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The Impact of Maternal Emotional State on Neurodevelopment of Children: A Cross-disciplinary Review

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Abstract

Emerging evidence highlights the critical role of maternal emotional health during pregnancy and the early postnatal period in shaping a child's neurodevelopment. This cross-disciplinary review synthesizes findings from neuroscience, developmental psychology, and pediatrics to explore mechanisms linking maternal mental states with early neurodevelopmental outcomes in offspring. A comprehensive literature search was conducted using PubMed, Scopus, and PsycINFO, focusing on studies from 2013 to 2024. Inclusion criteria encompassed human studies assessing maternal psychological health during pregnancy or within the first postpartum year, and objective measures of child neurodevelopment such as MRI, EEG, and behavioral assessments. The findings reveal a strong correlation between persistent maternal depressive and anxious symptoms and altered limbic system development in children, including amygdala hyperactivity and disrupted prefrontal-limbic connectivity. Dysregulation of maternal cortisol, quality of mother–infant bonding, and early caregiving behaviors are identified as key mediators of these effects. Notably, protective factors—such as social support, partner involvement, and timely psychological intervention—demonstrate potential in buffering against adverse outcomes. The review emphasizes that integrating mental health screening and support into standard perinatal care is essential for promoting optimal neurodevelopment. It concludes by advocating for health policies and clinical frameworks that prioritize maternal emotional well-being as a public health imperative. Recognizing and addressing maternal psychological distress is not only vital for women's health but also foundational to fostering resilient, emotionally regulated, and neurologically healthy future generations.

Keywords: amygdala; cortisol; early development; maternal depression; neurodevelopment