

# Slim women have a greater risk of developing endometriosis than obese women

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Women with a lean body shape have a greater risk of developing endometriosis than women who are morbidly obese, according to the largest prospective study to investigate the link.

The study, which is published online today (Wednesday) in Europe's leading reproductive [medicine journal](#) *Human Reproduction* [1], found that the risk of [endometriosis](#) was 39% lower in [morbidly obese women](#) – those with a [body mass index](#) (BMI) greater than 40 kg/m<sup>2</sup> – compared with women with a current BMI in the low normal range (18.5-22.4 kg/m<sup>2</sup>).

When the researchers looked back at the women's BMIs when they were 18, they found that women who were morbidly obese at that point in their lives had a 41% lower risk of developing endometriosis than women with low normal BMI.

The association was strongest in the group of women who were infertile – those who had been trying to become pregnant for more than a year: there was a significantly lower rate of endometriosis (62%) among the currently morbidly obese compared with those with a low normal BMI, while it was 77% lower among women who were morbidly obese at age 18 compared with those with a low normal BMI at 18.

The authors of the study [stress](#) that although their findings establish firm evidence of a link between endometriosis and BMI, it does not show that low BMI causes endometriosis. "It is important to note that despite the

strength of the evidence underlying the association between body weight and endometriosis, inferences regarding causation or the pathophysiologic process underlying these relations cannot be made," they write in their paper.

The mechanisms that might be responsible for the link between BMI and risk of endometriosis are unclear, but the researchers point to the possibility that BMI at a younger age may have an influence on health in later life, especially as it is known to have an effect on other diseases; and also that polycystic ovarian syndrome (PCOS) is more common among obese women and the effect it has on menstruation and hormones might play a role in reducing or slowing the growth of endometrial lesions.

First author of the study, Clinical Assistant Professor, Divya Shah (MD), at the University of Iowa Hospitals and Clinics (Iowa City, USA), said: "Further research is needed to understand the biological mechanisms underlying the associations that we have seen in our study. Maintaining a healthy body weight (BMI 20-24.9 kg/m<sup>2</sup>) throughout childhood, adolescence, and adulthood is associated with a myriad of known health benefits. The study does not suggest that the morbidly [obese women](#) are, in some way, healthier than the lean women and that is the reason for their lower risk of endometriosis. It is more likely that factors related to infertility, which is more common among the very obese, are linked to the reduced risk of endometriosis.

"Our finding that lean women have a higher risk is useful information for doctors when making a diagnosis. It also means that future research can focus on these women to discover the causes, so that we can design treatments that could help prevent the condition developing."

The findings come from the Nurses' Health Study II (NHS II), which has been following 116,430 female nurses in the USA since September

1989. Data were analysed after ten years, but now the researchers have a total of 20 years of data from 1989 to June 2011.

During the 20 years of the study, a total of 5504 women were diagnosed with endometriosis using laparoscopy [2]. Only women with a diagnosis of endometriosis that had been confirmed by laparoscopy were included in the analyses. The women were between 25-42 years of age when they were enrolled in the study in 1989. They completed a questionnaire about their medical history when they joined the study, including their weight and height at the age of 18, and then at two-year intervals thereafter. Information on current weight, height, and, from 1993, waist and hip circumference and any diagnosis of laparoscopically-confirmed endometriosis was also included.

The senior author of the study, Associate Professor, Stacey Missmer (ScD), of Harvard Medical School (Boston, USA), said: "Analysis of the first ten years of NHS II data revealed an inverse relation between endometriosis and BMI at age 18 among all women, and, in a subset of infertile women, an inverse relation between endometriosis and current BMI. Availability of an additional ten years of NHS II data yielded 2986 additional cases of endometriosis, and enabled us to trace women who were diagnosed with endometriosis after age 25 through most of their reproductive lifespan. This study confirms that women with a low BMI, both currently and at age 18, have a greater risk of developing endometriosis. The association remains stronger in infertile women, but is present in all women regardless of fertility status.

"Insomuch as any data can ever claim to be definitive, we do believe that this large prospective study provides conclusive evidence of the inverse association between endometriosis and BMI."

Endometriosis is estimated to affect approximately one in ten women of reproductive age. As a diagnosis of endometriosis can only be confirmed

by laparoscopy, it is difficult, if not impossible, to establish the precise point at which endometriosis appears. A recent study of women in 16 centres in ten countries [3], showed that the average age at which women presented with symptoms of endometriosis was 26, with most women experiencing a delay of six or seven years between the onset of symptoms and a definitive diagnosis.

**More information:** [1] "Body size and endometriosis: results from 20 years of follow-up within the Nurses' Health Study II prospective cohort", by Divya K. Shah, Katharine F. Correia, Allison F. Vitonis, and Stacey A. Missmer. Human Reproduction journal.

[doi:10.1093/humrep/det120](https://doi.org/10.1093/humrep/det120)

[2] Laparoscopy, often known as "key hole surgery", involves surgeons using a small tube (a laparoscope), containing a light and a camera, to access and study the inside of the abdomen and pelvis without making a large incision. Laparoscopes can also carry surgical instruments and devices to enable surgeons to carry out surgical procedures, such as taking biopsies.

[3] Nnoaham KE, et al. Fertility & Sterility 2011

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