EM0443: The Globe and Mail, December 10, 2004, page A21

Mother's stress, depression affects unborn child, researchers say

Studies indicate the infants are at greater risk for learning, behavioural problems

BY LAURIE TARKAN

BY listening intently to movements and heartbeats, researchers are finding that the fetuses of mothers who are stressed or depressed respond differently from those of emotionally healthy women.

After birth, studies indicate, these infants have a significantly increased risk of developing learning and behavioural problems, and may themselves be more vulnerable to depression or anxiety as they age.

The studies, researchers caution, are preliminary. Stress or depression during a mother's pregnancy is only one among many influences that affect an infant's development. Even among mothers who are depressed or highly stressed, the rate of emotional and behavioural problems in children is still very low.

"The last thing pregnant women need it to have something else to worry about," said Dr. Janet DiPietro, a developmental psychologist at the Johns Hopkins University Bloomberg School of Public Health.

The studies reflect growing evidence that stress and depression can have early and lasting effects on a child's life. If the findings hold up, experts say, they could eventually lead obstetricians, midwives and other health professionals who care for pregnant woman to include mental health screening as a routine part of prenatal examinations. Such screening could allow doctors to recommend therapy or treatment.

"We could be intervening earlier," said Dr. Catherine Monk, an assistant professor in the psychiatry department at the College of Physicians and Surgeons at Columbia. "Prenatal care is an optimal time to do mental-health screening, but we don't." The effects of stress on a fetus have been well documented in animal studies.

In rats, babies born to stressed mothers show permanent changes in brain chemistry and behaviour. For example, rat pups exposed prenatally to elevated levels of the stress hormone corticosterone were born with reduced numbers of corticosterone receptors in the brain, and showed exaggerated responses to stress.

In humans, there is convincing evidence that mothers who are stressed in pregnancy are more likely to give birth preterm or to infants with low birth weights.

In recent years, scientists have begun studying how fetuses respond to their mothers' anxiety or depression, the emotional health of the infants after birth and how they fare later in childhood. Some studies have offered unusual glimpses into the symbiotic relationship between a mother and a developing child.

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Dr. Monk has looked at the increase and decrease in fetal heart rate when the mother is under stress.

In one study, women in the third trimester of pregnancy went through psychological screening for depression and anxiety. They were then asked to perform a series of stress-inducing computer tasks. As expected, all the women showed increased heart rate, respiration and blood pressure. Fetal responses were more varied. The fetusus of mothers who were depressed or had anxious personality styles showed increased heart rates. In contrast, the heart rates of fetuses whose mothers were emotionally healthy showed no fluctuations.

Dr. Monk said the fetuses were not simply mimicking their mothers' responses. "What this leaves us with is another interpretation," she said. "The fetuses of depressed or highly anxious women are more reactive to stimuli than other fetuses."

She compared the fetuses' responses to the way people in a waiting room might react differently to a door being slammed. In this case, a fetus might be reacting to the mother's increased heartbeat or breathing, or to a jolt of stress hormones.

Dr. Monk said depressed women tended to have more difficulty handling stress, which leads to higher levels of stress hormones such as cortisol. She speculated that those higher levels, in turn, might make the fetus more jumpy.

"My hypothesis is that over the course of gestation, they have been exposed to an altered *in-utero* environment, which includes increased levels of stress hormones," Dr. Monk said. "This may make fetuses more susceptible to stressors in the future, and by extension, because stress plays a role in the development of depression, may make them more vulnerable to depression in the future."

Though stress and depression are closely intertwined, researchers believe that stress is the more potent player in affecting prenatal development. In a study by Dr. DiPietro, pregnant women who perceived their lives, and in particular their pregnancies, as stressful, had fetuses who were more active in an ultrasound test.

Other studies have linked higher levels of stress hormones in the mother with a more active fetus.

Dr. DiPietro has found that more active fetuses tend to become more active one-year-olds, providing some evidence that the effects are not transient.

The New York Times Service