Strip in 2014, and (3) what are the factors that affect the level of PTSD among health care providers following Israeli offensives against Gaza Strip in 2014.

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 worked in emergency rooms, operation rooms, intensive care units (ICUs), surgical departments, and burn units in hospitals of Gaza Strip during the Israeli offensives against Gaza in August 2014. These departments were chosen because they received the victims of the offensives. A Senses population that included all nurses ($n = 266$) and doctors (207) in three hospitals that geographically represent Gaza governorates, were recruited to participate in this study.

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 composed 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 7 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 & Gjestad, 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.

For the purpose of this study, the IES-R was translated into the Arabic language 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 than 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). Before using the Arabic version of IES-R in this study, its content validity was examined by five experts in the field. The responses of the experts revealed that the item content validity index (I-CVI) was 100% for each item which reflects a good content validity (Polit & Beck, 2006). 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.

Statistical Analysis

The Statistical Package for Social Science (SPSS) version 18 was used to analyse data. Prior to analysis, 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. Each participant was asked to sign a consent paper prior to participation.

Table 1
Characteristics of Participants.

| Variable | | Frequency | Percentage |
|--------------------|------------------|-----------|------------|
| Sex | Male | 285 | 88.0 |
| | Female | 39 | 12.0 |
| Marital status | Single | 51 | 15.7 |
| | Married | 271 | 83.6 |
| | Divorced/widowed | 2 | .6 |
| | | | |
| Hospital | Hospital A | 118 | 36.4 |
| | Hospital B | 111 | 34.3 |
| | Hospital C | 95 | 29.3 |
| Occupation | Nurse | 205 | 63.3 |
| | Physician | 114 | 35.2 |
| Level of education | Diploma | 22.8 | 23.1 |
| | Bachelor | 52.2 | 52.8 |
| | High diploma | 5.2 | 5.3 |
| | Master | 11.4 | 11.6 |
| | Doctorate | 6.8 | 6.9 |

Table 2
Means and Standard Deviations of Trauma Symptoms by Subscales.

| | Mean | Std. deviation | Minimum | Maximum | n | Cronbach's α |
|---------------|-------|----------------|---------|---------|-----|---------------------|
| Intrusion | 20.04 | 5.79 | .00 | 32.00 | 324 | .817 |
| Avoidance | 17.83 | 5.85 | .00 | 30.00 | 324 | .779 |
| Hyper-arousal | 14.27 | 4.36 | .00 | 24.00 | 324 | .713 |
| Total IES-R | 52.13 | 13.78 | .00 | 80.00 | 324 | .892 |

RESULTS

Characteristics of Participants

Of the 473 potential participants, 324 participants returned completed questionnaires with a response rate of 68.5%. The great majority were males ($n = 285$, 88.0%) and married ($n = 271$, 83.6%). Two hundred five (64.1%) of participants were nurses and 114 (35.2%) of the participants were physicians. Age of participants ranged between 20 and 56 years with a mean of 34.42 ($SD \pm 8.83$) and their working experience ranged between 1 year and 35 years with a mean 8.92 ($AD \pm 6.86$). 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 ($n = 291$, 89.8%) had scores more than 35 (threshold cut-off) on IES-R scale. Of them was 192 nurses (prevalence rate 93.64%), 94 doctors (prevalence rate 82.46%) and three participants did not identify their jobs.

Table 2 summarizes the scores of the IES-R scale and its subscales. The highest mean of the subscales belongs to "intrusion" (mean = 21.30) followed by "avoidance" (mean = 17.15) while the least frequently reported symptoms were related to "hyper-arousal" subscale (mean = 13.69).

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 = 3.46), followed by "I felt irritable and angry" (mean = 3.19), and "Pictures about it popped into my mind" (mean = 2.97). The least frequent

Table 3
Means and SD of Trauma Symptoms by Items (Descending Order).

| Statement | Mean | SD |
|--|------|------|
| 1 I had waves of strong feelings about it | 3.46 | .79 |
| 2 I felt irritable and angry | 3.19 | .879 |
| 3 Pictures about it popped up into my mind | 2.97 | .97 |
| 4 I felt watchful or on-guard | 2.80 | .98 |
| 5 Any reminder brought back feelings about it | 2.73 | 1.05 |
| 6 I avoided letting myself get upset when I thought about it or remembered it | 2.59 | .99 |
| 7 I tried to remove it from my memory | 2.56 | 1.07 |
| 8 I had trouble falling asleep | 2.55 | 1.18 |
| 9 Other things kept making me think about it | 2.53 | 1.06 |
| 10 I tried not to think about it | 2.43 | 1.17 |
| 11 I thought about it when I didn't mean to | 2.36 | 1.14 |
| 12 I was aware that I still had a lot of feelings about it, but I didn't deal with them | 2.24 | 1.13 |
| 13 I was jumpy and easily startled | 2.16 | 1.22 |
| 14 I had trouble concentrating | 2.13 | 1.22 |
| 15 I tried not to talk about it | 2.13 | 1.15 |
| 16 I stayed away from reminders about it | 2.11 | 1.09 |
| 17 I had dreams about it | 2.04 | 1.32 |
| 18 I found myself acting or feeling as if I was back at that time | 1.98 | 1.13 |
| 19 I had trouble staying asleep | 1.96 | 1.22 |
| 20 I felt as if it hadn't happened or wasn't real | 1.93 | 1.35 |
| 21 My feelings about it were kind of numb | 1.86 | 1.33 |
| 22 Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea or a pounding heart | 1.42 | 1.27 |

Table 4
Comparison of IES-R and Its Subscales in Relation to Different Variables.

| IES-R | | Intrusion | | Avoidance | | Hyper-arousal | | Total IES-R | |
|----------------|-----------|-----------|------|-----------|------|---------------|------|-------------|------|
| Variable | | Mean | P | Mean | P | Mean | P | Mean | P |
| Gender | Male | 19.77 | .024 | 17.84 | .954 | 14.02 | .007 | 51.63 | .077 |
| | Female | 22.00 | | 17.77 | | 16.06 | | 55.79 | |
| Marital status | Single | 19.63 | .600 | 18.10 | .700 | 14.20 | .917 | 51.92 | .929 |
| | Married | 20.09 | | 17.75 | | 14.27 | | 52.11 | |
| Job | Nurse | 20.88 | .001 | 18.89 | .000 | 15.09 | .000 | 54.85 | .000 |
| | Physician | 18.70 | | 15.96 | | 12.82 | | 47.38 | |

symptoms of trauma were “My feelings about it were kind of numb” (mean = 1.86) and “Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea or a pounding heart” (mean = 1.42).

Independent t test revealed that there were no statistically significant differences between the means of IES-R score among male and female participants and among single and married participants. However, there was a statistically significant differences in total IES-R and all of its subscales (Table 4) among nurses (mean = 54.85) and physicians (mean = 47.38) at a p value of less than .0001.

One way ANOVA test showed that there were no statistically significant differences among the scores of IES-R scale and its subscales among participants in relation to place of living or the hospital they work at. However, one way ANOVA revealed that there were statistically significant differences among the scores of IES-R scale and its subscales in relation to level of education. Post hoc results revealed that these differences were between participants who hold an associate degree and those who hold a doctoral degree (Table 5) in total IES-R and all of its subscales, and among participants who hold an associate degree and those who hold a bachelor degree (Table 6) in total IES-R and avoidance and hyper-arousal subscales.

Finally, ANOVA results showed that there were a statistically significant difference among participants who hold a bachelor (mean = 14.17) and those who hold a doctoral degree (mean = 11.36) in the hyper-arousal subscale ($P = .032$).

Correlation results revealed that there was a negative correlation between age of participants and total IES-R and its three subscales (Table 7). However, there was only a statistically significant correlation between the years of experience and the subscale of avoidance ($P = .038$).

DISCUSSION

In this study we aimed to assess the level of posttraumatic stress disorder 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. The results showed that 89.8% of participants had PTSD.

This study mirrors a study conducted by our colleague Dr. Bashir Alhajjar (Alhajjar, 2014) after the Israeli offensive against Gaza Strip in November, 2012. Unfortunately, Dr. Alhajjar himself was a victim of this war as he was killed during Israeli bombardment to Jabalia Camp. In our study, we assessed posttraumatic symptoms among nurses and doctors in three hospitals after 6 weeks of the 2014 Israeli offensives against Gaza Strip in 2014, while Alhajjar assessed posttraumatic

Table 6
Comparison Between the Means of Participants Holding Associate Degree and Bachelor Degree.

| | Number | | Mean | | Std. deviation | | P |
|---------------|-----------|----------|-----------|----------|----------------|----------|------|
| | Associate | Bachelor | Associate | Bachelor | Associate | Bachelor | |
| Intrusion | 74 | 169 | 21.51 | 19.75 | 5.15 | 5.47 | .181 |
| Avoidance | 74 | 169 | 19.68 | 17.33 | 5.04 | 5.75 | .032 |
| Hyper-arousal | 74 | 169 | 15.68 | 14.17 | 3.53 | 4.27 | .086 |
| Total IES-R | 74 | 169 | 56.86 | 51.25 | 11.32 | 12.89 | .025 |

symptoms among nurses in all Gaza hospitals after 1 year of the 2012 Israeli war on Gaza. Table 8 compares the results of the two studies. As noticed from Table 8, in this study, the percentage of nurses (93.64%) who had PTSD is higher than that reported by Alhajjar (69.4%). Moreover, participants of this study reported higher means in total IES-R scale and its three subscales. These differences can be attributed to the fact that this war left higher numbers of deaths and casualties compared to the war of 2012. The war of 2014 continued for 51 days and left 2191 deaths and 10,895 wounded (Palestinian Center for Human Rights, 2014), while the war of 2012 continued for 8 days and left 158 deaths and 1269 were injured (Caabu, 2013).

A similar study conducted by Ben-Ezra et al. (2007) and examined posttraumatic symptoms among nurses and doctors at the last few days of the war erupted between Israel and Lebanon in 2006. The results of their study revealed that 10.5% of physicians and 35.7% of nurses had high levels of PTSD symptoms. Ben-Ezra et al. conducted a logistic regression model and found 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 those 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 a 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., 2007). According to Regehr, Goldberg, and Hughes (2002), such sympathy and identification are 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 responsibilities 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 situation 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, 2014; Ben-Ezra et al., 2007, 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.

Table 5
Comparison Between the Means of Participants Holding Associate Degree and Doctoral Degree.

| | Number | | Mean | | Std. deviation | | P |
|---------------|-----------|-----------|-----------|-----------|----------------|-----------|------|
| | Associate | Doctorate | Associate | Doctorate | Associate | Doctorate | |
| Intrusion | 74 | 22 | 21.51 | 17.41 | 5.15 | 6.54 | .028 |
| Avoidance | 74 | 22 | 19.68 | 15.36 | 5.04 | 5.74 | .020 |
| Hyper-arousal | 74 | 22 | 15.68 | 11.36 | 3.53 | 4.54 | .000 |
| Total IES-R | 74 | 22 | 56.86 | 44.14 | 11.32 | 14.70 | .001 |

Table 7
Correlation Between Age and IES-R.

| | | Age | Intrusion | Avoidance | Hyper-arousal | Total IES-R |
|---------------|---------------------|--------------------|-------------------|-------------------|-------------------|-------------|
| Age | Pearson correlation | 1 | | | | |
| | Sig. (2-tailed) | | | | | |
| Intrusion | <i>n</i> | 316 | | | | |
| | Pearson correlation | -.132 ^a | 1 | | | |
| Avoidance | Sig. (2-tailed) | .019 | | | | |
| | <i>n</i> | 316 | 324 | | | |
| Hyper-arousal | Pearson correlation | -.170 ^b | .534 ^b | 1 | | |
| | Sig. (2-tailed) | .002 | .000 | | | |
| Total | <i>n</i> | 316 | 324 | 324 | | |
| | Pearson correlation | -.139 ^a | .775 ^b | .541 ^b | 1 | |
| Total IES-R | Sig. (2-tailed) | .014 | .000 | .000 | | |
| | <i>n</i> | 316 | 324 | 324 | 324 | |
| Total | Pearson correlation | -.172 ^b | .893 ^b | .820 ^b | .872 ^b | 1 |
| | Sig. (2-tailed) | .002 | .000 | .000 | .000 | |
| Total IES-R | <i>n</i> | 316 | 324 | 324 | 324 | 324 |

^a Correlation is significant at the 0.05 level (2-tailed).^b Correlation is significant at the 0.01 level (2-tailed).

Consistently, other studies (Alhajjar, 2014; Ben-Ezra et al., 2007; Bryant & Harvey, 2003) reported similar findings as female nurses and doctors. In the three studies, these differences were found to have no statistical significance. The higher scores of PTSD among female participants could be related to the nature of women who shows more sympathy to their clients (Regehr et al., 2002) and to neurobiological factors (Fullerton et al., 2001) as females respond more effectively due to sertraline than males (Brady et al., 2000). Moreover, these differences could be attributed to the differential response biases in symptom reporting as male participants underreport symptoms due to cultural and societal factors (Kessler, 2000a, 2000b) or it is possible that women are at higher risk for PTSD because of exposure to childhood trauma (Orr & Pitman, 1999).

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 PTSD. Moreover, age and experience were found to have inversely correlation with level of PTSD. The results were supported by Alhajjar (2014), Ben-Ezra et al. (2007), and Lavoie et al. (2011).

Table 8
Comparison Between Results of This Study and Alhajjar's (2014) Study.

| | This study | Alhajjar (2014) |
|---------------------------------|------------------|------------------|
| Intrusion | 20.04 | 15.5 |
| Avoidance | 17.83 | 14.9 |
| Hyper-arousal | 14.27 | 11.4 |
| Total IES-R | 52.13 | 41.7 |
| % of participants reported PTSD | (Nurses) 93.64% | 69.4% |
| | (doctors) 82.46% | (all are nurses) |

CONCLUSIONS AND IMPLICATIONS FOR INTERVENTION

This study had revealed a high prevalence of PTSD among health care providers after exposure to traumatic situations during the 2014 Israeli offensive against Gaza Strip in 2014. Such high prevalence rates will 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 nurses 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 in health care workers. Health care policy makers and hospital administration should take immediate actions to offer adequate treatment and counselling for those affected by the war stress. They also should 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. Health policy makers should adopt special programs that offer counseling and treatment to health care providers. Treatment programs should include providing education, a feeling of safety, and support to the traumatized persons (Yehuda, 2002). More attention should be paid during treatment and counselling programs to female health care providers since they were at higher risk to develop PTSD.

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