



Review

Ankara Med J, 2023;(2):241-255 // doi 10.5505/amj.2023.90699

FROM TRAUMA TO POST-TRAUMATIC STRESS DISORDER: IDENTIFICATION OF THE RISK FACTORS

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Submitted: 03.04.2023 // Accepted: 13.06.2023



Abstract

People encounter various traumatic events throughout their lives. However, most people can cope with these stressful life events in different ways without experiencing any long-term mental problems. Post-Traumatic Stress Disorder (PTSD) is a chronic and important psychiatric disorder that develops in a small number of people as a result of short or long-term exposure to one or more traumatic events and affects the life of an individual. For this reason, it is important to identify people at risk for the development of PTSD and to apply appropriate intervention methods for these people to prevent the disability caused by PTSD. In this review article, the factors that lead to the risk of developing PTSD in individuals exposed to trauma are discussed in light of current information in the literature.

Keywords: Psychological trauma, post-traumatic stress disorder, risk factors.

Introduction

Trauma is described as single or multiple events or series of events that have lasting negative effects on an individual's physical, mental, or social state that is physically or emotionally harmful or threatening.¹ Trauma is defined in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), directly or indirectly, as an actual or intimidating encounter with death, serious injury, or sexual assault.²

Studies investigating the frequency of exposure to a traumatic situation show that trauma exposure is quite common. The literature has shown that the frequency of experiencing a traumatic event throughout life is 17-83% and varies according to demographic characteristics.^{3,4} It is stated that exposure to more than one traumatic event is not uncommon, and 34% of men and 25% of women have been exposed to two or more traumas.⁵

Many different psychiatric disorders such as depression, anxiety disorder, alcohol and substance use disorder, and trauma-related disorders may occur in individuals exposed to trauma. ⁶ Some of these people may have post-traumatic stress disorder (PTSD).

PTSD, which is one of the trauma-related disorders, is a psychiatric disorder characterized by re-experiencing the event, negative changes in cognitions and affect, dissociative symptoms, avoidance from the reminders of the trauma, and hyperarousal symptoms resulting from direct or indirect exposure to a traumatic event.² Although the lifetime risk of PTSD is reported to be approximately 8%, the frequency of PTSD can vary significantly between different demographic groups, as in the incidence of trauma.⁷

Although quite high trauma exposure rates have been reported in the literature, not every trauma results in trauma-related psychiatric disorders. Trauma is a necessary, but not sufficient factor for the development of PTSD. For this reason, it is very important to identify the groups at high risk for PTSD and to offer appropriate psychosocial support and follow-up plan to these groups. This article aimed to review the factors that lead to the risk of developing PTSD in individuals exposed to trauma in light of current information in the literature.

Risk Factors for the Development of PTSD

There are many research and review studies examining the risk factors in the etiology of PTSD. When these studies are examined, the risk factors that predispose to the development of PTSD can be grouped under three main headings as pre-traumatic risk factors, trauma-related risk factors, and post-traumatic risk factors, as shown in Figure 1.

Pre-Traumatic Risk Factors

Gender, sexual orientation, intellectual capacity, personality traits, presence of a history of previous trauma or psychiatric illness, and some genetic factors have been shown as pre-traumatic risk factors for the development of PTSD.

Gender and Sexual Orientation

It has been shown that the probability of encountering a life-long traumatic event is higher in men than in women. However, studies have reported that women are almost twice as likely as men to have a lifetime diagnosis of PTSD. It has been revealed that this difference is maintained, although it decreases when the trauma type is controlled.⁸

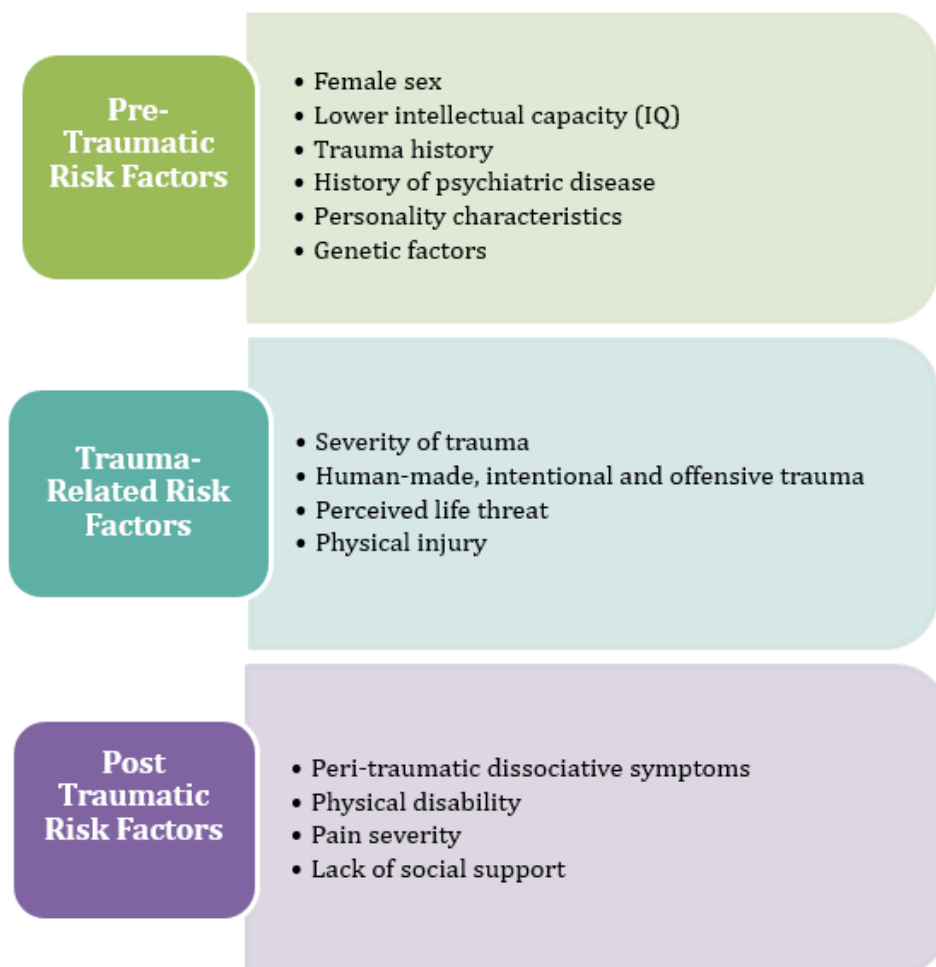


Figure 1. Classification of risk factors for the development of post-traumatic stress disorder

The studies searching for the reasons for this difference suggested that risky trauma exposures such as sexual assault for the formation of PTSD may be more common in women.⁹ However, it was stated that the fact that this difference was preserved even after controlling for the trauma type could be due to gender differences in trauma-related cognitions, emotional reactivity, emotion regulation, and coping strategies.¹⁰ More frequent dissociative symptoms in women and hyper-arousal symptoms in men could be related to these differences.¹¹

In addition, the fact that social support is more inadequate for women in many cases, more frequent history of childhood trauma in women, and cultural factors on gender roles and gender are thought to contribute to women being a risky group for PTSD.^{11,12}

In addition to gender, it has been stated that sexual identity and orientation may also be risk factors for the development of PTSD. Compared to heterosexual people, it has been shown that the rates of exposure to trauma are increased among homosexual, bisexual, and transgender people and they are more likely to be diagnosed with PTSD.¹³

Intellectual Capacity

It has been shown that there is a relationship between intellectual disability and the risk of violence, abuse and/or neglect.¹⁴ Research on trauma-related stress responses has shown that intelligence affects how an individual processes the traumatic experiences. It has been also shown that high cognitive capacity is protective against developing PTSD. For this reason, it was emphasized that cognitive deficits increase the risk of PTSD. Moreover, the diagnosis of PTSD may be missed if adequate psychiatric evaluation is not performed due to cognitive limitations. In review studies, it has been reported that the incidence of PTSD in these individuals is approximately 10%. In addition to that, it has been stated that the trauma itself negatively affects intellectual skills and may further impair their quality of life.¹⁵

Previous Trauma History

When individuals with a diagnosis of PTSD were evaluated, it was observed that there was often a history of exposure to trauma before the trauma that caused PTSD. Prior exposure to traumatic events has been associated with greater vulnerability to the PTSD effects of subsequent trauma.¹⁶ It has been emphasized that the effects of trauma are cumulative and therefore, a later trauma that appears may have a greater impact on the individual than a trauma that occurred many years ago.

The relationship between previous trauma and PTSD varies according to the type of current traumatic experience. It has been reported that having a previous trauma history is more strongly associated with PTSD

when the current traumatic experience includes interpersonal violence such as assault, rape, or domestic violence rather than war or accident.¹⁷

Studies have shown that a history of childhood trauma increases the risk of trauma-related PTSD in adulthood.¹⁸ The incidence of PTSD is reported higher in individuals who have experienced emotional neglect or sexual abuse, especially in their childhood period.¹⁹

In contrast to these findings, it is also observed that some people have developed effective coping strategies for their previous traumatic experiences or that they can cope with the new trauma more easily because they have learned to adapt to the consequences of the trauma. It has been stated that this condition, called post-traumatic growth, could be protective for people.²⁰

History of Psychiatric Disease

A history of mental disorders such as pre-traumatic mood disorder, anxiety disorders, or conduct disorder is associated with developing PTSD.²¹ Some studies have demonstrated that the risk of later PTSD increases with the presence of one or more psychiatric disorders, such as depression, anxiety disorder, and somatoform disorder before trauma exposure, particularly in women.²²

From a psychosocial perspective, it is thought that the socioeconomic conditions or interpersonal relationships of individuals with pre-existing psychiatric disorders predispose them to experience a traumatic event. Additionally, it is emphasized that the presence of mental illnesses can make it difficult to cope with the trauma encountered by an individual and therefore pave the way for the development of PTSD.²²

Personality Characteristics

Studies in the literature have suggested that temperament characteristics are associated with exposure to trauma and the risk of developing PTSD. Neurotic personality traits are associated with higher rates of PTSD.²³ Temperament characteristics such as avoidant and hostile attitudes are also shown to be correlated with the risk of developing PTSD.²⁴

Research has identified certain temperamental characteristics that are associated with an increased risk of developing PTSD. Specifically, individuals with low levels of self-directedness and cooperativeness, which reflect underdeveloped executive functions, are more vulnerable to developing PTSD²⁵. Additionally, factors such as low psychological resilience, high levels of harm avoidance behaviors, difficulties in regulating negative emotions, and specific cognitive schemas, including feelings of defectiveness, lack of self-control, self-sacrifice,

unrelenting standards, fear of abandonment, enmeshment, and vulnerability, have been found to be associated with an elevated risk of PTSD.^{26,27}

These findings highlight the complex interplay between individual temperament, cognitive processes, and the development of PTSD. Temperamental traits that indicate deficits in executive functions, along with maladaptive cognitive schemas and difficulties in emotion regulation, contribute to an increased susceptibility to experiencing and coping with traumatic events.

Genetic Factors

It has been suggested that the differences in resilience and PTSD risk in individuals who have experienced similar trauma may be due to the basic variables in biological processes determined by multiple genetic and epigenetic factors. High heritability rates have been reported in studies on genetic factors associated with the development of PTSD.

Genetic connectivity and twin studies on the etiopathogenesis of PTSD indicate a high heritability ranging from 13-69%. It has also been shown that the risk of exposure to certain types of trauma may have an important genetic component. The contribution of genetic factors is found higher in high-risk traumas such as sexual and physical neglect or abuse in childhood compared to other traumas.²⁸

In PTSD-related candidate gene association studies, more than 25 genes have been identified as involved in neurotransmitter systems and stress signaling pathways. In particular, single nucleotide polymorphisms (SNPs) that are claimed to be effective at receptor levels and transporter mechanisms have been identified in dopaminergic and serotonergic pathways associated with stress response.²⁹ It has also been shown that genetic variants in the glucocorticoid receptor and binding proteins that affect the hypothalamus-pituitary-adrenal (HPA) axis, which is one of the main regulators of the biological response to stress, are associated with the risk of PTSD.²⁹ Moreover, it is suggested that genetic changes in different signaling pathways such as some neurotrophic factors, ApoE, catecholamines, and endogenous opioids may predispose to the development of PTSD.³⁰

It has been stated that exposure to trauma may cause epigenetic changes, causing changes in the genetic opening, and this may pose a risk for psychiatric disorders such as PTSD. In animal studies, DNA methylation and histone modifications that may affect neurogenesis, neuron plasticity, and HPA pathway have been shown to cause PTSD clinic.^{31,32} In studies investigating the effects of early traumatic life events on DNA methylation in the hippocampus tissue, epigenetic changes are reported more prominently in genes that affect neuronal plasticity specifically.³³ It has been reported that these epigenetic mechanisms, which have an important role

in synaptic plasticity, may be responsible for traumatic memory and the formation of intrusive and repetitive memories, which are prominent symptoms of PTSD.²⁹

Trauma-Related Risk Factors

When the trauma-related risk factors for the development of PTSD are examined, the severity of the trauma, the type of traumatic experience, and the severity of the perceived threat to life are found to be associated with the risk of developing PTSD.

Severity of Trauma

Conditions such as direct exposure to trauma, physical injury as a result of trauma, or loss of loved ones, which show the objective severity of the traumatic event, are generally associated with the development of PTSD.³⁴

It is shown that direct exposure to trauma, such as experiencing trauma directly or witnessing a traumatic event experienced by others, has a more severe impact on the person than indirect trauma exposure, such as hearing about an event from others or learning through the media. When the traumas that are directly exposed are examined, experiencing the trauma directly has a more devastating effect than witnessing the trauma experienced by others. On the other hand, it has been shown that the closeness and emotional relationship of the person with the person witnessed changes the way of perceiving the severity of the trauma.³⁵

It has been reported that physical injury to a person after a traumatic event may be a predictor for the development of PTSD. About half of the people who were seriously injured in car accidents, fires, stabbings, gunshots, or other incidents have been shown to have PTSD and/or alcohol use problems one year after discharge from trauma surgery units.³⁶

Type of Trauma

Studies have shown that exposure to human-mediated intentional and offensive trauma is an important risk factor for the development of PTSD. It is found that the traumatic event is more likely to result in PTSD than many other types of trauma, especially in individuals who have been sexually assaulted. Factors such as being attacked by a stranger, being threatened, being exposed to an event in a safe place, having a history of childhood sexual abuse, and not receiving adequate social support after sexual assault further increase the risk of developing PTSD.³⁷

Domestic and partner violence is also quite common and could be traumatic. Although women are more frequently reported to be exposed to domestic and partner violence than men, there is no significant difference

reported between the genders in terms of PTSD symptoms. Moderate to severe PTSD symptoms were reported as a result of partner-related traumatic events in 24% of women and 20% of men.³⁸ Although physical, sexual, and psychological violence and abuse from partners are all significantly associated with PTSD, psychological violence has been reported to have the strongest association with developing PTSD.³⁹

The lifetime risk of experiencing PTSD for soldiers and armed personnel participating in wars or conflicts is reported up to 35%. Particularly, it has been shown that factors such as participating in a violent and long-term conflict, witnessing injured or dying people, physical disability, and inadequate post-conflict social support increase the risk of PTSD.⁴⁰

Trauma resulting from political violence and conflicts, which are common, especially among refugee groups, is widespread throughout the world and is one of the important types of trauma for the development of PTSD. In these groups, exposure to violence in early childhood, being in ethnic or religious minority groups, exposure to physical torture, and multiple trauma experiences were found to be more closely associated with PTSD risk.⁴¹

Natural disasters have a significant impact on a large number of people within a short period of time. Events such as earthquakes, floods, and tornadoes not only cause physical destruction but also contribute to psychological trauma. The presence of community members or outsiders in the affected areas can create a sense of chaos, adding to the stress experienced by individuals. The disruption of daily routines and the loss of familiar surroundings further exacerbate the traumatic experiences. Additionally, human-made mistakes and oversights that contribute to the severity of the disaster can increase the trauma experienced by individuals.¹ Knowing that the disaster could have been prevented or mitigated can evoke feelings of anger, helplessness and increased the severity of traumatic experience.

Financial and life-threatening risks are also prevalent during natural disasters. The loss of property, limited access to basic necessities, and displacement from homes add to the distress and uncertainty individuals face. In crowded shelters, privacy may be compromised, further impacting psychological well-being. Furthermore, media coverage of the disaster and the repetitive exposure to images of devastation can be distressing and can retraumatize individuals. The prolonged time required to restore daily routines, activities, and services, such as schools reopening, resuming work, or having access to basic supplies, can complicate the recovery process and increase the risk of developing PTSD.¹

Perceived Life Threat

What the events mean to the individual and what kind of life-threat perception they create are as important as the type and severity of the trauma. There are studies suggesting that the perceived fear of death during a traumatic event is related to PTSD.

Traumas in which a person is intensely worried about their life are associated with an increased risk of PTSD. In a large sample study, it was shown that when a threat to life is perceived, the probability of developing PTSD is 1.6 times higher and it stands out more than other risk factors.⁴² Perceived fear of death or threat to life is an independent factor that increases the risk of PTSD in different types of trauma, such as domestic violence, war experiences, sexual assault, or physical illness.^{43, 44}

Post Traumatic Risk Factors

Considering the post-traumatic period, it has been revealed that hospitalizations, chronic pain, physical disability, dissociative symptoms, and inadequacies in social support could be risk factors for the development of PTSD.

Dissociative Symptoms

Studies in the literature have revealed that dissociative symptoms experienced during and after trauma are an important risk factor for PTSD. In many meta-analyses, it has been reported that peritraumatic dissociative symptoms predict the development of PTSD.^{17,45} Not only in retrospective studies, but also in prospectively designed studies, it has been shown that peritraumatic dissociative symptoms are strongly associated with PTSD, and it has been emphasized that this is not the result of a recall error in remote memory shadowed by PTSD.⁴⁶ Some studies have suggested that the relationship between peritraumatic dissociative symptoms and PTSD is relatively weak.⁴⁷ It has been stated that one reason why some studies have found a stronger association between peritraumatic dissociation and PTSD than others may be because this association is significantly stronger in women than in men.

Research suggests that individuals with high anxiety sensitivity are more likely to experience heightened peritraumatic dissociative experiences. These peritraumatic dissociative symptoms can serve as markers for an increased risk of developing PTSD in the future⁴⁸. Furthermore, studies have indicated that the persistence of dissociative symptoms following a traumatic event may have a stronger association with the risk of developing PTSD than the peritraumatic dissociation itself. This suggests that individuals who continue to experience dissociative symptoms after the trauma may be particularly vulnerable to developing PTSD.⁴⁹

Physical Disability and Pain

Numerous studies have shown that a high heart rate (>95/min) at first admission to the emergency department is a risk factor for PTSD in people with physical injury.⁵⁰ While no relationship was found between length of stay in hospital and PTSD, it was stated that the history of intensive care hospitalization may have a moderate relationship with PTSD.⁵¹

PTSD has been associated with pain severity in patients with severe physical injury.⁵² There is evidence for a two-way interaction between pain and PTSD. It has been suggested that chronic pain may be a reminder of the traumatic event that triggers re-experiencing, while PTSD symptoms such as insomnia may lower the pain threshold.⁵³ The level of physical disability and loss of daily functioning are associated with an increased risk of PTSD.^{54,55} It has also been stated that there may be a relationship between mild traumatic brain injury and the development of PTSD.⁵⁶

Social Support

Studies have revealed that social support after trauma is a protective factor for the development of PTSD.¹⁷ Numerous studies have demonstrated that inadequacy in social assistance and support from the environment is one of the most consistent risk factors for PTSD. Lack of social support is more strongly associated with the development of PTSD in women than in men.⁵⁷ Contrarily, it has been shown that adequate social services, which can support adequate living conditions in the post-traumatic period, reduces post-traumatic symptoms in the long term.⁵⁸

In addition to the positive and protective nature of social support, it is also reported that negative social criticism and reactions may increase the risk of PTSD. In some studies, the effect of negative social reactions is found higher than positive forms of support in adjusting to and explaining trauma.⁵⁹ Although positive reactions to trauma have a weak protective role against the development of psychopathologies such as PTSD, it is emphasized that negative social reactions may be predictive for many psychiatric disorders, including PTSD.⁶⁰

Conclusion

The risk of experiencing PTSD for individuals who have been traumatized varies depending on different personal, event-related, and environmental factors. It is the prevention of traumatic experiences that will definitively prevent the risk of developing PTSD. However, in cases where trauma is exposed, evaluation of individuals in terms of risk factors is important for rapid support and intervention. Therefore, information about the individual's life history, personality traits, methods of coping with stress, and trauma experience should be discussed in detail. The meaning of the trauma experience for the person and how it creates a threat perception should also be examined. Different institutions and interdisciplinary cooperation should be established to provide medical, psychological, economic, and social support that can help people maintain their physical and social functionality in the post-traumatic period.

Conflict of Interest: The authors declare no conflict of interest.

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