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International study led by researchers in Singapore reveals critical insights into timely interventions for maternal depression

*International study by A*STAR's Singapore Institute for Clinical Sciences (SICS) and other partners shows that depressive symptoms begin from early pregnancy and last up to two years after childbirth, suggesting that early interventions during pregnancy can better mitigate maternal depression symptoms.*

SINGAPORE – A large-scale international study spanning three continents, led by researchers from A*STAR's Translational Neuroscience Programme of the Singapore Institute for Clinical Sciences (SICS) in Singapore, has found that maternal depressive symptoms begin from early pregnancy and can last up to two years after childbirth.

While health professionals often emphasise the postpartum stage after childbirth as a high-risk period for the onset of depression, findings from this latest study reveal a different reality – that maternal depressive symptoms can appear from early pregnancy and therefore timely interventions during pregnancy are needed to better mitigate such symptoms for improved outcomes for both mother and child.

Previous findings from the Growing Up in Singapore Towards healthy Outcomes (GUSTO) project showed clearly that prenatal maternal mental health plays a significant role in the brain development and health of one's offspring. Research shows that maternal depressive symptoms can negatively affect a child's nutrition, physical health, cognitive functions, socioemotional development, academic achievement, and also increase the risk of ADHD and depression.

The study was published in the journal *JAMA Network Open* on 26 Oct 2023, titled "[Perinatal Trajectories of Maternal Depressive Symptoms in Prospective, Community-Based Cohorts Across 3 Continents](#)". It involved seven prospective observational cohorts across the United Kingdom, Canada, and Singapore. A*STAR researchers analysed the maternal depressive symptom trajectories of 11,563 pregnant women, spanning multiple decades in the largest such analysis to date.

Among the cohorts analysed were three from Singapore: Growing Up in Singapore Towards healthy Outcomes (GUSTO), Singapore PREconception Study of Long-Term Maternal and Child Outcomes (S-PRESTO) and Mapping Antenatal Maternal Stress

(MAMS). Each cohort included depressive symptoms measured at multiple perinatal time points and analysed independently. The data was based on prospective maternal self-reports of depressive symptoms, eliminating the potential bias collected from retrospective reports.

The study showed three distinct clusters of mothers with stable low, mild, and high symptom levels over the perinatal period – the period from the beginning of pregnancy up to two years post-birth. The trajectories of depressive symptoms were present for all mothers. This was true even for those who met clinical cut-offs for probable depression, indicating that more serious instances of depression in women begin prior to the birth of the child.

With a more precise grasp of when depressive symptoms begin for mothers, the study underscores the importance of early interventions during pregnancy to mitigate maternal depressive symptoms and their impact on offspring. This paradigm shift has far-reaching implications for healthcare professionals, policymakers, and the general public.

“Several recent studies, including one conducted locally suggest that maternal depressive symptoms may begin before conception, which is why interventions, guidelines for care, and public health policies aimed at alleviating maternal depressive symptoms should target as early as preconception, at least during pregnancy, in addition to the postnatal period, for more effective outcomes,” says Dr Michelle Kee, Research Scientist at A*STAR’s SICS and first author of the paper.

Professor Michael Meaney, the Director of the Translational Neuroscience Programme at SICS, adds, “The medical media continues to refer to maternal depression as ‘postnatal depression’, implying that the onset of symptoms occurs following the birth of the child. This extensive analysis shows that the onset of symptoms is in the prenatal period and remains largely stable thereafter. This is true for women in the community as well as for those experiencing more severe symptom levels. The results of this study point to the early antenatal period as a crucial time point for the identification of stable trajectories of maternal depressive symptoms and emphasises the critical importance of prenatal intervention.”

Associate Professor Helen Chen, Senior Consultant at the Department of Psychological Medicine, KK Women's and Children's Hospital and Clinical Associate Professor of Duke-NUS Medical School shares, "This study provides strong evidence across populations that it is crucial to address depression during pregnancy so that mothers are well and ready to receive their babies, rather than to wait until the postnatal period, for postnatal depression has traditionally been the focus. Given what we know about the impact of perinatal depression on child development and health outcomes, the paper will help to inform healthcare systems to direct resources upstream to the antenatal period. This will benefit our mothers and their children, and population health of future generations."

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About A*STAR's Singapore Institute for Clinical Sciences (SICS)

Founded in 2007, the Singapore Institute for Clinical Sciences' (SICS) mission is to promote health and human capacity in Singapore, Asia and globally. The first institute within the Agency for Science, Technology and Research (A*STAR) to focus on clinical sciences and translational research, SICS posits that health has its origins in good beginnings and continued interactions between our physiological makeup and environment. To fulfil our vision of building gateways and an evidence base for positive health, our institute strongly promotes clinical research that supports the understanding of metabolism, neuroscience and how they impact human development. To take our research into the real world, we launched seminal nationwide birth cohort studies such as Growing Up in Singapore Towards healthy Outcomes (GUSTO) and Singapore PREconception Study of long-Term maternal and child Outcomes (S-PRESTO). By paving the way for scientific research to make a difference to the social and economic fabric of our communities, we are committed to 'Changing Tomorrow's Health, Today'. For more information, visit www.a-star.edu.sg/sics.

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About KK Women's and Children's Hospital

KK Women's and Children's Hospital (KKH) is Singapore's largest tertiary referral centre for obstetrics, gynaecology, paediatrics and neonatology. The academic medical centre specialises in the management of high-risk conditions in women and children.

Driven by a commitment to deliver compassionate, multidisciplinary care to patients, KKH leverages innovation to advance care. In 2021, the hospital launched the SingHealth Duke-NUS Maternal and Child Health Research Institute (MCHRI). This centre of excellence aims to support the growth of every woman and child to their fullest potential through research and innovation, to transform national health in Singapore and the region.

Some of the hospital's recent breakthroughs include uSINE[®], a landmark identification system for the administration of spinal epidural, the discovery of new genetic diseases like Jamuar Syndrome, and a series of guidelines for women and children to improve metabolic and mental health.

The Academic Medical Centre is also a major teaching hospital for Duke-NUS Medical School, Yong Loo Lin School of Medicine and Lee Kong Chian School of Medicine. In addition, KKH runs the largest specialist training programme for Obstetrics and Gynaecology, and Paediatrics in Singapore. The programmes are recognised by the Accreditation Council for Graduate Medical Education International (ACGME-I) and are highly rated for the quality of clinical teaching and translational research.

KKH was founded in 1858 and celebrates its 165th anniversary this year. For more information, visit www.kkh.com.sg

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