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Psychological Impact of Children Exposed to Trauma

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***Abstract*: Childhood trauma is a significant issue for public health because it can have lasting effects on mental, physical, and social well-being. This study looks at the emotional, behavioral, social, and neurological impacts of different types of trauma, including abuse, neglect, and witnessing domestic violence. It explores attachment theory, trauma theory, and views on brain development. The study highlights protective factors that affect development, along with key aspects such as family dysfunction, age at which trauma occurs, intensity of trauma, and financial difficulties. The findings indicate that childhood trauma leads to ongoing inflammation, disrupts the stress response, and changes brain structure. These changes significantly increase the risk of PTSD, depression, anxiety, and substance use disorders. Some limitations of this literature review include a lack of original research, insufficient understanding of resilience mechanisms, and few studies focused on Eastern perspectives. To help children exposed to trauma, it is essential to detect these issues early and provide appropriate evaluations, culturally sensitive therapies, and trauma-informed practices. It is important to address childhood trauma through teamwork among various professionals to create a safe environment and support healthy development in children.**

***Keywords*: Brain development, Childhood maltreatment, Psychological distress, Psychological intervention, trauma-informed care.**

1. Introduction

Childhood is a critical time in life that lays the groundwork for an individual's performance throughout their lifetime (Kerig, 2023). A secure and supportive environment promotes healthy psychological development, but the opposite is also true, highlighting how stressful and overwhelming situations hinder learning and increase a person's susceptibility to psychological problems in later life (Smith & Pollak, 2020). Thus, early experiences should be considered a predictor of psychological well-being in both infancy and maturity (Smith & Pollak, 2020). Negative experiences can seriously impede the development of norms, and certain early circumstances are not protective. Childhood trauma is one of the bad things that may significantly affect a child's life (Fan & Kang, 2025).

Childhood trauma is characterised as emotionally stressful or distressing situations that surpass a child's ability to cope, causing long-term changes in psychological, biological, and social development (Burke, 2024). Normal trajectories are hampered by abuse, neglect, and familial or environmental adversity at crucial developmental stages (Cruz et al., 2022). One of the main global public health concerns is the high frequency of childhood trauma. According to surveys from throughout the world, a considerable portion of children are affected by negative childhood experiences (Madigan et al., 2023). Children in India are particularly vulnerable to traumatic events due to a number of risk factors, including abuse, neglect, corporal punishment, domestic violence, and insufficient access to mental health facilities (Sharratt et al., 2021). Despite its high incidence, childhood trauma is underdiagnosed and undertreated, especially in low- and middle-income countries (Trivedi et al., 2024).

Childhood trauma has a profound effect on a child's psychological, emotional, and social development (Cruz et al., 2022). Trauma exposure at critical developmental phases can disrupt normal brain development and result in long-term changes to the brain's structure and function (Kılıç et al., 2024). These neurological changes may lead to a variety of psychological and behavioural issues, such as post-traumatic stress disorder (PTSD), sadness, anxiety, and difficulty regulating emotions (Neigh et al., 2009). Childhood trauma can affect a child's social development, making it difficult to build and maintain healthy relationships and increasing the likelihood of being a victim or acting violently (Cruz et al., 2022).

Understanding the psychological impact of childhood trauma is crucial for creating effective prevention and intervention strategies (Cruz et al., 2022). Early identification and intervention of traumatized children can reduce the negative impacts of trauma and promote resilience (Fan & Kang, 2025). For the children who were traumatized TF-CBT (trauma-focused cognitive-behavioral therapy) is evidence-based, both effective for reducing symptoms and leading to better outcomes (Arellano et al., 2014). However, there are nevertheless many unanswered questions on the mechanisms behind the mental consequences of youth trauma and the high-quality methods to keep away from and treat it, especially in culturally varied settings (Wiseman et al., 2019).

The purpose of this review is to thoroughly examine the psychological effects of childhood trauma, looking at how it influences social interactions, behavior, emotions, and brain development (Cross et al., 2017). It will also look at the evidence behind different ways to help those affected, as well

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as the factors that increase or reduce the chances of positive outcomes after trauma (McLaughlin & Lambert, 2017). This review is meant to help prevent and treat childhood trauma, and to improve the lives of children who have gone through it, by bringing together the latest research in this area (McLaughlin & Lambert, 2017).

A. Understanding Childhood Trauma

1) Concept and Definition of Trauma

When people face situations they see as extremely frightening or overwhelming, and these situations go beyond what they can handle, it's called 'trauma' (Jackson, 2016). These situations are often seen as scary, shocking, sudden, or even dangerous to someone's safety or life. When a child experiences many, ongoing, or repeated traumatic events—especially those that happen between people—during important times in their development, it's called 'developmental trauma' (Cruz et al., 2022). Since developmental trauma usually happens within or messes up important relationships, it affects many areas of a child's growth. These areas include forming secure attachments, controlling emotions and behavior, thinking and organizing thoughts, developing a sense of self, building social skills, and understanding the body and its feelings (Dozier & Bernard, 2017). These effects are often widespread and long-lasting, continuing into adulthood (Naeem et al., 2022).

Trauma can be of two main types. The first kind happens from a single, short-term traumatic event, like a natural disaster, a car accident, a one-time attack, or the sudden death of a loved one. This is known as acute trauma, or Type I trauma (Cruz et al., 2022). The second kind comes from long-term, repeated exposure to traumatic experiences. These are usually related to other people and often happen in caregiving relationships. Examples include ongoing abuse or neglect of a child, being exposed to abuse from others, or regularly experiencing violence in the community (Brend et al., 2020).

2) Types of Childhood Trauma

Childhood trauma refers to a variety of negative experiences that happen during early life. These events can differ in how bad they are, how long they last, and the relationships involved. The term "childhood trauma" describes harmful experiences in childhood that can affect a person's mental and physical health for a long time, such as abuse, neglect, or other types of mistreatment (Burke, 2024). These experiences can harm how a child relates to others, behaves, feels emotions, thinks, and stays physically healthy. It is common for children to face more than one type of trauma at the same time, and when this happens, it can make the effects on their development even worse (Cruz et al., 2022).

3) Physical Abuse

Intentional use of physical force against a child that causes or has the potential to cause physical harm is considered physical abuse. This can involve physical harm such as striking, kicking, shaking, burning, or other harmful actions (Christian, 2015). Numerous detrimental psychological effects, such as an elevated risk of PTSD, depression, anxiety, and behavioural issues, are linked to physical abuse. Physically abused children may also struggle with aggression, emotional control, and interpersonal interactions (Malinosky-Rummell & Hansen, 1993).

The degree and frequency of physical abuse, the age of the child at the time of the abuse, and the relationship between the child and the abuser are some of the variables that can affect the psychological effects of physical abuse (Pitzer & Fingerman, 2010). Physical abuse used by carers can be especially harmful because it contradicts the fundamental expectation of safety and protection in the home setting (Maulina & Minauli, 2020).

4) Emotional Abuse

"Emotional abuse," often referred to as "psychological abuse," is a pattern of behavior that impedes a child's emotional development or sense of self-worth (Rokach, 2021). Examples of these include verbal abuse, rejection, isolation, intimidation, or exposing the youngster to domestic violence (Taussig & Culhane, 2010). Emotional abuse often happens in combination with other forms of mistreatment, however it can occur on its own. Studies have shown that emotional abuse has long-term impacts on psychological development, such as a higher likelihood of anxiety, sadness, low self-esteem, and problems regulating emotions and interacting with others (Soliman et al., 2024). According to some study, emotional abuse may have long-term psychological impacts that are at least as harmful as physical violence (Li et al., 2020).

5) Sexual Abuse

Sexual abuse is defined as any sexual behavior with a kid, including contact abuse like touching or penetration as well as non-contact abuse such exposure to sexual content or exploitation (Norman et al., 2012). Among the most severe and long-lasting psychological impacts associated with sexual abuse include high rates of PTSD, depressive symptoms, anxiety, and issues with interpersonal relationships and sexual functioning (Karakurt & Silver, 2013). Children who are sexually assaulted may feel betrayed, regretful, and humiliated in addition to problems with trust and attachment (Lacono et al., 2021)

Some factors that may influence the impact of sexual abuse include the child's age at the time of the abuse, the duration and severity of the abuse, the child's connection to the abuser, and the response of caregivers and others when the abuse is revealed (Futa, 2001). The availability of appropriate therapy and the supportive responses of caregivers can promote recovery and resilience (Foster & Carson, 2013).

6) Neglect

Neglect occurs when a child's basic medical, emotional, educational, or physical needs are not satisfied. These can include emotional neglect (not giving emotional support and nurturing), medical neglect (not providing required medical treatment), educational neglect (not assuring school attendance), and physical neglect (not providing enough food, shelter, or supervision) (Chen et al., 2011).

Neglect is the most common kind of child maltreatment and has a significant negative impact on many developmental domains. Children who are neglected may struggle with socialization and emotional regulation, have delayed language and cognitive development, and be more vulnerable to mental health problems (Zeanah & Humphreys, 2018). The effects of

neglect are more severe during early childhood due to the fast growth of the brain and heightened sensitivity to environmental input (Tanzer et al., 2020).

7) Domestic Violence Exposure

Even if it is not specifically targeted, seeing domestic or interparental violence can result in ongoing relational trauma that compromises safety and attachment. Due to their constant fear, hypervigilance, and damaged attachment relationships, children who experience domestic abuse develop complicated symptom patterns (Pingley, 2017).

8) Loss, Separation, and Bereavement

The death of caregivers, extended separations brought on by placement or jail, or insecure care arrangements are a few instances of loss and separation. The disruption of fundamental safety functions brought on by loss may result in attachment difficulties and extended mourning reactions. Being away from their primary caregivers can be just as stressful for young children as abuse, especially if the substitute care is insufficient or inconsistent (Briggs-Gowan et al., 2019).

9) Exposure to Disasters, War, and Accidents

Exposure to domestic violence is defined as seeing violence between caregivers or other family members (Cohen & Shulman, 2017). Examples of this include seeing the aftermath of violent acts, hearing violence from another room, or being physically harmed. Children who witness domestic violence may experience a variety of negative psychological impacts, including PTSD, anxiety, depression, and behavioral problems (Tsavoussis et al., 2014).

Additionally, attachment bonds and a child's feeling of comfort and protection in the home can be harmed by domestic violence. Children may struggle to understand and absorb the violence they witness, have conflicted allegiances, and fear for their own or their caregivers' safety (Pingley, 2017). The impacts of exposure to domestic violence can be influenced by a number of factors, including the child's age and developmental stage, the frequency and intensity of abuse, and the existence of supportive connections (Artz et al., 2014).

Children in India may be particularly susceptible to trauma and its long-term psychological effects because of societal standards, the use of physical punishment, and the lack of access to child mental health services (Gourisankar et al., 2025). The fact that almost 53% of Indian children report having been abused as youngsters highlights the prevalence of this problem (Sharratt et al., 2021).

2. Theoretical Perspectives

A number of theoretical frameworks that describe how early negative experiences impair development and heighten susceptibility to psychopathology must be integrated to comprehend childhood trauma (Jiwani et al., 2025). The neurodevelopmental approach, trauma theory, and attachment theory are the three main viewpoints that offer complementary lenses for comprehending the causes and consequences of childhood trauma. Developmental effects of childhood trauma are described by a variety of theoretical frameworks (Cruz et al., 2022).

A. Attachment Theory

A fundamental framework for comprehending how childhood trauma affects psychological development is provided by attachment theory, which was first created by John Bowlby (Turneret al., 2019). This hypothesis holds that early interactions with carers mould internal working models of oneself and others, which have an impact on mental health, interpersonal connections, and emotional regulation

throughout one's life (Doyle & Cicchetti, 2017). Resilience in the face of hardship and healthy psychological development are fostered by secure attachment, which is defined by responsive, consistent caring (Mikulincer & Shaver, 2018). On the other hand, inconsistent, abusive, or inattentive caring may lead to insecure attachment patterns, which are linked to heightened susceptibility to psychological issues after trauma exposure (Doyle & Cicchetti, 2017).

The development of safe attachment and attachment relationships can be severely disrupted by childhood trauma, especially when it is caused by carers (Cushing et al., 2023). Disorganised attachment patterns, typified by conflicting behaviours and a lack of cohesive techniques for obtaining comfort from carers, can develop in children who experience abuse or neglect (Granqvist et al., 2017). Mental health, social functioning, and emotional control may all be negatively impacted by these broken attachment bonds (Doyle & Cicchetti, 2017).

Additionally, attachment theory emphasises the crucial role of the carer-child bond in the healing process after experiencing trauma. Children who have experienced trauma might benefit greatly from interventions that emphasise fostering sensitive, responsive caregiving and enhancing attachment bonds (Gee & Cohodes, 2023). For instance, attachment-based therapies like Attachment and Biobehavioral Catch-Up and Child-Parent Psychotherapy have demonstrated potential in enhancing attachment security and lessening trauma symptoms in young children (Schechter & Willheim, 2009).

B. Trauma Theory

Trauma theory offers a framework for understanding the psychological impacts of extreme, life-threatening experiences that exceed an individual's capacity for management (Grasso et al., 2012). This perspective holds that traumatic experiences have the capacity to upend fundamental assumptions that the world is safe and predictable, leading to profound changes in how people see themselves, other people, and their environment. According to trauma theory, it is essential to comprehend the subjective importance of traumatic experiences and how trauma may interfere with normal psychological functioning (Joseph & Williams, 2005).

The difference between single-incident trauma and complex trauma is a fundamental idea in trauma theory (McGreevy & Boland, 2020). While complex trauma entails repeated or extended exposure to traumatic experiences, frequently in the context of caregiving relationships, single-incident trauma refers to exposure to a single catastrophic occurrence, such as an accident or natural disaster. Complex trauma, which is prevalent in children who are abused or neglected, is linked to

more severe and widespread psychological issues, such as issues with self-esteem, interpersonal connections, and emotional control (Cruz et al., 2022).

C. Neurodevelopmental Perspective

The neurodevelopmental viewpoint highlights how early negative experiences can change the structure and function of neurones and how childhood trauma affects brain development (Tottenham, 2019). According to research, the brain develops quickly during childhood and adolescence. During these crucial times of increased flexibility, environmental events have a particularly significant impact on cerebral development (Teicher et al., 2002).

A child's emotional control, stress response, and cognitive functioning can all be affected by childhood trauma, which can interfere with normal neurodevelopmental processes (Bick & Nelson, 2015). For instance, studies have demonstrated that childhood trauma is linked to both increased amygdala reactivity and decreased hippocampal and prefrontal cortex volume. Many of the behavioural and psychiatric issues seen in children who have experienced trauma are believed to be caused by these neurobiological alterations (Teicher et al., 2016).

The idea of sensitive periods when the brain is especially susceptible to the consequences of negative experiences is also highlighted by the neurodevelopmental approach (Cross et al., 2017). According to research, the time of trauma exposure may have an impact on the particular patterns of neurobiological changes and related psychological consequences (Cicchetti & Cannon, 1999). For instance, early childhood trauma exposure may have more noticeable effects on the formation of attachment bonds and emotional control, whereas adolescent trauma may have a greater impact on the development of executive functions and risk-taking behaviour (Cruz et al., 2022).

Crucially, the neurodevelopmental approach also highlights the possibility of resilience and rehabilitation. The brain retains plasticity throughout childhood and into adulthood, implying that proper interventions can produce good neurobiological changes and trauma rehabilitation (Beauchaine et al., 2008). In order to take advantage of times of increased plasticity and support healthy neurodevelopment, this viewpoint emphasises the significance of early detection and intervention (Cross et al., 2017).

3. Risk and Vulnerability Factors

A. Age and Developmental Stage

Children's experiences and expressions of trauma are significantly influenced by their age and developmental stage (Cross et al., 2017). Preschoolers exhibit trauma through play reenactment and behavioural dysregulation, whereas infants and toddlers show trauma through relationship issues, emotion regulation issues, and heightened sensitivity to carer functioning. School-age children exhibit signs of arousal, avoidance, and reexperiencing; regular family routines are linked to fewer issues (Scott et al., 2021). Emotional abuse and neglect show strong negative relationships with adaptive functioning, and family adversity predicts low school involvement. Adolescents also appear in more complex ways and are less resilient (Kobulsky et al., 2022).

B. Duration and Severity of Trauma

More severe results in terms of trauma features and psychological impacts are linked to adversity accumulation, duration, frequency, and adoption of a dose-response pattern (Horton, 2019). Lifetime trauma exposure can independently explain significant differences in symptoms of PTSD, sadness, anxiety, and aggression; people with higher cumulative risk scores are more likely to be maltreated (Ogle et al., 2013). Increasing severity progressively reduces adaptive capacity, according to dose-related negative relationships between resilience and emotional abuse and neglect (Li et al., 2023).

C. Family Environment

While family structure, routines, and supportive care lower risk, family characteristics such as carer mental illness, domestic abuse, and dysfunction significantly increase susceptibility (Fritz et al., 2018). Parental violence often co-occurs with other adversities and is associated with trauma symptomatology; poor parental mental health and substance use are strong predictors of increased risk for maltreatment (Murphy et al., 2018). Even in impoverished urban settings, higher levels of family order and regular routines are linked to fewer issues and less traumatic stress, giving kids a sense of security that protects them from external stressors (Kiser et al., 2010).

D. Socio-economic Status

Poverty, economic disadvantage, and neighbourhood-level risk factors raise the likelihood of poorer outcomes and trauma exposure; a lack of resources exacerbates family stressors (Mock & Arai, 2011). Economic deprivation is strongly associated with a higher probability of maltreatment, and family difficulty and dangerous locations are additional risk factors for poorer mental health and educational outcomes. Homeless children experience melancholy, anxiety, aggression, and PTSD due to stressors specific to homelessness, and harsh parenting is associated with poverty and a history of mother trauma, creating intergenerational loops (Spiegel et al., 2022).

E. Lack of Support Systems

While resource constraint exacerbates family stressors, poverty, economic disadvantage, and neighbourhood-level risk factors increase trauma exposure and the chance of worse outcomes (DeCandia & Guarino, 2020). In addition to family difficulties and unsafe areas being risk factors for worse mental health and educational outcomes, economic deprivation is significantly linked to an increased risk of maltreatment (Hunter & Flores, 2020). Even though poverty and a history of trauma experienced by the mother are linked to harsh parenting, which creates intergenerational cycles, homelessness-specific stressors also independently exacerbate symptoms of depression, anxiety, aggression, and PTSD in homeless children (Hopper et al., 2010).

F. Psychological Impact of Trauma on Children

Early exposure to difficult and dangerous situations, such as seeing domestic violence, enduring physical, sexual, or emotional abuse, or being bullied or victimised by peers, is significantly predictive of poorer mental health outcomes later in life. Disorders such as anxiety, depression, post-traumatic stress disorder, and behavioural problems are intimately associated with trauma (Khadija, 2025). Additionally, it may impact social relationships, academic performance, emotional control, and self-perception. This section examines the complex psychological repercussions of childhood trauma, including the emotional, cognitive, behavioural, social, and neurobiological domains (Cross et al., 2017).

G. Emotional Consequences

Childhood trauma can have profound effects on emotional development and functioning. One of the most common emotional consequences of trauma is difficulty with emotional regulation, which involves the ability to modulate emotional responses in adaptive ways (Dvir et al., 2014). Children who have experienced trauma may struggle to identify, express, and manage their emotions, leading to emotional dysregulation characterised by intense, unpredictable emotional reactions (Keeshin et al., 2021).

Trauma-exposed children are at increased risk for developing mood disorders, including depression and anxiety. Depression in trauma-exposed children may manifest as persistent sadness, loss of interest in activities, changes in sleep and appetite, and feelings of worthlessness or hopelessness (Negele et al., 2015). Anxiety may present as excessive worry, fear, or avoidance of trauma-related stimuli. Research has shown that the risk of depression and anxiety increases with the severity and chronicity of trauma exposure (Dickerson et al., 2021).

Post-traumatic stress disorder (PTSD) is another common emotional consequence of childhood trauma. PTSD is characterised by intrusive memories or flashbacks of the traumatic event, avoidance of trauma-related stimuli, negative alterations in cognition and mood, and hyperarousal (Cruz et al., 2022). Children with PTSD may experience nightmares, difficulty concentrating, irritability, and exaggerated startle responses (Galano, 2018). The prevalence of

PTSD varies depending on the type and severity of trauma, with particularly high rates among children who have experienced sexual abuse or exposure to violence (Eth, 2016).

Trauma can also affect the development of emotional competencies, such as empathy and emotional understanding (Perkins & Graham-Bermann, 2011). Children who have experienced trauma may have difficulty recognising and responding to the emotions of others, which can impact their social relationships and overall functioning (Callaghan et al., 2017).

H. Cognitive Impact

Childhood trauma can have significant effects on cognitive development and functioning (Motsan et al., 2021). Research has shown that trauma-exposed children may experience difficulties with attention, concentration, and executive functions (Matte-Landry et al., 2022). Executive functions, which include skills such as planning, problem-solving, and impulse control, are particularly vulnerable to the effects of trauma. These cognitive difficulties can impact academic performance and overall functioning (DePrionce et al., 2009).

Memory is another cognitive domain that can be affected by childhood trauma. Trauma-exposed children may have difficulty with both explicit memory (conscious recall of facts and events) and implicit memory (unconscious memory that influences behaviour). Some children may experience intrusive memories or flashbacks of traumatic events, while others may have difficulty remembering important aspects of the trauma (Fan & Kang, 2025).

Language development can also be impacted by childhood trauma, particularly neglect. Children who experience neglect may show delays in language acquisition and have difficulty with verbal expression and comprehension. These language difficulties can further impact social relationships and academic achievement (Spratt et al., 2012).

Research has also shown that childhood trauma can affect academic performance and educational outcomes. Trauma-exposed children may have difficulty concentrating in school, completing assignments, and achieving academic milestones. They may also have higher rates of school absenteeism, grade retention, and dropout. These academic difficulties can have long-term consequences for educational attainment and career success (Willcutt et al., 2011).

I. Behavioral Outcomes

Childhood trauma is associated with a wide range of behavioural difficulties. Externalising behaviours, such as aggression, defiance, and rule-breaking, are common among trauma-exposed children (Straussner & Calnan, 2014). These behaviours may represent attempts to cope with overwhelming emotions or to exert control in an unpredictable environment. Research has shown that children who experience physical abuse are at particularly high risk for developing aggressive and antisocial behaviours (Rode et al., 2019).

Internalising behaviours, such as withdrawal, social isolation, and self-harm, are also prevalent among trauma-exposed children. These behaviours may reflect attempts to avoid trauma-related stimuli or to cope with intense emotional distress (Straussner & Calnan, 2014). Self-harm behaviours, including cutting, burning, or other forms of self-injury, are particularly concerning and are associated with increased risk of suicide (Liu et al., 2024).

Trauma exposure is also associated with increased risk of substance use and abuse. Adolescents who have experienced childhood trauma may turn to alcohol or drugs as a means of coping with trauma-related symptoms or emotional distress. Research has shown that the risk of substance use increases with the number and severity of adverse childhood experiences (Walker et al., 2024).

Risky sexual behaviour is another potential consequence of childhood trauma, particularly sexual abuse. Trauma-exposed adolescents may engage in early sexual activity, have multiple sexual partners, or fail to use protection, increasing their risk of

sexually transmitted infections and unintended pregnancy (Negriff et al., 2015).

J. Social and Interpersonal Difficulties

Developmental trauma disrupts self-perception and relational functioning, often leading to insecure attachment patterns, especially when trauma occurs within caregiving relationships that are expected to provide safety and nurturance (Cruz et al., 2022). Children may display anxious, clingy behaviours or avoidant, dismissive relational styles (Kamene, K. (2025).

Trauma also produces faulty attributions about the self and others, with children anticipating harm, expecting a lack of care, and developing pervasive trust difficulties (Chahal & Shah, 2025). These expectations contribute to hypervigilance in social situations, misinterpretation of neutral cues as threatening, and difficulty forming reciprocal, trusting relationships (Milesi et al., 2023).

Peer relationships are frequently affected, with social withdrawal, conflict, rejection, and isolation reported across developmental stages (Fareri et al., 2017). Limited social skills, poor emotional regulation, aggression or withdrawal, and difficulties in recognising facial expressions and solving social problems further reduce relationship quality and increase marginalisation (Li et al., 2021). Heightened reactivity, misattributions, and poor communication in relational contexts often lead to repeated interpersonal conflict and cycles of rejection and further adversity (Fonagy et al., 2017).

4. Neurobiological Impact

A. Brain Structure and Function

Childhood trauma has been shown to alter brain structure and function in multiple regions and networks (Daweeth, 2025). Neuroimaging studies have consistently found that trauma-exposed children and adults show reduced volume in the hippocampus, a brain region critical for memory and emotion regulation. The hippocampus is particularly vulnerable to the effects of stress and trauma due to its high concentration of glucocorticoid receptors. Reduced hippocampal volume has been associated with increased risk of PTSD and depression (Sapolsky, 2000).

The prefrontal cortex, which is involved in executive functions, emotional regulation, and decision-making, is also affected by childhood trauma (De Bellis & AB, 2014). Research has shown that trauma-exposed individuals have reduced volume and altered activity in the prefrontal cortex, particularly in the medial prefrontal cortex and anterior cingulate cortex. These alterations may contribute to difficulties with emotional regulation, impulse control, and decision-making observed in trauma-exposed individuals (Rong et al., 2023). The amygdala, a brain region involved in processing emotions and detecting threats, shows increased reactivity in trauma-exposed individuals (Theodoratou et al., 2023). This heightened amygdala reactivity may

contribute to hypervigilance, anxiety, and exaggerated fear responses commonly seen in individuals with trauma histories. Research has also shown alterations in connectivity between the amygdala and other brain regions, including the prefrontal cortex and hippocampus (Iqbal et al., 2023).

Other brain regions and networks affected by childhood trauma include the corpus callosum, which connects the two hemispheres of the brain, and the default mode network, which is involved in self-referential thinking and memory. Alterations in these structures and networks may contribute to the wide range of cognitive, emotional, and behavioural difficulties observed in trauma-exposed individuals (Miller et al., 2017).

B. Stress Response Systems

Childhood trauma can profoundly affect the development and functioning of stress response systems, particularly the hypothalamic-pituitary-adrenal (HPA) axis (Pervanidou et al., 2020). The HPA axis is a neuroendocrine system that regulates the body's response to stress through the release of cortisol and other stress hormones. In healthy individuals, the HPA axis shows a diurnal rhythm, with cortisol levels peaking in the morning and declining throughout the day (Knezevic et al., 2023; Montoliu et al., 2020).

Research has shown that childhood trauma can disrupt the normal functioning of the HPA axis, leading to either hyperactivity or hypoactivity of the system (Niu et al., 2025). Some trauma-exposed individuals show elevated baseline cortisol levels and exaggerated cortisol responses to stress, while others show blunted cortisol responses. These alterations in HPA axis functioning have been associated with increased risk of mental health problems, including PTSD, depression, and anxiety (Carpenter et al., 2007).

The autonomic nervous system, which regulates involuntary bodily functions such as heart rate and blood pressure, is also affected by childhood trauma (Huang et al., 2024). Trauma-exposed individuals may show alterations in autonomic functioning, including increased resting heart rate, reduced heart rate variability, and exaggerated physiological responses to stress. These alterations may contribute to hyperarousal symptoms and increased risk of cardiovascular disease(Sumner et al., 2023).

C. Inflammation and Immune Function

Emerging research has shown that childhood trauma can have lasting effects on inflammation and immune function. Trauma-exposed individuals show elevated levels of pro-inflammatory markers, such as C-reactive protein and interleukin-6, which persist into adulthood (De Bellis & AB, 2014). This chronic low-grade inflammation has been linked to increased risk of both mental and physical health problems, including depression, cardiovascular disease, and autoimmune disorders (Palmer et al., 2024).

The mechanisms underlying the link between childhood trauma and inflammation are not fully understood but may involve alterations in stress response systems, changes in health behaviours, and epigenetic modifications (Cattaneo et al., 2015). Research has shown that stress hormones can influence immune function, and chronic activation of stress response systems may lead to dysregulation of inflammatory processes

(Lima et al., 2018).

Childhood trauma has also been associated with alterations in cellular immune function, including changes in the number and activity of immune cells. These alterations may increase vulnerability to infections and other health problems (Chen et al., 2021). Research in animal models has shown that early life stress can have lasting effects on microglial function, which plays a critical role in brain development and immune function (Cattaneo et al., 2015).

D. Epigenetic Changes

Epigenetic mechanisms, which involve changes in gene expression without alterations to the DNA sequence itself, have emerged as an important pathway through which childhood trauma can have lasting biological effects (De Bellis & AB, 2014). Research has shown that childhood trauma is associated with epigenetic modifications, particularly DNA methylation, in genes involved in stress response, immune function, and neurodevelopment (Peng et al., 2018).

These epigenetic changes may help explain how early adverse experiences can have long-lasting effects on health and development. Importantly, some research suggests that epigenetic modifications may be reversible, offering potential targets for intervention (Chen et al., 2021). However, more research is needed to fully understand the role of epigenetic mechanisms in the long-term effects of childhood trauma and the potential for epigenetic interventions (Yang et al., 2013).

E. Long-Term Psychological Outcomes

Children exposed to adversity are about twice as likely to develop a mental disorder, with risk increasing as adversities accumulate, and this vulnerability often persists from adolescence into adulthood (Cotter & Yung, 2017). Childhood trauma is also linked to poorer educational attainment, reduced social and occupational functioning, chronic physical illness, and higher risk of premature mortality (Merrick et al., 2017).

Chronic inflammation is a key biological pathway through which early adversity becomes embedded in the body, increasing susceptibility to depression, anxiety, cardiovascular disease, and type 2 diabetes (Berens et al., 2017). Developmental trauma is frequently associated with later complex post-traumatic stress disorder, mood, anxiety, personality, and substance use disorders, along with significant impairment in relationships, education, and employment (Lippard & Nemeroff, 2019). In childhood, trauma commonly presents as post-traumatic stress disorder—with re-experiencing, avoidance or emotional numbing and hyperarousal, while acute stress disorder may precede PTSD if symptoms persist beyond four weeks (Cruz et al., 2022).

Rather than leading to a single diagnosis, childhood trauma is typically linked to comorbid conditions such as depression, phobias, substance misuse, and behavioural disorders, contributing to long-term difficulties in personality development, revictimisation, intergenerational transmission of trauma, and challenges in forming and maintaining intimate relationships (Iacono et al., 2021).

F. Protective Factors and Resilience

Several factors can increase the risk of negative outcomes following childhood trauma exposure. The severity and chronicity of trauma are among the most important risk factors, with more severe and prolonged trauma associated with worse outcomes (McLaughlin & Lambert, 2017).

The type of trauma also matters, with certain types of trauma, such as sexual abuse and exposure to violence, associated with particularly severe psychological consequences (Hogg et al., 2023).

The age at which trauma occurs can also influence outcomes. Trauma exposure during early childhood, a period of rapid brain development and heightened plasticity, may have particularly pronounced and lasting effects (Kılıç et al., 2024). However, trauma at any age can have significant impacts, and adolescence represents another period of heightened vulnerability due to ongoing brain development and social-emotional changes. Family factors can also influence outcomes following trauma exposure (Leal & Silvers, 2020). Children who experience trauma in the context of family dysfunction, including parental mental health problems, substance abuse, or domestic violence, are at increased risk of negative outcomes. Lack of support from carers following trauma disclosure can also increase risk (Woods-Jaeger et al., 2019).

Socioeconomic factors, including poverty, neighbourhood violence, and lack of access to resources, can increase both the risk of trauma exposure and the risk of negative outcomes following trauma (Rosen et al., 2018). Children living in poverty may experience multiple forms of adversity, including trauma, which can have cumulative effects on development and mental health (Tarshish et al., 2024).

Individual factors, such as pre-existing mental health problems, cognitive difficulties, or temperamental characteristics, can also influence vulnerability to the effects of trauma (Nurius et al., 2013). Family factors are among the most important protective factors for trauma-exposed children. A secure attachment relationship with at least one caring adult can buffer the effects of trauma and promote resilience (McLaughlin & Lambert, 2017). Supportive, responsive caregiving following trauma exposure can help children process their experiences and develop healthy coping strategies. Family stability, positive family relationships, and effective parenting practices are also protective (Crouch et al., 2018).

Community and social factors can also promote resilience. Supportive relationships with teachers, mentors, or other adults outside the family can provide additional sources of support and positive role models (Luthar & Cicchetti, 2000). Cultural factors may also play a role in resilience. Cultural beliefs, practices, and community support systems can provide sources of meaning, identity, and support that promote resilience in the face of adversity (Janousch et al.,

2020). However, cultural factors can also increase risk, such as when cultural norms discourage help-seeking or when stigma surrounding mental health prevents access to services (Çetrez et al., 2021).

5. Intervention and Therapeutic Approaches

A comprehensive assessment of childhood trauma requires multiple methods, including clinical interviews, behavioural observations, standardised measures, and symptom-specific questionnaires (Chemtob et al., 2016). Commonly used tools such as the Child Post-traumatic Stress Reaction Index and the Child PTSD Symptom Scale help evaluate trauma-related symptoms, while primary care practitioners contribute to early identification, psychoeducation, and referral to specialised services (Gillihan et al., 2012).

Screening must be developmentally sensitive, as children may lack the language or cognitive capacity to describe their experiences (Keeshin et al., 2020). Parents, teachers, and school counsellors play a crucial role because they can observe behavioural and emotional changes that indicate possible trauma exposure (Crusto et al., 2010). Identification is often complicated by variability in symptom presentation, misattribution of difficulties, reluctance to disclose due to shame or fear, and limited adult awareness; therefore, professional training, routine screening, and safe environments for disclosure are essential (Chemtob et al., 2016).

A. Trauma-Focused Cognitive Behaviour Therapy (TF-CBT)

School-based intervention frameworks emphasise that trauma reactions differ across children and that even less extreme events or multiple co-occurring adversities can produce complex symptoms; therefore, staff must recognise cumulative trauma and its impact (Kurtz et al., 2021, Periyasamy et al., 2025)

B. Play Therapy

Healing is supported by creating a safe and predictable environment through routines, consistent rules, reliable adult support, and honest, developmentally appropriate communication (Cohen & Polack, 2018).

C. Attachment-Based Interventions

Positive, trusting relationships with teachers, counsellors, peers, and other adults, characterised by undivided attention and calm, consistent responses, are central to recovery (Holden & Sellers, 2019).

D. Family-Based Interventions

The family can either buffer or intensify trauma effects; carer maltreatment, low responsiveness, attachment disruption, and household dysfunction increase risk for complex trauma, whereas supportive caregiving restores safety and regulation, especially when trauma occurs within the home (McLaughlin et al., 2020).

E. School-Based Mental Health Programmes

Strength-focused practices—affirming self-worth, recognising resilience, encouraging emotional expression, and helping children develop self-regulation—promote recovery and growth. Providing time for relationship-building and maintaining on-site resources such as trauma screening tools (e.g., ACEs) and referral pathways further support trauma-informed care (Stephenson & Yost, 2023).

Overall, these approaches highlight the need for trauma-informed environments that prioritise safety, supportive relationships, and the development of coping and resilience (DeCandia & Guarino, 2020).

6. Implications for Mental Health Professionals, Educators, and Policy

School counsellors and personnel play a key role in identifying trauma symptoms, providing support, and preventing retraumatisation, with early identification, comprehensive assessment, and timely evidence-based intervention essential for reducing long-term psychological harm (Herrenkohl et al., 2019). Trauma-informed care requires recognising the high prevalence of trauma, understanding its developmental and behavioural impact, integrating this knowledge into everyday practice and policy, and actively avoiding retraumatisation (Nguyen-Feng et al., 2025).

Greater awareness of childhood trauma is needed among all professionals working with children—including educators, healthcare providers, child welfare workers, and juvenile justice personnel—supported by training in trauma symptoms, trauma-sensitive communication, and the creation of safe, supportive environments (Lyons & Fernando, 2023). Strengthening child protection systems through adequate funding, prevention and intervention programmes, child-centred policies, and intersystem coordination is essential to ensure accessible, comprehensive services for trauma-affected children and families (Fishbein et al., 2023, Periyasamy et al., 2024).

A. Discussion

Childhood trauma has long-term biological, psychological, and social effects, increasing risk for PTSD, depression, anxiety, substance use, and chronic physical illness through interconnected developmental and neurobiological disruptions (De Bellis & AB, 2014). Early identification and evidence-based, trauma-focused interventions are therefore essential (DeCandia & Guarino, 2015).

Outcomes depend on the balance between risk and protective factors. Severity of trauma, early exposure, carer difficulties, domestic violence, and socioeconomic adversity heighten vulnerability, whereas secure attachment, emotionally responsive carers, adaptive coping, supportive schools, positive peer relationships, and access to services promote resilience (Masten & Barnes, 2018).

Cultural context shapes trauma expression, stigma, and help-seeking, highlighting the need for culturally responsive trauma-informed care (Livingston et al., 2025). However, research remains limited by WEIRD samples, insufficient longitudinal and implementation studies, and a need for greater focus on resilience processes and intergenerational interventions (Siriwardhana et al., 2014).

7. Conclusion

With long-term implications on development, neurobiological functioning, and mental, physical, and interpersonal well-being, childhood trauma is a significant public health problem (Cross et al., 2017). These results,

however, are not predetermined; timely evidence-based treatments and consistent, supportive caregiving can mitigate hardship and foster resilience (Shonkoff et al., 2021).

A comprehensive, trauma-informed strategy is necessary to address childhood trauma (Burke, 2024). Strengthening carer-child interactions is particularly important when trauma occurs inside the family, and early screening, thorough evaluation, and therapies like trauma-focused cognitive behavioral therapy lessen the severity of symptoms. Recovery is further supported and retraumatization is prevented by trauma-informed schools, healthcare systems, and child-serving organizations (Connell et al., 2018).

In order to enhance access and results, prevention also requires tackling structural variables including poverty, community violence, and inequality in addition to ongoing staff training, research, and culturally sensitive treatment (Nguyen-Feng et al., 2025). Therefore, coordinated intervention across sectors is necessary to guarantee secure, stable, and loving environments for all children and lessen the long-term impact of childhood trauma (Fishbein et al., 2023).

A. Future Directions for Research

To elucidate causal pathways, pinpoint intervention-sensitive times, and investigate biological processes such epigenetic, inflammatory, and stress-response alterations, future research should employ longitudinal designs (Chen et al., 2021). In addition to preventative and implementation studies to support trauma-informed practices in actual systems, comparative effectiveness research is required to identify which interventions are most successful for certain trauma types and groups. Technology-based service delivery, intergenerational and two-generational interventions, and culturally appropriate therapies for underprivileged and diverse groups are other priority topics (Green et al., 2014).

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