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The Relationship between War Trauma, PTSD, Depression, and Anxiety among Palestinian Children in the Gaza Strip

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Abstract

Aims: The aim of the study was to examine the relationship between war trauma, PTSD, depression, and anxiety among Palestinian children in the Gaza Strip.

Method: A sample consisted of 251 children aged 6-16 were selected from 3 summer camps in the Gaza Strip. Children were interviewed using the following scales: sociodemographic scale, Gaza Traumatic Events Checklist, Impact of Events Scale, Children Revised Manifest Anxiety Scale, and Children Depression Inventory.

Results: The results showed that the most common traumatic events due to war on 2009 reported by children were hearing shelling of the area by artillery, hearing the sonic sounds of jetfighters, watching mutilated bodies on TV, and hearing shootings and bombardment. Mean Impact of Events Scale was 18.37, intrusion subscale mean was 8.98, avoidance subscale mean was 9.49, 148 children were in the clinical range for post-traumatic stress disorder symptoms (59%). Study showed that 21.9% of children had anxiety and 50.6% had depression. Total traumatic events were significantly correlated PTSD, avoidance, arousal symptoms, anxiety, and depression.

Clinical implications: The findings showed that political violence due to war trauma is related to the development of PTSD and depression in Palestinian children in Gaza Strip.

Different levels of programs and interventions had to be described; such interventions under extremely adverse circumstances can be put in place after children's basic needs have been met. This is because existing emergency aid agencies have already responded to the local infrastructure in specialized and culturally appropriate ways and so can serve as a channel for the provision of additional services.

Keywords: Anxiety; Depression; Gaza strip; PTSD; Trauma

Introduction

Gaza's population is considered a young as almost half the population of the Gaza Strip is under the age of 15. This is likely to increase in the near future, because of the annual rate of population growth (6%). Children living in the Gaza Strip have been exposed to and are suffering from a range of trauma and abuse. This puts them at high risk for the development of mental health problems while they are still young and the continuation of such problems into adulthood, which affects the next generation of parents. Eighty percent of the population in Gaza falls below the poverty line of US\$2 per day (up from 30 percent in 2000) and the unemployment level stands at approximately 50 percent. In addition, people in Gaza have been subject to military occupation, causing significant psychological trauma, particularly for children [1].

From a health point of view, the impact of violence in general may be seen within a traumatization framework, i.e. that the different types of violence, including political violence, induce physical and/or mental harm to (i.e. traumatize) individuals, groups or populations. A separation of physical and mental traumatization is difficult, since physical traumatization can hardly occur without being accompanied by mental traumatization [2]. The violence and cruelty of conflict are associated with a range of psychological and behavioural problems, including depression and anxiety, suicidal behaviour, alcohol abuse and post-traumatic stress disorder. Furthermore, psychological trauma may become evident in disturbed and antisocial behaviour, such as family conflict and aggression towards others. This situation is often exacerbated by the availability of weapons and by people becoming inured to violence after long exposure to conflict. The impact of conflicts on mental health is, however, extremely complex and unpredictable. It is influenced by a host of factors such as the nature of the conflict, the kind of trauma and distress experienced, the cultural context, and the resources that individuals and communities bring to bear on their situation [3]. In a study of Silove et al., [4] war-affected 107 subjects of Tamils living in Australia. Tamils exposed to torture returned statistically higher PTSD scores than other war trauma survivors after controlling for overall levels of trauma exposure. The torture factor identified by the PCA was found to be the main predictor of PTSD in a multiple regression analysis. In similar study of Eisenman et al., [5] aimed to determine rates of exposure to political violence

among Latino 638 adult primary care patients who have immigrated to the United States its impact on mental health. The study showed that 54% of participants reported political violence experiences in their home countries, including 8% who reported torture. Of those exposed to political violence, 36% had symptoms of depression and 18% had symptoms of PTSD vs 20% and 8%, respectively, among those not exposed to political violence. Rosner et al., [6] in study of samples in Sarajevo, Bosnia-Herzegovina, three years after the end of the war. A total of 311 people surviving the siege of Sarajevo were assessed. The study groups consisted of a randomly selected residents sample (n=98), a group of individuals in psychological treatment (n=114), and a group in medical treatment (n=99). Each individual survived an average of 24 traumatic events. According to the Diagnostic and Statistical Manual of Mental Disorders, 4th ed. criteria, 18.6% of individuals in the residents sample, 32.7% of those in medical treatment, and 38.6% of those in psychological treatment developed PTSD. In the study of Qouta et al., [7] the prevalence and determinants of PTSD were assessed among 121 Palestinian children (6-16 years; 45% girls and 55% boys) living in the area of bombardment. The results showed that 54% of the children suffered from severe, 33.5% from moderate and 11% from mild and doubtful levels of PTSD. Girls were more vulnerable; 58% of them suffered from severe PTSD, and none scored on the mild or doubtful levels of PTSD.

The study of Giacaman et al. [8] aimed to investigate the influence of exposure to humiliation in war-like conditions on health status in 10th and 11th grade students living in the Ramallah District, West Bank, Occupied Palestinian Territory. There was a significant association between a high number of subjective health complaints and demographic variables, particularly for females compared with males, and refugee camp dwellers compared with village dwellers. In addition, exposure to humiliation was significantly associated with an increased number of subjective health complaints. Students experiencing three forms of humiliation were found to be 2.5 times more likely to report a high number of subjective health complaints compared with those who had never been exposed to humiliation (52% vs 21%), while those experiencing four forms of humiliation were three times more likely to report a high number of subjective health complaints (62% vs 21%). In the study of Elbedour et al, [9] to evaluate and describe the psychological effects of exposure of war-like circumstances on this population. Participants for this study were 229 Palestinian adolescents living in the Gaza Strip who were administered measures of post-traumatic stress disorder (PTSD), depression, anxiety, and coping. Of the 229 participants, 68.9% were classified as having developed PTSD, 40.0% reported moderate or severe levels of depression, 94.9% were classified as having severe anxiety levels, and 69.9% demonstrated undesirable coping responses. Similarly in study of Alexander [10] which described symptoms of anxiety, depression and PTSD among Bosnian (n=17) and Colombian (n=17) torture survivors served by the Florida Center for Survivors of Torture. Findings show that 100% of Bosnians are symptomatic for depression and over half possess symptoms of PTSD compared to 35% of Colombians

for depression and 18% for PTSD, despite the differences in years since trauma occurred. Similarly, Khamis [11] in study aimed to assess the occurrence of post-traumatic stress disorder (PTSD) and psychiatric disorders (i.e., anxiety and depression) in Palestinian adolescents following intifada-related injuries found that 137 adolescents (76.5%) in the sample met full criteria for PTSD diagnosis after they had been injured by live ammunition. About 41 (29.9%) of the cases had a delayed onset; that is, the onset of symptoms occurred more than 6 months after the trauma. In regard to depression and anxiety, significant differences were found between PTSD and non- PTSD adolescents on the depression scale and anxiety scale. Adolescents who exhibited PTSD symptoms were more likely to report higher levels of depression and anxiety.

Also, Thabet et al. [12] in study of 200 families from North Gaza and East Gaza showed that 70.1% of children were likely to present with PTSD, 33.9% were rated as having anxiety symptoms of likely clinical significance, and 42.7% were rated as having significant mental health morbidity by their parents. Fasfous et al. [13] in study aimed to evaluate the symptoms of PTSD among Palestinian school children in two different areas of Hebron. A total of 381 schoolchildren from different parts of Hebron participated in the study. Results indicate that 77.4% of the children living in Hebron show symptoms of moderate-to-severe PTSD, and 20.5% of them meet the DSM-IV diagnostic criteria for chronic PTSD. Similarly, Thabet et al., [14] in study of 386 Palestinian children and adolescents from Gaza Strip showed that, 12.4% of the children and adolescents reported post-traumatic stress disorder. Also, Thabet and Thabet [15] in study of 502 randomly selected children from 16 districts of the Gaza Strip showed that 35.9% of children reported PTSD and 30.9% of children had anxiety disorder. The aim of this study was to examine the relationship between war trauma, PTSD, depression, and anxiety among Palestinian children in the Gaza Strip.

Method

Participants

The sample consisted of children (ages 6 to 16) with similar socioeconomic characteristics in the Gaza Strip who had been enrolled in three summer camps in Gaza Strip. The sample consisted of 251 children, 129 were boys (51.4%) and 122 were girls (48.6%). Children ranged in age from 6-16 years with a mean age of 11.19 years (SD=2.71).

Measures

The data was collected from children by using the following questionnaires:

Sociodemographic characteristic questionnaire

This questionnaire includes sex, age, place of residence, parental information, and family income.

Gaza traumatic events checklist (Thabet et al., [16])

This checklist consists of 31 items covering different types of traumatic events that a child may have been exposed to in the particular circumstances of the regional conflict and Israeli violence in the last 6 months. This checklist covers three domains of trauma. The first domain covers witnessing acts of violence such as the killing of relatives, home demolition, bombardment, and injury of others. The second domain covers hearing experiences such as hearing of the killing or injury of friends or relatives. The third domain covers personal traumatic events such as being shot, injured, or beaten. This checklist can be completed by children aged 6-16 ('yes' or 'no'). In this study the 31-item trauma scale, Cronbach's alpha was 0.90.

The children's revised impact of events scale (CRIES-8)

This scale measures symptoms of post-traumatic stress disorder (PTSD). This includes all 8 items of the original Impact of Events Scale [17]. Individual items were rated according to the frequency of their occurrence during the past week (none=0, rarely=1, sometimes=3, a lot=5) and in relation to a specific traumatic event written at the top of the scale. In this study the revised IES was translated from English to Arabic and back translated. A cut-off score of 17 and above has been found to indicate the likelihood of PTSD (Yule, 1991). A total score was provided, as well as subscale scores for intrusion, arousal and avoidance PTSD symptoms. In this study the 8-item Impact of Events Scale, Cronbach's alpha was 0.73. Regarding the two subscales, Cronbach's alpha for the avoidance items was 0.57; for the intrusion items, Cronbach's alpha was 0.69.

The revised children's manifest anxiety scale (RCMAS) [18]

This is a standardized 37-item self-report questionnaire for children aged 6-19. It measures the presence or absence of anxiety-related symptoms ('yes'/'no' answers) in 28 anxiety items and 9 lie items. A cut-off total score of 19 has been found to predict the presence of anxiety disorder [19]. In this study the total anxiety scale reliability, Cronbach's alpha was 0.82.

Child depression inventory (CDI)

The CDI is a standardised self-report questionnaire of depressive symptomatology [20]. This has been developed for children and young people aged 6-17. The CDI includes 27 items, each scored on a 0-2 scale (from 'not a problem' to 'severe') for the previous two weeks. The total score ranges between 0-54, and a score of 19 and higher has been found to indicate the likelihood of a depressive disorder. The CDI has been adapted for use with Arab children [21]. In this study the 27-items depression inventory, Cronbach's alpha was 0.65

Study procedure

We selected the sample from summer camps organized by three non-governmental organizations working with children. Camps were located in Gaza City, Middle area, and Rafah area south of Gaza Strip. We held a meeting with supervisors of the summer camps to explain the aims of the study. A cover letter was sent to each parent to obtain written permission from them to interview their children in the study and for permission to participate in the study. Sociodemographic information for the study population was collected from parents. In cooperation with the camp supervisors a total number of 251 children (97%) complete the scales and the 9 children did not complete the questionnaires. The data was collected by 6 social workers and psychologists who were trained for 4 hours prior to interviewing children inside the summer camps. Children were given the self-report instruments to complete, interviewers gathered children into groups of 10 children they read the questions a loud to the children, Children were informed by data collectors that there was no right or wrong answers and that they were free to withdraw from the study at any time. Children were also informed that if they had questions when completing the scales, they could raise their hands and ask any questions. The study was approved by Local ethical committee (Helsinki Research Committee) as part of Ministry of Health in Gaza Strip. The data was collected during summer 2011.

Statistical Analysis

All analyses were carried out using Statistical Package for the Social Sciences SPSS ver. 20 for data entry and analysis. Frequencies and percentages of trauma, PTSD, anxiety, and depression items were calculated. Independent t test was conducted to find differences between two groups. Pearson's correlation coefficient tested the association between trauma, PTSD, anxiety, and depression. Linear regression investigated the association between independent (traumatic events) and PTSD, anxiety, and depression as dependent variable was conducted to find the predictor factors of psychopathology in children.

Results

Sociodemographic characteristics of the sample

The sample consisted of 251 children, 129 were boys (51.4%) and 122 were girls (48.6%). Children ranged in age from 6-16 years with a mean age of 11.19 (SD=2.71). Young children (ages 6 to 12) represented 68.5% of the sample with 31.5% of the sample being adolescents (ages 13 to 16). According to place of residence, 61.8% of children live in cities, 24.7% live in camps, and 13.5% live in villages. According to family monthly income, 53.4% of the families' monthly income is less than \$300, 27.1% ranged from \$301-500, 10.4% of

families' income ranged from \$501-750, and only 9.2% had income more than \$751 monthly income (**Table 1**).

Table 1 Sociodemographic characteristics of the study population (N=251).

	N	%
Sex		
Male	129	51.4
Female	122	48.6
Age	Mean=11.19 (SD=2.76)	
Young children (6-11 years)	172	68.5
Older children (12-16 years)	79	31.5
No. of siblings		
Less than 4	57	22.7
5-7 children	136	54.2

More than 8 children	58	23.1
Monthly income in US dollar		
Less than \$300	134	53.4
\$301-500	68	27.1
\$501-750	26	10.4
More than \$751	23	9.2

Types of traumatic events due to war

Palestinian children reported a variety of traumatic events as a result of the repeated incursions in the area. The most common traumatic events reported by children were: hearing shelling of the area by artillery (85.4%), hearing the sonic sounds of jetfighters (81.5%), watching mutilated bodies on TV (78.2%), and hearing shootings and bombardment (76.7%) (**Table 2**).

Table 2 Types of traumatic events.

Trauma	No	%
Hearing shelling of the area by artillery	210	85.4
Hearing the sonic sounds of the jetfighters	203	81.5
Watching mutilated bodies on TV	194	78.2
Hearing the shootings and bombardment	191	76.7
Witnessing the signs of shelling on the ground	170	68.5
Witnessing assassination of people by rockets	153	62.4
Witnessing arrest or kidnapping of someone or a friend	142	57
Hearing killing of a close relative	141	56.4
Hearing killing of a friend	121	48.4
Deprivation from water or electricity during detention at home during incursion	106	42.7
Beating and humiliation by the army	97	39.4
Witnessing firing by tanks and heavy artillery at neighbors homes	94	37.9
Being detained at home during incursions	91	36.8
Witnessing of a friend home demolition	90	36.3
Threaten by telephone call from Israelis security force to evacuate their home before bombardment	86	34.8
Witnessing arrest of someone or a friend	84	34
Threaten by shooting	83	34.3
Witnessing shooting of a close relative	82	32.9
Destroying of your personal belongings during incursion	82	33.2
Witnessing of own home demolition	81	32.8
Witnessing firing by tanks and heavy artillery at own home	80	32.7
Witnessing shooting of a friend	79	32.1
Deprivation from going to toilet and leave the room at home where you was detained during incursion	79	32.1

Witnessing killing of a friend	76	30.6
Being exposed to shooting during the last shooting and confrontations	76	30.8
Witnessing killing of a close relative	75	30.4
Threatened to death by being used as human shield to arrest your neighbors by the army	73	29.6
Being shot by bullets, or rocket parts, or bombs	69	27.9
Threaten of family member of being killed	69	27.8
Physical injury due to bombardment of your home	65	26.3
Threaten of being killed	64	25.8

Mean and standard deviations of traumatic events

The number of traumatic events ranged from no traumatic event to 31 traumatic events with a mean of 13.17 events (SD=7.50). Males (M=14.51, SD=7.80) reported significantly more exposure to trauma than females (M=11.75, SD=6.93), $t(249)=4.52$, $p>0.003$. There was no mean difference in reported exposure to traumatic events between young children (M=12.93, SD=7.78) and older children (M=13.68, SD=6.90), $t(249)=3.96$, $p>0.05$.

Prevalence of post-traumatic stress disorder

Children's post-traumatic stress disorder scores ranged between 0 and 36. IES-8 items mean was 18.37 (SD=8.67). Intrusion subscale mean was 8.98 (SD=5.36), avoidance subscale mean was 9.49 (SD=4.88). In order to estimate the prevalence of PTSD, the sum of the 8 items of IES was recoded in to PTSD/No PTSD with a cut off point of 17 and above as PTSD. The results showed that 148 children were in the cut-off range indicating a likely diagnosis of post-traumatic stress disorder (59%).

In order to find the differences in PTSD and sex, an independent t test was performed. The results showed that there was no statistically significant differences between boys and girls in PTSD ($t=0.33$, $p=ns$). There were no age differences in reported PTSD.

Anxiety symptoms

The minimum symptoms were 0 and maximum were 28 with mean anxiety 13.90 (SD=5.97). Considering cutoff points of 19 and above as anxiety, 55 children (21.9%) had anxiety. In order to find the differences in anxiety and sex, an independent t test was performed. The results showed that there was no statistically significant differences between boys and girls in total anxiety scores ($t=-0.08$, $p=ns$). There were no age differences in reported anxiety.

Depression

Palestinian children reported symptoms of depression. The minimum symptoms were 0 and maximum were 36 with mean depression 18.38 (SD=6.48). Considering the cutoff point of

CDI of 19 and above for depression, 127 children (50.6%) were depressed. In order to find the differences in depression and sex, an independent t test was performed. The results showed that there was no statistically significant differences between boys and girls in depression ($t=0.93$, $p=ns$). There were no age differences in reported depression (**Table 3**).

Table 3 Means and standard deviations of PTSD, depression, and anxiety.

	Mean	SD
PTSD	18.37	8.67
Avoidance	9.49	4.88
Intrusion	8.92	5.36
Anxiety	13.9	5.97
Depression	18.38	6.48

Relationships between trauma, PTSD, anxiety, and depression

In order to find the relationships between the dependent and independent variables, Pearson correlation coefficient test was done. Total traumatic events were significantly correlated to total PTSD total scores ($r=0.33$, $p=0.01$), avoidance ($r=0.26$, $p=0.01$), arousal ($r=0.32$, $p=0.01$) anxiety ($r=0.36$, $p=0.01$), and depression ($r=0.36$, $p=0.01$) (**Table 4**).

Table 4 Pearson correlation values of trauma exposure-PTSD symptoms, anxiety, and depression.

	1	2	3	4	5
Total trauma	1				
Total PTSD	0.33**	1			
Avoidance Symptoms	0.26 **	0.84**	1		
Arousal symptoms	0.32**	0.86**	0.46**	1	
Anxiety	0.36 **	0.26**	0.21**	0.24**	1

Depression	0.36 **	0.37**	0.27**	0.37**	0.78**
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Prediction of PTSD by traumatic events due to war

In a univariate linear regression analysis, each traumatic event of war was entered as an independent variable in a

multiple regression model, with total PTSD scores as the dependent variable, two traumatic events were significantly associated with PTSD: witnessing killing of a close relative (B=3.86, p=0.001), and witnessing of a friend home demolition lost the main source of income (B=2.69, p=0.01) (F=19.87, p<0.001, R2=0.14) (Table 5).

Table 5 Linear regression analysis for predictor variables of trauma for the PTSD.

	Unstandardized Coefficients		Standardized Coefficients	t	p	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Witnessing killing of a close relative	-4.88	1.27	-0.27	-3.86	0.001	-7.38	-2.39
Witnessing of a friend home demolition	-3.21	1.19	-0.19	-2.69	0.01	-5.57	-0.86

Prediction of anxiety by traumatic events

In a univariate linear regression analysis, each traumatic event was entered as an independent variable in a multiple regression model, with total anxiety scores as the dependent variable, three events were significantly associated with

anxiety: witnessing of own home demolition (B=3.17, p=0.001), threaten by telephoned to evacuate your home before bombardment (B=3.22, p=0.001), and hearing the shootings and bombardment (B=2.20, p=0.03) (F=17.6 p<0.001, R2=0.17) (Table 6).

Table 6 Linear regression analysis for predictor variables of trauma for the anxiety.

	Unstandardized Coefficients		Standardized Coefficients	t	p	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Witnessing of own home demolition	-5.62	1.77	-0.22	-3.17	0.001	-9.11	-2.13
Threaten by telephoned to evacuate your home before bombardment	-5.61	1.74	-0.23	-3.22	0.001	-9.04	-2.17
Hearing the shootings and bombardment	3.72	1.69	0.14	2.2	0.03	0.38	7.06

Prediction of depression by traumatic events

In a univariate linear regression analysis, each traumatic event was entered as an independent variable in a multiple regression model, with total depression scores as the

dependent variable, three events were significantly associated with depression: witnessing of own home demolition (B=4.08, p=0.001), and threaten by threaten by shooting (B=2.83, p=0.01) (F=21.19, p<0.001, R2=0.15) (Table 7).

Table 7 Linear regression analysis for predictor variables of trauma for the depression.

	Unstandardized Coefficients		Standardized Coefficients	t	p	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Witnessing of own home demolition	-7.76	1.9	-0.28	-4.08	0.001	-11.51	-4.02
Threaten by shooting	-5.37	1.89	-0.19	-2.83	0.01	-9.1	-1.64

Discussion

Children living in regions of war and political conflict are exposed to numerous types of potentially traumatic events that have a significant impact on their psychological and physical wellbeing. The number of traumatic events that children in this study were exposed to ranged from 13.17. While the most prevalent types of traumatic events involved hearing shellings, sonic sounds of the jetfighters, and shootings and bombardment, a substantial number of children (approximately 75%) reported watching mutilated bodies on TV resulting. Nearly half of the children had heard about killings of close relatives or friends and approximately twenty-five to thirty-four per cent had actually witnessed the killings with deaths. An estimated 1 in 4 children reported that they or a family member had been threatened to be killed. The reported level of war trauma exposure had a significant impact on children's mental health with more than half of the children reporting in the clinical range of posttraumatic stress reactions and depression and about a fifth of the children reporting clinical levels of anxiety. The findings of this study were consistent with literature on the impact of political violence on children living in areas of war and conflict [7,9,12,14-16,22]. This study showed no differences in exposure to trauma posttraumatic stress, anxiety and depression according to children gender or age.

Our study results were consistent with other studies of children in Gaza exposed to political violence [9] and were inconsistent with other studies with which showed that girls had more posttraumatic stress than boys [7]. Our results were consistent with reviewed studies by Tolin and Foa [23] which suggested that for children exposed to combat, war and/or terrorism there is no difference in PTSD between young girls and boys, but during adolescence, sex differences in PTSD become more prevalent with girls reporting higher levels of posttraumatic stress. However, it may be that in times of extreme widespread continuous violence and in a context of a worldview where there becomes a sense of collective trauma, these types of difference in distress based on sociodemographic characteristics such as sex or age are not revealed until times of decreased violence or peace. Further research in the area of age and sex as vulnerabilities for children exposed during and after war-like conditions is needed. Nevertheless, there is strong evidence of the associations between children's exposure to political violence and posttraumatic distress [7,14,15,22,24,25]. The unique situation in the Gaza Strip during the last years puts more burden on Palestinian children to cope with different types of traumatic events and to continue normal life beside the siege of Gaza in the last 10 years [26].

Conclusion and Implications

The study showed that children had mental health problems due to war. This need effort of increasing media and policy attention on children living in war zones provides a good opportunity to consider the implications of these research findings for international initiatives to improve the well-being

of children and families. Different levels of programs and interventions had to be described, such interventions under extremely adverse circumstances can be put in place after children's basic needs have been met. This is because existing emergency aid agencies have already responded to the local infrastructure in specialized and culturally appropriate ways and so can serve as a channel for the provision of additional services. There is already some research evidence on strategies to prevent or minimize children's response to trauma through ongoing political conflict. Implementation of aid efforts are more likely to be successful through agencies operating in the area and in collaboration with schools, which are the main source of stability and safety for the children. International organizations such the United Nations (under whose auspices, for example, all schools in the Gaza refugee camps operate) and UNICEF have a major role to play in providing as much socioeconomic stability, education, alternative coping strategies, and awareness of the impact of trauma, as is humanly possible in these sad and untoward circumstances.

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