

This document is for informational purposes only. It does not necessarily represent the official policy position of the March of Dimes nor does it constitute medical advice.

While weight and obesity have long concerned women due to looks and lifestyle issues, it is becoming increasingly evident that obesity is a matter of health. Obesity in women can cause serious pregnancy-related complications, but it is a risk factor that can be modified to improve birth outcomes.

Adverse Outcomes Associated with Maternal Overweight and Obesity

- Birth defects, especially neural tube defects¹
- Infertility²
- Labor and delivery complications³
- Fetal and neonatal death⁴
- Maternal complications (e.g. hypertension, gestational diabetes, preeclampsia)⁵
- Delivery of large-for-gestational-age (LGA) infants^{3,5}

Research has shown that obesity increases the risk of adverse outcomes, such as those listed above, for both mother and baby. The dramatically increasing rate of obesity and the increasing rate of preterm births (PTB) have led to recent investigations of an association of maternal obesity with PTB.^{3,5} Findings suggest that, while obesity may not be an independent risk factor for PTB, obesity does increase rates of medical complications (such as hypertension and diabetes) that have been shown to contribute to PTB.

Obesity and being overweight are associated with a variety of adverse health outcomes, such as: cardiovascular disease, some types of cancer, diabetes, stroke, respiratory problems and arthritis.⁶⁻⁸ Underweight women (low pre-pregnancy weight) are also at increased risk for adverse pregnancy outcomes, including PTB and low birthweight (LBW).^{9,10} For these reasons, all individuals should be encouraged to maintain or work towards a healthy body mass index (as described below).

Obesity – Definition and Prevalence

Body Mass Index (BMI) is a tool for representing weight status by measuring weight for height. BMI is not valid while pregnant and should be measured pre- and post-pregnancy. It can be calculated using the following formula for BMI:

$$\text{BMI} = \left(\frac{\text{Weight in Pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \right) \times 703$$

An online BMI Calculator developed by the CDC can be found at: www.cdc.gov/nccdphp/dnpa/bmi/calc-bmi.htm

Weight Classification by BMI for Adults*^{6,11}

Weight Status	BMI (kg/m ²)
Underweight	<18.5
Normal weight	18.5 – 24.9
Overweight	25.0 – 29.9
Obese	≥30.0

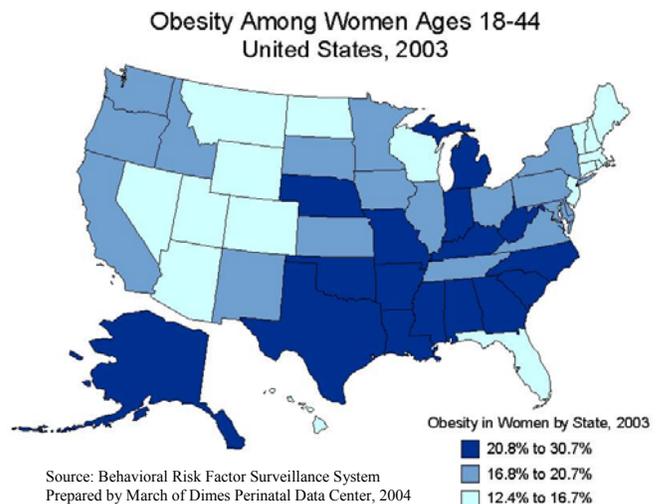
*Excludes pregnant women. BMI & weight status should be assessed pre- and post-pregnancy

Overall Prevalence:

- The prevalence of obesity or being overweight is a major health concern in the United States, and was named one of the ten leading health indicators used to measure the health of the nation in Healthy People 2010.¹²
- The overall occurrence of obesity and being overweight in the U.S. population has dramatically increased during the last two decades.^{13,14} Results of the most recent National Health and Nutrition Examination Survey (NHANES) from 1999–2002 indicate that an estimated 65% of U.S. adults are either overweight or obese.¹⁴

Prevalence of obesity in women of reproductive age:

- In 2003, 19.6% of U.S. women of reproductive age (aged 18-44 years) were obese (BMI greater than or equal to 30).¹⁵ See map below for this distribution by state.



Recommendations for Weight Gain During Pregnancy

Institute of Medicine (IOM) Recommendations for Weight Gain During Pregnancy by Prepregnancy Weight Status (1990)¹⁶

Description	Recommended Total Weight Gain (lbs)
Underweight	28–40
Normal weight	25–35
Overweight	15–25
Obese	15

The March of Dimes, in conjunction with the American College of Obstetricians & Gynecologists, supports the IOM guidelines for weight gain during pregnancy based on BMI before pregnancy. For pregnancies with twins, triplets or other multiples, women should consult their health care provider to determine how much weight to gain (depending on the number of babies).

Studies Linking Obesity to Pregnancy-related Complications

Cedergren MI (2004)³: A Swedish, population-based cohort study (n=805,275)

- When “morbidly obese (BMI >40)” mothers were compared with normal weight mothers, there was an increased risk for adverse pregnancy outcomes including: preeclampsia (nearly 5-fold), stillbirths after 28 weeks gestation (nearly 3-fold), early neonatal death (nearly 3.5-fold) and large-for gestational-age (LGA) infants (nearly 4-fold). For mothers with BMI between 35.1 and 40, associations were similar, but to a lesser degree.

Baeten JM et al. (2001)⁵: A population-based cohort study in Washington state based on birth data (n=96,801)

- Among nulliparous (no previous live birth) women, overweight (BMI 25.0–29.9) and obese women (BMI >30) had significantly increased risk for gestational diabetes, preeclampsia, eclampsia, cesarean delivery and LGA infants.

Weight Matters—For the Health of Both Mother & Baby

Women of childbearing age and their health care providers should work together to assess and address this important health issue before, during and after pregnancy. Health care providers can do the following:

Recommendations for ALL women (including preconception):

- Inform & counsel women about the health risks associated with overweight and obesity
- Encourage a healthy diet as outlined by the U.S. Department of Agriculture
http://www.marchofdimes.com/pnhec/159_823.asp
*Diets that restrict particular food groups are discouraged, especially during pregnancy
- Screen for hypertension and diabetes mellitus in women who are at risk
- Counsel women to consume adequate folic acid, iron and calcium
- Encourage regular exercise (≥ 30 minutes of moderate physical activity daily)¹⁷
- Counsel women to quit smoking

- Counsel women to avoid consuming alcohol during pregnancy

During Pregnancy (prenatal)

Recommendations “for ALL women” **PLUS the following:**

- Discuss recommended weight gain during pregnancy (*see 1990 IOM guidelines*)
- For women who are attempting to or have quit smoking, continue support to prevent relapse

After Pregnancy (postpartum)

Recommendations for “for ALL women” **PLUS the following:**

- Encourage breastfeeding
- Counsel women to return to a healthy weight
- For women who are attempting to or have quit smoking, continue support to prevent postpartum relapse

References

1. Watkins ML, Rasmussen SA, Honein MA, Botto LD, Moore CA. Maternal obesity and risk for birth defects. *Pediatrics* 2003;111:1152-8.
2. Rich-Edwards JW, Goldman MB, Willett WC, et al. Adolescent body mass index and infertility caused by ovulatory disorder. *Am J Obstet Gynecol* 1994;171:171-7.
3. Cedergren MI. Maternal morbid obesity and the risk of adverse pregnancy outcome. *Obstet Gynecol* 2004;103:219-24.
4. Cnattingius S, Bergstrom R, Lipworth L, Kramer MS. Prepregnancy weight and the risk of adverse pregnancy outcomes. *N Engl J Med* 1998;338:147-52.
5. Baeten JM, Bukusi EA, Lambe M. Pregnancy complications and outcomes among overweight and obese nulliparous women. *Am J Public Health* 2001;91:436-40.
6. National Institutes of Health. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults. Bethesda, MD: Department of Health and Human Services, NIH, National Heart, Lung, and Blood Institute, 1998.
7. Must A, Spadano J, Coakley EH, Field AE, Colditz G, Dietz WH. The disease burden associated with overweight and obesity. *JAMA* 1999;282:1523-9.
8. Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. *JAMA* 2003;289:76-9.
9. Ehrenberg HM, Dierker L, Milluzzi C, Mercer BM. Low maternal weight, failure to thrive in pregnancy, and adverse pregnancy outcomes. *Am J Obstet Gynecol* 2003;189:1726-30.
10. Schieve LA, Cogswell ME, Scanlon KS, et al. Prepregnancy body mass index and pregnancy weight gain: associations with preterm delivery. *Obstet Gynecol* 2000;96:194-200.
11. World Health Organization. Obesity: preventing and managing the global epidemic. Report of a WHO consultation presented at: the World Health Organization: June 3-5, 1997; Geneva, Switzerland. Publication WHO/NUT/NCD/98.1.
12. Healthy People 2010. 2nd ed. Washington, DC: US Dept. of Health and Human Services, 2000.
13. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA* 2002;288:1723-7.
14. Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. *JAMA* 2004;291:2847-50.
15. March of Dimes Perinatal Data Center, 2004. Analysis of data from the Behavioral Risk Factor Surveillance Survey, CDC.
16. Nutrition During Pregnancy Part I: Weight Gain; Part II: Nutrient Supplements. Committee on Nutritional Status During Pregnancy and Lactation, Institute of Medicine. Washington DC: National Academy Press, 1990.
17. ACOG Committee Opinion. Number 267, January 2002: Exercise during pregnancy and the postpartum period. *Obstet Gynecol* 2002;99:171-3.