

Effects of Terrorism on Children

Psychosocial Biological Understanding

M. Basheer Ahmed, M.D.

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Many children are exposed to trauma and life-threatening situations. During the last few decades, thousands of children have been exposed to terrorism. No child is immune to the traumatic effects of terrorism whether they are in Oklahoma, New York, Bosnia, Israel, Palestine, Iraq, Lebanon, Rwanda, Kashmir, or Darfur.

Millions of children of the world learn about terrorist acts through watching television but thousands of unfortunate Muslim children in Iraq and Palestine watch the terror on a daily basis and have first hand experience with severe and traumatic incidents. Children saw bombs destroying buildings killing scores of women and children recently in Lebanon in July and August of 2006. The experience of the severe trauma and long term consequences of these atrocities in children are rarely reported in the media, as if these unfortunate children who did not die during the terrorist act, do not exist.

Who can shield these children from such horror, and who speaks for their psychological trauma and well being? Many children end up in hospitals with limited facilities for physical care with absolutely no mental health services or psychological support. Thousands of children end up in refugee camps and shelters with limited resources. Food and medicine remain the top priorities in the affected area. Meanwhile, these traumatized children's emotional health is neglected and they live with fear, apprehension, and anger for years to come.

There are no scientific reports published on the effect of terrorism on the children of Iraq. Few reports were published on the effect of terrorism on Palestinian children. Several reports were published on the effects of the terrorist bombing of the Federal Building in Oklahoma City and the World Trade Center in New York. Most of the reports discuss the effect of acts of terrorism when children watch the death and destruction on television. However, there is a general consensus that the disasters in which harm is inflicted intentionally such as terrorism on civilians are associated with higher levels of distress.¹

Terrorism causes psychological trauma that results in helplessness in the face of intolerable danger and anxiety. Most of the children will suffer from post-traumatic stress disorder which affects the cognition, emotions, interpersonal relations, and personality development. The most common

effect is an enduring sense of pessimism with depression and suicidal ideations. The symptoms of depression and anger are much higher in the children who more frequently experience terror, as in Palestine and Iraq. On average, every Palestinian child has witnessed about ten traumatic incidents. The traumatized children show a range of symptoms including insomnia, nightmares, hyper vigilance, and severe agitation ². Children with adverse stress reactions and behavioral symptoms for longer than one month may be at increased risk of developing PTSD or violent and delinquent behavior later in life ^{3,4}

This article will summarize the research work on diagnostic criteria for PTSD in children, and adolescents and the neurobiology of early life stresses, and post-traumatic disorders. It will also examine the short-term and long-term effect of exposure to terrorism in children and some treatment modalities.

Stress of trauma is experienced when an individual (a child or adult) is confronted with a situation that is personally threatening to self or others. Some of these children may grow up normally with adequate coping mechanisms, but the majority may develop long-term consequences of these early-life stresses resulting in deep-seated psychological problems if early therapeutic intervention is not provided.

The diagnostic criteria for Acute Stress Disorder and Post Traumatic Stress Disorder are derived from studies of effects of trauma on adults. Psychological trauma and life-threatening situations may produce different symptoms in children and adolescents than in adults. In recent years, research work has been done on the effects of trauma on children and adolescents. The American Academy of Child and Adolescent Psychiatry has written modified diagnostic criteria for Post Traumatic Stress Disorder in children and adolescents. However, short-term and long-term effects of acute and long-term psychological trauma due to terrorism on children need to be further investigated.

Early life experiences and post-traumatic stress disorders

It is now established that stresses caused by emotional trauma during early development, permanently affects the brain circuits critically involved in the regulation of stress and emotions. These biological scars then lead to altered behavioral and physiological responsiveness to the environment that ultimately increase the likelihood of adult psychopathology. It appears that the neurobiological effects of early life stress may represent priming for the development of PTSD in response to subsequent stresses. ⁵ Children who are exposed to early childhood traumatic experiences become vulnerable and are at greater risks for developing PTSD. ⁶

According to the Diagnostic Statistical Manual- DSM IV, the characteristic symptoms of acute stress disorder, such as anxiety, dissociation and other symptoms may develop within days to four weeks, after the exposure to extremely traumatic stressors such as threatened death or serious injury to self and others. The person's response includes fear, horror, hopelessness, numbness, detachment, or absence of emotional responsiveness, depersonalization, dissociation, and amnesia

(unable to recall an important aspect of trauma). The traumatic event is usually re-experienced in recurrent images, thoughts, dreams, flashback episodes, or in a series of reliving the experiences. Symptoms may also include increased arousal (difficulty in sleeping, irritability, poor concentration, and restlessness), and avoidance of stimuli that arouse recollection of the trauma. If these symptoms persist beyond four weeks, the diagnosis of PTSD should be considered. The individual may feel guilty for surviving when others have not survived, and may feel responsible for the consequences of the trauma. Symptoms of depression, despair, and hopelessness may be persistent and severe enough to meet the criteria of major depression. These individuals are at high risk for development of post-traumatic stress disorder, impulsive and risk-taking behavior.⁷

Neurobiology of early life stresses and Post-traumatic Stress Disorder- Heim et al discussed in detail the neurobiology of early life experiences. Some regions of the brain may be particularly sensitive to adverse experiences which may lead to major and sometimes, irreversible abnormalities. The stress response includes activation of the two major outflow systems, the sympathetic division of the autonomic nervous system and the hypothalamic-pituitary adrenal axis (HPA).⁵

Sympathetic activation results in increased release of norepinephrine and changes in the blood flow to the medial temporal lobes and the orbito-frontal cortex during symptom provocation that is confirmed by PET imaging.⁸ These brain areas are also involved in emotional processing.

HPA Axis dysregulation. DeBellis described the biological and physiological changes in children with PTSD. Elevated levels of dopamine, norepinephrine and free cortisol in 24-hour urine specimens were found in traumatically exposed children. The urine catecholamine and free cortisol concentration were positively correlated with the duration of trauma and symptoms' severity.⁹⁻¹⁰ Significantly elevated salivary cortisol level is also found in a majority of children with PTSD, especially girls.¹¹ The increased secretion of glucocorticoids from adrenal cortex affects the metabolism, immune system, and the brain. These physiological changes are associated with behavioral changes such as fear, anxiety, and sleep disturbance, as well as fight and flight behavior. The pre-eminent neurotransmitter that coordinates these various stress response elements into one coping reaction is corticotropin-releasing factor (CRF), causing alteration of diurnal cycles of cortisol and altered peripheral catecholamine levels. Abnormalities on brain electrical activities, electroencephalogram (EEG) were also noted which are indicative of changes in cognitive processing of the emotional stimuli and structural brain development.¹²

One of the recognized functions of the hippocampus is converting short-term memories into long-term associations. The hippocampus is also involved in the control of the HPA axis, in explicit memory and in contextual aspects of fear conditioning.¹³ Specific changes in hippocampus are becoming hallmarks of PTSD. Traumatic stress releases glucocorticoid, which binds to hippocampal cells, and inhibit their normal memory functioning. Repeated application of stress hormones may cause cellular damage in the hippocampus. Postmortem inspection of the Hippocampus of patients with PTSD showed overall shrinkage caused by specific areas of atrophy. MRI of Patients with PTSD shows similar changes in Hippocampus. Medina pointed out that this data could also be interpreted to

mean that patients who suffer from PTSD may have atrophied hippocampus and the traumatic experiences may result in the experiencing of PTSD symptoms.¹⁴ Other MRI studies found attenuation in frontal lobe asymmetry, smaller total brain and cerebral volume. The apparent changes in brain architecture and metabolism may have functional implications as noted in the children with PTSD who have been found to perform more poorly than do the control subjects on measures of attention, abstract reasoning, and executive functioning.¹⁵

Diagnostic criteria for Post-Traumatic Stress Disorder

According to DSM IV PTSD in children has a different presentation and expression of symptoms than adults. A child's response to stressful events may be expressed as disorganized or agitated behavior instead of intense fear, feelings of helplessness, or horror. Children re-experience or express the traumatic event or aspects of it through repetition play. Children's dreams may be frightening but without recognizable content, or they may change into generalized nightmares of monsters, of rescuing others or of threats to self or others. These children tend to have more psychosomatic symptoms.⁷ It needs to be mentioned that PTSD symptoms vary at different ages, and different developmental stages. These symptomatic changes are described in the American Academy of Child and Adolescent Psychiatry's guidelines for assessing and treating PTSD.¹⁸ According to their guidelines, young children may have recurrent recollection, post-traumatic play or play re-enactment, nightmares and episodes of objective features of a flashback or dissociation. Children may also show constriction of play, social withdrawal and a restricted range of affect and loss of acquired developmental skills (especially language and toilet training). As hyper-arousal symptoms in adults, children may express night terrors, difficulty in going to sleep, night awakening, decreased concentration, hyper vigilance, and exaggerated startle responses. Children may manifest different symptoms than they manifest initially, including aggression, separation anxiety, fear of darkness, and new fears not related to trauma.¹⁹⁻²⁰

Stages of children's response to disaster: Most children respond to trauma of terror in two stages. The first stage immediately after the disaster includes reaction of fright, disbelief, denial, grief, and feelings of relief if loved ones have not been harmed¹. A great deal of altruism is often displayed by children trying to help in the aftermath of such tragedies; this may help them develop resilience and also may be a marker of resilience²¹. The second stage occurs a few days to several weeks after the disaster and is characterized by developmental regression in many children and manifestations of emotional distress such as anxiety, fear, sadness, and depressive symptoms, hostility, and aggressive behavior towards others, apathy, withdrawal, sleep disturbance, somatization, pessimistic thought of the future, and play demonstrating themes related to traumatic event^{1,22}.

The response of younger children to disaster is dominated by mood, anxiety, and behavioral symptoms²³. The younger children are not able to understand the intentions and logic of others and have great difficulty distinguishing a deliberate action from an unintentional incident. Although infants and toddlers may have no cognitive comprehension of a disaster, the loss of loved ones can lead to

regression and detachment ¹. Such experience can manifest as increased crying and irritability and separation anxiety ²⁴. School-aged children often demonstrate the experience of trauma through play, expressing trauma related themes, and aggressive behavior. The older school children have greater capacity of social cognition and empathy. They tend to display more empathy for families who are affected by the crisis. They have greater capacity to understand why the tragedy occurred and focus more on the safety of the society as a whole. ^{3 25}

Depression and suicide in children exposed to trauma

Based on data collected in the USA, it was found that PTSD occurs in 1-4% of the general population of children, exposed to violence, trauma, or abuse. ¹⁶ Foy et al reviewed 25 studies on PTSD children and found that 3 factors appeared to mediate the development of PTSD in children: the severity of trauma exposure, trauma related to parental distress, and temporal proximity to the traumatic events. ¹⁷

The traumatized children who require therapy for PTSD have been victims of chronic and multiple terror, rather than motor vehicle accidents, natural disasters, or isolated acts of terrorism. Symptoms of depression: despair and hopelessness may be persistent and result in prolonged depression in these children.

The children and adolescents with traumatic grief are 4 times more likely to have suicidal thoughts. According to a study by Davidson, 19% of PTSD patients may ultimately commit suicide. The effect of violent death of significant others such as parents and siblings predicted a worse long-term outlook. These children experience more frequent re-experiencing of trauma, more disruption in their ability to attend school, and participate in the structured activities. Some children experience extreme anger, and when anger is mixed with suicidal thoughts, their acts become unpredictable ²⁶. In some cases, the adolescents with depression and anger may be prepared to die (by committing suicide) while killing others for the sake of the country.

Intergenerational effects of terrorism

Portney summarized some of the studies done on children of parents who suffered from prolonged trauma in Germany, due to Nazi atrocities. The parents were the survivors of the Holocaust who were exposed to prolonged traumatic stress. These parents constantly re-experienced the torture, and developed emotional numbing which did not help the child in developing a reasonable sense of safety, and predictability in the world. These parents have difficulty in modeling a healthy sense of identity, autonomy, and maintaining balanced perspective when life challenges arise. Instead they model catastrophic or inappropriately numb and dissociate responses. The parents' higher level of anxiety did interfere with child development, and emotional maturity. Thus the prolonged psychological effect of trauma is passed on to the new generation ²⁷. The suicide bombings in Israel by Palestinian

militants and the aggressive strikes on Palestinians by the Israeli military will producing the inter-generational anger and hatred in both Israelis and Palestinians, which may last for years.

Although children from my parts of the world have been exposed to acts of severe violence this article will specifically examine the studies and observations on short-term and long-term effects of exposure to terrorism on children of Bosnia, Israel, and Palestine.

Effects of terrorism on Bosnian children

Dr. Arshad Husain, in his book “Hope for the Children: Lessons from Bosnia,” elaborated on children’s experiences in Bosnia who faced death and destruction during the Serbian's attack on Bosnia during the mid-nineties. Dr. Husain found several unusual symptoms in the children who survived the massacres. Some children were afraid of light rather than darkness as light meant snipers could see and kill them. Some children experienced the symptoms of Post-Traumatic Stress disorder almost every night: children woke up in the middle of the night with terror and hiding in basements. Some children woke up with any noise that reminded them of shootings. Seventy percent of the Bosnian children had seen their parents or close relatives killed and these children had developed distressing symptoms of depression, low self-esteem, insomnia, and guilt. Some even expressed suicidal ideas saying: “I should have been dead before my mother.” 40% of children with PTSD showed all three types of symptoms re-experiencing, avoidance, and hyper arousal. Sometimes the children become confused and lose the ability to feel and express emotions such as “I feel so empty, sometimes I feel I am not alive. I am just here.” Some children give up their childhood and act like adults. A seven year old said, “We have to be strong and work hard for our country.”²⁸

Effects of terrorism on Israeli children-

Children in Israel have been exposed for years to suicide bombings. Dr. Kaplan of the Beth Sheva Mental Health Center in Israel has extensive experience of Post-Traumatic effects on Israeli children. Exposure to terror in Israel occurs as a victim or witness or as a relative, or as a friend of the victim. Most mental health professionals in Israel are trained to identify post-traumatic symptoms in children more rapidly than in other countries and refer these children to one of the five post-traumatic centers where biomedical psychotherapeutic, familial and socio/occupational rehabilitation is available.

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Effects of terrorism on Palestinian children-

The author recently met a delegation of Palestinian mental health professionals visiting U.S.A. Their visit was arranged by the U.S State Department to study the treatment strategies for children with PTSD. Most of the information I am presenting is based on information given to me by Palestinian mental health professionals. [add a reference to this personal communication] Some information is

also gathered from the reports published in the press. [References needed] Very few research studies on the psychological effects of trauma on Palestinian children have been published.

Shafiq Masalha, a Palestinian psychologist, studied psychological consequences of prolonged trauma on 114 Palestinian children. He studied the dreams of children (9-10 year olds) to measure the psychological state of children. 79% of Palestinian children dreamt constantly about political violence, and 13% dreamt that they were killed, or sacrificing their own lives. These children were preoccupied with death in one form or another. These dreams and preoccupations with the violence ultimately resulted in the expression of violent behavior.³⁰ Mahmud Sehwal, a Palestinian psychiatrist stated that the Palestinian children do not suffer from post-traumatic stress disorder, but they suffer from continuing traumatic stress disorder. In the U.S. and other countries, a person usually gets one traumatic event, and later he lives in at least a protected environment. [insert reference to personal communication] In Palestine, children are not living in any protected environment. The situation is always unpredictable. They cannot even plan for the evening, or the next day. 30

The most significant experiences the Palestinian children have are of intense fear, helplessness, and horror. Some young children become agitated and do not want to be left alone. They cling to their mothers or surviving relatives. These children have difficulty in sleeping at night. They wake up in the middle of the night with nightmares, and frightening dreams, without recalling the contents. Even after the withdrawal of the Israeli army, they continued to live in a state of fear that at any moment, big Israeli tanks would return and they will be crushed. Mothers reassure the children, that they are safe but they also give a realistic explanation that if something happens to them, they will go to heaven and have eternal peace. Most of these parents themselves were exposed to terror, suffer from PTSD, and they have extreme difficulty in reassuring their children. Children are even afraid to go outside during the daytime or peep through windows due to the fear that the Israeli soldiers might kill them with a bullet. They are afraid that soldiers are waiting outside to kill them. The children's lives revolve around their family, and their little home. When their houses and their little worlds are destroyed, they develop a sense of numbness, which is a characteristic symptom of PTSD.

The children are developing unrestrained anger directed towards Israelis. Their feelings of helplessness create more anger and they are willing to fight against the Israeli soldiers with stones. The 10 or 12-year olds recall how their friends were throwing stones at soldiers and how they were shot dead. The children are angry, and even their parents cannot help them in reducing the fear anger and feeling of helplessness.

Fourteen to sixteen year olds show more understanding. They verbalize the loss of their family, lands, their homes and the persistent humiliation under foreign occupation. These children do not believe the reassurance given by elders, that one day Palestine will become an independent state. They only see suffering, pain, and despair around them. They believe that they have nothing to look forward to except for misery, humiliation, and terror. These feelings further enforce their anger, and suicidal thoughts. They think of retaliation without worrying about the consequences. Dr. Iyad Sarraj, a

Palestinian psychiatrist in Gaza City, has watched the suicide bombing with growing alarm. [insert reference to personal communication] Having grown up with the idea of suicide attacks, Palestinian children were equating death with “power” and are creating a new kind of culture and compensating for the powerlessness of their parents in the face of humiliation of Israeli occupation. Some suicide bombers had no connection with the militant Islamic groups like Hamas and Islamic Jihad, and most of them did not go through the months of preparation that has been repeatedly mentioned in Western media. These young adults die with the hope that giving their lives will give lives to others. The principle behind suicide bombing is that it is better to die in dignity rather than to live in humiliation and shame.³¹

Conclusion Individuals who are exposed to serious psychological traumas and develop PTSD may have multiple co-morbid illnesses, multiple medical and psychiatric problems including hypertension, bronchial asthma and peptic ulcer. Substance abuse, anxiety and depression are also common occurrences and some times, the symptoms of co morbidity mask the diagnosis of PTSD. Many of these children develop depression. Incidence of suicide is also high in PTSD patients. In some cases, the depression changes to anger and a small number of these adolescents are prepared to die while killing for the sake of their country. They die with a hope that giving their lives will give lives to others. To prevent depression, despair, anger and revenge, therapeutic intervention is necessary. With limited resources and insurmountable problems, this is a difficult, if not an impossible task.

The traumatized children should be screened for anxiety, depression, and behavioral problems. Parents should be also counseled regarding the range of normal, emotional, and behavioral reactions of children to terror and the symptoms children manifest which they should be concerned about. Individuals and family counseling is strongly recommended to prevent severe consequences of psychological trauma.

Therapeutic interventions like Critical Incident Stress De-briefings, Prolonged Exposure Therapy (PET), emotional support, and psycho education proves to be beneficial in treating children exposed to trauma, and these techniques also help in preventing the subsequent development of PTSD. Many medications like SSRI's, Tricyclic antidepressants, and Anti-anxiety medications have been used for treatment of PTSD. American Academy of Child and Adolescent Psychiatry practice guidelines defer to the psychiatrist's judgment to determine the best pharmacological approach.³²⁻⁶

The U.S Dept. of Health and Human Services awarded 10 million dollars in grants for treatment of children and adolescents who have experienced traumatic events after Sept.11, 2001. Fortunately, the Israeli children exposed to traumatic stress have institutions, and professional staff to help and treat them. The goal is to stabilize and prepare them to live a normal life.

The Palestinian children with traumatic experiences live in the same environment of misery and suffering but with severely limited therapeutic intervention. Without some kind of assistance to the Palestinian children and an end to occupation, the suffering of the Palestinian children, the cycle of violence is likely to continue.

Dr. M. Basheer Ahmed is a former professor of Psychiatry at Southwestern Medical School, Dallas, Texas, and currently in private practice of Psychiatry in Fort Worth, Texas. He can be reached at: mbahmed03@hotmail.com

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