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## Is the war on terror induced-post traumatic stress disorder; the cause of suicide attack? An approach from psychological-cognitive and neurobiological perspective

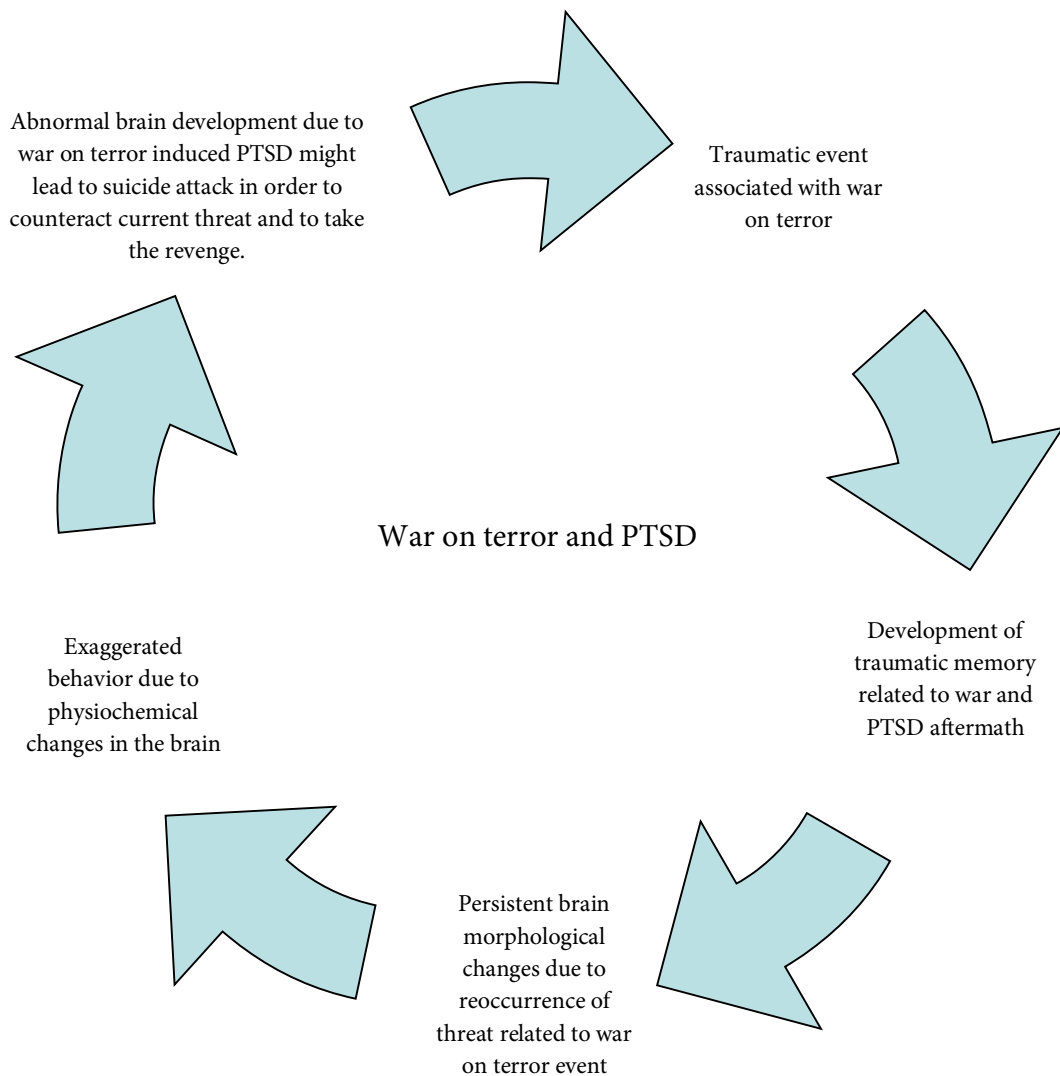
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Understanding suicide attack is one of the highly complicated problems in the field of psychological disorders. Post-traumatic stress disorder (PTSD), may occur in individuals subjected to traumatic assaults like terrorism, warfare, sexual abuse or natural disaster. Individual's living within war affected area often develops PTSD, which may consequently leads to cognitive and memory impairment. The war induced PTSD patient, is under the influence of severe stress; terror and helplessness as it manipulate and retrieve the past trauma as a current threat. Substantial evidences support that PTSD patients are more prone to varying degree of neurological and psychological complications. In this correspondence, we wish to highlight the biological consequence of suicide attack from the perspective of war induced PTSD. Earlier research also supports that PTSD and suicide have some common basis like alterations in hypothalamic pituitary-adrenal axis, nitric oxide and catecholamine like norepinephrine and serotonin level. Thus it is important to uncover the risk of PTSD due to war on terror with precision towards suicide attack and minimize the detriment followed by it. PTSD through the development of depression, irritability and anger, is one amongst the major causes of suicide attack.

In order to clarify the underlying psychological mechanism, there is a pressing need to address it from different aspects like disease causing synaptic plasticity and abnormal brain development. PTSD is a reaction to past traumatic events. For instance, the danger of perceived threat due to witness of deaths in a war, may develop a constellation of properties that may leads to PTSD. Usually, it initiates a sequence of behavioral and cognitive changes that can be anticipated to reduce the perceived threat. However, the consequences of perceived threat lead to cognitive changes and thus maintain a devastating disorder. Appraisals of such memory not only generate situational fear but also the avoidance, which leads to enhanced trepidation and over-activity. For example, a person exposed to a road side traumatic accident may avoid driving; for having an impractical faith that it may happen again, thereby affecting its social life.

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Patients suffering from PTSD due to war may interpret that the trauma will persist for long time and thus he is no longer safe. He or she may suffer from depression, irritability, anger outbursts, emotional numbing, flashbacks, and nightmares [1]. It has been reported that numbing is an ordinary reaction to traumatic events. Individuals should realize that it is a normal aspect of the recovery process, otherwise it can lead to permanent changes which may worsen their physical or psychological well-being [2-4]. Children experiencing the PTSD, usually underwent alterations in hypothalamic-pituitary-adrenal axis, catecholamine and norepinephrine, which results in pathological and detrimental brain development [5]. Interestingly, the inhibition of nitric oxide in hippocampus by antidepressant has promising outcome to alleviate the PTSD symptoms [6]. While, the augmented level of plasma nitrates in depressive patients are found to be associated with suicide attempts [7].



**Figure1:** Flowchart of brain development and plasticity due to war on terror induced PTSD and the consequence of suicide attack.

The intention of a suicide attack is to kill a large crowd or bringing mass destruction, even with the notion that he will die in this act. Suicide bombings termed as "suicide bombing" constitute an overall 4% of terrorist attacks, which dates back to the beginning of the 19th century. In most of the modern suicide terrorist is used against non-combatants for the accomplishment of impact on political situation.

Although a suicide attack aims to annihilate a primary target, however it can be used as a weapon of psychological warfare to affect the large public population. The main target of this action is not those who are killed but those witnessed it [8]. Intriguingly, it is reported that the level of brain-derived neurotrophic factor (BDNF) is directly associated with suicide while indirectly it can affect PTSD. Also, defining body of research proved that altered level of serotonin in dorsal raphe nucleus, amygdala, median raphe, frontal cortex, hypothalamus and hippocampus is associated with aggressive behavior and suicide [9]. PTSD-induce symptoms like impulsivity, violence, suicide attempts, depression, panic, and anxiety can also be associated with altered serotonin levels [10].

## Conclusion

The mechanism of suicide attack is still highly debated; and need much more to address. Since, PTSD through the development of depression, irritability and anger, accomplish various physiological and cognitive changes in the brain, so it might be one of the causes which increases the susceptibility of acceptance for being a volunteer to suicide attack? This discussion was put forward; as some war induced PTSD patients among temporary displaced people in different regions of the world showed strong willingness for suicide attack as a counter revenge of war. Therefore, we also need to address suicide attack from the perspective of psychological disorders like war induced PTSD.

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