

## Guest Editorial

### Toxic Stress and Adverse Childhood Experiences

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#### Introduction

The human brain is indeed a complex entity. Millions of nerve cells and synapses encode behavior and responses in each individual that reflect as the personality of that particular being. The development of human brain starts from intrauterine life and continues into adulthood. The most critical period of development of brain is the early childhood. Any insult; physical or psychological, to brain during this period may prove to be very detrimental.

There are two kinds of factors that shape the developmental trajectory in children. The first are the significant adversities that prevent the Healthy development trajectory from going up. We call it toxic stress. The second are the supportive relationships, stimulating experiences and the health promoting environments that pave the way to normal healthy developmental trajectory. Toxic stress during early childhood can drastically affect the development and health in children; however it has been observed that new protective interventions can be very helpful in these cases.

A study during the 70s, called the Carolina Abecedarian study aimed to study the effects of preschool and school age social interventions in children on their health. One group received quality preschool and the other was the control group and they were followed over a course of several years. The results were astonishing. At 40 years, the children who received quality preschool care had significantly better health indicators like lower systolic and diastolic blood pressure, higher HDL, lower LDL and lesser obesity, metabolic syndrome and cardiovascular risk score.<sup>1</sup> The results of this study made evident the effects of preschool social interventions not only on mental health but physical

health also. Furthermore, in addition to health benefits, significant social effects were also observed like less likely to repeat grades, more likely to graduate from college and less likely to drink or have run-ins with law.<sup>2</sup>

Toxic stress is another factor that can drastically affect development and health of children. It occurs when a child experiences prolonged or strong adversity in the form of neglect, abuse, violence or problems with caregivers.<sup>3</sup> Toxic stress has both epigenetic effects and effects on brain architecture. Lifelong changes are observed in the way the genetic program is turned on or off. Childhood stress results in chronic flight and fight response by the stress hormones; which in turn alters the brain architecture and thus results in hyper-responsive stress response.

Adverse childhood experiences are the exposures in childhood that put children at risk to develop certain health problems and poor quality of life. These include emotional, physical or sexual abuse, child neglect, exposure to mental illness or substance abuse, divorce/separation of parents or incarcerated parents/caregivers. A study demonstrated at least one ACE reported by Two-thirds of participants. The presence of 1 ACE increases the risk of having another ACE. As the ACE score increases, there is an increased risk of certain health problems like alcoholism, STDs, COPD, depression, liver disease, smoking etc.<sup>2</sup>

Since ACEs have been known to cause not only mental, but physical health problem too; there are a few ways toxic stress can be addressed. These include positive relationships, positive parenting, home visiting, support for pregnant females, early childhood education and care and cognitive behavior therapy. The 5 Rs of early childhood should be

promoted which include reading, rhyming, routines, rewards and relationships as “it is easier to build stronger children than to repair broken adults”.<sup>4,6</sup>

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