

Impact of parenting on the development of chronic diseases in adulthood

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ARTICLE INFO

Keywords:

Parenting
Pediatrics
Chronic disease
Life course
Childhood

ABSTRACT

The life course theory refers to a method developed in the 1960s that utilizes a multifaceted approach to evaluate people's lives, structural contexts, and social change. Adversities in childhood are associated with a heightened risk of chronic illnesses in adulthood. Parents play an important role in developing self-esteem, self-confidence, and effective coping mechanisms in their children. We discuss the myriad adverse childhood experiences that may contribute to the development of chronic diseases in adulthood and offer several strategies aimed at mitigating the effects of adverse childhood experiences and educating parents about their responsibilities of nurturing and preparing a child for life.

Introduction

The life course is defined as “a sequence of socially defined events and roles that the individual enacts over time” and focuses on the connection between individuals from a historic and socioeconomic perspective [1]. It encompasses beliefs from a host of disciplines, specifically, history, sociology, psychology, biology, and economics [2]. Adversities in childhood including socioeconomic disadvantage, physical and sexual abuse, as well as substance abuse and violence in the household are associated with an increased risk of chronic illness in adulthood such as cardiovascular and pulmonary diseases, diabetes mellitus, obesity, and psychiatric disorders [3–6].

We propose that parents are the pivotal players in the biopsychosocial model of child development. Parents should serve as positive role models who instill self-esteem and self-regulation in their children. If children do not acquire adequate coping mechanisms, social skills, and healthy avenues to face stressful situations, they may embrace addictive and destructive behaviors. Adverse psychosocial childhood experiences disrupt the physiological response to stress leading to detrimental consequences later in life [7–11]. This report examines the relationship between adverse childhood experiences (ACE) and their effect on chronic diseases in adulthood, stress and mental health in childhood, and family dynamics. We also offer recommendations to mitigate the effects of ACE.

Biopsychosocial model of child development

The biopsychosocial model encompasses three categories, including biological (brain, genetics, and endocrine function), psychological (emotional and cognitive systems and responses), and social (spanning perceptions of self to social settings) [12] (Fig. 1). The interaction of these three domains with their inherent risks and protections in early childhood plays an important role in development. The term “gene-environment interplay” refers to the genetic factors and family processes, in particular parenting behavior, that both contribute to child adjustment and behavioral outcomes [13]. This biopsychosocial structure underscores the dynamic nature of child development.

Neville and colleagues conducted a study of an eight-week family-based training program involving lower socioeconomic status (SES) preschoolers in a Head Start preschool program [14]. The goal was to enhance academic readiness and selective attention in preschoolers while their parents underwent an intervention to reduce family stress and improve discipline. The authors reported that children who received the combined intervention (child and parent training) demonstrated significant improvements in IQ and language performance, behavior, and selective attention [14]. Additionally, parents who were involved in the intervention reported a decrease in parenting stress. These findings illustrate the importance of intervention studies targeting biopsychosocial development in children by identifying pre-existing adversities in families.

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<https://doi.org/10.1016/j.mehy.2019.01.015>

Received 4 October 2018; Accepted 23 January 2019

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Biopsychosocial Model of Child Development

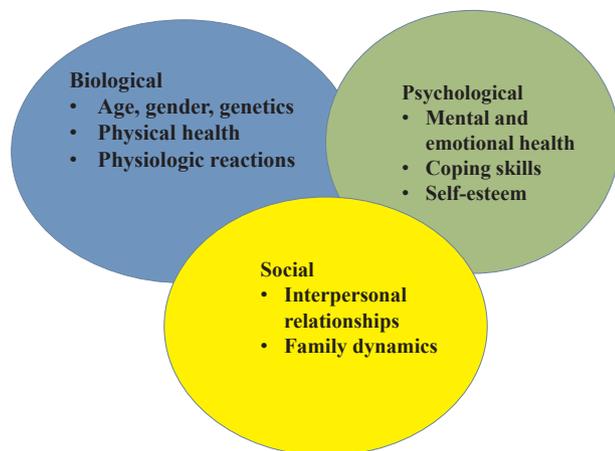


Fig. 1. Biopsychosocial model of child development. This model encompasses the biological, psychological, and social factors that interact in early childhood and play a crucial role in development.

Adverse childhood experiences

Several studies have investigated the impact of adverse childhood experiences (ACE) on developing chronic diseases in adulthood [3,5,6,15–17]. Felitti and colleagues performed the groundbreaking ACE study about the effect of emotional, physical, or sexual abuse and household dysfunction during childhood on health risk behavior and chronic disease in adulthood [6]. Of the adults who had experienced 4 or more ACE categories, there was a 4 to 12-fold increased risk of alcoholism, drug abuse, depression, and suicide attempts, a 2 to 4-fold increased risk in smoking and poor self-rated health, and a 1.4 to 1.6-fold increased risk in physical inactivity and severe obesity [6]. Other studies have reported that adults who were exposed to several negative childhood experiences were 2.6-fold more likely to develop chronic obstructive pulmonary disease (COPD) [3], 7 to 10-fold more likely to become addicted to illicit drugs [5], and were more prone to major depression, high inflammation level (indicated by high-sensitivity C-reactive protein level > 3 mg/L), and metabolic risk biomarkers (such as overweight, hypertension, high total cholesterol, low HDL cholesterol, high glycated hemoglobin, and low maximum oxygen consumption levels) [4]. A cumulative effect has been observed, specifically, the greater number of ACE increases the number of age-related chronic disease risks in adulthood [4,6,9,16].

Stress and coping mechanisms in childhood

Coping consists of both cognitive and behavioral processes and involves emotional regulation under stress [7,11,18] (Fig. 1). Inflammatory stress hormones enter a child's brain and alter the genes that are responsible for stress reactivity [10,19]. Epigenetics refers to chemical modifications to the genome that regulate gene activity and has been used to explain the association between ACE and later health problems [19]. Children and adolescents experiencing ACE and deficiencies in social and emotional development may cope by self-medicating with cigarette smoking, alcohol or drug abuse, overeating, and promiscuous sexual behaviors [4,6,11,20]. Additionally, they may possess feelings of hopelessness, personal failure, and suicidal ideation [21]. Childhood distress may affect socioeconomic success including education and employment later in life [22]. The stress response in the brain is reprogrammed to "high" in childhood under stressful situations which increases the inflammation-induced adult conditions of cancer and cardiac and autoimmune diseases [10].

In addition to adapting healthy coping mechanisms, children also

desire self-regulation as they mold their unique thoughts, behaviors, and emotions [7,11,18,20]. It has been suggested that children do not perform as many chores, contribute to society, or play outside as frequently as in the past which prevents them from acquiring self-esteem and self-worth [20]. Additionally, children who live in poverty are more likely to experience more physical stressors (inadequate housing and chaotic living environments) and psychosocial stressors (familial upheaval) which leads to heightened chronic stress and increased childhood mental health disorders [7–9,11].

Mental health in childhood

According to the National Comorbidity Survey (2010), the lifetime prevalence of Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) mental disorders in adolescents in the United States are reported as follows: anxiety 31.9%, behavior 19.1%, mood 14.3%, and substance use 11.4% [23]. Furthermore, the overall prevalence of disorders with severe impairment and/or distress was 22.2%, with a mean age of onset of 6 years old for anxiety disorders. These authors suggest that adult mental disorders often initiate in childhood, necessitating prevention and early intervention during the transition from adolescence to adulthood [23]. While childhood mental and physical health problems as well as socioeconomic status all contribute to the evolution of adult outcomes (health, education, work, and income), it has been proposed that mental health has the strongest effect [9,22,24].

Family dynamics

Family dynamics play an important role in impacting a child's development. The term "risky families" refers to families marked by conflict and aggression and relationships that are cold and unsupportive [11]. Children with these upbringings often feel alienated, detached, and lack feelings of acceptance. According to the Centers for Disease Control, the divorce rate was 3.2 per 1000 total population in the United States in 2016 [25]. Between 40 and 50% of married couples in the United States divorce, with a higher divorce rate for subsequent marriages [26]. Interestingly, the divorce rate for ages 25–39 decreased from 30 persons per 1000 married persons in 1990 to 24 persons per 1000 married persons in 2015 [27,28]. Individuals in this age group are waiting longer to get married and prefer cohabitation. It has been suggested that the end of a cohabitating relationship between adults (with own biological parents or one parent and an unrelated adult) is more stressful for children than divorce [29]. Approximately 2.5 million children currently live in cohabiting homes, an increase by 12-fold since the 1970s [29]. In her study of adolescents living in a cohabiting environment, Cavanagh reported that they were twice as likely to use drugs compared to adolescents living in an intact married family and that family structure at adolescence was the best predictor of later emotional distress [30]. Cohabiting homes are generally marked by less commitment and sexual fidelity and more domestic violence, instability, and insecurity compared to married couples or single-parent homes [29].

Education for parents

A multifactorial approach is warranted to educate parents about the negative repercussions of ACE in the development of adult chronic illnesses. A societal movement that improves the quality of family and household environments during childhood and instills healthy coping strategies are key components to ensure stability and security during childhood and adolescence. Interestingly, adult chronic diseases are not only impacted by a child's adverse experiences but also by a mother's prenatal choices. Fetal growth retardation and low birth weight have been linked to adult coronary disease [15], suggesting that a mother's decision to smoke cigarettes and engage in other risky behaviors during

pregnancy may impact her child’s health decades in the future. Furthermore, a mother’s mental health problems are strongly associated with her child’s mental health [8], necessitating close monitoring and management of a mother’s psychiatric care. With the upsurge in cohabitating, mothers should be educated about the ramifications of this unstable living environment on their impressionable children. Additionally, the financial strain experienced by impoverished families affects parenting abilities [7].

There are no billable procedure codes for pediatricians to teach positive parenting skills to parents of toddlers, an essential time when discipline and consequences for behavior are cemented [15]. However, it is the responsibility of pediatricians to educate parents about healthy eating habits and sufficient outdoor exercise for their children to prevent the lifelong risks associated with obesity.

Recommendations to mitigate the effects of ACE

A two-fold approach is the pivotal strategy to mitigate the effects of ACE. Prior to a child’s birth, parents should be educated about their impact on their child’s life. Skills-based parenting classes with tax incentives should be offered to parents-to-be, with the primary goal of preventing ACEs before they occur. Parents will learn how to become better parents by serving as positive role models, instilling self-esteem and self-regulation, developing social skills, acquiring adequate coping mechanisms, and promoting healthy lifestyles (Fig. 2). These ideal parenting practices speculatively decrease the risk of chronic diseases in adulthood such as cardiovascular and pulmonary diseases, diabetes mellitus, obesity, and psychiatric disorders.

If parents do not acquire the necessary education and do not practice the preventative measures prior to having their children, the child may develop “holes” marked by anxiety, depression, and low self-esteem (Fig. 2). Children may desire to “fill the holes” with destructive behaviors such as smoking, alcohol, drugs, sex, an excessive amount of food, and a lack of exercise. The key is to identify the stressors of anxiety, depression, and low self-esteem in children before they engage in detrimental behaviors. Once the stressors are identified in these at-risk children, intervention and healing should ensue with support from a wide array of sources, including additional parent education, community, church, school, pediatricians, and social workers.

Community capacity refers to the empowerment of communities to come together, share responsibility for decreasing crises, improve services, and create healthy environments for families and children [31]. It has been shown that building community capacity has a positive impact

on decreasing numerous child and family hardships and reducing ACE prevalence [31]. Several factors play an important role in mitigating the effects of ACE, including enhancing parenting skills in mothers who have a low SES or suffer from substance abuse, alleviate toxic stress within families, and establishing high-quality childcare for families of a low SES [12]. Funding to strengthen the student-teacher relationship and develop programs to provide early intervention for at-risk children are warranted.

One positive role model can serve as a beacon of hope and inspiration as the child searches for direction and meaning in his/her life. Intervention and healing speculatively decrease the likelihood of chronic diseases in adulthood.

Conclusion

Children and adolescents are not static beings but are constantly evolving. Social, emotional, and medical problems are interconnected throughout the continuity of the lifespan. Childhood is a critical period in the development of mental and physical disease, and adverse childhood experiences and unstable family environments contribute significantly to the morbidity and mortality associated with chronic adult illnesses. Child maltreatment (physical and sexual abuse as well as psychological abuse and neglect) has been linked to emotional, behavioral, and physical health problems [32]. It has been reported that the total lifetime estimated financial costs associated with one year of confirmed cases of child maltreatment is approximately \$124 billion in the United States [32]. Not only are these costs staggering, but the adults who have borne the brunt of childhood traumatic experiences live with these permanent scars and are at risk of developing chronic mental and physical illnesses as a sequelae. Public health programs are warranted to educate parents about providing the healthiest family environment possible for their children and serving as admirable role models. Furthermore, communication represents a key component in parenting and child development [33]. Parents have the responsibility to promote health and prevent disease in the earliest stages of their child’s biopsychosocial development which will generate lasting benefits for the lifespan of their child.

Conflict of interest statement

The authors have no competing conflicts of interest.

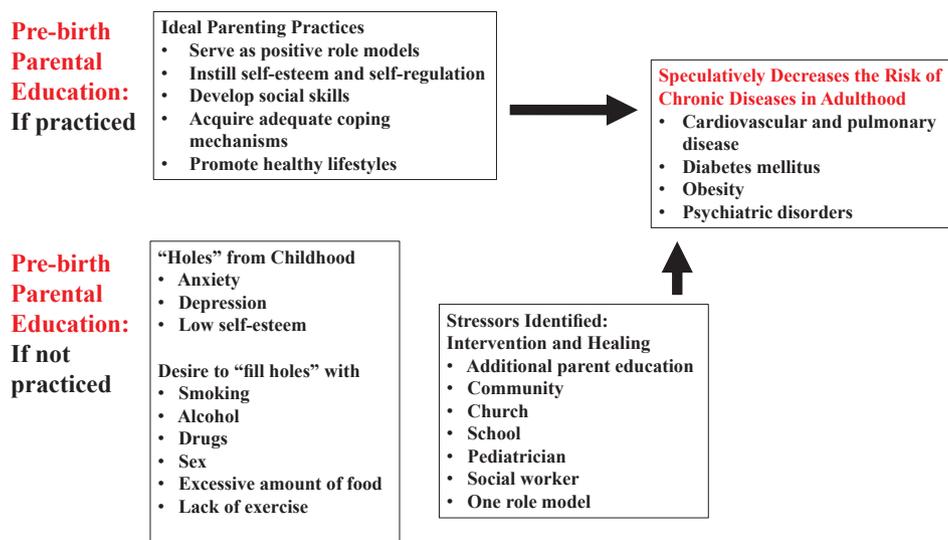


Fig. 2. Impact of parenting on the development of chronic diseases in adulthood. The goal of pre-birth parental education is to reduce the risk of chronic diseases in adulthood.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.mehy.2019.01.015>.

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