

Prevalence of Post-Traumatic Stress Disorder among Adolescents in Mosul City after War

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Abstract: Post Traumatic Stress Disorder (PTSD) among adolescents is increasing worldwide especially in violent conflicts and war zones. Iraq is consistently exposed to large-scale traumatic events such as successive wars, economic sanction, sustainable organized violence, and terrorism. This unsafe situation has negative impacts on the psychosocial status of the whole Iraqi community, particularly children and adolescents.

Objectives: To assess the prevalence of posttraumatic stress disorder among adolescents in Mosul city, and to figure out the association between PTSD with certain socio-demographic characteristics..

Method: The current study was based on a cross sectional design, which conducted on a sample consisted of 1034 adolescents aged 15 to 21 years old age was randomly selected from 13th schools in the Mosul city. Participants were interviewed by self-administrated questionnaire include sociodemographic characteristics and Post traumatic stress disorder according to DSM-IV scale.

Results: The study resulted that 44.7% of the participants were aged between (17 - 18) years old, 52.5% of the participants were male. The study showed that 10.4% of adolescents reported mild PTSD, 44.3% showed moderate, 40.5% revealed severe PTSD while 4.6% of adolescents suffering from very severe PTSD and girls reported more PTSD than boys. The results showed a significant association between the PTSD with age of adolescents and family monthly income.

Conclusions: The unsafe situation in Iraq has led to high trauma exposure and a high prevalence rate of PTSD among adolescents in Mosul city. It was more prevalent among 19-21years age group and was more prevalent among females than males. The study explored a number of factors that are associated with this increased rate. The urgent need to develop adolescents' health care services in Iraq must be supported. There may be an even greater need for school-based programs to promote child and adolescent health and well-being, particularly as Iraqi children and adolescents continue to be exposed to violence, and the most distressing lifetime traumas.

Keywords: Adolescent, Posttraumatic stress disorder, Secondary schools.

Introduction

Children and teenagers are vulnerable for experiencing many forms of stressful events due to the rapid physiological and psychological changes happening during adolescent years. This vulnerability can increase among adolescents living in countries facing crisis continuously. Trauma creates a loss of faith that there may be any safety in this world, and it smashes a person's innocence (Margolies and read, 2016). Battles, political and religious violence, obligatory displacement and migration, human right exploitations, unemployment, and poverty have impaired Iraqi society, generating foremost public physical, psychological and social well-being crunches (AlObaidi., 2013).

PTSD is a disabling disorder, in both the developed and the developing countries which can lead to mental, emotional and social disorders and loss of normal daily life, it has a lifelong impact on multiple aspects of functioning, including adaptive and interpersonal functioning, emotion regulation, cognition and memory function(Mouthaan, et al., 2018).

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The risk for PTSD among children relies upon the nature of the trauma; the child's age and gender; and personal, family, and community factors (Gerson, and Rappaport, 2013).

Traumatic involvements may result from conflicts, as supported by literature which showed that the rate of PTSD among youth in Iraq has been multiplied. Adolescents exposed in Iraq to different kinds of the traumatic event over the last decade especially after the conflict of 2003, people in Iraq have been fairly constantly exposed to war for more than three decades (Alshawi, 2017 and Al-Hadethe, et al., 2014).

Post-Traumatic Stress Disorder (PTSD) is defined as an anxiety disorder that happens when exposed to a traumatic event. The traumatic event(s) should have the ability to stimulate worry, vulnerability or frightfulness in response to distressing events, war or political trauma. The anxious individual usually fears the occurrence of an unexpected threat. Individuals with PTSD tirelessly try intentionally to avoid recalling the traumatic event, but experience intrusive thoughts, images, flashbacks or dissociative reactions. In turn, these can cause internal or external physiological reactions. PTSD symptoms commonly start after exposure to a traumatic event, but individuals may not recognize the nature of the symptoms until months or even years later (Greenberg et al., 2015).

Nineveh is the second largest Iraqi governorate where exposed to war, violence and terrorist activities during the last four years ago, Because of Islamic State of Iraq and the Levant (ISIL, also known as ISIS, IS and Da'esh) who control on the city from the period 2014 to 2017. They were taking the civilians as hostages and human shields Temporary loss of water and Power outage from them and the lack of health and educational services, making the situation more complex and difficult. Yet, there is little attention to it. Moreover, Adolescents suffered years of deprivation and delayed from schools because lived in constant threat of exposure to airstrikes, death and the daily threat of unexpected attacks from ISIS (UN-Habitat. 2016). This was the rationale behind conducting this study as the psychological trauma is increasing in Iraq as a result of the successive wars/violence, yet, there is little attention to it, moreover, the lack of psychological and mental health services in Iraq makes this problem more serious especially that it is affecting this vulnerable group.

I. Methods:

A descriptive Cross Sectional study was carried out in the Mosul city (the second highest populated city in Iraq) during the period of 15th February 2019 to the 30th March 2019.

II.I Study sample and procedure:

The sample of the study was adolescents that were collected from secondary schools, at Tigris River who divided Mosul city into two sides (left and right side). According to the Department of Statistics in the General Directorate of Nineveh Education (2018-2019), the total number of secondary schools in the Mosul city is 85 schools, 55 schools in the left side and 30 schools in the right side. In this study, A simple random sampling technique was applied to choosing 20% of total secondary schools and randomly sample selected from 13th schools in the Mosul city (nine schools in the left side and four schools in the right side, eight males and six females schools). Three classes in each school were selected randomly (fourth, fifth and sixth grades) and the sample in each class also selected randomly. The total sample were included 1034 adolescents out of 7240 adolescents recorded in these schools. Before starting data collection, an approval letter was obtained from the General Directorate of Nineveh Education with the name of schools and its locations, to facilitate the process of data collection in governmental secondary schools. Every adolescent participated in these study obtained an explanatory letter which explain the aim of the study and these information will be kept confidentially for the research only.

Tools of Measure:

• Socio-demographic characteristics:

This questionnaire includes age, gender, place of residence, the number of sibling and rooms, father education and mother education and the family monthly income.

• PTSD Index for DSM-IV: Adolescent Version24.

The adolescent version contains a total of 20 questions, which is rated as a 3-point Likert scale from 1"Never", 2 "Sometimes" and 3"Always" is used for adolescent aged 13 years and older. and the range of total PTSD scores is between 0 - 60. Scores are categorized as a "mild PTSD reaction" (total score less than 15), "moderate" (16 - 30), "severe" (31- 45), and "very severe reaction" (46- 60).

II.II Statistical Analysis:

Data entry and analysis were applied by using a Statistical Package for the Social Science (SPSS, Version 22). Frequency and percentage distribution was used in statistical analysis. T- Independent tests were applied to compare gender of adolescents and mean of posttraumatic stress disorder. One way ANOVA test was used for measuring differences between PTSD and other sociodemographic variables.

II. Results:

Table (1) Socio demographic characteristics of the sample (No.1034)

1- Gender	No.	%
Male	543	52.5
Female	491	47.5
Total	1034	100%
2- Age of adolescent	No.	%
15-16 years	224	21.7
17-18 years	463	44.7
19-21 years	347	33.6
Total	1034	100%
3- Place of residence	No.	%
Left side	707	68.4
Right side	327	31.6
Total	1034	100%
4- Number of siblings	No.	%
Less than 4 children	446	43.1
4-8 children	509	49.2
More than 8 children	79	7.6
Total	1034	100%
5- Monthly family income	No.	%
Enough	340	32.9
Enough partly	496	48
Not Enough	198	19.1
Total	1034	100%

6- Educational level of father	No.	%
Illiterate	42	4.1
Primary education	254	24.6
Secondary education	383	37
Higher education	355	34.3
Total	1034	100%
7- Educational level of mother	No.	%
Illiterate	102	9.9
Primary education	454	43.9
Secondary education	350	33.8
Higher education	128	12.4
Total	1034	100%
8- Father work	No.	%
Employee	713	69
Unemployed	320	31
Total	1034	100%
9- Mother work	No.	%
Employee	108	10.4
Unemployed	926	89.6
Total	1034	100%

This table show that the total sample was 1034 adolescents which represents 15% from 13 schools chosen. 543 males (52.5%) and 491 females (47.5%), aged between 15-20 years (Mean = 17.79; SD =1.413). In regard with place of residence, 68.4% of participants was lived in the left side of Mosul, while 31.6% was lived in the right side. Concerning family monthly income, 32.9% had enough monthly income, 48% enough partly income and 19.1% had not enough family monthly income. Regarding the educational level of fathers, the majority of them were had secondary level education as (37%). While, about half percent of mothers educational level had primary educated as (43.9%).

Table (2) PTSD symptoms (PTSD Index for DSM-IV: Adolescent Version2 (No.1034)

Items	Never		Sometimes		Always	
	No.	%	No.	%	No.	%

1. Frequent, involuntary, and intruding disturbing remembers of the traumatic events.	134	12.9	661	63.9	239	23.2
2. "Recurrent distressing dreams in which the content and/or effect of the dream are related to the traumatic events".	410	39.6	480	46.5	144	13.9
3. Dissociative responses such as "flashbacks in which the individual feels or actions as if the traumatic events were recurrent".	258	24.9	444	42.9	332	32.2
4. Strong psychological despair when exposed to "internal or external" signal that image and liken the characteristic of the traumatic event.	93	8.9	372	35.9	569	55
5. "Marked psychological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s)".	337	32.5	435	42	263	25.5
6. Avoid, or make efforts to avoid troubling thoughts, or feelings related to a traumatic event.	101	9.7	365	35.2	568	55.1
7. Efforts to avoid external remembers such as individuals, activities, areas and situations that elicit disturbing remember, thoughts or feelings related to the traumatic events.	198	19.2	350	33.8	486	47
8. lack of the ability to recalling an substantial part of the traumatic events.	698	67.6	233	22.5	103	9.9
9. "Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world" (e.g., "I am bad, No one can be trusted, the world is completely dangerous, My whole nervous system is permanently ruined").	233	22.5	355	34.3	446	43.2
10. Constant and recurrent thoughts about the cause of traumatic events that lead the individual to blame himself or others.	497	48	300	29.1	237	22.9
11. "Persistent negative emotion state (e.g., fear, horror, anger, guilt, or shame)".	399	38.5	424	41.1	211	20.4
12. Significantly decreased interest or involvement in important activities.	267	25.8	429	41.5	338	32.7
13. Feelings of detachment or estrangement from others	440	42.5	353	34.1	241	23.4
14. Permanent inability to express a positive feelings such as inability to express happiness, satisfaction, or loving emotions.	366	35.4	450	43.5	218	21.1
15. Passively behavior and irritable reactions with little or non-provocation.	536	51.8	304	29.4	194	18.8
16. Reckless or self-destructive behavior.	753	72.9	205	19.8	76	7.3
17. Hyper vigilance	241	23.3	496	47.9	297	28.8
18. Exaggerated response to the surprise reactions.	201	19.4	408	39.4	425	41.2
19. Difficult in the concentration.	219	21.2	463	44.8	352	34
20. "Sleep disturbance (e.g., difficulty falling or	307	29.6	388	37.5	339	32.9

staying asleep or restless sleep)".						
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The study showed that the mean total scores of posttraumatic stress disorder was 39.41 (S.D 6.885), as the most common post traumatic reactions were: strong psychological despair when exposure to direct or indirect stress that image or liken as a type of traumatic events which represent (55%) with always response, whereas (55.1%) always had avoidance of or efforts to avoid distressing thoughts or feelings related to a traumatic event. Efforts to avoid external remembers such as individuals, activities, areas and situations that elicit disturbing remember, thoughts or feelings related to the traumatic events signified as (47%), exaggerated response to the surprise reactions (41.2%), difficult in the concentration (34%) and sleep disturbance (32.9%).

Table (3) frequency and severity PTSD reactions (No.1034)

Severity of PTSD reactions	Frequency	(%)
Mild	108	10.44
Moderate	459	44.39
Severe	419	40.52
Very Severe	48	4.64

According to these table, the study shows that 108 of adolescents (10.44%) had mild PTSD, while 459 of them (44.39%) had moderate of PTSD, 419 showed severe PTSD (40.52%) and 48 of them exhibit a very severe PTSD (4.64%) as presented in table 3.

The relationships between PTSD and Sociodemographic characteristics:

T independent test was conducted, the result shows that the mean of PTSD in males was 39.04 (S.D=7.144), while in females the mean scores was 39.82 (S.D=6.568). So, according to these results, the female had PTSD more than males and statistically significant differences toward females ($t= 3.590$, $df 1032$, $p<0.05$).

Table (4) one way ANOVA analysis of variance for the differences between PTSD and sociodemographic variables

Sociodemographic Variables		Sum of Squares	Df	Mean Square	F	Sig
Age	Between Groups	139.179	38	3.663	1.896	.001
	Within Groups	1922.586	995	1.932		
	Total	2061.765	1033			
Mother Education	Between Groups	46.828	38	1.232	1.826	.002
	Within Groups	671.508	995	.675		
	Total	718.337	1033			
Father	Between Groups	41.019	38	1.079	1.460	.037

Education	Within Groups	735.702	995	.739		
	Total	776.721	1033			
Family Monthly Income	Between Groups	39.366	38	1.036	2.151	.000
	Within Groups	479.133	995	.482		
	Total	518.499	1033			
Number of Sibling	Between Groups	23.401	38	.616	1.650	.008
	Within Groups	371.339	995	.373		
	Total	394.740	1033			

The table above showed a significant difference in PTSD according to the age of adolescents ($F=1.896$, $P=0.001$). For the differences between PTSD and mother education present a significant relationship ($F=1.826$, $P<0.002$). On the other hand, the study showed non-significant relationship between PTSD and father education level at ($F=1.460$, $P=0.037$). The results also showed a significant differences between PTSD and number of siblings ($F=1.650$, $P=0.008$). Additionally, results showed high significant differences in PTSD and Family Monthly Income ($F=2.151$, $P=0.000$).

VI. Discussion:

All human beings starting from childhood might go through many different shockable life events, and difficulties until reaching to adulthood. Exposure to such events might increase internal fears and create insecurities and if the impacts of traumatic events remain with person for long durations without support to cope with the aftermath of traumatic events, it may ultimately lead to psychological problems. The current descriptive cross-sectional study which was carried out in thirteen schools in the Mosul city and has demonstrated that the majority of adolescents in this study have PTSD. The study underhand present that the more post traumatic responses were: attempts to obviate activities, locations, or individuals that elicit remembers of the trauma (47%), attempts to obviate ideas, emotions and feelings, or talking about the trauma (55.1%), exaggeration startle reflex (41.2%), strong psychological despair when exposure to direct or indirect stress that image or liken as a type of traumatic events which represent (55%). These results consistent with Qeshta, (2015) who exhibited that more PTSD responses in the adolescents were repeated thoughts remembers of traumatic event such as pictures, feelings and conceptions (49%), strong psychological despair when exposure to direct or indirect stress that image or liken as a type of traumatic events (36.9%). As well, Al-Ibwaini (2015) found that more PTSD responses in the adolescents were repeated thoughts remembers of traumatic event such as pictures, feelings and conceptions (45.7%), exaggerated response to the surprise reactions (43.6%), emotions or feelings as if the traumatic events will be repeated (42.2%), attempts to obviate actions, locations and individuals which elicit remembers of the traumatic event (42.4%), attempts to obviate ideas, emotions and feelings, or talking about the trauma (40%).

Furthermore, the results shows that 10.4% of the adolescents reported mild PTSD, 44.3% reported moderate, 50% reported severe and 4.6 reported very severe of PTSD. These results is agreement with the study which conducted by Thabet, et al (2017) who founded 25.5% of adolescents had moderate PTSD and 9.3% had severe PTSD. While, the study was conducted by (Qeshta, 2015) found 16.4% of respondents had severe PTSD. Additionally, the study conducted by (Al Ibwaini's, 2015) founded 20.3% children had severe PTSD and girls reported more PTSD than boys. My findings was incompatible with the study of (Qeshta, 2015) which showed no significantly relationship between total scores of PTSD and gender of participants. On other hand, my findings be similar to the study which conducted by Thabet, et al (2015) reported females more PTSD than males. In addition, Nooner et al., (2012) reported the adolescent girls may be have more PTSD than adolescent boys.

IV. Conclusions and recommendations:

This study concluded that the prevalence of PTSD among adolescents in Mosul City was high. It was more prevalent among 19-21 years age group and was more prevalent among females. Also, PTSD was statistically significant according to the age of adolescents, mother education level, and high significant differences in PTSD and family monthly income. The PTSD appears as one of the important physical and psychological health issues that should be taken into consideration among adolescent in the Mosul City.

In summary, the data from this study suggest that there are multiple factors contributing to the occurrence of PTSD among adolescents. This may serve as a foundation for further research in this crucial field of adolescents' health and well-being in the context of armed conflict. The urgent need to develop adolescents' health care services in Iraq is supported by our study. There may be an even greater need for school-based programs to promote child and adolescent health and well-being. It is essential to build the capacity of Iraqi educational professionals through continuing health and medical educational opportunities, and to train Iraqi teachers in recognizing children's distress and in applying appropriate strategies that address children's needs, particularly as Iraqi children and adolescents continue to be exposed to social instability and violence, and the most distressing lifetime traumas. Moreover, public education by using public meetings, workshops and media to target a whole communities or for specific settings such as schools, civilian centers and other health organizations. We have to establish community policies to provide collaboration and coordination among different social institutions and governmental and nongovernmental organizations. Furthermore, extracurricular interested activities for children and adolescents such as art, music, drama, and sport, etc.

Financial disclosure

There is no financial disclosure.

Conflict of interest

None to declare.

Ethical Clearance

All experimental protocols were approved under the Mosul University and all experiments were carried out in accordance with approved guidelines.

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