

Long-term effects of adverse childhood experiences on health: A review of key social determinants and intervention strategies

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Abstract. The impact of adverse early childhood experiences (ACEs) on an individual's health has far-reaching and long-lasting implications, including a wide range of mental health, psychological well-being and social relationships. This paper uses a literature review approach to explore the long-term impact of adverse experiences on health, analyse the key social determinants involved, and discuss targeted interventions to better protect children's health. ACEs lead to health outcomes that are further exacerbated by social determinants such as socio-economic status, level of parental education, community support systems, and cultural and policy contexts. Effective interventions for adverse health effects require a multilevel and targeted approach, and the current study highlights the urgent need for multisectoral collaboration to evaluate and optimise intervention strategies. This review demonstrates the long-term impact of ACEs on health and highlights the importance of addressing ACEs by analysing social determinants through an evidence-based approach to promote the health and well-being of affected children.

Keywords: Adverse Early Childhood Experiences (ACEs), social determinants of health, Children's health, mental health, intervention, violence.

1. Introduction

Nowadays, there is a growing concern about children's health and mental health, and in recent years many studies have confirmed significant associations between ACEs and a wide range of chronic diseases and psychological disorders in adulthood [1-2]. Experiences in the early stages of the human life cycle have a profound impact on their future health. Family, social and environmental factors all play an important role in a person's physical and mental health during this critical period of growth. However, for some children, early life may not be a safe, stable and supportive environment. The relationship between Adverse Childhood Experiences (ACEs) and health is complex and varied, not only affecting children's development and well-being but also potentially carrying over into adulthood, with long-term impacts on individuals and societies. ACEs include experiences of domestic violence, abuse, neglect, and family dysfunction, which significantly increase the risk of developing chronic diseases, mental illnesses, and behavioural problems. In the broader social context, ACEs are not only individual family problems but also reflect macro issues such as socioeconomic inequality and unequal distribution of educational resources. We note that there are significant differences in the prevalence

and extent of impact of ACEs in different socio-economic contexts. Meanwhile, the importance of factors such as social policies, community support and educational interventions in mitigating the negative impacts of ACEs is gradually emerging. Therefore, this paper aims to explore the long-term impact of ACEs on health, analyse the key social determinants involved, and explore targeted interventions to provide strategies to better protect children's health.

2. Definition of Adverse Childhood Experiences

Adverse Childhood Experiences (ACEs) are negative events or traumatic experiences that occur during childhood and adolescence that can have long-term effects on a child's physical and mental health. These ACEs may include domestic violence, bullying in schools, abuse, parental divorce, etc. ACEs are statistically linked to at least five of the top ten causes of death, and preventing ACEs can affect up to 44% of depressed adults [3]. Several studies have also shown that people with adverse childhood experiences tend to have higher mortality rates and greater physical and mental health risks in adulthood [4]. The main long-term health effects of adverse childhood experiences include mental health problems, physical health problems, behavioural problems and social relationship problems. Adverse childhood experiences are strongly associated with mental health problems such as anxiety, depression, and post-traumatic stress disorder [5]. Secondly, it can also lead to a range of physical health problems such as growth retardation, impaired immune system functioning, and increased risk of chronic diseases [5]. There are also behavioural problems such as aggressive behaviour, self-injurious behaviour, drug use [6]. Finally, the establishment and maintenance of social relationships can also be affected, which can lead to social isolation and further exacerbate health problems [7]. Understanding and responding to adverse childhood experiences is therefore crucial for the promotion of health and well-being.

3. Social Determinants of Health in Adverse Childhood Experiences

3.1. Family Environment

In understanding the emergence and process of ACEs, there is a close relationship between the relevant social determinants and adverse childhood experiences, the relevant social determinants largely shape the environments that individuals are exposed to during childhood and directly or indirectly influence their health and well-being. Firstly the family environment is central to children's lives and the home is the primary place where children live, so the family has a profound impact on children's growth, development and health [8]. Adverse family environments, such as family conflict, domestic violence, and mental health problems of family members, can lead to children facing adverse experiences such as abuse and neglect. Kong et al. [9] showed that such behaviours as parental childhood violence and abuse lead to increased vulnerability of children when they face stressful life events later in life. Increased vulnerability exposes children to more mental health and physical health challenges, which raises health risks later in life. The prevalence of ACEs due to parental splitting was particularly high in a Brazilian cohort of a study of adolescents with adverse childhood experiences [10]. It has been shown that children growing up in good family environments have a much lower risk of depression, aggressive behaviour and reduced emotional problems. A good family environment provides emotional support and a sense of security, leading to healthy physical and mental development of children [8]. Therefore factors such as intimacy, family support, and family stability within the family can influence an individual's early experiences and subsequent health.

3.2. Socio-economic Status

Secondly socio-economic status is also an important social determinant of ACEs. In a Brazilian study of factors associated with adolescents' adverse childhood experiences, it was shown that children in lower levels of poverty and socioeconomic status were more than six times more likely to experience four or more ACEs than children in the highest SEP category [10]. Economically disadvantaged families may be more vulnerable to poverty and social exclusion, which can lead to children being exposed to a variety of adverse experiences over time, such as physical abuse, emotional neglect, etc. Parental

unemployment has been associated with child neglect, as parental unemployment may place significant financial strain on the family, unemployment as an economic factor may lead to children being exposed to emotional and physical neglect, which can hurt children's health and development [11]. Unemployment can be a contributing factor to alcohol abuse [12], and alcohol-abusing behaviour increases the risk of violent behaviour. Some studies have shown that children of alcoholic parents are at higher risk of developing mental and behavioural disorders compared to other children [13]. However, there is no direct evidence to suggest that there is necessarily a relationship between alcoholism and low socioeconomic status, and parental alcoholism can be analysed as a family environmental factor in children's adverse experiences. In addition, children in low socioeconomic status environments may not have access to adequate material resources, medical care, and emotional support, making children more vulnerable. Thus there is a strong relationship between economic factors and ACEs. Economic hardship may increase the risk and impact of adverse experiences on children.

3.3. Education

The level of education is one of the social determinants of health and is closely linked to the economic situation of the family. Firstly school is one of the main places where children live and the school environment is crucial for their development and health. Some studies have shown that adolescents with ACE are more likely to experience school suspensions and low academic achievement [14], and poor school environments may increase children's risk of facing adverse experiences such as bullying, violence, and sexual harassment at school. Of these, school bullying is a major public health problem and also occurs more frequently. Positive relationships between children and their peers are protective against externalising and internalising behaviours [15]. Numerous studies have demonstrated the far-reaching effects of bullying on children's health, with severe bullying behaviours leading to suicidal behaviour by the child [16]. Therefore a good school environment and high quality level of education will reduce the incidence of these bullying behaviours in schools. In addition, the quality of education and unequal distribution of resources in schools may lead to children facing unequal educational opportunities, increasing the incidence of adverse experiences.

4. Intervention

4.1. Early Preventive

The early years are the most critical for children's physical and mental development, and it is vital to implement interventions targeting ACEs. Bellis et al. [17] and others examined mortality and adult burden of disease associated with ACEs in England and found that it is important for improving childhood environments, providing better childhood experiences and investing in childhood health. Early investment and prevention are recognised as critical in preventing NCDs. The first focus in early prevention is on identifying high-risk families and children and identifying high-risk families and children is important for several measures. Among these GPs or clinicians play a key role in identifying early adolescent mental health problems in primary care [18], and there is research that suggests that clinicians can identify and screen for ACEs during routine physical exams and medical consultations, thus identifying some of the population at risk for ACEs [19]. Nurses are also in the best position to identify abused and neglected children and are often instrumental in the implementation of family-centred care interventions [20]. Therefore, training needs to be provided to professionals such as doctors, nurses, or social workers to help them accurately identify and respond to ACEs during diagnosis, followed by regular home visits to observe the home environment and assess potential risk factors in the family, as studies have shown that regular home visit programmes are effective in preventing recurrence of child maltreatment in the home [20]. Parenting training and support are provided to parents to include parents of high-risk families as a focus of home visits [19]. Providing parents with relevant resources and training, helps parents to create a safe and supportive home environment that is conducive to child development.

4.2. Social support

Social support is one of the important factors in ACEs interventions to reduce the risk of ACEs by enhancing family and community support networks. Psychological counselling and services can be provided to children and their parents to help individuals face the trauma and distress caused by adverse experiences. For example, through a variety of channels such as community mental health centres, medical volunteer activities, and campus counselling, to ensure that children and families have access to professional psychological support and treatment. Use cognitive behavioural therapy to help individuals understand and cope with the negative impacts of adverse experiences, with research showing that cognitive behavioural therapy can be effective in improving mental health outcomes for people who have experienced neglect or abuse [21]. Building strong family and community support networks can provide children with a safe and stable environment in which to grow up and receive timely help and emotional support in times of distress. This includes the establishment of community centres, community activities, etc.

4.3. Education and Publicity

Education and publicity are important components of ACE interventions. By raising public awareness of ACEs and their long-term effects, early identification and intervention can be facilitated to reduce the negative impacts of ACEs. A favourable educational environment and educational opportunities can provide children with the cognition and skills they need to develop, help them better cope with life's challenges and stresses, and reduce the incidence of adverse experiences. This is why mental health education is promoted in schools and communities with mental health education classes, behaviour management programmes on campus, and so on [22]. Creating a supportive environment through schools and communities helps children affected by ACEs get the necessary support and resources to give people the cognitive and emotional support they need to reduce the risk of ACEs. Through these educational and awareness measures, the long-term effects of ACEs on children and families are mitigated and public mental health is promoted.

4.4. Policies and Legislation

Improvements in child protection laws and policies can ensure that children receive timely and effective protection from adverse experiences. Specific measures include severe penalties for child abuse and domestic violence, improved child protection laws and stronger enforcement. Enforcement of laws and policies is strengthened. These measures will not only deter potential abusers but also provide necessary legal protection and support to child victims, thus reducing the occurrence of ACEs. In addition, to address the root of the problem, it is necessary to focus on and improve the socio-economic conditions of families. Financial assistance and policy support for families with low socio-economic status or in poverty, childcare or housing subsidies, and policies to enhance family financial security can alleviate financial pressure on families and improve children's living environments [22]. Further, there is a need to promote social welfare and poverty-supporting policies, including the provision of basic livelihood security, health insurance, and education subsidies, to ensure that every family, especially low-income families, can enjoy basic living and education conditions. Poverty-support policies should target poor families with economic support and employment training to help them enhance their economic capacity, thereby improving the overall environment of the family. Through these measures, not only will stress and conflicts within families be reduced, but a healthier and safer environment for children to grow up in will also be provided. Improving the socio-economic status and financial stability of families will help reduce the incidence of abuse and neglect and promote the healthy physical and mental development of children.

5. Challenges

There are many challenges to the implementation of interventions, including lack of resources, complex family and social environments, and social and cultural barriers. For example, there is a shortage of mental health professionals, especially in poor and remote areas, and studies have shown that people

living in rural areas receive psychotherapy less frequently than those living in urban areas [23]. Some interventions are difficult to replicate and accept in different communities due to cultural differences, and some families and children are reluctant to seek help [24]. Some intra-family conflicts and problems are difficult to resolve completely through a single intervention. Interventions should be universally implemented but also adapted to the needs of different situations. Currently, interventions for early adverse experiences have not been implemented and scaled up on a large scale [17]. Understanding the long-term health effects of early adverse experiences can therefore help to develop more effective health prevention and intervention strategies.

6. Conclusion

The long-term effects of ACEs have been widely researched and confirmed to be far-reaching and complex. These experiences include physical abuse, emotional neglect, domestic violence, etc. ACEs can have a long-term negative impact on an individual's health across a range of physical, psychological, and social relationships, and these health impacts are further exacerbated by the social determinants of ACEs, such as poverty, family environment, and education. The implementation of early targeted interventions is therefore of great significance to an individual's future physical and mental health. Interventions include early prevention, education and awareness, policy and legislation, and social support. All interventions work together to reduce the risk of ACEs. Future research should focus on optimising intervention strategies, enhancing their accessibility and effectiveness, and establishing long-term monitoring mechanisms to comprehensively assess the effectiveness of interventions and the direction of improvement. Through comprehensive interventions and sustained research efforts, we can respond more effectively to adverse childhood experiences, improve the long-term health of individuals, and promote the overall well-being of society.

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