

# Increasing height and body mass index are risk factors for ovarian cancer

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(Medical Xpress) -- Taller women are at a greater risk of ovarian cancer, a large study has found after bringing together all the evidence from clinical studies carried out worldwide.

The analysis, led by Oxford University scientists, also found that larger body size sees a rising risk of ovarian cancer, though this effect depends on whether women have used hormone replacement therapy (HRT) or not.

The study is published in the journal *PLoS Medicine* and aimed to better understand some of the factors which may influence the development of ovarian cancer.

The international collaborative group, coordinated by researchers based at the Cancer Epidemiology Unit at Oxford, analyzed individual patient data from 47 epidemiological studies including over 25,000 women with ovarian cancer and more than 80,000 women without. These studies, both published and unpublished, provide virtually all the relevant data on the topic worldwide.

The researchers found a 7% increase in the risk of developing ovarian cancer for every 5 cm increase in height. For example, 165 cm-tall women have a 14% greater risk of ovarian cancer than those who are 155 cm.

'The fact that height is clearly associated with risk may well be important

for understanding how ovarian cancer develops,' explained Dr Gillian Reeves of the Cancer Epidemiology Unit at Oxford University, one of the lead researchers on the study.

She added: 'Although we do not yet know why height is related to ovarian cancer risk, there are a number of possible explanations. For example, the association that we see may be due to the biological effects of factors associated with height – such as increased levels of insulin like growth factor (IGF-1) (which has been associated with a number of other cancers such as breast and prostate cancer), or increased numbers of cells being at risk of becoming cancerous. Future studies should clarify this.'

The scientists found that for body mass index (BMI) – a standard measure of body size and obesity found by dividing your weight by the square of your height – the risks of ovarian cancer depended on whether women had ever taken HRT.

Women who have never used HRT showed a 10% increase in relative risk of ovarian cancer for every 5 kg/m<sup>2</sup> rise in BMI.

This relationship disappeared among women who were using HRT.

Dr Reeves said: 'These results show that in women who are not taking HRT, ovarian cancer risk increases steadily with increasing BMI. These results relate only to the effect of body size on ovarian cancer risk and do not provide any relevant information about advice on HRT use.'

The researchers say that unlike height, BMI is something that people can potentially do something about and this may be relevant for health advice for cancer prevention. But their main focus is on understanding the biological pathways connected to ovarian cancer.

Dr Reeves notes that women's oestrogen levels are linked to the amount of body fat they have, at least in postmenopausal women who aren't using HRT: 'We think this may be part of the explanation for the association between BMI and ovarian cancer,' she said.

Oestrogen levels are also likely to be altered with HRT, and this may explain why there is a different effect of BMI in HRT users.

The average height and BMI of women in Western countries have been increasing by about 1 cm and 1 kg/m<sup>2</sup> per decade, respectively.

The findings of this study suggest that these increases in height and weight would have resulted in the number of ovarian cancer cases rising by 3% per decade, if all other factors affecting ovarian cancer risk remained constant.

Sarah Williams, health information officer at Cancer Research UK, which funded the work, said: 'This study included as much evidence as possible to produce a clearer picture of the factors that can affect a woman's risk of developing ovarian cancer, and found that body size was important. Women can reduce their risk of this and many other diseases by keeping to a healthy weight. For women trying to lose weight, the best method is to eat healthily, eat smaller amounts and be more physically active.'

**More information:** Collaborative Group on Epidemiological Studies of Ovarian Cancer (2012) Ovarian Cancer and Body Size: Individual Participant Meta-Analysis Including 25,157 Women with Ovarian Cancer from 47 Epidemiological Studies. *PLoS Med* 9(4): e1001200. [doi:10.1371/journal.pmed.1001200](https://doi.org/10.1371/journal.pmed.1001200)

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