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Kids with early life adversity face higher risk of mental health disorders: Study

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Children who were exposed to high levels of adversity in the womb, such as their mothers' mental and physical health challenges during pregnancy, show an accelerated pattern of brain development, likely in order to survive their difficult circumstances.

This early maturity can shorten the window period of neuroplasticity – the ability of the brain to change – needed for children to learn, and hence lead to an increased risk of cognitive impairment and mental health disorders such as depression and anxiety.

These were findings of a new study led by the Agency for Science, Technology and Research (A*Star) published in January.

Neuroplasticity is the brain's ability to reorganise itself to learn, recover from injury and adjust to new experiences. In early childhood, the brain is typically more adaptable. Low neuroplasticity is associated with poor emotion regulation, aggression, risk-taking behaviours and poor executive functioning skills such as organisation.

About 10 per cent of the Singapore population were found to have exposure to high levels of early life adversity, based on the study's representative sample.

Early life adversity is measured in the study by the mother's poor mental and physical health, with factors such as hypertension and postnatal depression, as well as smoking, low household income and family structure. Out of the 354 children who participated in the study, 34 had high levels of exposure to early life adversity.

The children studied were those enrolled in the Growing Up in Singapore Towards Healthy Outcomes (Gusto) cohort study since birth. The Gusto study started in 2008 to examine how conditions in pregnancy and early childhood influence the health and development of women and their children.

The Gusto study and the new study are a collaboration between the Singapore Institute for Clinical Sciences at A*Star, KK Women's and Children's Hospital, National University Health System and National University of Singapore.

For the new study, the research team took MRI brain scans from the children at ages 4½, six and 7½ years to examine the link between early life adversity and brain development. The research team found that exposure to high levels of early life adversity is linked to the decline of neuroplasticity, especially between the ages of 4½ and six.

Dr Tan Ai Peng, principal investigator with the Singapore Institute for Clinical Sciences at A*Star and clinician with the National University Hospital, who led the study, said: "It is the time when the brain changes the most, and it also means that this is the time when the brain is most susceptible to any form of intervention."

Dr Tan said the effects of early life adversity are reversible if identified and treated within this period, but are likely to be permanent otherwise.

“If we can find out what exactly are the brain changes that link early life adversity and the adverse outcomes that we see in our children, then we can potentially develop interventions that target these brain changes,” she said. “If we can develop screening tools to detect accelerated brain development, we will be able to implement interventions earlier.” For instance, bypass surgery was developed to help treat heart attacks after it was found that coronary artery occlusion is the cause of heart attack, she said. Dr Tan also gave the example of cognitive behavioural therapy, an approach that helps people manage problems by changing the way they think and behave.

Dr Tan highlighted the importance of children’s ability to manage stress in protecting against the effects of early life adversity.

“Some people, when they’re exposed to the same level of stress, feel like, ‘It’s fine, whatever happens, happens’, and they take it in a very positive manner. And these people... have a high level of psychological resilience. No matter what stress you throw at them, they will still survive and thrive.”

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