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Post-Traumatic Stress Disorder and Depression Among Survivals of Chemical Attack in Halabja

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ABSTRACT

The main aim of this study was to find out the prevalence rates of post-traumatic stress disorder (PTSD) and depression, likewise to find out significant gender differences in the level of this mental disorder among survivals of the chemical attack in Halabja. PTSD and depression among 109 (45 were males and 64 were females) survivors of the chemical attack were assessed by the Kurdish version scales of post-traumatic stress disorder checklist for DSM-5, and depression section of the Hopkins symptoms checklist-15. And the non-random snowball sampling technique was used to select the sample. Besides, face to face and structured interviews were used to collect data. The results of this study showed that the prevalence rate of PTSD was 46.78%, and there was a significant gender difference in the level of PTSD among survivals in Halabja. The prevalence rate of depression was 45.87%, and there was no significant gender difference in the level of depression among participants in this study.

Keywords: PTSD, depression, survivals of chemical attack, Halabja.

1 Introduction

Over 31 years ago on 16 March 1988 Halabja had been bombarded via chemical weapons by the Baath regime. The result of these bombardments was dead 5000 innocent civilians, injured of more than 10000 people and disappeared of more than 179 children [1]–[4]. This tragedy has become a symbol of victims of Iraqi Kurdish people in the world [5]. Chemical weapons are any toxic chemicals that can cause death, injury, incapacitation, and sensory irritation, deploy via a delivery system, such as an artillery shell, rocket, or ballistic missile [6]. All the same, Sulfur mustard use in chemical weapons and exposure to Sulfur mustard may be causing health problems such as respiratory, ocular, and skin problems; mental problems such as sleep disorders, anxiety, depressive, and PTSD symptoms. Also, causes social problems such as limits family life, and lack of workability [7]–[10]. However, exposure to chemical weapons is an

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extremely traumatic event that has long-lasting adverse consequences on mental health [11]. Besides, survivors of chemical weapons suffer from psychological disorders including post-traumatic stress disorder (PTSD), and depression [12]. PTSD is a mental disorder that results from the experience or witness of traumatic or life-threatening events [13]–[15]. Although, the main PTSD symptoms in the fifth edition of the Diagnostic and Statistical Manual of mental Disorders (DSM-5) are intrusive, avoidance of stimuli, negative alterations in cognitions and mood, alterations in arousal and reactivity symptoms [13]. Also, Depression is characterized by a depressed mood which can be experienced as feeling sad, empty, hopeless, and loss of interest or pleasure [16]. According to a report of the Jiyan Foundation for human rights in Halabja showed that 60% of survivals of chemical attack needed to visit this foundation for the treatment of psychological problems and most of the survivors were women, majority of them had PTSD, depression, and other disorders [17]. Likewise, another report by Pedersen showed that survivors in Halabja suffer from PTSD and depression [18]. According to the results of that studies revealed that the prevalence rate of PTSD was high among Koshe landslide, and Kashmir Valley survivors [19], [20]. Moreover, many studies conducted about prevalence rates of PTSD and depression among survivors of war for example, in a meta-analysis study found 354 million adult war survivors suffer from PTSD and depression in a global population [21]. Likewise, a study among survivors of the Kosovo war found the prevalence rate of PTSD was 26.4% and depression was 41.4% [22]. Besides, a study found that the prevalence rate of PTSD was 32.9% and depression was 22.3% among survivors of war in Iran [9]. Based on this metaanalysis of epidemiological studies was used clinical structure interviews and found that the prevalence of PTSD and depression were high in survivors of war [23]. In addition, previous studies found a significant gender difference in the level of PTSD and depression such as a study by Thabet, Tawahina, and Sarraj showed a higher level of PTSD and depression among females than male survivors of the Gaza war [24]. Although, the result of a study showed that a significant difference in the level of PTSD and depression, and it was higher level in women than man survivors of war veterans in Iraq and Afghanistan [25]. However, some studies have been examined the mental health consequences of exposure to chemical weapons for example these studies [11], [26], [27] showed that the prevalence of PTSD and depression were high among survivors of chemical warfare. Based on, a study result revealed a high prevalence of PTSD among victims of Sardasht chemical warfare in Iran and found a significant gender difference in the level of PTSD, it was higher level in females than males [28]. However, a study by Ekzayez et al. showed that few studies were done about mental disorders among survivors in Halabja [29]. But there are many studies conducted in different domain among survivors of the genocide specifically survivors of chemical attack in Halabja, some of the previous studies about PTSD symptoms and the prevalence of PTSD have been conducted, and many of the previous studies were qualitative studies [30]–[35]. Until now few quantitative studies were found out the prevalence of depression and gender difference in the level of PTSD and depression among survivors of the chemical attack, especially in Halabja. Although, we have limited data and statistics about this mental disorder among this population, which means that this is making a gap in our knowledge about this mental disorder among survivors of the chemical attack in Halabja. Moreover, this research is beneficial in that it increases the number of scientific sources about this tragedy, which is better to make it known as genocide around the world. And the majority of survivors have a few awareness and knowledge about the side effect of the chemical attack on their mental health. Hence, this study has been tried to transmit awareness and knowledge about PTSD and depression among survivors of the chemical attack in Halabja. Therefore, the current study aimed to show the prevalence rates of PSTD and depression among survivors of the chemical attack in Halabja. Then, it targeted to find out gender differences in the level of PTSD and depression among this population.

2 Research Methodology

2.1 Participants

The participants in this study consisted of 109 (45 were males and 64 were females) survivors of the chemical attack in Halabja city, the Kurdistan Region of Iraq (KRI). At the time of the interview, the age of participants ranged between 36 and 92 years old (M = 51.35, SD = 12.92). Although, the age of participants during the chemical attack ranged between 5 and 61 years old (M = 20.30, SD = 12.82). During the chemical attack, most of the participants (93.6%) lived in Halabja city. The majority of participants (82.6%) were married (Table 1).

Table 1: *Demographic information about participants*

Variables		N	%
Gender	Male	45	41.3
	Female	64	58.7
Age	Ranged: 36 – 92 years old. M = 51.35, SD = 12.92		
Age during the chemical attack	Ranged: 5 – 61 years old. M = 20.30, SD = 12.82		
Life place during chemical attack	Inside Halabja	102	93.6
	Around towns	5	4.6
	Around villages	2	1.8
Marital status	Never married	6	5.5
	Currently married	90	82.6
	Divorced	1	0.9
	Separated	1	0.9
	Widow women	11	10.1

2.2 Sample Procedure

The researcher was selected the sample by non-random snowball sampling technique. Firstly, the researcher selected 10 survivors of the chemical attack, and then each survivor guided the researcher to other survivors of chemical attack. This technique was used until all data collected. The researcher used a structured interview based on standardized questionnaires and face to face conducted interviews with survivors. The data was collected from 30 January 2020 to 6 February 2020 in Halabja city. All interviews were conducted in the Kurdish Sorani dialect; each interview lasted 10 to 15 minutes. Prior to each interview, the purpose of the study, confidentiality, and freedom of participants have been explained.

2.3 Instruments

Post-traumatic stress disorder

The PTSD Checklist for DSM-5 (PCL-5) was initially developed in 1990 by the national centre for PTSD after 2010 changed the version based on DSM-5 criteria for PTSD [36]. This scale includes 20 items, each items have 5- point Likert scale ranging from 0 (not at all) to 4 (extremely) in the past month. Many studies conducted about the validity and reliability on this scale [37]. Also, this scale was validated among the Kurdish people previously, Convergent validity conducted to this scale was acceptable, good internal consistency reliability was 0.85, and the cut off score of 23 in the Kurdish society [38]. In this study, the researcher took 25 (15 were females, and 10 were males) survivors of chemical attack for a pilot study to find out internal consistency reliability by SPSS program, the result of internal consistency reliability for PCL-5 scale showed high internal consistency reliability (Cronbach's $\alpha = 0.93$).

Depression

The researcher used the Kurdish version of the Depression Hopkins Symptoms Checklist-15 (D-HSCL15) to assess the depression among survivals of the chemical attack. This scale was originally designed by Parloff, Kelman, and Frank [39]. DHSCL-15 is one important tool used in cross-cultural research to assess depression symptoms [40]. D-HSCL-15 includes 15 items, each items have 4 - point Likert scale ranging from 1(not at all) to 4(extremely) in the past week. A cut off score was valuing larger equal than 1.75 used to diagnose depression disorder [41]. Also, the researcher used this cut off score in this study. We don't have the specific study about validity of this scale among the Kurdish population, but there were many studies conducted and used this scale among the Kurdish population in their studies [38], [42], [43]. Also, the researcher took 25 (15 were females, and 10 were males) survivors of the chemical attack in a pilot study to find out internal consistency reliability by SPSS program, the internal consistency reliability of DHSCL-15 in the current study was good (Cronbach's $\alpha = 0.87$).

2.4 Statistical analysis

The Statistical Package for the Social Sciences (SPSS) program version 22 was used to carry out the statistical analysis. Descriptive statistics (frequency) was used to describe the general characteristics of the participants. An independent sample t-test was carried out to detect significant gender differences in the level of PTSD and depression among survivors of the chemical attack.

3 Results

The first aim of this study was to find out the prevalence rate of PTSD among survivors of the chemical attack in Halabja. Based on the previously validated cut off score of 23 for the Kurdish version of the PCL-5 scale in the Kurdish society [38], the result showed that the prevalence rate of PTSD was 46.78% among participants in this study. Second, the researcher was using an independent sample t-test to find out significant differences between males and females in the level of PTSD among survivors in Halabja. The result showed that there was significant gender difference in the level of PTSD ($t(107) = -2.07$, $p = 0.04$), there was a high level of PTSD among female ($M = 30.42$, $SD = 19.75$) than male ($M = 22.91$, $SD = 17.83$) survivors of chemical attack. The third aim of this study was to find out the prevalence rate of depression among survivals of the chemical attack. And based on the 1.75 cut off score of the D-HSCL-15 scale, the prevalence rate of depression was 45.87% among those survivors of the chemical attack that participant in this study. And the fourth aim of this study was to realize a significant gender difference in the level of depression among survivals of the chemical attack. The result showed that there was no significant gender difference in the level of depression ($t(107) = -1.74$, $p = 0.08$), however, there was a high level of depression in female ($M = 28.30$, $SD = 10.15$) than male ($M = 25.02$, $SD = 8.95$) survivors of chemical attack.

4 Discussion

This study found that the prevalence rate of PTSD was 46.78%, and this one revealed that less than half of the participants in this study have PTSD. Similarly, the results of previous studies showed that low prevalence of PTSD, and ranged between 23.5% and 32.5% [9], [22], [44], [45]. Conversely, the result of more studies found that high prevalence rate of PTSD among survivors of war and chemical warfare [11], [26], [33], [46], [47]. However, 16 March every year commemorates this event by people and government in Halabja and many countries in the world [48], this commemorates may be causes of remained this tragedy and effect on their mental health. According to the majority of survivor's speech during the interviews discussed PTSD symptoms in the March month because they remained the event in those times. One other reason is social support; the majority of survivors of chemical attack might have social support by family members and/or friends. A study by Maheux and Price in 2016 showed a social support effect to reduce PTSD [49]. Besides, the study found that the prevalence rate of depression was 45.87%, and showed that less than half of survivals of the chemical attack participants in this study have

depression. The studies found that low prevalence of depression, and ranged between 34.4% and 41.4% [9], [22], [50]. Moreover, the results of many studies showed that conversely the result of this study [11], [23], [26], [27], [51]. In addition, the most population in Halabja consisted of survivors of the chemical attack, who had 6 a high level of religion. However, this studies showed a low prevalence of depression among those people who have religion and social support [52]–[54]. And these reasons might be cause of less than half of the participants in this study have depression. Likewise, the result of this study showed that there was a significant difference between males and females in the level of PTSD, which is a higher level of PTSD can be found among females than male survivors of the chemical attack in Halabja. Similarly, that studies showed there was a significant gender difference in the level of PTSD and higher level of PTSD in female than male [24], [25], [28], [55]–[57]. However, some studies found that no significant gender difference in the level of PTSD symptoms [43], [58], [59]. Finally, this study found that no significant gender difference in the level of depression, and showed that there are higher levels of depression among females survivors of the chemical attack than male. The result of this study was consistent with previous studies [60], [61]. Otherwise, Justice and Brandt in 2010 found that there is a significant gender difference in the level of depression [25]. Based, depression was a high level among female survivors of chemical attack; it may be because the female lived within the home most of the time. Otherwise, a study showed that ground activity has a positive effect on depression in females [62]. However, the researcher believes that these differences in results may be because the sample type, in this study sample was survivors of the chemical attack but in other studies sample were survivors of war, chemical warfare, refugee, and survivors of other traumatic events. Then, this difference may be because of different type of instrument, the researcher was used DHSCL-15 and PCL-5 scales in this study but in other study was used the different instrument such as HTQ-16, CAPS, Beck depression inventory, Zong depression questionnaire, Mississippi questionnaire, QTCL- war of Gaza, and GHQ-28. Besides, in other differences was a sample size that may be effect on results, this study consisted of a small sample size compared to other studies.

5 Conclusions

The result of this study revealed that the prevalence of PTSD was 46.78%, and the prevalence of depression was 45.87%. Also, this study showed that there was a significant gender difference in the level of PTSD; and there was no significant gender difference in the level of depression among survivals of chemical attacks in Halabja. However, the limitations in this study were small sample size, because some survivors didn't agree to complete-scale were explained to them all the information. Although, some of the survivors remembered this traumatic event, it was caused a depressed mood and they went to those time effects on the answer questions. And they had a stigma about mental disorders and especially depression; this one may be causes of fear to answer the questions. Until now few data and statistics have about the mental health of general survivors of the chemical attack in Halabja. Further, the researcher suggested that another researcher try to conduct research on the prevalence of mental disorders among survivors of chemical attacks in the clinic. Besides, this study conduct among general survivors of genocide takes more samples. Likewise, this study assures that it is important to take more samples, and they use different research designs such as the survey, and new dependent variables such as anxiety. And it would be better to conduct the study among second-generation survivors of chemical attack and Anfal. Finally, according to the finding of this study, the researcher recommended that to transmit awareness and knowledge about mental disorders, especially depression and PTSD by radio, TV, and social media, or in other important transmitters. Psychologists and clinical psychologists have been conducted seminars to reduce stigma among survivals of the chemical attack specifically for females. Besides, the government has been tried to build an important mental health centre for the general population in Halabja and these survivors experienced PTSD and depression so that they can take treatment.

6 Declarations

6.1 Study Limitations

The limitations in this study were small sample size, because some survivors didn't agree to complete-scale were explained to them all the information. Although, some of the survivors remembered this traumatic event, it was caused a depressed mood and they went to those time effects on the answer questions. And they had a stigma about mental disorders and especially depression; this one may be causes of fear to answer the questions. Until now few data and statistics have about the mental health of general survivors of the chemical attack in Halabja.

6.2 Acknowledgements

The author would like to acknowledge survivals of chemical attack who participated in this study.

6.3 Competing Interests

The author has no competing interests.

6.4 Informed Consent

The researcher was explained this work for participants, she gave the inform consent that consisted of described herself and works, their roles, purpose of this work, confidentiality, and freedom of participants. Before start the interviews.

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