

The effect of bodyweight on fertility



Concept
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Globally 1.6 billion adults are overweight and at least 300 million of these are clinically obese. Since 1980 there has been a 3-fold increase in obesity rates in Europe, North America, China and Australasia. In Australia 7 million adults are overweight and a third of these are obese. It has also been estimated that 60% of Australian adults are overweight. The figure in the panel on the right shows that a high percentage of men and women in the reproductive age range are overweight as evidenced by increased body mass index (BMI).

A person's body weight can have a profound impact on their fertility. Men and women who are either under or over their ideal weight have a higher risk of experiencing infertility. A BMI of less than or greater than the desired weight can also lead to fertility problems. Being under or over the desired weight for both males and females can disrupt the hormonal balance that is necessary for normal egg and sperm production, leading to a 30% decline in the likelihood of a pregnancy and healthy birth.

The impact of weight on female reproduction

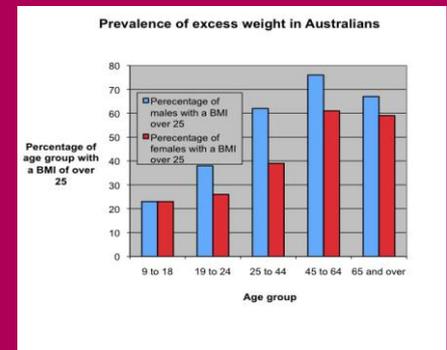
Research from as early as the 1930s demonstrated a link between excess body weight and polycystic ovary syndrome (PCOS). Excess body weight can lead to menstrual cycle irregularity, infertility, an increased risk of miscarriage and difficulty achieving a good response to assisted reproductive procedures. It also appears that excess weight as a teenager has a significant effect on subsequent fertility. This was the conclusion of a number of large research studies from the Netherlands, Japan, the United Kingdom and Australia. Conversely, being underweight can also lead to disruptions in the normal menstrual cycle and subsequent fertility problems.

The effect of weight on success of fertility treatment

Recent research has shown that a lowered or elevated BMI significantly reduces the chance of achieving a pregnancy after in vitro fertilization and embryo transfer (IVF-ET). In this study of nearly 400 couples, 21.8% of the female partners had a BMI below the normal range and 22% were above the normal range. The results suggest that being either underweight or over weight can have a negative effect on IVF outcome leading to a decreased chance of pregnancy from these procedures. It has been estimated that the chance of pregnancy is 30% less in overweight or obese women.

The body mass index (BMI) is the routine measure used to assess whether a person is under or over their ideal weight. BMI is calculated as weight (in kilograms) divided by height (in metres) squared.

BMI	Description
<20	Underweight
20 - 25	Desired weight
26 - 30	Overweight
>30	Obese



Source: Australian Institute of Health and Welfare, 2000

The effect of weight loss on fertility

In the 1950s it was shown that reducing weight in overweight women could restore menstrual cycle regularity. This study has since been confirmed by studies from Italy, the United Kingdom and Australia which demonstrated that a weight reduction of 5% is enough to restore normal menstrual cycle function in up to 60% of overweight women. Furthermore, several studies have shown that if an overweight female partner reduces her weight before undergoing IVF the chance of becoming pregnant is dramatically improved.

Obesity and pregnancy outcome

Many articles report that obesity has a significant negative impact on the outcome of pregnancy and the offspring. Obese women who become pregnant have an increased risk of hypertension, pregnancy related diabetes, urinary infections, Caesarian sections and assisted delivery. In addition, the miscarriage rate was reported to be much higher in overweight women. Other studies have shown an increased incidence of Down's syndrome in the children born from overweight mothers.

Does body weight effect male fertility?

The potential for obese males to have a reduced sperm count does exist. For example, obesity can lower levels of the male hormone testosterone (which is directly linked to sperm count) that is converted to estrogen by fat cells. Obese males can also develop an apron of fat around the genital area heating up the testicles and potentially reducing sperm numbers.

Recent research has shown that male obesity can affect the development of the embryo. Using an animal experimental model researchers from Adelaide showed that obese males had reduced quality and development of their embryos and a reduced pregnancy rate. This research was then confirmed by studying a group of obese men undergoing IVF treatment. As the men's BMI increased there was a significant reduction in pregnancies and births and an increase in pregnancy loss.

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Questions and Notes