



## Post-Traumatic Stress Disorder Risk among Iraqi Displaced Children

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### Abstract

Millions of people around the world had been forced to flee their homes due to violence. High rates of mental problem have been reported among those populations. Iraq is an exemplar of the mental health needs of children in conflict-affected countries.

A multi-stage random sampling technique was adopted targeting primary school students in the main three Iraqi governorates (Baghdad, Duhok, and Erbil) to which most of the displaced families fled. A standard questionnaire form adapted from the 10-item Trauma Screening Questionnaire -TSQ/ child version was used. The prevalence of PTSD was estimated to be 83.3%, which seems to increase with age, more in females, and was associated with large family size and frequent displacements. There was a significant association between PTSD and the occurrence of violent events in the family (death, injury or arrest) during or after displacement. These findings call the attention for an urgent humanitarian interference to help the traumatized Iraqi children.

### Keywords

PTSD; Risk; Displaced; Children; Iraq

### Introduction

At the end of 2014, 38 million people around the world had been forced to flee their homes by armed conflict and generalized violence. This represented a 15% increase from 2013 and includes 11 million people who were newly displaced during the year, the equivalence of 30,000 people a day [1].

Forced from their homes, internally displaced persons (IDPs) experienced specific forms of deprivation, such as loss of shelter, armed attacks and abuse, family separation, including an increase in the number of separated and unaccompanied children and increased risk of sexual and gender-based violence, particularly affecting women and children who are estimated to form 80% of IDPs.

The emotional immaturity among the displaced sufferers resulted in post-traumatic stress for children on account of their little tolerance towards violence [2,3]. High rates of mental problems such as post-traumatic stress disorders (PTSD), depression and anxiety have been reported among conflict-affected civilian populations [4,5].

Iraq is an exemplar of the challenging mental health needs of

children in low-income, conflict-affected countries as it has a long history of internal displacement caused by conflict or government policies. Internal displacement prior to 2003 was estimated at around one million at the time of the US-led invasion with a spike in 2006–2008 during the sectarian civil war [6]. The number of IDPs in Iraq has doubled more than over the last four years reaching four millions, 10.8% of its population and 10% of IDPs worldwide [3,7].

About 28% of IDPs in Iraq are hosted in Kurdistan region, 68% in central Iraq (Baghdad and five other governorates), and 4% in the South. Some of them live in rented houses while others live in “critical shelters,” like tented settlements, unfinished or abandoned structures, religious houses, or car parks. Only 8% were housed in organized camps, with about 2.5 million living outside of camps [8–11]. We attempted to offer new data to the plight of children’s mental health in a country ravaged by war and conflict, externally and internally, which has led to enormous internal displacement of millions of Iraqis, of which disproportionately are women and children. Trying to dig out for the real magnitude of this problem among the displaced Iraqi children; we set out to assess the prevalence of PTSD and some associated factors to portray a clear profile about this vulnerable group. Our focus was on settlements in Baghdad, Duhok, and Erbil, which between them hosted an estimated 913,734 IDPs [12].

### Methods

We designed the cross sectional study as a retrospective cohort [13] by dealing with the exposure of displacement as a predictor for PTSD. The study was conducted during a three month period (March 1 to May 31, 2016).

### Sample and sampling technique

We chose primary school students as they were accessible, and most of the displaced families resided in restricted areas with complicated security measures.

A multi-stage probability sampling technique was adopted via choosing some sectors from the main education directorates in those governorates through a simple random sampling technique. In the second stage; schools were chosen from those sectors using a simple random sampling technique. The number of schools was determined according to the number of displaced families in each of the sampled governorates (in Erbil 32649, in Baghdad 55607, and in Duhok 74033 families). Eight primary schools were chosen from Erbil, 12 from Baghdad, and 13 schools from Duhok. The third stage was to choose the students; all the students in the chosen schools were defined, then students from all grades were included (excluding first year students as they were too young and newly going to school) using a systematic random sampling technique, students from the first and second grades were not included for they are too young to understand the questions, and might not be able to express their feelings in a comprehensible way. Both genders were included.

### Study instruments

As there is no Iraqi questionnaire to assess PTSD in children, a standard questionnaire form (adapted from the 10-item Trauma Screening Questionnaire -TSQ)/child version “CTS” [14] was used

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by rewording the questions to make them more comprehensible for children. The instrument referenced displacement (and specific traumas within the displacement) as the default.

The CTSQ assessed for re-experiencing (5 items) and hyper-arousal symptoms (5 items). The participants' response was required to be with yes (scored 1) or no (scored 0) to whether they have experienced the symptoms since the displacement. Avoidance items (amnesia and foreshortened future symptoms) were not incorporated, as they were not easily comprehended by children in the acute post-trauma timeframe. An optimal cutting score of 5+ was derived providing the best prediction of later PTSD [14].

Identification of PTSD in those students was not only based on clinical diagnosis but, rather, on probable PTSD symptomatology based on CTSQ.

Information was collected about demographic and displacement characteristics: the governorate they came from, type of residence, times of displacements drop out from school, and family members who were killed, injured or arrested during or after displacement. The questionnaire items were validated by an academic committee of community physicians. The translation was verified through back translation.

## Data collection

The displaced students were placed in separate schools which were either a temporary collection of caravans, or an already used governmental school where the local students occupy the buildings in the morning shift and the displaced during the evening shift, the data collection team was composed of three well trained female community physicians who had previous experience in field work. A direct face to face interview was done for each student after explaining them the meaning of the questions letting them fill the questionnaire by themselves.

## Ethics statement

The survey was approved by Baghdad Provincial Council, the education directorates of Duhok and Erbil Governorates, and the ethical committee in the Mustansiriya Medical School. The permission was granted by the school managers after informing and getting the verbal consent of the families of the students. The interviews were conducted with a teacher accompanying from each school, the purpose of the study was explained in details to the respondents giving them the full choice to participate. Each student was seated in a visible corner in the class room in order to insure more privacy. The questionnaire form was anonymous and the participants were assured that all the information will be kept strictly confidential and will not be used for any purpose other than research work.

## Analyses

The data were presented as numbers and percentages. Chi-square was used as a test of association, significance was set at ( $p < .05$ ). Adjusted odds ratios (OR) and 95% confidence intervals were calculated for each of the studied demographic and displacement variables. Multiple logistic regressions were performed with the demographic variables and displacement characteristics as predictors, while PTSD (measured by CTSQ scores) served as the outcome. We utilized the (enter) method, adding all of the predictors simultaneously.

## Results

Most of the students accepted to participate with a response rate of 98%. Each class usually constituted about 40-45 students, so, using the systematic random sampling (every other student) resulted in a total of 80 students from each school. From all the 33 surveyed primary schools; a total of 2640 student was collected. Of those; 1178 (44.6%) were females and 1462 (55.4%) were males, their ages ranged from 9-13 years. Mosul (Ninawa) was the original location which constituted 51.3% of them and 39.9% were from Anbar. The family size was equal or more than ten persons in 32.1% of them and 5-9 persons in 66.3%. After displacement; 67.3% of the children reported absenteeism or drop out from their schools for a year or more, as shown in Table 1.

Three quarters of the children (74.7%) said that this was the first displacement for them, while 19.8% were displaced for the second time, and 5.5% reported more displacements that may reach to seven times. During or after displacement, 257 cases of death was reported in their families, 63 injuries, 55 arrests, and 42 reported the occurrence of more than one of these events in the same family. The type of residence was either rented houses or flats (86.9%), tents (3.7%), caravans (2.1%), unfinished structures, stores, factories, or worship houses (2.1%) (Table 2).

Most of the children (2199) answered "yes" for five questions or more giving a prevalence (of children at risk of developing PTSD) of 83.3%. The statistical analyses showed that the prevalence of PTSD was increasing with age ( $p < .0001$ ) especially in the age of 12 years and more (OR=3.44), more in females (OR=1.96,  $p < .0001$ ). The prevalence increases when the family size increases (OR 2.42,  $p < .025$ ) and with frequent displacements (OR=3.071,  $p < .0001$ ). There was also a significant association between PTSD and the occurrence of violent events in the family (death, injury or arrest) during or after displacement (OR=1.70,  $p < .001$ ). PTSD symptoms was reported significantly more in children who left their schools for a year or more during and after displacement (OR=1.99,  $p < .0001$ ) (Table 3).

Figure 1 shows the percentage of children who answered (yes) for each of the ten questions. Positive answers were more in questions related to repeated memories about the event (84.3%), feeling that the accident will happen again (80.6%), feeling upset (79.3%) and "suddenly jump" in response to any surprise (89.6%).

Table 1: Sample characteristics (n=2640).

Age (years)	No.	%
9	280	10.6
10	462	17.5
11	639	24.2
12	799	30.3
13	460	17.4
Male	1462	55.4
Female	1178	44.6
<b>Original governorate</b>		
Mosul	1353	51.3
Anbar	1054	39.9
Salaheddin	145	5.5
Diyala	88	3.3
<b>Family size (Range 2-58)</b>		
< 5	44	1.6
5-9	1749	66.3
>=10	847	32.1
<b>Children left school for one year or more</b>		
Yes	864	32.7
No	1776	67.3

Multiple logistic regression analysis of the studied variables demonstrated the independent effects of each of the predictors; age (OR=3.661,  $p<.0001$ ), and female gender (OR=2.551,  $p<.0001$ ) were the major risk factors in the development of PTSD. Multiple displacements (OR=2.927,  $p<.002$ ) and family size of >5 members (OR=2.554,  $p<.009$ ) were also risk factors. Other risk factors shown by multiple logistic regressions were: violent events (death, injury, or arrest of family members) during or after displacement and leaving school for a year or more (Table 4).

## Discussion

For 13 years, Iraq has been one of the most susceptible locations in the world for a wide spectrum of psychological problems due to

conflicts, repeated wars, violence and, recently displacement. Several reports have covered the estimates of violence in Iraq during the years of conflict [13,15,16]; however, mental health trauma from these years have not been widely documented [17-19].

This survey was conducted 22 months after a major wave of population fled from Ninawa following ISIS seizure (June 10, 2014). The three governorates (Baghdad, Duhok and Erbil) were the main settlements to which most of the people headed as these governorates hosted about 40% of all Iraqi IDPs [12].

Three quarters of our sample experienced displacement at least once, while some suffered up to seven displacements. Those tortured survivors who suffered repeated traumatic stress, fear, and violence perceived greater negative impact on their life domains compared to others who lived in war scenery but had no traumatic experience [20].

The “unique” experience of displacement in Iraq (in the present circumstances) is totally inhuman, it is difficult to perceive or understand by many people especially those who live in stable countries where a child’s exposure to “bullying” may trigger a social concern and a long behavioural therapy, as compared to those children who faced the successive waves of terror before, during and after the enforced armed displacement, which resulted in finding a high prevalence of PTSD symptoms among them is not taken by a surprise. Many studies indicated that people exposed to conflicts and displacement suffer a high rate of psychopathology and mental health disfigurement more significantly than others, and that PTSD is one of the most common reactions observed amongst such groups [21-23].

The Iraqis have repeatedly witnessed painful and terrible war and post-war consequences, they are afraid, anxious, and depressed about the prospect of war. A study conducted in 2007 showed that only 40% of Iraqis reported that life is worth living [24]. The Iraqi children have suffered more than adults from these consequences.

**Table 2:** Displacement characteristics (n=2640).

Number of displacements*	No.	%
1	1971	74.7
2	522	19.8
3 & more	93	5.5
<b>Family events (death, injury, arrest)</b>		
Death	257	9.7
Injury	63	2.4
Arrest**	55	2.0
Combined	42	1.6
Total	417	15.7
<b>Type of residence</b>		
Rented houses or flats	2293	86.9
Tent	96	3.7
Relatives	79	3.0
Owned houses or flats	58	2.2
Caravan	55	2.1
Others ***	32	2.1

\*Each child represents one family \*\* Usually by ISIS or militias, the outcome is (missed)

\*\*\* Worship house, factories, unfinished structures or stores

**Table 3:** Association between different demographic and displacement characteristics and PTSD.

		PTSD		No		P value	OR (95%CI)
		No	%	No	%		
<b>Age (years)</b>	9	200	71.4	80	28.6	0.0001*	---
	10	345	74.7	117	25.3		1.18 (0.85-1.65)
	11	526	82.3	113	17.7		1.86 (1.34-2.59)
	≥12	1128	89.6	131	10.4		3.44 (2.51-4.73)
<b>Sex</b>	Female	1039	88.2	139	11.8	0.0001*	1.96 (2.44-2.94)
	Male	1160	79.3	302	20.7		---
<b>Name of Governorate</b>	Anbar	842	79.8	213	20.2	0.001*	---
	Diyala	76	87.4	11	12.6		---
	Mosul	1152	85.1	201	14.9		---
	Salaheddin	129	89.0	16	11.0		---
<b>Family size</b>	<5	30	68.2	14	31.8	0.007*	---
	≥5	2169	83.6	427	16.4		2.35 (1.23-4.48)
<b>Number of displacements</b>	1	1610	81.7	361	18.3	0.0001*	---
	2	452	86.6	70	13.4		1.45 (1.10-1.91)
	3 & more	137	93.2	10	6.8		1.07 (1.60-5.90)
<b>Father (Dead, Arrest, or Missed)</b>	Yes	127	87.0	19	13.0	0.219	1.36 (0.83-2.23)
	Alive	2072	83.1	422	16.9		---
<b>Mother</b>	Dead	16	88.9	2	11.1	0.523	1.61 (0.37-7.02)
	Alive	2183	83.3	439	16.7		---
<b>Death, injury or arrest occur during/after displacement</b>	Yes	370	88.7	47	11.3	0.001*	1.70 (1.23-2.34)
	No	1829	82.3	394	17.7		---
<b>Left school for a year or more</b>	Yes	770	89.1	94	10.9	0.0001*	1.99 (1.56-2.54)
	No	1429	80.5	347	19.5		---

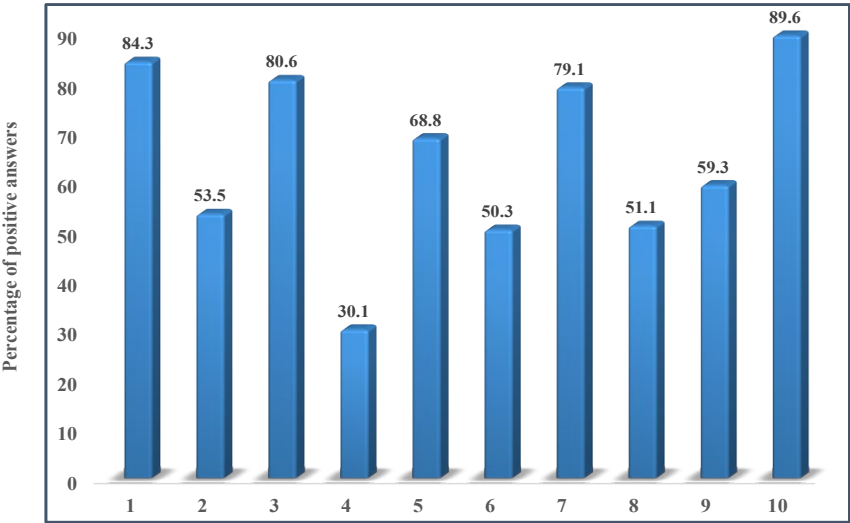


Figure 1: Positive answers by children for each item.

Table 4: Multiple logistic regression with demographic variables as predictors for PTSD.

Variables in the Equation	B	S.E.	Wald	df	Sig.	Adjusted OR (Exp B)	95% C.I. for OR	
							Lower	Upper
Age			73.734	3	.000			
10	1.306	.168	60.267	1	.000	3.691	2.654	5.132
11	.922	.148	38.725	1	.000	2.515	1.881	3.363
≥12	.559	.143	15.314	1	.000	1.749	1.322	2.313
Sex (Female)	-.752	.115	43.047	1	.000	.472	.377	.590
Total family members			7.745	1	0.022*			
≥5	.938	.357	6.890	1	.009	2.554	1.268	5.145
No of Displacements			13.088	2	.001			
2	1.074	.341	9.921	1	.002	2.927	1.500	5.712
3 & more	.772	.360	4.610	1	.032	2.164	1.070	4.378
Father (D, Arrest or Missed)	.308	.269	1.311	1	.252	1.361	.803	2.308
Mother (Dead)	.456	.779	.342	1	.558	1.578	.343	7.264
Death, I or A during or after	.421	.179	5.559	1	.018	1.524	1.074	2.163
Left school	.406	.135	8.986	1	.003	1.501	1.151	1.958
Constant	-4.300	.952	20.397	1	.000	.014		

Iraqi children who were exposed to Al Ameriyah shelter bombing in 1991 continued to experience sadness and remained afraid of losing their family for years following the end of the 1991 Gulf War [25].

Our findings were higher than that among Gaza and Bosnia refugee children (14%, 37%) [26,27]. In Turkey, the PTSD rate among children who were obliged to depart their customary dwellings was 27.2% [28]. The findings were also superior to the high prevalence estimated among children distressed by community violence or war trauma in many other countries [29,30]. In Sarajevo, PTSD rate was 41% for children age 6-16 year [31], in Afghanistan (32%) [32], in Lebanon (43%) [33], while in Palestinian school children, it ranged from 39-87% [34,35]. A survey conducted in Baghdad in 2012 revealed a prevalence of PTSD of 37% out of a total 1026 male adolescents who reported previous exposure to trauma [36]. Arousal and reactivity symptoms (hyper vigilance and easily startled) were obvious among the majority of children (89.6%), while 84.3% had a lot of thoughts or distress reminiscences about their displacement, these flashback distressing memories upset 79.1% of the children, might be owing to their inability to forget such mishap with a continuous feeling or

act as if the accident is about to happen again (80.6%), leaving them suffering from sleep disturbances and nightmares, as well as being all the time on the suspense that a dangerous thing will happen. These findings are in the same line with some studies [37], and inconsistent with others [38].

The current study suggests that the rates of PTSD augmented as the age increases. This doesn't necessarily mean that younger children had less PTSD symptoms, it might, rather, be owing to the fact that although children and teens can have extreme reactions to trauma than adults, teen children are more likely to show aggressive behaviours of PTSD symptoms while younger children coexisting in a traumatic situation can present with complicated anguish that can hinder the diagnosis of PTSD and may mask its symptoms by hyperactivity and irritability [37], that is why it is not easily recognizable in those "silent victims" [39]. In Detroit area survey of trauma; it has been found that 20% of people who were exposed to a traumatic event will develop PTSD with children were still at a higher risk [40] since children often face difficulties dealing with affected parents, food and education, social isolation, and poverty [41].



Girls reported a higher prevalence of PTSD symptoms than boys, this might be attributed to the fact that females, taking the Iraqi culture norms, are more fragile and, hence, more vulnerable to violent triggers than males. It has been found that PTSD is about six times more among females in USA, and they experience symptoms for a longer duration [42], while in Rwanda; it was revealed that 54% to 62% of children had PTSD with a rate of 72% for males [43]. In Kabul (Afghanistan) a prevalence of PTSD was shown to be 26% in boys and 14% in girls [44].

Moderate to large families form the vast majority of the study sample (98.4%) with a higher prevalence (more prediction) of PTSD among their children. Large families in such circumstances meant more poverty, deprivation and neglected. All the Iraqis heard about many displaced families those who lost a child during their flight.

Education is critical for internally displaced children. Schools gave children meaningful day-to-day activities, leaving them less likely to succumb to the negative aspects of long-term displacement [3]. Absenteeism from schools among displaced children is high due to family financial difficulties, a lack of necessary documents, or the travel distance to schools [45]. Those children may experience emotional trauma that may increase their academic challenges [46]. According to UN reports; 53% of Syrian refugee children were not enrolled in school [47].

In the current study, about one third of the surveyed children left their schools for a year or more (with a risk of developing PTSD of 89.1%), might be owing to the far distant schools from their new residence, fear of their families from the risk related to the unstable security condition, or because they had to work to make living for their families as many of the households' bread earners were either killed, kidnapped or arrested by ISIS or by local militants. This is just the "tip of the iceberg" as many other children may be leaving their schools for good, a stratum that we could not perform in our survey as we have collected our data from the "currently schooling" children only, while a household survey that was conducted in the IDP settlements in Iraq revealed that 66.2% of the displaced students dropped out from their schools [48]. One of the limitations in the current study was the selection of children. The drop outs selection was more important than the children attending school. Another limitation was that some children were ashamed to tell that they have fear, nightmares, or other similar feelings.

Natural disasters can contribute to high stress levels in reference to a study conducted following the disastrous flooding (Hurricane Katrina), New Orleans, revealed numerous after-effects on children that was associated with an increased percentage of PTSD [49]. Similarly, man-made disasters can be more devastating for this -promising- age group as it found a defected generation and paved the road for many immediate and remote complications starting with juvenile delinquency [50] and substance abuse [16], ending with psychologically paralyzed unproductive cohort of adults.

## Conclusion

In conclusion, our findings indicated that the prevalence of PTSD among Iraqi displaced children is disastrous. An urgent humanitarian interference is needed to help rehabilitate the Iraqi children to avoid creating a "malformed" generation, the drawbacks of whom will be reflected on the whole humanity.

It is essential to develop school-based programs to promote child mental health and train the Iraqi teachers in recognizing children's

mental problems and in applying the strategies that addresses children's needs, particularly as Iraqi children continues to be exposed to social instability and violence.

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