



Risks of Being Overweight for Women of Reproductive Age

Many people already know that being overweight or obese can raise a woman’s risk of heart disease, diabetes, stroke, hypertension and high cholesterol. New national research now indicates that a woman who is overweight before she becomes pregnant also has a higher risk of complications during her pregnancy and health problems for her children. This new information is especially troubling in light of the current obesity epidemic. Each year the population as a whole, including women of reproductive age, gains weight. While obesity is becoming more prevalent among women of all races and ages, the highest rates of obesity are among African American, American Indian and Hispanic women. These are also the groups with the highest rates of poor birth outcomes.

How much weight is too much?

Body Mass Index (BMI) is a number calculated from weight and height. BMI provides a reliable indicator of body fat for most people and is used to screen for weight categories that may lead to health problems. BMI does not measure body fat directly, but research has shown that BMI correlates to direct measures of body fat. Calculating BMI is one of the best methods for population assessment of overweight and obesity.

The table below shows how BMI values are classified into indicators of overweight status and provides an example of weight ranges that would apply to these BMI categories for a person who is 5’ 4”.¹

Weight categories	BMI value	Weight ranges for a 5’4” individual
Underweight	< 18.5	< 108
Normal	18.5 - 24.9	108 - 144
Overweight	25 - 29.9	145 - 173
Obese	30 - 39.9	174 - 231
Extremely obese	40+	232+

Weight and pre-pregnancy health

Women who are overweight before pregnancy are more likely to have chronic conditions such as diabetes or hypertension, which could impact the health of their pregnancies. Being overweight or obese is also a risk factor for infertility. Women with a body mass index (BMI) of 28 or higher are approximately 2.5 times more likely to have ovulatory infertility than women with a BMI of 18 to 22.³

Weight and pregnancy complications

Women with a higher pre-pregnancy BMI are at increased risk for:

- Gestational diabetes
- Preeclampsia/eclampsia
- Abnormal labor
- Premature delivery
- Cesarean delivery ⁴

Chart 1: Increased odds of pregnancy and delivery complications by weight status (BMI)

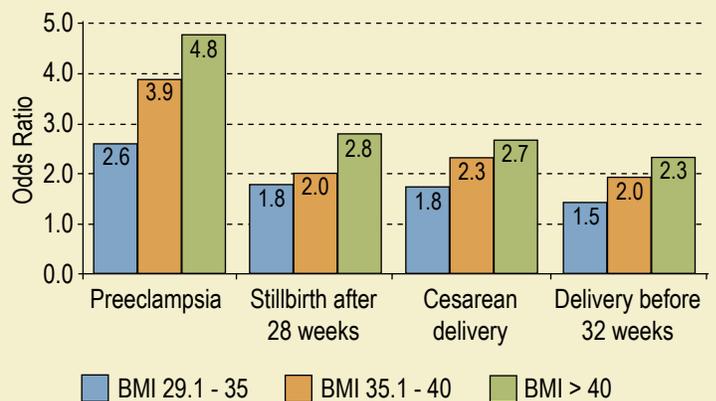


Chart 1 shows the increased odds of several conditions for women with a BMI in several elevated categories.⁵ This chart compares women with elevated BMIs to women with BMIs from 19.8 to 26 (generally the normal weight category). This study found that a woman with a BMI of 35 or higher was approximately four to five times more likely to have preeclampsia during pregnancy.

Impact of weight gain between pregnancies

Women with BMI increases of one or more points between pregnancies are at an increased risk for pregnancy and delivery complications for subsequent pregnancies (see Chart 2). Women whose BMIs increased three points or more between pregnancies were twice as likely to have gestational diabetes than women with no BMI change.⁶ For example, a three-point BMI increase would correspond to a 17-pound weight increase for a 5'4" woman who weighed 123 pounds before pregnancy.



Women who enter pregnancy overweight or obese retain more of their pregnancy weight gain. Women who are obese lose an average of 60 percent of their weight gain while normal-weight women lose 80 percent.⁷

Weight and birth outcomes

Overweight or obese women are more likely to have high birth weight babies, which increases the likelihood of Cesarean deliveries and increases the likelihood that the babies will be born with low blood



sugar, which can be associated with brain damage and seizures.⁴ As shown in Chart 3, pregnancies among overweight or obese women are also more likely to result in fetal distress, low Apgar scores, early infant death, and large birth weight infants.⁵ For example, women in this study with a BMI of 35 or higher were 2 to 2.5 times more likely than women with a BMI of 19.8-26 to experience fetal distress.

Chart 2: Increased odds of complications associated with BMI point increases between pregnancies

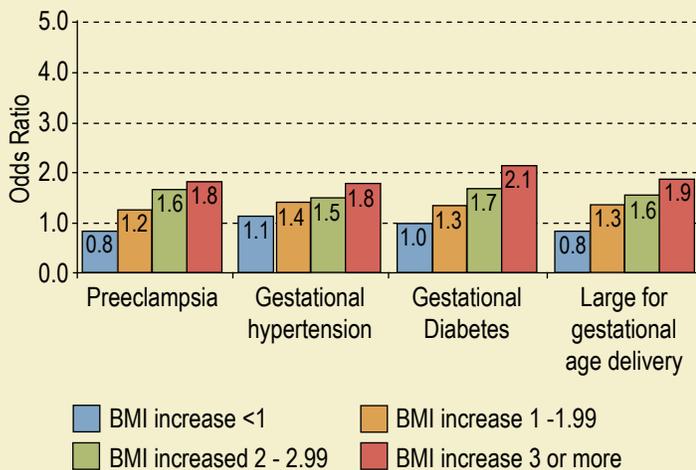
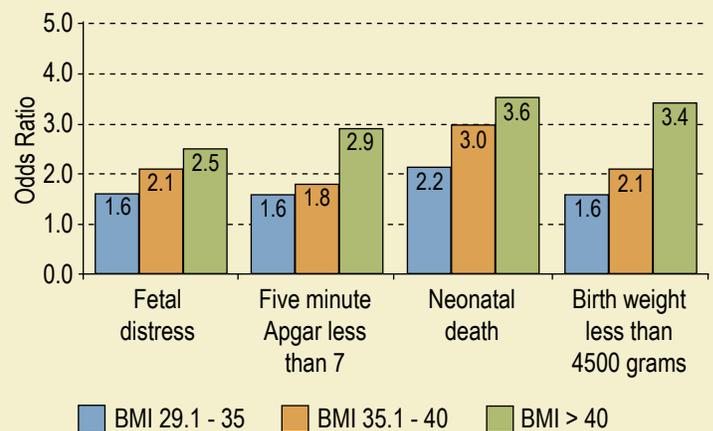


Chart 3: Increased odds of poor birth outcomes associated with weight status (BMI)



Weight and birth defects

Women who enter pregnancy overweight or obese are more likely to have pregnancies resulting in certain birth defects including:⁸

- Neural tube defects, such as spina bifida
- Heart defects
- Cleft palate
- Limb reduction defects



A recent study found obese women to be at a higher risk for seven of the 16 categories of birth defects investigated.⁹ These risks persisted after adjusting for maternal age, ethnicity, education, parity, smoking before pregnancy, and folic

acid supplements taken before pregnancy. An explanation for this higher risk level hasn't been found, but the study mentions the possibility of undiagnosed or subclinical cases of gestational or type 2 diabetes. (This study did not include known diabetic women.)

Women of childbearing age should take in about 400 micrograms of folic acid daily to prevent neural tube birth defects. Only about one-third of women of childbearing age report taking folic acid supplements daily. One national study found that obese women were 24 percent less likely to take folic acid daily when compared to normal-weight/underweight women, after adjusting for race, age, education, household income, knowledge that folic acid prevents some birth defects, and whether a health care provider had recommended folic acid.¹⁰ Nationally, birth defects researchers are calling for research to examine if overweight and obese women's increased risk for these defects is due to a lack of folic acid and if so, how much folic acid would lower the risk.

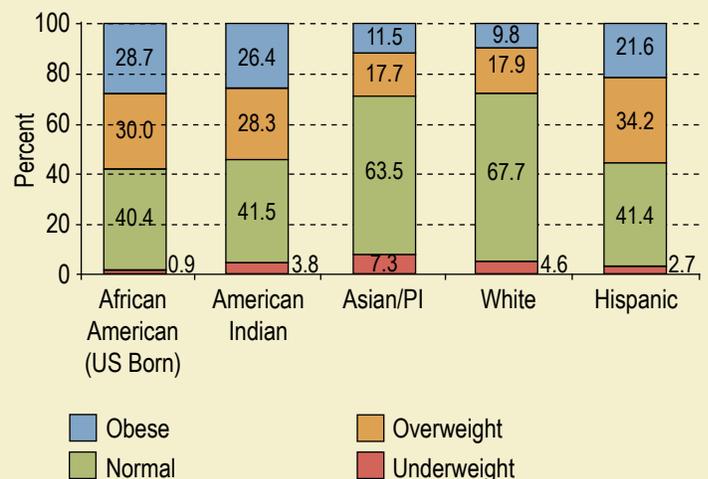
Weight and breastfeeding

Some studies have found that women who enter pregnancy with a higher BMI are less likely to breastfeed. Those who do breastfeed do so for shorter durations than women with a lower BMI.¹¹ Maternal obesity may actually cause poor lactation performance because of higher progesterone levels.¹² As a result, infants born to overweight and obese women are less likely to gain the health benefits associated with breastfeeding, such as a reduced risk of SIDS and improved immunity.¹³ Some studies indicate the effects of weight on breastfeeding may differ by race.^{14,15}

Risk among Minneapolis women

In Minneapolis, approximately 34% of women of childbearing age are overweight or obese (BMI \geq 25). Compared with white women (9.8%), Hispanic (21.6%), American Indian (26.4%), and African American (28.7%) women age 18-44 are much more likely to be obese. Minneapolis communities with larger proportions of low-income residents and residents of color have higher rates of obesity among women (22.6% in Phillips, 26.3% in Near North, and 18.2% in Camden) than communities with proportionally more high income and white residents (6% in Calhoun Isles and Southwest).²

Weight status of Minneapolis women of childbearing age



A growing public health problem



Each year more and more of the population, including children and adolescents, is overweight or obese.¹⁶

The adolescent girls in this growing trend are the next generation of overweight and obese mothers. The rise in overweight and obesity

in these teens today means a higher proportion of health problems, chronic conditions, pregnancy complications and poor birth outcomes facing mothers and the public health community in the very near future.

What can health professionals do?

- Address weight for women of reproductive age and tell them about their risks for poor birth outcomes, birth defects, pregnancy complications and the future weight of their children.
- Encourage all women to take folic acid supplements daily. Give this subject a special focus for diabetic and overweight women.
- Talk to women about the influence they have on their families' eating and exercise behaviors by the example they set, their family food decisions, and what they teach their children. Work with women to maximize the positive influences they can have on their family members' weights in their role as mothers.
- Help fund obesity prevention efforts and health care access for girls and women of reproductive age.

¹ http://www.cdc.gov/nccdphp/dnpa/bmi/adult_BMI/about_adult_BMI.htm

² SHAPE survey 2002, Minneapolis Department of Health and Family Support.

³ Rich-Edwards JW, Goldman MB, Willett WC, et al. Adolescent body mass index and infertility caused by ovulatory disorder. *Am J Obstetr Gynecol.* 1994; 171(1): 171-177.

⁴ http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_consequences.htm

⁵ Cedergren MI Maternal Morbid Obesity and the Risk of Adverse Pregnancy Outcome. *Obstetr Gynecol.* 2004; 103:219-24.

⁶ Villamor E, Cnattingius S. Interpregnancy weight change and risk of adverse pregnancy outcomes: a population-based study. *The Lancet.* 2006; 368(9542):1164-1170.

⁷ Gunderson EP, Abrams B, Selvin S. Does the pattern of postpartum weight change differ according to pregravid body size? *Int J Obes Relat Metab Disord.* 2001; 25(6):853-62.

⁸ Watkins M, Rasmussen S, et al. Maternal Obesity and Risk for Birth Defects. *Pediatrics.* 2003; 111(5 Supple Pt 2):1152-8.

⁹ Waller DK, Shaw GM, Rasmussen SA, et al. Prepregnancy Obesity as a Risk Factor for Structural Birth Defects. *Arch Pediatr Adolesc Med.* 2007; 161(8) 745-750.

¹⁰ Case AP, Ramadhani TA, Canfield MA, Beverly L, Wood R. Folic Acid Supplementation among Diabetic Overweight, or Obese Women of Childbearing Age. *JOGNN.* 2007; 36, 335-341, 2007.

¹¹ Donath SM, Amir LH. Does maternal obesity adversely affect breastfeeding initiation and duration? *J Paediatr Child Health.* 2000; 36: 482-486.

¹² Lovelady CA. Is maternal obesity a cause of poor lactation performance? *Nutrition Reviews.* 2005; 63(10):352-355.

¹³ Schack-Nielsen and Kim Michaelsen. Breastfeeding and future health. *Curr Opin Clin Nutr Metab Care.* 2006;9:289-296.

¹⁴ Kugyelka JG, Rasmussen KM, Frongillo EA. Maternal obesity is negatively associated with breastfeeding success among Hispanic but not black women. *J Nutr.* 2004; 134: 1746-1753.

¹⁵ Hilson JA Rasmussen KM, Kjolhede CL. High prepregnant body mass index is associated with poor lactation outcomes among white, rural women independent of psychosocial and demographic correlates. *J Hum Lact.* 2004; 20:18-29.

¹⁶ <http://www.cdc.gov/nccdphp/dnpa/obesity/childhood/prevalence.htm>

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