



Childhood Maltreatment and Toxic Stress: What We Have Learned From the COVID-19 Pandemic Era

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Stress is a natural state that emerges due to the dynamics of an individual's life. Children must learn how to effectively manage stress as part of their growth and development. Resolution is possible when children are exposed to stress and receive adequate support from their families. However, when stress is intense, frequent, protracted, or traumatic, as in cases of childhood abuse, it can become toxic and interfere with the development of the child's brain and body. This results in vulnerability, which can have detrimental effects on the child's overall physical, mental, and emotional health. This perspective discusses the impact of childhood maltreatment and toxic stress, drawing on insights gained during the COVID-19 pandemic. We aimed to shed light on the lessons learned from this unique and challenging period and how they inform our understanding of the effects of stress on children's well-being.

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TOXIC STRESS AND CHILD MALTREATMENT

Stress is a common state that can range from moderate to severe and arises in response to harmful or frustrating situations. Depending on the stress level, it can induce various changes in behavior, emotional well-being, and cognitive function. Stress is manageable when accompanied by emotional support (protective factors), particularly in young individuals. Manageable stress can enhance performance by focusing on the source of fear or threat without distraction. However, stress may become toxic when the conditions or events that trigger it are extremely dangerous, particularly if they are persistent or recurring, and when protective mechanisms are insufficient to reduce stress to a manageable level. Consequently, toxic stress may impair a child's ability to cope with stress rather than improve their attention toward confronting fear or threats [1].

Toxic stress can develop due to traumatic childhood experiences such as maltreatment. Childhood maltreatment, often referred to as child abuse and neglect, occurs in children under 18 years old. This condition encompasses all forms of

physical and/or emotional abuse, sexual abuse, neglect, and commercial exploitation that result in real or potential harm to a child's health, survival, development, and dignity in the context of responsibilities, relationships, trust, or power. These experiences can alter the brain architecture, causing the stress response system to activate more frequently and for longer durations, thereby increasing the risk of various physical and mental health issues, including cardiovascular disease, depression, and anxiety [2].

LEGAL FRAMEWORKS AND CHILD PROTECTION

Legal frameworks are the backbone of safeguarding children's rights and wellbeing worldwide. In the United States, the Child Abuse Prevention and Treatment Act stands as a key pillar, focusing on preventing, identifying, and addressing child abuse and neglect [3,4]. In Europe, the European Convention on Human Rights and the United Nations Convention on the Rights of the Child form the foundation for child protection, emphasizing children's rights and safety [5]. On the global stage, the World Health Organization has charted the way with strategies and policies for child protection, notably through its "Investing in Children: The European Child Maltreatment Prevention Action Plan 2015–2020" [6].

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These legal guidelines and international agreements offer a roadmap for governments, institutions, and individuals to ensure children's security, access to crucial services, and safeguard against discrimination, exploitation, and violence. Practical legal frameworks are vital for enforcing child protection laws, ensuring accountability, and creating nurturing environments in which children can flourish.

CHILD MALTREATMENT BY THE NUMBERS: AN EPIDEMIOLOGICAL INQUIRY

Child maltreatment is a global issue with significant long-term consequences. Although recent national surveys have been conducted in several low- and middle-income nations, data remain scarce in many other countries. In 2018, 4.3 million reports of alleged child abuse were made to the Child Protection Services in the United States, affecting 7.8 million children. Of these reports, approximately 2.4 million were thoroughly examined, leading to the identification of approximately 678000 children who had experienced abuse. Overall, both sexes were equally affected, although boys were more likely to experience physical abuse than girls. The victimization rate tended to increase with age [7].

In 2018, it was also reported that 60.8% of verified cases in the United States involved neglect (including medical neglect), 10.7% involved only physical abuse, and 7% involved only sexual abuse. Additionally, many children (15.5%) experienced abuse in multiple ways. That same year, approximately 1770 children in the United States lost their lives due to maltreatment, with nearly half of them under the age of one. Approximately 80% of these child victims experienced neglect, and 46% were victims of physical assault, either alone or in combination with other forms of abuse. Notably, approximately 80% of the perpetrators were parents, acting alone or in collaboration with others [7].

RISK FACTORS FOR TOXIC STRESS AND CHILD MALTREATMENT

Various theoretical formulations and models explaining child neglect and abuse exist in the literature. Blumenthal classified them into three main categories of causal neglect: parental, environmental, and transactional-ecological [8].

The parental deficit paradigm assumes that individuals, particularly parents and guardians, bear the primary responsibility for ensuring a child's well-being rather than society at large. It posits that inadequate parenting is the root cause of child neglect, which is often influenced by parental traits such as psychopathology, cognitive distortions, or improper care

experiences. However, this approach tends to overlook the influence of social and economic factors on parenting and may not fully consider the broader societal context or acknowledgment of neglect. The environmental deficit model, rooted in sociological theory, contends that material insufficiency is a significant factor contributing to child maltreatment. According to this model, intergenerational poverty plays a pivotal role, as it induces stress that can hinder parents from meeting their children's material and emotional needs. The transactional ecology paradigm posits that child neglect results from a combination of family traits and environmental variables. Stress levels and coping strategies are central to this approach. Neglect can develop when stress surpasses a family's coping abilities [8].

A toxic stress reaction can develop when a child experiences significant changes and frequent or ongoing exposure, resulting in a deviation from the child's fundamental state. Examples of toxic stress include physical or emotional abuse, prolonged neglect, caregivers misusing substances or having mental illnesses, exposure to violence, and cumulative suffering due to poor family economic situations. When a child is exposed to early adversity and toxic stress, they are at risk of developing a maladaptive stress response. The first few years of life are a critical period for enhanced neural plasticity, which begins to decline. Implementing primary preventive strategies at a young, developmentally sensitive age helps develop an adequate stress response to deal with adversity. Screening is often used to identify children who would benefit from preventative and therapeutic interventions, if necessary [6].

The American Academy of Pediatrics recommends screening for factors such as social isolation, poverty, unemployment, low educational attainment, single-parent households, presence of a male not biologically related to living at home, family or intimate partner violence, young parental age, and personal factors such as low self-esteem, substance abuse, and violence perpetrated by family or intimate partners [6]. Child maltreatment risk factors include measurable circumstances, conditions, or events that increase the probability of a family experiencing negative outcomes. Combined with insufficient protective factors, these risk factors increase the risk of child abuse and neglect. Protective factors can occur at the individual, family, neighborhood, or community level. They assist children and families in coping with danger and hardship, help parents find resources or assistance, and promote coping skills that enable effective parenting, even in challenging situations [7].

Among these protective factors are the presence of a caring and supportive adult figure, positive shifts within the family dynamic, a structured and supportive school envi-

ronment, accessibility to healthcare and social services, engagement with religious communities, and participation in organized extracurricular activities. Additionally, community resources, such as safe neighborhoods, access to healthcare, and social support networks, contribute significantly. These elements serve as pillars of resilience, offering children pathways to navigate and overcome the challenges posed by toxic stress while fostering their overall well-being. By recognizing and strengthening these protective factors, communities can collaboratively create environments that cultivate the development and resilience of children, thereby reducing the prevalence and severity of child maltreatment and the detrimental effects of toxic stress [8,9].

CONSEQUENCES OF TOXIC STRESS AND CHILD MALTREATMENT

Learning how to cope with stress is fundamental to the healthy development of children. It is undeniable that stress (positive or negative) triggers physiological responses, including increased heart rate, elevated blood pressure, and stress chemicals, such as cortisol, impacting the individual's overall well-being. Positive stress, managed with responsive caregiver support, is integral to healthy child development, whereas tolerable stress, buffered by nurturing relationships, allows stress responses to be resolved. However, without supportive relationships, toxic stress can persist, chronically activating the stress response system, potentially impairing brain structure, and causing lasting physical and psychological effects. Epigenetic changes at the molecular level can influence future generations [1,9-12].

The consequences of child maltreatment are profound, encompassing physical, psychological, and behavioral repercussions that are often interconnected. Abuse or neglect can hinder brain development, leading to low self-esteem and risky behaviors. Moreover, child maltreatment is associated with various health conditions, impairment in critical brain regions, and long-term societal costs. However, early intervention offers hope to support children's brain development and mitigate these adverse effects. Under these circumstances, a comprehensive approach that combines awareness, support for caregivers, and tailored interventions can help break the cycle of child maltreatment and safeguard the wellbeing of children, families, and future generations [1,9-12].

CHILD MALTREATMENT RISK FACTORS DURING THE PANDEMIC: A PERSPECTIVE

Parental influence

The impact of parental mental health on parenting behavior and child development is well documented [13,14]. The exacerbation of pre-existing mental health conditions, such as depression, anxiety, stress, and alcohol and substance use, has become increasingly prevalent amidst the stressors associated with the COVID-19 pandemic [15-18]. Both maternal and paternal depression have been associated with negative parenting behaviors, including irritability, hostility, and disengagement. In contrast, parental anxiety is linked to controlling and intrusive parenting practices. The economic impact of increased unemployment during the pandemic has reduced household income, contributing to stress and a higher likelihood of violence against children. Additionally, social isolation and stay-at-home measures have led to increased stress levels among parents, further elevating the risk of violence towards their children. In some cases, parents who have lost their jobs may leave their children behind to work elsewhere without proper supervision, placing them at risk [15-18].

Furthermore, fear of illness increases parental stress and diminishes coping mechanisms, further increasing the risk of child maltreatment. These issues can contribute to harsh parenting behaviors, such as coercive and aggressive discipline, which may further exacerbate stress in caregiving roles and increase the risk of parental burnout. Parental burnout, affecting 8%–36% of parents, leads to adverse consequences for both parents and children, including poorer mental and physical health outcomes and higher rates of child abuse and neglect. Disruptions in routine healthcare services and limited access to mental health resources have compounded these challenges, leaving many parents with inadequate support systems. Consequently, children in these households are more susceptible to neglect, abuse, and other forms of maltreatment [12-18].

Factors related to family status

Children with immigrant parents are at higher risk of experiencing child abuse, particularly when their traditional cultural practices differ from those of the host community. Being a single parent was one of the most consistent and significant predictors of child maltreatment [19]. Prior to the official declaration of COVID-19 as a pandemic, discriminatory incidents against individuals of Chinese and Asian descent had already begun to surface globally. For instance, in the United States, anti-Asian sentiments emerged, leading to instances of service refusal, verbal harassment, and physical

assault, with approximately 6% of cases involving children as victims [20]. Xenophobic attitudes, often termed Asiaphobia, persist in the United States, as evidenced by a study involving Chinese-American parents and children aged 10–18 years. This study revealed alarming rates of online and in-person encounters with COVID-19-related Asiaphobia, with a significant proportion of the respondents reporting experiences of stigma and discrimination [21]. Witnessing or experiencing such discrimination is linked to adverse psychological effects, including symptoms of generalized anxiety and depression, highlighting the urgent need to address xenophobia to protect the mental health of vulnerable populations.

Cultural norms and community factors

Adherence to cultural norms within society can influence the vulnerability of spouses and children to early employment. This can lead to young parents with uncertain employment statuses facing an increased risk of poverty as they often move to fulfill their children's needs, potentially resulting in child abuse, neglect, and malnutrition [22].

Impact of the COVID-19 pandemic on child well-being and family dynamics

The COVID-19 pandemic has imposed significant psychological strain on children and their families, with far-reaching consequences. While some suggested a 5.2% increase in child maltreatment prevalence in the US post-COVID-19 outbreak [23], conflicting findings showed a 7.95% decrease in the number of maltreatment incidents during the pandemic [24]. Despite these opposing findings, alarming statistics underscore concerns regarding child maltreatment during the COVID-19 era, affecting children both in the United States and globally. A recent investigation conducted in southern Brazil revealed findings on children and adolescents during the pandemic. This study revealed a notable increase in feelings of unease (62.7%), anxiety (67.7%), and melancholy (51.3%) during this period. Furthermore, the study highlighted a significant prevalence of excessive screen time (50.9%) and sedentary habits (39.1%) among individuals in this age bracket. Moreover, regressive behaviors were more commonly observed in children aged 3–6 years (57.1%) and those between 7 and 10 years old (44.6%) [25].

The COVID-19 pandemic has been acknowledged as a significant stressor affecting various levels of society, ranging from a broader societal framework to individual family units. Disruptions caused by the pandemic, such as economic instability, social isolation, and future uncertainty, have contributed to increased stress and strain on families. These stressors, compounded by preexisting vulnerabilities and challenges, increase the risk of child maltreatment. Although the pan-

demical has brought unprecedented challenges to families and communities, it has highlighted the urgent need for effective interventions and support systems to protect vulnerable children [26,27].

Suggestions, recommendations, and follow-up

In the face of challenging circumstances such as a pandemic, it is imperative to comprehend the intricate factors influencing child maltreatment. This understanding serves as the cornerstone for enhanced protection of children and families. By acknowledging the multifaceted nature of these risk factors, strategies can be formulated to prevent child maltreatment and provide support to those in need.

From our perspective, a set of pivotal measures can be undertaken to address these risk factors and fortify child protection during a pandemic. First, the importance of education and awareness should be emphasized. Disseminating knowledge of indicators of child maltreatment and providing parents with resources to navigate these exigent times is of paramount importance. Workshops and online seminars focusing on positive parenting methodologies and efficacious stress management techniques are expected to yield substantial dividends.

Second, ensuring unfettered access to mental health services for parents and caregivers is of utmost importance. Heightened stress levels during a pandemic can engender abusive behaviors, necessitating the provision of robust support for mental health exigencies. Therefore, it is imperative to establish mechanisms for the follow-up and continuous mental health support of families. Third, the establishment of community-based programs that foster a milieu of inclusion and support is remarkably effective. Such programs provide a secure harbor for families grappling with crises and cultivate a network of vigilant individuals who look out for one another.

Furthermore, the expansion of virtual child maltreatment prevention initiatives has played a pivotal role. Remote counseling and support services are perceived as instrumental conduits that span the chasm created by social distancing measures, thereby assisting families precisely in their moments of greatest need. Regular follow-up of families engaged in these programs is essential to ensure sustained support. Mitigating economic disparities and extending financial succession to families grappling with adversity are indispensable. Targeted economic assistance programs are envisaged to ameliorate stressors that contribute to child maltreatment, thereby safeguarding children's well-being. The continuous assessment and adjustment of these programs are vital for their effectiveness.

Respect and acumen for cultural norms and practices within diverse communities are essential. Tailoring interventions

that respect these cultural dimensions is discerned as a means to ensure that the support rendered is efficacious and culturally attuned. Ongoing engagement with community leaders and representatives is therefore essential. Finally, the sustainability of the research and data collection remains pivotal. This knowledge serves as a guiding compass for our response to the evolving landscape of child maltreatment during pandemics, thereby enabling evidence-based policy formulation and intervention. Continuous monitoring and data analysis are essential for adjusting strategies as needed.

By embracing a comprehensive approach that encompasses awareness, support, and customized interventions, we can work assiduously toward the attenuation of child maltreatment, even amid unprecedented challenges such as a pandemic. Our collective endeavors remain ardently dedicated to preserving the well-being of our children, the most vulnerable constituents of our society.

Availability of Data and Material

This perspective article does not contain any original data as it primarily synthesizes and analyzes existing literature and previously published research findings. Therefore, no datasets or original materials are available.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

Author Contributions

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