

## Weight issues associated with pregnancy

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New research is placing great emphasis on achieving a healthy weight before and during pregnancy. Women who are affected by obesity when they become pregnant may face increased risks to their own health, and the health and future wellbeing of their unborn baby.

### Obesity in European women

In several European countries, it is estimated that over half the adult population has overweight, and 20–30% have obesity [body mass index (BMI)  $>30 \text{ kg/m}^2$ ].<sup>1</sup> The prevalence of obesity in pregnant women ranges from 1.8% to 25.3%.<sup>2</sup> Obesity during pregnancy deserves special attention due to its impact on both mother and child. Maternal obesity is associated with increased risks and complications in pregnancy, even leading to higher rates of maternal and infant death compared to healthy mothers.

### Optimal weight gain during pregnancy

Dietary energy requirements do increase during pregnancy, but just for the last trimester and only by around 200 kcal per day. Consequently, there is no need to 'eat for two'. This additional demand increases to around 675 kcal per day during lactation, to cover milk production. Research has shown that the healthiest pregnancy is associated with a pre-pregnancy BMI of 23  $\text{kg/m}^2$ .<sup>3</sup> The amount of weight gained during a healthy pregnancy, however, is variable and influenced by pre-pregnancy bodyweight and the presence of oedema.

Advice regarding the optimal weight gain during pregnancy is currently under debate. The World Health Organization showed that optimal birth weight of 3.1–3.6 kg was associated with maternal weight gains of 10–14 kg.<sup>4</sup> The US Institute of Medicine guidelines for weight gain in pregnancy suggest underweight pregnant women should gain 12.5–18 kg, normal weight women should gain 11.5–16 kg, women who are overweight should gain 7–11.5 kg and pregnant women with obesity should gain 5–9 kg.<sup>5</sup> Rapid weight loss or crash-dieting during pregnancy are potentially dangerous, leading to ketoacidosis, which can be associated with death of the baby, or cognitive impairment later in the child's life. Mothers who restrict food intake excessively during pregnancy could inadvertently place their children at greater risk of obesity.<sup>6</sup>

### Implications of obesity during pregnancy

Having obesity or overweight prior to and during pregnancy increases the risk of complications in pregnancy. Obese women have increased risk of miscarriage and their baby being born pre-term or dying early.<sup>7</sup> Furthermore, birth complications are a commonly observed consequence of maternal obesity, which increases the likelihood of emergency caesarean delivery. Additional complications at delivery for mothers with obesity encompass hypertension and pre-eclampsia, delivery of a large baby and gestational diabetes.

Women with obesity also often face difficulties in initiating and sustaining breastfeeding.<sup>8</sup> Furthermore, babies born to women with obesity are more likely to have congenital defects (e.g. spina bifida, heart defects).<sup>9</sup> Excessive weight gain during pregnancy can also lead to sustained obesity. This emphasises that for women with obesity, pregnancy provides an opportunity for change towards healthier eating and improved lifestyle, as well as healthier future pregnancies. Appropriate diet and exercise after delivery may help women lose excess postnatal weight.<sup>10</sup>

## Maternal obesity and later child health

Specific metabolic conditions of the mother may adversely affect the offspring's health. A child of a mother with obesity may suffer adverse development from exposure to a sub-optimal nutritional environment whilst in the womb. In addition, new research has shown that what a woman eats when she is pregnant can affect her child's risk of obesity, regardless of how fat or thin she is, or her baby's weight at birth.<sup>11</sup> Two EU-funded projects, EDEN (Study of pre- and early postnatal determinants of the child's development and health) and EARNEST (Early Nutrition Programming Project) are researching these issues.

## Conclusions

Pregnancy is a vulnerable time in terms of nutrition and health for mother and baby. Achieving optimal weight before pregnancy, and gaining appropriate amounts of weight during pregnancy is recommended to ensure the safe delivery of a healthy baby, and for the future health of the child.

EARNEST website: <http://www.metabolic-programming.org/>

EDEN publications: <http://eden.vjf.inserm.fr/index.php/fr/>

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