**Children and post-traumatic stress disorders**

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**Abstract:**
Post-traumatic Stress Disorders is recognized as a wide-spread disorder among children and adolescents world-widely in developed and developing countries. The study aimed to identify and classify the chief complaints of PTSDs among children, and present the relationships between complaints and sources of psychological pressure the children exposed to. Furthermore, our study depended on a cross-sectional, descriptive, and correlational study design to accomplish its aims. It carried out for a period from 5th of October 2017 till 30th of April 2018 on a sample of (595) children between (6 – 8) years old obtained depending on non-probability sampling technique from fourteen primary schools at the left side of Mosul city. The instrument of the study composed of physical complaints, Psychological complaints, and Cognitive complaints. Data were gathered by sending the questionnaire with the students to their mothers to fulfill them. We found that the exposure to negative life events was the main source of psychological pressure children exposed to, suffering from psychological and physical complaints were more than cognitive complaints.

**Keywords:** Children, Post-traumatic Stress Disorders

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**Introduction:**
Intentional, interpersonal and chronic traumas among children are associated with greater rates of Post-Traumatic Stress Disorders (PTSDs) - which is recognized as a widespread disorder among children and adolescents world-wide in developed and developing countries\(^1\). Trauma during childhood has serious effects on victims and society\(^2\), it affects its health as well as adulthood health\(^3\). Childhood trauma is defined as exposure to actual or threatened death, serious injury\(^4\), witnessing trauma, exposure of friend or relative to trauma, terrorism, bullying, community, and domestic violence\(^2\), parental unemployment, family instability, substance abuse\(^3\), also there are different events that categorized as trauma affect the individual psychologically, such as; natural disasters (fires, floods, earthquakes, hurricanes and so on), physical abuse, as, incest, rape, domestic abuse, and molestation, physical harm, as, car accidents, suffering from terrible injury, massacre, witnessing or experiencing carnage, fatalities or horrific injury\(^5\). The development of symptoms of the typical PTSD cycle begins within six months after the onset of the traumatic event, although there is a delay in the occurrence of the symptoms. Individuals with symptoms lasting more than three months are diagnosed with chronic PTSD that causes severe social or occupational distress or impairment and associated with a range of poor health outcomes, including obesity, heart disease, alcohol addiction, and reduced public health perceptions\(^6\). Specifically, the probability of PTSD ranged from 15.9 to 36.5\% among children in some studies conducted from three months to three years after the Wenchuan earthquake\(^7\), whereas the probability of PTSD after one year later was (5.6–8.7\%) found in other studies\(^8\). If the trauma isn't be resolved and there were previous overwhelming life experiences, these effects can be appeared via delays in or deficits of multisystem developmental achievements physically as sleep disturbances, Low energy, eating disturbances, sexual dysfunction, chronic and unexplained pain, emotionally as anxiety, fearfulness, panic attacks, despair, depression, spontaneous crying, emotional numbness, compulsive and obsessive behaviors, irritability, feeling out of control, angry and resentment, and withdrawal from ordinary routine and relationships\(^8\), and cognitively as difficulty making decisions, feeling distracted, memory lapses especially in relation to the trauma, difficulty making decisions.
Attention Deficit and Hyperactivity Disorders "ADHD" symptoms, continuous and undesirable memories of a painful event, intrusive memories of the event, memories of the separatist past\textsuperscript{(9)}, frightening thoughts and subversive memories and nightmares about the event, feel separated or drugged or maybe easily surprised. In severe forms, post-traumatic stress disorder can greatly impair a person's ability to work at the workplace, at home, and socially, and characterized by avoidance of event reminders and excessive alertness to potential threats to the environment\textsuperscript{(10)}. These symptoms can be very frightening and disruptive to everyday activities, constant avoidance of places, people, and activities that remind of the traumatic event, the difficulty of experiencing a whole range of emotions, emotional numbing, and the declining expectations of an individual's ability to live a long and satisfactory life\textsuperscript{(9)}. Ophuis and colleagues indicated that PTSD symptoms are different among patients exposed to intentional and unintentional traumatic events. The prevalence of PTSD among patients exposed to unintentional shock events decreased in a timely manner, while the prevalence of patients who experienced intentional trauma increased\textsuperscript{(11)}. The broad categories of PTSD symptoms (re-experiencing, avoidance/numbing and increased arousal) are present in children as well as in adults\textsuperscript{(12)}. On the other hand, traumatic events can lead directly or indirectly to chronic illness in adulthood as a result of poor cardiovascular health or poor immune functioning\textsuperscript{(3)}. A previous study referred that the health of adults who suffered during childhood from physical and psychological abuse was worse compared with those who did not, also experienced a greater deterioration in health over "10" years later in adulthood\textsuperscript{(13)}. From the life-long perspective, many potential pathways may contribute to cumulative deprivation after painful childhood events, one possible pathway is through the negative effects on mental health in adulthood from childhood trauma\textsuperscript{(14)}. Recent work also points to socioeconomic disadvantages in puberty resulting from early trauma in life that may contribute to chronic disease\textsuperscript{(15)}. Adult mental health and socioeconomic status are considered potential explanatory factors for the relationship between childhood trauma and chronic disease, in addition, to be reasonable buffer factors for the negative consequences of trauma on health\textsuperscript{(16)}. 

The aims of the current study are:
1. Identify and classify the chief complaints of PTSDs among children.
2. Determine the sources of psychological pressure the children exposed to.
3. Find out the relationship between complaints and demographic variables related to the sample.
4. Demonstrate the inter-relationships among the complaints.
5. Present the relationships between complaints and sources of psychological pressure the children exposed to.

Methodology:
The study depended on a cross-sectional, descriptive, and correlational study design to accomplish its aims. It carried out for a period from 5th of October 2017 till 30th of April 2018 on a sample of (595) children between (6 – 8) years old obtained depending on non-probability sampling technique and accidental sampling method from fourteen primary schools at the left side of Mosul city that was selected depending on stratified method. For there is no universal instrument to identify and detect the signs and symptoms of PTSDs among these ages, the researchers arranged and prepared a special instrument after reviewing two related references\textsuperscript{(17,18)}, in addition to the opinions of five Psychiatric specialists (Three Physicians and Two Nurses) about the topic of the study as experts. Finally, the primary instrument exposed to four specialist physicians in psychiatry to find out their views. The final draft of the tool was adopted depending on the comments of experts. The instrument categorized as physical complaints (10) symptoms, Psychological complaints (10) symptoms, and Cognitive complaints (10) symptoms in addition to many demographic variables. The sample of the study was (595) children. Data were gathered by sending the questionnaire to the students to their mothers to fulfill by them and returned it the next day. Data were demonstrated as descriptive statistic means (Frequency, Percentage, and Cumulative percentage), and analyzed by using inferential statistic means (Mann-Whitney U and Kruskal Wallis Statistical Methods), and Stepwise Linear Regression.

Results:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of the Child:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six Years</td>
<td>311</td>
<td>52.3%</td>
</tr>
<tr>
<td>Seven Years</td>
<td>169</td>
<td>28.4%</td>
</tr>
<tr>
<td>Eight Years</td>
<td>115</td>
<td>19.3%</td>
</tr>
</tbody>
</table>

Table-1: Demographic characteristics of the sample (595 child)
The sample was distributed according to their demographic characteristics as the highest percentages to; half of them approximately (52.3%) were of six years old, females were more than males (56.6 vs. 43.4), the families of four and two siblings were of the highest percentage as (25.9%, 24.4%) respectively, finally, the first, second and third sequences of children in their families were of the highest percentages among other sequences as (25.9%, 23.5% and 21%) respectively.

### Table 2: Sources of psychological pressure children suffered from

<table>
<thead>
<tr>
<th>Source</th>
<th>No</th>
<th>Percentage</th>
<th>Yes</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School Obligations</strong></td>
<td>469</td>
<td>78.0%</td>
<td>131</td>
<td>22.0%</td>
</tr>
<tr>
<td><strong>Family Problems</strong></td>
<td>489</td>
<td>82.2%</td>
<td>106</td>
<td>17.8%</td>
</tr>
<tr>
<td><strong>Peer Relationships</strong></td>
<td>471</td>
<td>79.2%</td>
<td>124</td>
<td>20.8%</td>
</tr>
<tr>
<td><strong>Exposure to Negative Life Events</strong></td>
<td>353</td>
<td>59.3%</td>
<td>242</td>
<td>40.7%</td>
</tr>
<tr>
<td><strong>Deprivation</strong></td>
<td>466</td>
<td>78.3%</td>
<td>129</td>
<td>21.7%</td>
</tr>
</tbody>
</table>

The table presents that (40.7%) of the sample suffered from exposure to negative life events followed by those suffered from school obligations as (22%).

### Table 3: Chief complaints children suffering from

<table>
<thead>
<tr>
<th>Complaints</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Complaints; No Complaints</td>
<td>450</td>
<td>75.6%</td>
<td>75.6%</td>
</tr>
<tr>
<td>One complaint</td>
<td>17</td>
<td>2.9%</td>
<td>78.5%</td>
</tr>
<tr>
<td>Two complaints</td>
<td>65</td>
<td>10.9%</td>
<td>89.4%</td>
</tr>
<tr>
<td>Three complaints</td>
<td>63</td>
<td>10.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>595</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

| Psychological Complaints; No Complaints | 435      | 73.1%      | 73.1% |
| Two complaints                     | 61        | 10.3%      | 83.4% |
| Four complaints                    | 99        | 16.6%      | 100.0% |
| Total                             | 595       | 100%       | 100%   |
It was obvious from the table that about one/fourth of the children suffered from at least one problem of each physical, psychological complaints as (24.4% and 26.9%) respectively, while about one/fifth and cognitive complaints as (19.1%).

Table (4) demonstrates that there were significant differences in physical complaints and highly significant differences in cognitive complaints in regard to the ages of the children, while physical complaints had high significant differences in respect to the gender of the children.

Figure (1): Association between physical complaints with psychological complaints

It was obvious from the figure (1) that there was a positive association between physical complaints with psychological complaints.
Figure-2: Association between psychological complaints with cognitive complaints

It was obvious from the figure (2) that there was a positive association between psychological complaints with cognitive complaints.

Table-5: Association between some variables and sources of psychological pressure with psychological complaints the children suffered from by using stepwise linear regression

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t-test</th>
<th>p.</th>
<th>95% Confidence Interval For (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Constant</td>
<td>0.259</td>
<td>0.184</td>
<td>0.111</td>
<td>1.408</td>
<td>0.160</td>
<td>0.102</td>
</tr>
<tr>
<td>Siblings (1)</td>
<td>0.135</td>
<td>0.046</td>
<td>0.147</td>
<td>2.974</td>
<td>0.003</td>
<td>0.046</td>
</tr>
<tr>
<td>Child Sequence (2)</td>
<td>0.169</td>
<td>0.043</td>
<td>0.117</td>
<td>3.932</td>
<td>0.000</td>
<td>0.253</td>
</tr>
<tr>
<td>School Obligations (3)</td>
<td>0.430</td>
<td>0.152</td>
<td>0.098</td>
<td>2.839</td>
<td>0.005</td>
<td>0.133</td>
</tr>
<tr>
<td>Family Problems (4)</td>
<td>0.390</td>
<td>0.153</td>
<td>0.317</td>
<td>2.551</td>
<td>0.011</td>
<td>0.090</td>
</tr>
<tr>
<td>Peer Relationships (5)</td>
<td>1.187</td>
<td>0.150</td>
<td>0.141</td>
<td>7.927</td>
<td>0.000</td>
<td>0.893</td>
</tr>
<tr>
<td>Exposure to Negative Life Events (6)</td>
<td>0.436</td>
<td>0.115</td>
<td>0.026</td>
<td>3.805</td>
<td>0.000</td>
<td>0.211</td>
</tr>
<tr>
<td>Deprivation (7)</td>
<td>0.096</td>
<td>0.142</td>
<td>0.496</td>
<td>0.468</td>
<td></td>
<td>0.182</td>
</tr>
</tbody>
</table>

(1) R=0.109; R²=0.012; ∆R²=0.012; Part Correlation=0.107; Sig=0.003
(1+2) R=0.159; R²=0.025; ∆R²=0.013; Part Correlation=0.142; Sig=0.000
(1+2+3) R=0.335; R²=0.112; ∆R²=0.087; Part Correlation=0.103; Sig=0.005
(1+2+3+4) R=0.362; R²=0.131; ∆R²=0.019; Part Correlation=0.092; Sig=0.010
(1+2+3+4+5) R=0.462; R²=0.213; ∆R²=0.082; Part Correlation=0.286; Sig=0.000
(1+2+3+4+5+6) R=0.483; R²=0.233; ∆R²=0.020; Part Correlation=0.138; Sig=0.000
(1+2+3+4+5+6+7) R=0.483; R²=0.233; ∆R²=0.001; Part Correlation=0.025; Sig=Non-Sig.

It was clear from the table that Peer relationships, Child sequence, Exposure to negative life events, and School obligations were the more affected variables in exposure of children to psychological complaints as (β= 0.317, 0.147, 0.141, and 0.117) respectively.

Table-6: Association between some variables and sources of psychological pressure with cognitive complaints the children suffered from by using stepwise linear regression

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t-test</th>
<th>p.</th>
</tr>
</thead>
</table>

It was clear from the table that Peer relationships, Exposure to negative life events, and Family problems were the more affected variables in the exposure of children to cognitive complaints as (β= 0.279, 0.196, and 0.164) respectively.

**Discussion:**
The Iraqi society, especially Mosul, has been exposed to many events that were affected on it since the occupation by the Coalition Forces in 2003 till nowadays, whereas, Mosul city exposed to another miserable catastrophe that was invasion from the so-called Islamic State in Syria and Iraq (ISIS) that left behind negative consequences in moral, economic and social aspects of the community and had an unacceptable impacts within the families, schools and peers’ relationships, on the other hand, the infrastructure had been destroyed to a very large extent and accompanied by scenes of murder, looting, persecution, bloodshed and unfavorable scenes in the real life of the community. All these terrible events were obvious to leave negative effects physically and psychologically, and cognitively on people, especially children due to the strange events, extreme fear, profound anxiety and stress from unknown and from the future, terrible scenes of infrastructure destruction left behind, horrific scenes seen directly by eyes or through the television screens, so, children who witnessed these events during the control of what is known as Islamic State in Syria and Iraq (ISIS) were the sample of the study for they could easily be affected through these events. Therefore, the study endeavored to assess the suffering signs and symptoms of PTSDs among children according to their health aspects (Physical, Psychological, and Cognitive) as in table (2), also to identify the sources of psychological problems the children exposed to or suffered from as in table (3) to; School obligations: Get weak grades, neglect of school instructions, Difficulty to get the highest grades, Duties of repeated study; Family problems: Divorce of parents, Illness of a family member, Frequent parental quarrels, Lack of parental interest towards the student, Preference of such child more than others, Participate in the home business; Peer relationship: Ridicule from others, The presence of feisty students in the school, Hit or assault from others, Quarrels with others, Don’t allowance playing with others; Exposure to Negative Life Events: Sound of explosions, Aerial bombardment sounds, The sounds of fighter aircraft, Seeing images of blood on television, Seeing photos of houses and buildings destroyed on television; Deprivation: Lack of necessary life needs, Damage of private things, Loss of private things, Lack of play and entertainment places. Exposure to negative life events, school obligations and peer relationships were the most frequent sources of psychological pressure the children exposed to (Table -2). Children in the present study suffered from Psychological and physical complaints more than...
cognitive complaints (Table 3), this perhaps can be mainly due to exposure to negative life events as (Table-2) demonstrated. The prevalence of PTSD is estimated to be 7-8% in the general population [9]. The results of a national study conducted in the United States indicate that overall rates of child abuse are 8.0% sexually abused, 2.9% severe neglect, 6.7% physical abuse [19]. Goodwin and colleagues reported that parental abuse was 15.8%, and so the similar was reported in Canadian research [20]. In a community-based study of traumatic experiences among children, 19.5% reported an accident or major illness, 17.7% repeating a year of school, 9.6% parental divorce, 9.4% parental unemployment, 2.6% being sent away from home, 3.8% physical assaults, 26.5% experience of a significant scare, and 8.2% parent alcohol or drug use, child abuse increases the risk of behavioral problems, including internalizing behaviors (depression and anxiety) and external behavior (aggressive behavior), fifty percent of children in their study reported no exposure to traumatic event, 27% of them exposed to one event, while 23% of them exposed to two or three events [19]. Three frequently traumatic events the children exposed to were terrified event (20%), parental abuse of drug or alcohol addiction (18%), and hospital admitting for two or more weeks (17%). Although prevalence estimates varied depending on the type of exposure to shocks and demographic characteristics. For example, prevalence rates are higher among individuals exposed to military combat, ranging from 12-20% [21]. In contrast, a systematic review of PTSD reactions after the Wenchuan earthquake showed that children and adolescents had a lower prevalence of PTSD and that their symptoms lasted for a much shorter period than did those of adults [22]. Children with poor parental relationships had a greater risk of PTSD and depressive symptoms [9]. Another study revealed that poor family relations (i.e. family conflict or a poor parent-child relationship) predicted PTSD [23, 24]. Previous research has shown that between 30 percent and 40 percent of children who experience physical or sexual abuse will end up developing PTSD. Common examples of trauma that children and adolescents can experience include things like Sexual abuse/rape, School violence, Natural disasters, Military-family related stressors, Sudden or violent loss of a loved one, Neglect, Serious accidents, Life-threatening illnesses [25]. Many children presenting with symptoms of PTSD may have been subjected to multiple traumas such as childhood sexual abuse or domestic violence [12]. It is well documented that children exposed to war and political violence are more vulnerable to mental health problems as a consequence, in particular, posttraumatic stress disorder (PTSD) [26, 27]. Children are also at a higher risk of developing behavioral problems, especially aggression, as a result of the traumatic events that they have witnessed or been a victim too. Previous studies indicated that children who survived from specific disasters suffered from PTSD as (30-60%), while (40%) of high school students suffered from domestic or community violence, at the same time (3-6%) suffered from PTSD [28]. The overall PTSD prevalence was (21%) in the acute stage, after three months it was (15%), whereas at six months, it was (12%), and at one year later it was (11%) [29]. About (60%) of children who exposed to traffic developed PTSD [1]. The study carried out on (251) children found that they were exposed to painful events as, hearing fighters aircraft, watching pictures of dead persons and wounded on television, and hearing shelling artillery [30]. During a war conflict, 23.9% of 403 children (aged 9–15 years) suffered from both PTSD and depression [31]. Childhood considers a critical developmental stage of life, so age and gender can reveal significant differences in suffering from such complaints due to exposure to such psychological pressures (Table-4). As a general, it is agreed that children display a wide range of stress reactions, to some extent these vary with age, with younger children displaying more overt aggression and destructiveness [12]. Children under the age of six years had been exposed to an event involving real or threatened death, serious injury, or sexual violence in at least one of the following ways: direct experiencing or witnessing an event, but this does not include events that were seen on television, in movies, or some other form of media. The child learned about a traumatic event that happened to a caregiver [25]. Among Kuwait children sample, the Gulf crisis left behind a rate of 4% of PTSD. Earthquake as a natural disaster in Italy also left behind a rate of 38% of PTSD among students below 18 years of age. In Balkans countries, PTSD symptoms found as 19.8% among war-exposed adults [30]. Kaminer and colleagues found that children with PTSD symptoms had sub-threshold functional impairment [4]. Thabet and Thabet found that Palestinian children in Gaza strip exposed to war traumas, 35.9% of them developed full criteria of PTSD, which were more in girls than boys, at the same time emotional and behavioral disorders and neuroticism was found among lower family incomes. Furthermore, 61.5% of children suffered from PTSD symptoms in another study. The prevalence of PTSD in a year ago was (3.6%) among adults in the United States, it was lower for males (1.8%) than for females (5.2%), while the lifetime prevalence was (6.8%), more than two-thirds of children in the United States report having experienced at least one traumatic event by the age of 16 years old [25, 36]. From the age of 8–10 years, following traumatic events, children display reactions closely similar to those manifested by adults,
also 0.4% of children aged 11–15 years were diagnosed with PTSD, with girls showing twice the rate of boys\(^{11,38}\). Childhood trauma exposure is unfortunately prevalent. According to a national survey in the USA, 60% of children and adolescents have experienced or witnessed a potentially traumatic event (PTE), such as domestic violence, injuries, and natural disasters\(^{32,33,34}\).

**Conclusions:**

The study concluded:
1. The chief source of psychological pressure was exposure to negative life events.
2. Children suffered from physical complaints followed by psychological complaints then cognitive complaints.
3. The age of children had significant differences in respect to physical and cognitive complaints suffered from, while the gender of children had a significant difference in regard to physical complaints.
4. There were positive relationships between physical and psychological complaints, and between psychological and cognitive complaints children suffered from.
5. Peer relationships, Child sequence, Exposure to negative life events, and School obligations were the more affected variables in the exposure of children to psychological complaints.
6. Peer relationships, Exposure to negative life events, and Family problems were the more affected variables in the exposure of children to cognitive complaints.

**Recommendations:**

The study recommended:
1. Rehabilitation centers should be established to follow up and address the victims of post-traumatic effects in the general community, especially children.
2. Pay special attention to children and try to keep them away from social problems, especially those within the families.
3. Attention to children within the family and non-discrimination among them in dealing is very important.
4. Guiding schools and teachers on easing school commitments and dealing with students according to their social circumstances.
5. Educate students and children about improving their relationship and making that fraternal.

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