New study reveals environment's role in post-natal depression

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(Medical Xpress) -- As part of the continuing Fragile Families and Child Wellbeing Study, launched in 1997, researchers, including Professor John Hobcraft, of York's Department of Social Policy and Social Work and academics from Princeton, Penn State and Columbia Universities in the USA, examined the DNA of more than 1,200 mothers.

The authors examined two genetic markers– 5-HTTLPR and Stin2 –that have been linked to risk of depression. These data were then examined against whether or not the mother was depressed in the first year of her child's life and her level of education – with low levels of education being a proxy for a negative environment and higher levels for a positive one.

The research is published in *Proceedings of the National Academy of Sciences* (*PNAS*).

While post-natal depression affected less than a quarter (17 per cent) of those sampled, the rates varied depending on whether the mother carried specific variants of a gene associated with biological sensitivity to her environment and her level of education.

Not surprisingly, mothers with genetic markers that made them more sensitive to their environment were more likely than other new mothers to become depressed if they were in a negative environment (ie low level of education).

Mothers without these markers looked the same across the education spectrum, with rates of depression the same regardless of environment. For these mothers, environment did not seem to have much of an impact.

However, when a mother with the 'sensitive' markers was in a positive environment (ie high level of education) she was actually less likely to become depressed than all other mothers, including those without the environmentally sensitive genetic markers.

Thus, the term "depression gene" is not quite right. In fact, the genetic markers previously linked with depression are actually signaling a more environmentally sensitive genetic makeup. This results in mothers with the sensitive genetic make-up actually being better off than other mothers in a positive environment, but worse off than others in harsher environments.

Professor Hobcraft said: "Our findings on the interplay between genetic markers and socioeconomic disadvantage regarding post-natal maternal depression break new ground. Of key importance is the evidence that mothers with a particular combination of genetic markers do not seem to be all that affected by environmental disadvantage, but those with a different combination on the same gene are both less susceptible to maternal depression when advantaged but even more at risk of maternal depression when disadvantaged."

Lead author, Colter Mitchell, of the Center for Research on Child Wellbeing and Office of Population Research, Princeton University, said: "The specific findings of this study are very interesting. But the paper is important because of the bigger concept it demonstrates. That is, certain genes may have a positive or negative effect depending on a person's environment."