Early environmental exposures affect blood pressure in children: Study

Some of the factors are air pollution, natural spaces, noise levels, and chemicals in environment

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It is universally known that malnourishment during pregnancy is linked to low birth weight in babies which in turn can continue as under nutrition in childhood and lead to health problems, including adult onset hypertension and type-2 diabetes. A new study has now looked at multiple factors that act together to affect the blood pressure in childhood, beginning in utero.

According to the study titled 'Early-Life Environmental Exposures and Blood Pressure in Children', published in the Journal of the American College of Cardiology (JAAC) on September 2, four environmental factors affected blood pressure in the children studied: the actual building and its surroundings where the mother lived while she was pregnant; outdoor temperature; intake of fish during pregnancy, and chemical exposure during pregnancy.

The team of researchers, led by Charline Warembourg, found that early life exposure to factors such as air pollution, natural spaces, lifestyle, chemicals in the environment, noise levels, and the built-up surroundings may affect blood pressure in children. The researchers evaluated 89 prenatal maternal exposures and 128 postnatal child exposures for the study.

A file photo of mothers with their newborn children.

Corroborating the findings, city-based doctors said it was not new that exposure to certain environmental factors during pregnancy can affect the well-being of the baby.

Quoting Barkers' hypothesis, N. Karthik Nagesh, chairman of Neonatology at Manipal Advanced Children's Centre at Manipal Hospitals, said British epidemiologist David Barker had proposed in 1990 that intrauterine growth retardation, low birth weight, and premature birth have a causal relationship with the origins of hypertension, coronary heart disease, and non-insulin-dependent diabetes, in middle age.

"Foetal origin of adult diseases is a known aspect and there are many studies to prove this. Babies with low birth weight have an increased risk of developing non-communicable diseases in their adulthood. The need of the hour is to ensure that the mother is adequately nourished during pregnancy so that a healthy baby is born," he said.

Preventing malnutrition

Asha Benekappa, former director of the State-run Indira Gandhi Institute of Child Health, said it was vital to prevent maternal malnutrition not only for the health of the mother and the baby but also for when the child reaches adulthood.

"While the world is moving towards artificial intelligence, we cannot compromise on the natural environment, especially the microbiota, our basic bacteria for sustenance. The more unnatural we are, the more complex compromised situations we land up in. Babies born through C-section do not get exposed to the "good" bacteria that line the mother's birth canal and miss out on a stronger immune system," she explained.

On the possibility of outdoor chemical exposure also affecting blood pressure in children, C.N. Manjunath, director of Sri Jayadeva Institute of Cardiovascular Sciences, said there were several studies to indicate that air pollution kills more people than smoking.

Risk factors

"Apart from cardiovascular health problems in women as a result of pregnancy-related lifestyles, including obesity, drinking and smoking, it is also true that the unborn child may be predisposed to develop high blood pressure in response to these risk factors. The child is bound to have the same risks as those faced by the mother during pregnancy. Hypertension is a known risk factor for cardiovascular diseases and it is important that all precautions are taken to keep your blood pressure under control," he added.

Factors that may affect BP in children

- The actual building and its surroundings where the mother lived during pregnancy
- Outdoor temperature, intake of fish, and chemical exposure during pregnancy