

Birth size is a marker of susceptibility to breast cancer later in life

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Birth size, and in particular birth length, correlates with subsequent risk of breast cancer in adulthood, according to a new study published in *PLoS Medicine* by researchers at the London School of Hygiene and Tropical Medicine.

Associations between birth size, perhaps as a marker of the pre-natal environment, and subsequent breast cancer risk have been identified before, but the findings from epidemiological studies have been inconsistent.

In the new study, led by Isabel dos Santos Silva (Professor of Epidemiology), the researchers re-analysed data from published and unpublished studies to obtain more precise estimates of the extent to which birth size affects the risk of breast cancer later in life and to investigate whether they could be explained by associations with other risk factors.

They examined 32 studies, comprising 22,058 cases of breast cancer among a total of more than 600,000 women, most of whom lived in developed countries. They found that birth weight was positively associated with breast cancer risk in studies where information on birth size was based on birth records (although not in those based on adult self-reports, which tend to be less accurate). Analyses of women with data from birth records showed that a 0.5 kg increment in birth weight was associated with an estimated 7% increase in the risk of breast cancer.

Birth length and head circumference were also positively associated with breast cancer risk when studies with data from birth records were analyzed. Of the three birth size measures examined, birth length appeared to be the strongest independent predictor of risk.

The estimated magnitude of the birth size association with breast cancer risk was not affected when the effects of established breast cancer risk factors were accounted for.

Isabel dos Santos Silva commented: 'Our study indicates that birth size is a marker of susceptibility to breast cancer in adulthood, at least in developed countries. The birth size - breast cancer association appeared to be largely independent of known risk factors. Little is known on how the pre-natal environment may affect breast cancer risk later in life. Further research is needed to unravel the biological mechanisms underlying the birth size - breast cancer association'.

In an expert commentary, Pagona Lagiou and Dimitrios Trichopoulos of Harvard University School of Public Health, who were not involved in the study, say that the new study provides "the strongest evidence yet that birth size is a critical determinant of breast cancer risk in adult life."

Citation: dos Santos Silva I, De Stavola B, McCormack V, Collaborative Group on Pre-Natal Risk Factors and Subsequent Risk of Breast Cancer (2008) Birth size and breast cancer risk: Re-analysis of individual participant data from 32 studies. *PLoS Med* 5(9): e193.

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