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Impact of chronic war trauma exposure on PTSD diagnosis from 2006 -2021: a longitudinal study in Palestine

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Abstract

Background Trauma and Post-Traumatic Stress Disorders (PTSD) are a common result of the occurrence of natural and man-made disasters, the refugees are one of these traumas in which some resulted from political conflicts. Today, Palestinians are the largest refugee population in the world after the Nakba in 1948. This study aims to discover the impact of chronic war traumas on PTSD diagnosis and symptoms from 2006 to 2021. The current study is a follow-up of 607 adolescents and adults, aged between 10–30 years of which are also those children who participated in the 2006 study. This research used an adapted PTSD scale (PTSD-SRII, 33 items) from a validated original questionnaire developed by Altawil in 2008 to measure PTSD based on symptoms reported in DSM-IV and ICD-10.

Results The main findings show at least 97.2% of participants had experienced at least 6 traumatic experiences up to the year 2006 and 100% of the participants were exposed to traumas in 2021. This study found four categories of responses to chronic war trauma: (a) Acute group ($n = 321$, 52.9%) shows high PTSD symptoms in 2006 and in 2021; (b) Remitters group ($n = 54$, 8.9%) shows high PTSD symptoms in 2006 but did not show significant PTSD symptoms in 2021; (c) Delayed group ($n = 204$, 33.6%) shows no PTSD symptoms in 2006 but showed significant PTSD symptoms in 2021; (d) Resilient group ($n = 28$, 4.6%) had no PTSD symptoms in 2006 and did not show PTSD symptoms in 2021.

Conclusions The authors conclude that Palestinian children, youth, adults and their families in the Gaza Strip are continually at a huge risk of developing PTSD and other psychological problems.

This means that Palestinians will suffer for a long time from PTSD, which should be called Chronic Traumatic Stress Disorder (CTSD) rather than PTSD. This PTSD or CTSD cannot be changed unless the root of the problem is solved by ending the 74 years of living under occupation.

Keywords PTSD, Trauma, Chronic, Resilience, Palestine, War, Occupation

Background

Trauma and PTSD are common as a result of the occurrence of natural and man-made disasters. Today, Palestinians are the largest refugee population in the world [1]. UNRWA [2] reported that 5.4 million Palestinian refugees are registered with them in Lebanon, Syria, Jordan, Gaza Strip and West Bank, and East Jerusalem. The economic situation is devastating for Palestinian families who live under the Israeli occupation and UNICEF [3] reported that over 50% of these

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families live below the poverty line. These statistics are alarming and necessitate attention for the well-being of Palestinians.

The Gaza Strip has become the worst Palestinian refugee area, suffering from ongoing siege and conflict under the Israeli occupation. It is estimated that by 2020 Gaza will become uninhabitable if no preventive actions are taken [4]. 97% of the water supply is undrinkable and fresh water is available for less than four percent of people in Gaza. Furthermore, more than 25% of all reported diseases in Gaza are caused by dirty water [5]. Oxfam added that the international community, so far, has failed to protect the dignity, freedom, human rights, health and education for the 2 million Palestinians in Gaza—a big open prison.

Palestinians who live in The Gaza Strip are between what is locally called the “two fires” of Israel and Egypt with no hope of escape. For example, leaving Gaza through Israel is virtually a dream with only a very small number of students and chronically ill patients who can do so using this route. The Israeli occupation very closely controls Gaza from the air, by the sea and land [6].

70% of youth in Gaza are unemployed, 90% of them have never left The Strip and 53% of the population live below the poverty line (UNWRA, 2018). Gaza has been under-developed by the closures of border crossings, a blockade preventing trade and the entry of supplies, as well as restriction of movement. Manufacturing is down from 16% of gross domestic product (GDP) in 1994 to 8% today [7]. All this and more has contributed to the collapse of living standards and has affected the people's will to endure or even merely cope with these adverse conditions.

The majority of the world's refugees are children and adolescents with high prevalence of psychological disorders [8]. Children who grow up in war zones are typically exposed to multiple stressors and on-going traumatic events which affect every aspect of their lives: somatic, psychological, social, and functional. Most studies conducted in the The Gaza Strip or The West Bank found that Palestinian children were at high risk for PTSD, somatoform disorders, and psychosocial problems [9]. Some of the post-traumatic symptoms may persist for a few years after the traumatic events and even resurface after several years (Altawil et al., 2008).

World Health Organisation -World Mental Health (WHO-WMH) consider PTSD to be characterised by acute damaging symptoms experienced by traumatised people [10]. PTSD can seriously affect production levels of people in societies plagued by adversity [11]. Therefore, outreach treatment for those traumatised is vital and this should not be restricted to mental health clinics only. The quality of the treatment of PTSD symptoms

needs urgent consideration for more effective outcomes especially on a long term basis.

In 2006, Altawil et al. (2008) conducted a study among 1,137 children aged between 10 and 18 years who were randomly selected across The Gaza Strip. It was found that every child in Palestine is likely to have been exposed to at least three traumatic events. Importantly, 41% of Palestinian children inside Gaza suffered from PTSD. Likewise, research by Save the Children [12] reported that 95% of their sample in Gaza had four groups of symptoms: depression, aggression, hyperactivity, and a preference for being alone.

The cumulative effect of these complex traumas challenge resilience to depressive disorders. Moreover, the environment for recovery must remain undisturbed for affected people to heal psychologically [13]. With this in mind, there is an absolute need for a longitudinal study that investigates different PTSD symptom groups including acute PTSD, resiliency, and the development of PTSD symptoms over time. There are several longitudinal studies of PTSD (e.g. [14, 15] which highlight the importance of identifying and supporting people who still suffer from the traumatic effects of disasters over time. Notably, there is still a call for psychosocial interventions underlying the importance of considering the psychological, social and physical aspects of the environment to support refugee children and their families [16]. As such, the aim of this study was to contribute to existing research by examining the psychosocial context of events related to PTSD symptom groups and how collective lifetime traumatic experiences might influence the course of PTSD. The current study is a follow-up of 607 adolescents and adults, aged between 10–30 years of which are also those children who participated in the 2006 study.

Research questions

1- To what extent does the impact of time on the exposure to traumatic events affect adolescents and adults (from 2006 to 2021) and are there any gender differences in both groups?

2- What is the impact of chronic war traumas on PTSD diagnosis and symptoms from 2006 and 2021 in relation to four groups of PTSD: *Acute*, *Remitters*, *Delayed*, and *Resilient*?

Methods

Design, participants and recruitment

This study utilized an experimental within-group design to identify the impact of time on the exposure to traumatic events and how they affect adolescents and adults at different times (2006 and 2021). This study also aimed to discover the impact of chronic war traumas on PTSD diagnosis and symptoms from 2006 to 2021 with

reference to four groups of PTSD sufferers: acute, remitters, delayed, and resilient. The original study (group 1 – acute PTSD sufferers) was conducted in 2006 among 1128 participants. 607 participants who took part in the 2006 study were successfully matched and also participated in the 2018 study. The age of the participants in the first study ranged from 10 to 18 years, while their ages at the second study (in 2021) ranged from 21 to 30 years. Of those, 54.36% of the participants were females and 45.63% males. A total of 95% of these participants were residents of refugee camps in the The Gaza Strip. All participants were recruited using random sampling from the represented population (refugees or non-refugees) and in terms of geographical areas (North, Middle, South areas) in The Gaza Strip.

Measures

This research adapted a PTSD scale (PTSD-SRII, 33 items) from a validated original questionnaire developed by Altawil [17] to measure PTSD based on symptoms reported in DSM-IV (1994) and ICD-10 (1992), while taking into consideration previous PTSD research locally and internationally (e.g. Pynoos et al., 1987; Hawajri, 2003; El-Khosondar, 2004).

The PTSD-SRII questionnaire is scored from 0 (lack of any sort of problem or issues—psychological, cognitive, physical or functional) to 10. The higher the rating the worse the disorder level—psychological symptoms. It can be administered by clinicians who have a working knowledge of PTSD, and also by appropriately trained para-professionals. It was published in the Diagnostic and Statistical Manual of Mental Disorders; 5th edition (DSM-V, 2013), and was revised in both English and Arabic in line with the instructions enlisted in the fifth American Manual. Nine items were deleted from the previous edition of Altawil [17] and 43 items from 52 validated phrases were approved in the Manual of Post-Traumatic Stress Disorders (DSM-V, 2013). The PTSD diagnostic indicators were summarized according to the American Manual into 30 items with five categories of symptoms and disorders.

Concurrent validity was achieved for the current questionnaire (PTSD-SRII) and this was based on a significant positive correlation between total PTSD symptoms generated within the current study and an earlier study by Hawajry (2003) [$r(50)=0.520$, $p<0.01$]. The internal reliability across the five subscales of this questionnaire was measured using Cronbach's Alpha Coefficient (generating reliabilities above 0.80). The PTSD-SRII was completed by three psychologists/therapists. Inter-rater reliability was checked for ten participants by an independent therapist. There was a good reliability, based on PTSD total symptoms, between psychologists/therapists

(Cohen's Kappa = 0.87). Therefore the questionnaire was considered valid and reliable to use in this study.

Procedure

Participants were identified to demonstrate the impact difference of PTSD from 2006 to 2021.

The time gap for the participants was 15 years from 2006 to 2021. Some of the participants who were involved in the 2006 study unfortunately passed away as a result of the on-going conflict, the siege and the four major assaults against the people in Gaza in 2008, 2012, 2014 and 2021. The first database in 2006 was generated via UNRWA's schools and governmental schools in The Gaza Strip. Informed consent was gained from all the participants. The second database was produced in 2012 and then in 2021 when information was collected door-to-door as most of the participants in the first group had already finished schooling with the help of the Palestinian Ministry of Education in Gaza. All participants were recruited using the approved scale (PTSD-SRII) developed by Altawil [17]. All data in the first phase (2006) was collected by the researcher, while following data in 2021 was collected by psychologists and therapists of the Palestine Trauma Centre in the Gaza Strip. All PTSD assessments and diagnoses took place individually and confidentially using clinical interviews with the help of the professional psychologists. Some researchers argued that the diagnosis of PTSD should not be carried out using questionnaires, but instead diagnosed clinically in an interview by a professional (e.g., [10, 18, 19]).

Results

Exposure to traumatic events and diagnosis

Traumatic experiences and incidents were coded for a total of 607 participants who took part in this study at two different times (2006 and 2021). Figure 1 shows total traumatic experiences and total PTSD symptoms for Obsessive-Compulsive Symptoms (OCS), Avoidance Symptoms (AS), Negative Changes (NC), Irritability Symptoms (IS), and Personal/Professional Function (PPF).

After grouping traumatic exposure into 5 categories, Table 1 shows that at least 97.2% of participants had experienced at least 6 traumatic experiences up to the year 2006. And for the time leading to 2021, 100% of the participants were exposed to at least 21 traumatic incidents.

Following DSM-5 criteria, exposure to trauma and Information about OCS, AV, NC, IS, PPF were coded for all participants. Based on these symptoms participants were diagnosed. It was evident that 61.8% of the participants met the PTSD criteria in 2006 while 86.5% have met the PTSD criteria for the year 2021.

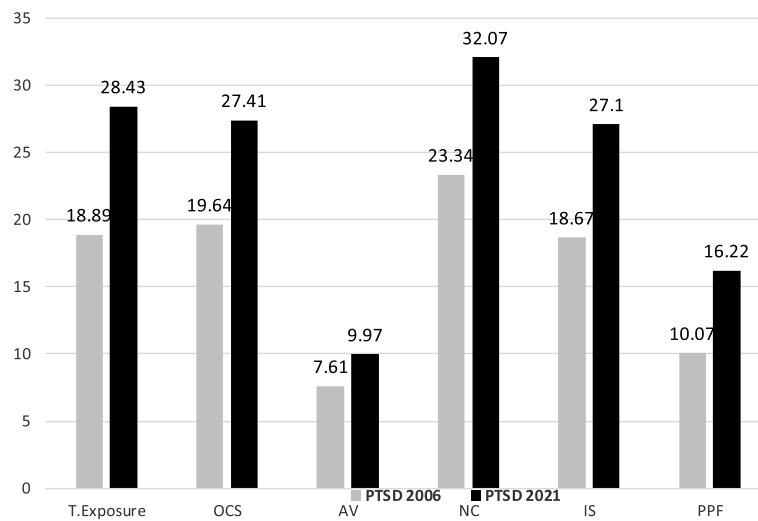


Fig. 1 Total trauma exposure and PTSD symptoms in 2006 and 2021

Table 1 Percentages of exposure to group of traumas in 2006 & 2021

Group of Traumas	2006		2021	
	N	Percent	N	Percent
Traumas 1–5	17	2.8%	-	-
Traumas 6–10	74	12.2%	-	-
Traumas 11–20	242	39.9%	-	-
Traumas 21–30	257	42.3%	520	85.7%
Traumas 31–40	17	2.8%	87	14.3%
Total	607	100%	607	100%
Diagnosed PTSD	375	61.8%	525	86.5%
Not Diagnosed PTSD	232	38.2%	82	13.5%

As expected, number of trauma exposures were higher in 2021. Repeated measures t-test revealed a significant difference in trauma exposures among participants between the years 2006 and 2018, $t(607) = 64.91, p < 0.001$. Participants had significantly more trauma exposures in 2021 ($M = 28.43, SD = 2.15$) compared to 2006 ($M = 18.89, SD = 7.17$). Table illustrates prevalences in percentages. It should be noted that there was significant between the two times in all the PTSD subscales ($p < 0.001$).

PTSD four categories

Based on the diagnostic criteria, participants PTSD condition was categorized as: Acute, Remitters, Delayed, and Resilient. I

- **Acute group** ($n = 321, 52.9%$): High PTSD symptoms in 2006 and in 2021.

- **Remitters group** ($n = 54, 8.9%$): high PTSD symptoms in 2006 but did not show significant PTSD symptoms in 2021.
- **Delayed group** ($n = 204, 33.6%$): There is no PTSD symptoms in 2006 but showed significant PTSD symptoms in 2021.
- **Resilient group** ($n = 28, 4.6%$) which had no PTSD symptoms in 2006 and did not show PTSD symptoms in 2021.

Gender related differences

Repeated measures t-test- revealed no significant differences in total PTSD symptoms between males ($M = 80.21, SD = 32.73, N = 607$) and females ($M = 78.59, SD = 31.83$), $t(607) = 0.62, p > 0.05$. However significant, t-test showed significant gender differences in PTSD symptom in 2018, $t(607) = 2.66, p < 0.05$. Females showed significantly higher number of symptoms ($M = 116.74, SD = 37.34$) compared to males ($M = 108.05, SD = 42.79$).

Following Chi-Square statistics gender did not show variations across diagnoses. Of the females, In 2006, 62.4% of female participants were diagnosed with PTSD and 61% of males ($X(3) = 0.127, p > 0.05$). In 2018, 88.2% were diagnosed with PTSD while 84.5% of the males $X(3) = 1.77, p > 0.05$. (Fig. 2).

Discussion

The impact of time (15 years) on exposure to traumatic events

This longitudinal study revealed that the PTSD symptoms of people who were exposed to on-going traumas

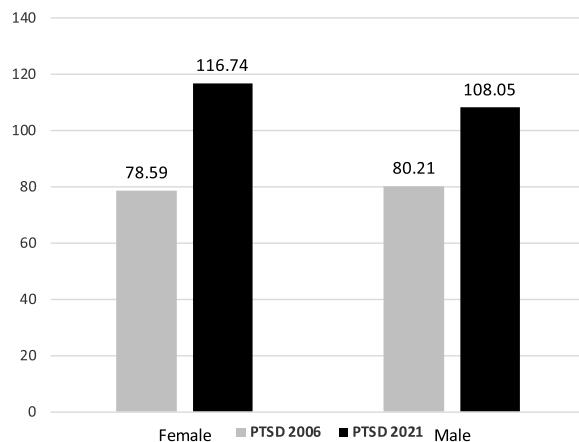


Fig. 2 Effect of gender on PTSD symptoms in 2006 and 2021

due to conflicts and blockade and wars from 2006 to 2021 significantly increased – collective lifetime traumas increased from 97.6% in 2006 (exposure to at least six traumas) to 100% in 2018 (exposure to at least twenty traumas). Based on a survey conducted by WHO World Mental Health (WMH), 4.3% of traumatised people across 24 countries worldwide (63,894 participants) have experienced more than seven traumas [10] whilst in the current study, 100% of the Palestinians have been exposed to at least twenty traumatic events in their lifetime. Therefore, the occupation and constant conflict left the Palestinians at a huge risk of developing symptoms of PTSD and other health and psycho-social diseases. Other research also found that experiencing more than one traumatic event yielded a higher risk of developing PTSD (e.g., [6, 20–22]). The WHO World Mental Health (WMH) survey also found that the most traumatic events were caused by violence and conflict with a high risk of developing lifetime PTSD. 11.6% of traumatised people suffered the unexpected death of a loved one and people who had a history of exposure to traumas were also most likely to develop symptoms of PTSD or other psychological problems in their lives [10]. Therefore, Palestinians are most likely to develop symptoms of PTSD due to their long history of exposure to constant traumas in their lifetime. Researchers and experts agree that a long life facing day to day traumatic events of conflict and war and other stressors relating to poverty will most likely increase the possibility of children and adults developing PTSD and other psychological and psychiatric symptoms (e.g., [23–25]).

Past research has shown that the cumulative effect of multiple traumas is especially present in the situation of war (Ispanovic-Radojkovic, 1993). There is also evidence suggesting that there is a correlation between the number of previous traumatic experiences and PTSD, with more

exposure leading to an increase in symptoms of trauma (e.g., [23, 24, 26] and in particular, in the case of children and adolescents living in war zones [21, 26, 27].

Gender influence on PTSD

While there was no evidence of gender influence on PTSD in the 2006 assessment, the follow-up assessment in 2018 showed a collective build up of PTSD symptoms in female participants. These results are supported by several studies which showed that symptoms of PTSD appeared more in females than males who were exposed to trauma (e.g., [20, 28, 29]). Similarly, other research showed that females showed more vulnerability to the development of PTSD than males [30]. However, Pfefferbaum [31] argued that males and females have the same level of development to PTSD which was not the case in this study.

More recently, Nicolsona and Ponnampereuma [32] conducted a study among 84 adolescents aged 13–16 years in Sri Lanka on the association between PTSD and aspects of diurnal cortisol secretion. It was found that females were more likely to show symptoms of PTSD than males. Similarly, Altawil [6] found that male Palestinian children (10–18 years old) who live in the Gaza strip were more often exposed to traumas than females. However, traumatised females suffered significantly more than males across all PTSD scales.

The impact of chronic war traumas on PTSD diagnosis and symptoms from 2006–2021

Current findings showed that 52% suffered symptoms of PTSD in the ‘acute’ group; 33% suffered from PTSD in the ‘delayed’ group and overall, 86.5% of the acute and delayed groups were diagnosed with PTSD. These results raise concerns for the wellbeing of these children who have now become adults. In fact, acute exposure to traumatic events in childhood may be associated to adulthood underlying acute mental health symptoms. Worryingly, this can also make treatment extremely difficult [6, 33]. Several researchers showed that people who were exposed to trauma can develop PTSD based on the number of traumatic events they have been exposed to, whether the duration of facing trauma is a one-off traumatic event or a life trauma exposure (e.g., [23, 24, 34,]. The severity of the type of trauma is also related to higher level of PTSD [35] and it has been found that severe trauma relates to acute PTSD in Palestine [36] and among Bosnian people [37].

It was also found that only 8.9% of sufferers in the ‘remitters’ group recovered from PTSD. This group reported lower PTSD levels when psycho-social support was available. It has been previously documented that after exposure to trauma, self-healing can prevent

the development of PTSD. If traumatised people have healthy belief systems, ideological and political commitment, strong cultural values, and good support within the family and community these can enable them to understand the meaning of the trauma as part of their daily resistance 'resist to exist'. All of these factors can strengthen resilience and prevent the development of PTSD amongst traumatized people (e.g., [6, 38]). Similarly, Altawil [6] reported that in both the quantitative and qualitative studies involving 1138 Palestinian children exposed to severe traumatic events, some did not show symptoms of PTSD with the influence of moderating factors such as: a) social support, b) positive personality traits—ambition and hope; determination and will; a patriotic sense; courage and boldness; and, religion and faith; c) adaptation or coping; and also, d) engagement in recreational programmes and practicing sport. Veronese et al. [39, 40] conducted a study to measure the diverse reactions of 201 Palestinians after experiencing traumatic events in Gaza Strip and West Bank. 10% of traumatised people did not show symptoms of PTSD. These authors suggested that the reasons behind this positive reaction in the face of trauma was related to the contribution of post-traumatic growth and subjective well-being. Previous research on PTSD has also shown that in receipt of social support a good number of patients who suffer from PTSD may recover within six months depending on the type of trauma [41].

The 'resilient' group (4.6% in the Gaza study)) are a small percentage in the community.

Traumatic events may cause the development of PTSD or not depending on the moderating/mediator factors involved [6]. There is evidence suggesting that some traumatised people may re-act immediately or later during the course to show symptoms of PTSD symptoms and other psychological problems, while other people might not show any significant symptoms of PTSD [38]. Parenting and family support have been found to act as protective factors in preventing development of PTSD among Palestinian refugee in The Gaza Strip [42]. Furthermore, there is evidence from studies conducted in South Africa, the Philippines and Palestine that show that active engagement in, or ideological commitment to, political struggle can increase resilience (Kostelny & Garbarino, 1994; Punamaki, 1996). Of direct relevance to this study, Kostelny and Garbarino (1994) interviewed mothers and children in Palestine and concluded that it was the adolescents' ability to perceive themselves as freedom fighters that made the experiences of invasion and detention less traumatic.

Last but not least, Altawil [6] reported that some Palestinians in Gaza did not show symptoms of PTSD from daily exposure of war trauma in the presence of personal

(e.g. good coping skills, hardiness, personal control and tolerance) and social (e.g. social support and understanding) protective factors. Altawil added that family support was the strongest protective factor against symptoms of PTSD and other psychological problems, a finding also supported by other studies (e.g.s. [43, 44]).

Despite the common negative experience of living daily in situations afflicted by political conflict worldwide, some researchers suggest that living with ongoing challenges and stress might allow some people to develop certain positive skills and enhance their personal strength, independence, resilience, coping mechanisms, self-awareness, self-acceptance, spiritual strength and beliefs, compassion, as well as positive self-perceptions. This is a new understanding of the meaning of trauma referred to as Post-traumatic Growth 'PTG' [25, 39, 40]. Behrouzan [45] added that PTG can empower some people to lessen the impact of trauma through strengthening their coping strategies while repeatedly confronting stress and challenges.

Conclusions

Palestinian people have been facing humanitarian disaster and trauma since 1948. This community urgently requires an increasing number of psychologists and trauma specialists to provide therapeutic and supportive services to those who are severely traumatised and suffering PTSD and other psychological disorders [6]. Children, youth, adults and their families in The Gaza Strip are continually at huge risk of developing PTSD and other psychological problems. The repeated trauma does not allow for any proper recovery process.

Based on a report from the Palestinian Ministry of Health (MoH) and with the support of the WHO, there are six community mental health centres in The Gaza Strip, ten psychiatrists and 36 clinical psychologists. This situation makes it impossible to meet the needs of its population of two millions. Five "protection focal points" (one per governate) have been set up to help traumatised families access mental health facilities. The most internationally known mental health service in Gaza is the privately run *Gaza Community Mental Health Programme* which operates in three areas of the Strip. They have about 70 professional workers. For a long time there has been a stigma attached to mental health work or psychiatry although this is slowly changing as people are increasingly associating mental health with resilience while also focusing on physical symptoms (pain, fatigue, tightness amongst others) which can be treated [46]. The aforementioned available professional mental health support is still extremely limited in capacity and resources and needs to be rectified in response to the ongoing conflict and siege in The Gaza Strip. Traumatized people who

suffer symptoms of PTSD due to life exposure of traumatic events need much more mental health care on both an individual and group level [47].

The Palestinian problem and the exile they have been exposed to since 1948 still result in producing more millions of refugees, some of them living in the occupied Palestinian territory (OPT), mainly in The Gaza Strip, West Bank and East Jerusalem. These Palestinians have been suffering across generations since the catastrophe 'Nakba' in 1948. In The Gaza Strip, two millions have faced three wars within ten years (in 2008, 2012, 2014, 2021) in addition to a siege since 2006. This is the context in which Palestinian children and their families in the OPT are living in daily. It becomes clear that Palestinian children and their families currently have very little hope that the circle of suffering will end. If this traumatised society is still experiencing ongoing trauma and stress most of the time, then unfortunately the community will produce more victims than survivors, and this will lead to a lost generation of children and increase conflict in that region [6].

Abbreviations

PTSD	Post Traumatic Stress Disorders
CTSD	Chronic Traumatic Stress Disorders
SR11	Scale Revision 2
ICD-10	10Th revision of the International Classification of Diseases
DSM-IV	The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders
UN	United Nations
UNRWA	The United Nations Relief and Works Agency
GDP	Gross Domestic Product
WHO-WMH	Worlds Health Organisation-World Mental Health
OCS	Obsessive-Compulsive Symptoms
AS	Avoidance Symptoms
NC	Negative Changes
IS	Irritability Symptoms
PPF	Personal/Professional Function

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Authors' contributions

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Availability of data and materials

All data and materials for this research is available for sending.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Ministry of Education and the Interior Ministry in Gaza. In addition, participants who are above 18 yrs signed for themselves and the head of the household signed for their children.

Consent for publication

Not applicable.

Competing interests

The authors have no competing interests to declare that are relevant to the content of this article. The authors have no financial or proprietary interests in any material discussed in this article. The authors of this proposed article did not receive support from any organisation for the submitted work.

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