



# Impact of Childhood Abuse on Cognitive Development: A Systematic Review

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DOI: <https://doi.org/10.55248/gengpi.5.0524.1432>

## ABSTRACT

Abuse is a painful condition involving abuse and neglect. This harassment and neglect includes acts of harm, threats, acts of negligence, and plunder. This systematic review aims to analyze 16 international journals regarding the impact of violence against children on cognitive development. The results of a systematic review show that violence that occurs in children can have various dangerous impacts on individuals in adulthood. Types of violence are abuse (physical, sexual, and emotional) and neglect (physical and emotional). The impact of violence on children affects the performance of the brain's executive functions, namely memory function, attention function, concentration, autobiographical memory, worsening organization of behavior, and worsening processing of information and emotions. It is recommended for further research to conduct research on efforts to prevent violence against children in the family.

Keywords: Abuse, Child, Cognitive, Review

## 1. Introduction

Violence is a painful condition that involves abuse and neglect (Kim-Spoon et al., 2021). Harassment is an act involving harm, or the threat of harm, while neglect refers to an act of negligence involving deprivation. Various types of violence including physical abuse, sexual abuse, and neglect in childhood will show deficits in executive function and reasoning (Davis et al., 2019). Child sexual abuse can include sexual acts, abusive sexual contact, or non-contact sexual abuse (Chiasson et al., 2022). Violence committed can be a potential stressor that can cause trauma and disorders related to the stressor. The existence of executive function dysfunction in individuals who experienced violence during childhood has led to consistent findings that these traumatic events can increase the risk of suicidal ideation, plans and attempts (Gaweęda et al., 2020).

Experiencing violence in childhood causes a person to become an individual who is vulnerable to adverse consequences that have the potential to persist for a long time which have an impact on cognitive function and psychological well-being (Chiasson et al., 2021). Exposure to abuse in childhood is common, with between 30% and 50% of adults indicating that they experienced violence in the form of abuse, neglect, or both when they were children (Davis et al., 2019). Early abuse has been linked to a variety of health impacts that persist into adulthood, including cognitive dysfunction. Research related to the experience of violence during childhood on gender differences, reveals that men and women have innate differences in brain structure, namely changes in important areas in the decision-making process (Ritchie et al., 2018). In addition, individuals with a history of childhood abuse will be more sensitive to detecting threats from faces that are ambiguous to them, proving the ease of processing threatening information (Iffland & Neuner, 2020). Children who are physically neglected will show difficulty in differentiating emotional expressions, while children who are physically abused tend to show a response bias towards angry facial expressions.

Based on the research explanation above, it shows the negative impact of violence in children on cognitive development. These results indicate the danger of violence in children on cognitive abilities at a later age. Therefore, a systematic review was carried out with the aim of filling the gap in reviews regarding the large number of cases of child violence, but the resulting dangers are also very serious and to see how the dynamics of child violence variables can affect a person's cognition. The hope is that this systematic review research can provide information about the various impacts of the dangers of committing violence on children, so that parents or caregivers can pay more attention to children.

## 2. Method

The process carried out when carrying out a systematic review in this research is the first to carry out planning starting from identifying and developing. The second is conducting a review which consists of a journal search process, selecting journals based on title to full text, and making a report. Review planning begins with creating research questions using the PCC (Population, Concept, and Context) systematic review question formulation. The question in this research is "What is the impact of child violence on cognitive development?" Then the author determines search keywords and designs search

procedures. The author obtained terms taken from the research question and created the terms more broadly in a more comprehensive search word list. The search keywords used were abuse, sexual harassment, violence, hardness, child, child children, childhood, son, cognitive, and brain. These search words are used to search for articles in the Scopus and Google Scholar databases.

The next stage is that all journals are checked for duplication using Mendeley by the author and Rayyan. Then the author filtered all journals that had passed the duplication check based on title by getting 172 journals. Next, the author screened all journals that had passed title selection based on abstracts by obtaining 53 journals. After that, the journals were analyzed based on the complete version of the entire journal's contents and produced 16 journals that discussed the impact of child violence on cognitive development. The graph of the journal selection flow can be seen in Figure 1. The author determined the limitations in this review, namely (1) the journal discusses violence against children as the dependent variable and cognitive as the independent variable, (2) the subject is someone who had experience of violence as a child, (3) quantitative and qualitative research types, (4) international and English-language journals, and (5) research conducted from 2019 to 2023.

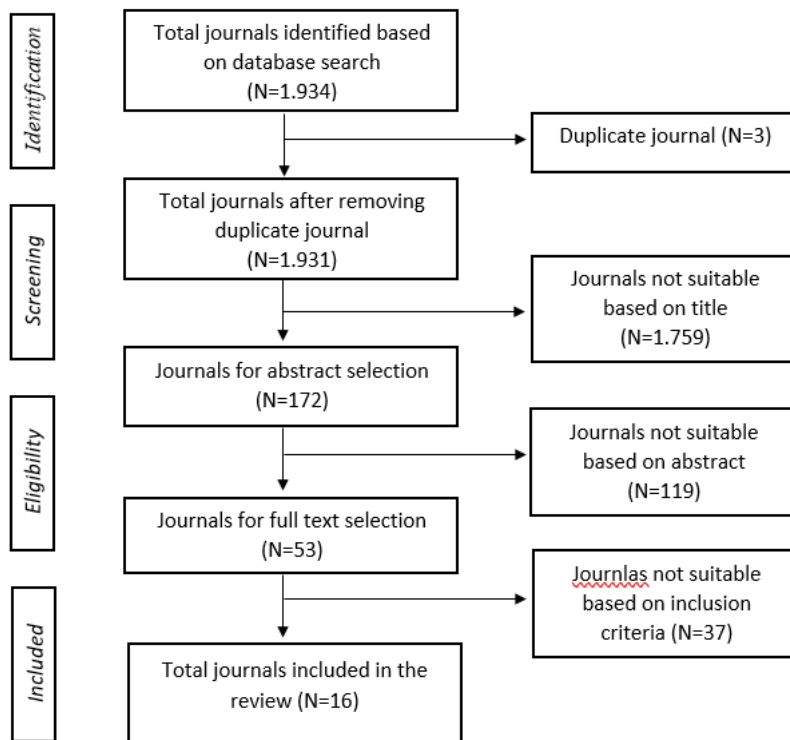


Figure 1. PRISMA Graph for Journal Selection Flow

### 3. Result and Discussion

Violence against children can be grouped into two types, namely abuse and neglect (Kim-Spoon et al., 2021). Harassment includes physical abuse such as kicking, hitting and pushing; sexual harassment such as committing violence using sexual tools in an indecent manner; and verbal abuse such as swearing, speaking in a high pitched voice, and bad-mouthing. Meanwhile, neglect is also divided into two types, namely physical neglect and emotional neglect. An example of physical neglect is that children are not provided with basic necessities, including housing, and their presence is often ignored. Emotional neglect can include parents who don't care about their child's feelings when they are sad, angry, or happy.

Table 1. List of types of violence and the impact of violence in childhood

No	Writer	Subject	Types of Violence	Impact of violence	Country
1	Chiasson et al., 2022	15 male	childhood Sexual Abuse	poor autobiographical memory, difficulty regulating behavior and emotions	Canada
2	Davis et al., 2019	770 adults, aged 40-65 years	childhood sexual, physical, and emotional abuse	symptoms of depressed mood, poor cognitive performance, poor health behavior, sleep disturbances	Amerika Serikat

3	Gaweęda et al., 2020	4088 young adults, aged 18-35 years	childhood emotional, physical and sexual abuse	cognitive biases, depression, mood disorders, possible suicidal plans and ideation	Polandia
4	Hawkins et al., 2021	132 teenagers to adults	physical and sexual abuse, neglect	low short-term memory and long-term memory, poor academic performance,	Amerika Serikat
5	Iffland & Neuner, 2020	67 adults, ages 18-65 years	emotional abuse, emotional neglect, physical abuse, physical neglect, and sexual abuse	changes in attention processes and emotional processing, high sensitivity to threat	Jerman
6	Kim-Spoon et al., 2021	167 teenagers, aged 13-14 years	1. abuse : physical, sexual, verbal, and non-verbal 2. neglect : physical and emotional	decreased fronto-parietal activation (concentration, attention, decision making), accelerated stress	Amerika Serikat
7	Lyons-Ruth et al., 2023	57 pairs of mother and baby	emotional, physical, and sexual abuse, and emotional and physical neglect	impaired emotional regulation or response to stress, autism spectrum or other neurological disorders	Amerika Serikat
8	Marques et al., 2020	49 children, aged 7-12 years	sexual abuse	difficulty concentrating, anxiety, difficulty sleeping, attention and memory worsen	Brazil
9	Montoya-Arenas et al., 2022	59 male and female, aged over 49 years	child abuse and sociopolitical violence	decreased memory performance, poverty of executive performance, triggers feelings of insecurity	Colombia
10	Moreno-Manso et al., 2021	74 children, aged 7 and 16 years	physical abuse, physical neglect	executive performance difficulties such as organizing behavior, planning and attention	Spanyol
11	Peterson et al., 2019	79 pairs of mothers and babies (0-3 years)	Intimate partner violence (IPV)	poor development of children's expressive language	Amerika Serikat
12	Puetz et al., 2020	1144 young adults	childhood abuse, childhood neglect	increased threat reactivity of the ventral amygdala (emotion regulation), increased reactivity of fronto-parietal cortical networks (behavioral coordination)	Amerika Serikat
13	Sanz-Martin et al., 2019	20 children, aged 12-15 years	child sexual abuse	more executive function problems, higher cortisol levels	Mexico
14	Strathearn et al., 2020	5200 children, aged 14-21 years	psychological maltreatment, sexual abuse, physical abuse, neglect, emotional abuse	attention problems, PTSD symptoms, depression, externalizing behavior problems, experiencing visual hallucinations	Amerika Serikat
15	Tozzi et al., 2020	3872 participants, aged 13-89 years	childhood maltreatment	decreased memory, attention, or executive function, depression, anxiety	Amerika Serikat
16	Weissman et al., 2019	149 teenagers, ages 8-17 years	physical abuse, sexual abuse, or domestic violence	stress sensitization, depression, disturbances in memory function, disturbances in emotional regulation	Amerika Serikat

The review found several impacts resulting from violence during childhood, creating traumatic events for individuals. Table 1 shows some of the impacts of violence in children that affect a person's cognitive development. Some of the impacts that a person will experience with exposure to violence as a child include poor autobiographical memory, symptoms of depressed mood (Davis et al., 2019), cognitive biases and depression (Gaweęda et al., 2020), low short-term memory and long-term memory (Hawkins et al., 2021), high sensitivity to threat (Iffland & Neuner, 2020), decreased concentration, attention, and decision making (Kim Spoon et al., 2021), impaired emotional regulation or response to stress (Lyons-Ruth et al., 2023), anxiety and

difficulty sleeping (Marques et al., 2020), decreased memory performance and triggers feelings of insecurity (Montoya-Arenas et al., 2022), difficulties organizing behavior, planning and attention (Moreno-Manso et al., 2021), poor development of children's expressive language (Peterson et al., 2019), threats in memory formation and inappropriate organization of behavior (Puetz et al., 2020), many executive function problems (Sanz Martin et al., 2019), PTSD symptoms, externalizing behavior problems, and experiencing visual hallucinations (Strathearn et al., 2020), decreased memory abilities, attention, or executive function, and anxiety (Tozzi et al., 2020), and stress sensitization, depression, disturbances in memory function, and disturbances in emotional regulation (Weissman et al., 2020).

Autobiographical memories have become a nightmare for individuals who experienced childhood abuse. This happens because childhood is a golden period, when individuals are able to absorb all the information in their learning through social-cognitive means. If the memories he gets are only about violence for him, then in adulthood the individual will have less memories about themselves as a child. The individual may lose memory of how he or she passed through childhood. Research conducted by Chiasson (2022) and his friends in 2022 involved 15 men who had experienced childhood sexual abuse and had been diagnosed with PTSD (post traumatic stress disorder). The results prove that sexual abuse during childhood has an impact on impaired autobiographical memory (AM) for traumatic events, even in men who experience PTSD and those who do not experience PTSD.

Research by Hawkins (2021) also discusses the relationship between violence and decreased cognitive function in aspects of long-term and short-term memory. The subjects of this research were 132 teenagers with experiences of violence who were studied regarding their cognitive development until adulthood. The participants were given tasks to remember when they were adults. The result is that when an adult is 31-42 years old, a person has a long-term memory score that decreases due to exposure to violence since childhood. Apart from that, another study that looked at the impact on memory function was Montoya (2022). In 81% of subjects experiencing at least one incident of child abuse, it was associated with decreased performance in executive planning, including decreased memory performance. This is in line with Puetz's (2020) research which found that there were obstacles to memory formation in individuals who experienced violence as children.

Research by Davis (2019) and his friends involved 770 adults aged 40-65 years who had experienced violence including sexual, physical and emotional abuse, showing the impact of violence on the individual's immune system. Childhood abuse predicts high levels of IL 6 (Interleukin-6). IL-6 is a cytokine produced by immune system cells in response to infection, injury, or inflammatory conditions. Sexual abuse of children can cause various psychological and physical impacts. The body's reaction to stress or trauma, including sexual abuse, involves a number of biological and neurochemical changes. Traumatic experiences, including sexual abuse, can trigger a neuroendocrine response that causes the release of various chemicals in the brain and body, such as cortisol and certain neurotransmitters. This response can impact various body systems, including the immune system. It is important to remember that the body's reaction to child sexual abuse is complex and involves the interaction of multiple biological, psychological, and social components. IL-6 may be part of the body's immune response to stress and related inflammation. Results from the study also significantly demonstrated that IL-6 and depressive mood symptoms mediated the relationship between exposure to childhood abuse and poorer cognitive performance.

One of the worsening cognitive performance is cognitive bias. Gaweeda (2020) has findings regarding cognitive biases in individuals who have experienced violence as children. Where cognitive biases have mediated individuals to have possible suicidal plans and ideas. A total of 4088 young adults aged 18-35 years were subjects in the research and were selected based on the criteria that individuals (subjects) had experienced violence as children. Those who experienced five or six traumatic events during childhood were five times more likely to develop suicidal thoughts and plans and attempt suicide, compared to those who did not experience depression. Additionally, study participants with high levels of cognitive bias experienced a fourfold increased likelihood of suicidal ideation and suicide plans, and were over four and a half times more likely to make a suicide attempt.

A sharp developmental decline in fronto-parietal activation in the brain also occurs in children who experience violence (Kim-Spoon et al., 2021). Fronto-parietal is an interaction between the frontal lobe (at the front) and the parietal lobe (at the top) of the brain. The fronto-parietal network is a nervous system that involves both lobes and has an important role in concentration and attention. Attention and Concentration. The fronto-parietal network plays a role in controlling attention and concentration. This function helps individuals to focus on a specific task or stimulus while ignoring distractions. Individuals who experience exposure to violence as children will experience decreased fronto-parietal activation, so that maintaining attention and concentration tends to experience problems. Individuals may become more easily distracted or have difficulty focusing on certain tasks. In line with research by Marques (2020), children with a history of sexual abuse (SA) show low performance in visual attention or task switching and memory.

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#### 4. Conclusion

Violence during childhood will have a major influence on changes in a person's life at a later age, especially in cognitive aspects such as memory decline, worsening autobiographical memory, decreased concentration and attention, and the emergence of suicidal plans and ideas. The most common impact found from this research is a decrease in memory function in a person after the adult phase. The disturbances that occur range from the formation of memory in adulthood which experiences obstacles, long-term and short-term memory that worsens, and the reception of social-cognitive information that is full of threats, fear and anxiety. The findings in this research can be used as reflection material for parents or caregivers in providing parenting practices to their children so that they can avoid violence perpetrated against children.

### Acknowledgements

Thank you to my supervisor in the scientific paper writing course, Mrs. Dr. Nida Hasanati, M.Si. who have provided direction and input during the process of preparing this scientific work. I also thank Prof. Dr. Iswinarti, M.Si. and Mr. Surahman, M.Si who introduced and provided training on good systematic review research procedures. I would like to thank you for your guidance and suggestions in order to complete the systematic review.

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