

## Maternal & Infant Nutrition Briefs

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**Does Mother's Weight Loss Affect Infant Growth?**

**Formula Company Materials Reduce Breast-Feeding Duration**

**Eating for More than Two**

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*A research-based newsletter prepared by the University of California for professionals interested in maternal and infant nutrition*



### **Does Mother's Weight Loss Affect Infant Growth?**

Some mothers never shed those last few pounds gained during pregnancy. With obesity on the rise in this country, overweight breast-feeding women need to know if they can lose weight without affecting their milk supply. The Institute of Medicine currently advises overweight breast-feeding mothers not to lose more than 2 kg per month, but no randomized trials have ever been done. The purpose of this study was to examine the effect of weight loss in overweight breast-feeding women on growth of their babies.

The study involved a randomized, 10-week trial that assigned breast-feeding women to either a diet-and-exercise (n=27) or a control (n=21) group. The subjects were healthy, exclusively breast-feeding, sedentary, overweight nonsmokers. All had delivered full-term, healthy babies weighing at least 2500 gm at birth. Starting at four weeks postpartum, the diet-and-exercise mothers began exercising four times a week for 45 minutes at an intensity of 65-80% of their maximal heart rate. Typical exercise included aerobic dancing, jogging, or brisk walking. The diets lowered each mother's energy intake by 500 calories a day, but no diet provided less than 1800 calories. Control women did not restrict their energy intake nor exercise vigorously more than once a week.

Mothers in the diet-and-exercise group lost significantly more weight than control mothers (4.8 vs. 0.8 kg,  $p < 0.001$ ). Skin-fold measurements indicated that weight changes were mostly due to fat loss. By the end of the study, 38% of the women in the diet-and-exercise group had a body mass index less than 25, compared to only 11% of the control mothers. Over the 10 weeks, infant growth did not differ among the two groups. Average infant weight gain was 1925 + 500 grams in the diet-and-exercise group babies, compared to 1861 + 576 grams in control babies. Infant length gain also did not differ.

The authors conclude that overweight breast-feeding women can safely lose up to 2 kg a

month without affecting their milk supply. However, one reviewer pointed out that, given the large variation in infant weight gains, the sample size may have been too small to pick up differences. Until more studies are done, a safer recommendation may be to avoid excessive prenatal weight gains in overweight women and postpone more intensive diet and exercise programs until four to six months postpartum when mother's milk is no longer the only source of nutrition for the baby.

**Sources:** Lovelady CA, Garner KE, Moreno KL, Williams JP. 2000. The effect of weight loss in overweight, lactating women on the growth of their infants. *New Eng. J. Med.* 342 (7): 448-453

Butte N F. Dieting and exercise in overweight, lactating women. *New Eng. J. Med.* 342 (7): 502-503.

### **Formula Company Materials Reduce Breast-Feeding Duration**

Many obstetricians give their patients colorful, attractive infant feeding materials, produced by formula companies. While such materials usually state that breast-feeding is the best way to feed babies, they also tend to deliver equivocal messages about the ease or even desirability of exclusive breast-feeding. The purpose of this study was to examine the effects of formula company materials on a woman's decision to breastfeed, as well as duration of breastfeeding.

The researchers prepared a gift package for pregnant women that included pamphlets on pregnancy and infant feeding, a generic diaper bag, and a coupon worth \$5.00 of infant items. This research package was of equal monetary value to a formula company package that contained pamphlets, a diaper bag with the company logo, a can of formula, and a business card redeemable for a case of formula. Women, receiving prenatal care in outpatient clinics in Rochester, New York, were randomly assigned to receive either the research package (n=270) or the commercial package (n=277). Most of the subjects were white (94% of sample), and 60% planned to return to work after their babies were born. The researchers interviewed the women, while still in the hospital, about their infant feeding choice, breast-feeding intentions, and past breast-feeding experiences. Nurses phoned those choosing to breast-feed at 2, 6, 12, and 24 weeks postpartum to collect data on breast-feeding patterns. Overall breast-feeding was defined as the length of time any breast milk was given.

The women receiving the research package were not different from other women by age, ethnicity, parity, previous breast-feeding experience, plans to return to work, or infant birth weight or gestational age. Forty-three percent of the women who chose to breast-feed had uncertain or limited breast-feeding goals. Eighty-seven percent reported reading the materials in their packages and 21% of the commercial group redeemed their coupons. Among the other findings were the following:

- The type of package did not influence the choice to breast-feed, how long women planned to breast-feed, or whether they were uncertain about their goals.
- Risk of terminating breast-feeding while still in the hospital was ten times higher among women receiving the formula company package, compared to the research group (overall breast-feeding adjusted odds ratio: 10.3; 95% C.I. 1.3, 81.2;  $p < 0.03$ ).
- Risk of terminating breast-feeding within the first 2 weeks was almost two times higher among women receiving the formula company package, compared to the research group

(overall breast-feeding adjusted odds ratio: 1.91; 95% C.I. 1.02-3.55;  $p < 0.04$ ).

The adverse effects of formula company materials may be even greater when women receive their packets late during pregnancy, where hospitals are not “baby-friendly”, or when given to low-income or minority women. Based on the results of this study, health providers should only give pregnant women materials that comply with the World Health Organization code. Such materials may be obtained through state health departments, the American College of Obstetrics and Gynecology, or the American Academy of Pediatrics.

**Source:** Howard C, Howard F, Lawrence R, Andresen E, De Blicke E, and Weitzman M. 2000. Office prenatal formula advertising and its effect on breast-feeding patterns. *Obstet. Gynecol.* 95: 296-303.

### **Eating for More than Two**

During the past two decades, the rate of multiple births has been increasing in the U.S., due to fertility treatments and older maternal age. In 1980, twin birth accounted for 1 in 56 births, whereas by 1996, the rate was 1 in 38. Similarly, triplet births have increased from 1 in 3500 in the early 70’s to 1 in 785 births in 1996. Unfortunately, multiple births are also associated with higher rates of preeclampsia, iron-deficiency anemia, and hyperemesis gravidarum, as well as low birth weight and preterm deliveries.

Despite the increase in multiple births, relatively few studies have examined nutrient and energy needs or optimal weight gain in women expecting two or more babies. Nevertheless, much information, without scientific foundation, is available to these women via the Web and other sources. To assist nutritionists in counseling these women, a recent review in the *Journal of the American Dietetics Association* includes the following as “Best Practice” advice:

- A total weight gain of 35-45 lb. is recommended in twin pregnancies. Underweight women should gain at the upper end of the range and overweight or obese women, at the lower end. Women expecting triplets should gain at least 50 lbs.
- Some gain (perhaps 4-6 lbs.) is important during the first trimester. Since most multiple pregnancies are not discovered until later, guidelines should encourage positive gains throughout pregnancy, especially for women who have undergone fertility treatment. After the first trimester, women expecting twins should gain about 1.5 lbs. a week.
- Energy needs are estimated to be 150 kcal/day above recommended levels for singleton pregnancies. However, energy intake should be adjusted to support weight gain goals.
- The Institute of Medicine’s recommends supplements after 12 weeks including: iron (30 mg); zinc (15 mg); copper (2 mg); calcium (250 mg); vitamin B-6 (2 mg); folate (300 µg); vitamin C (50 mg); and vitamin D (5 µg, 200 IU). Where possible, use the Dietary Reference Intakes standards for tolerable Upper Intake Levels to identify nutrient intakes that are too high.
- Pregnant women should follow the Food Guide Pyramid, that recommends daily 3+ servings from the milk, yogurt, and cheese group; 3+ servings from the meat, poultry, fish dry beans, eggs, and nuts group; 3+ servings from the vegetable group; 2+ servings from the fruit group; and 6+ servings from the bread, cereal, rice, and pasta group. Additional servings should be based on weight gain goals. Since needs for linoleic and linolenic acids appear to be

higher in multiple than in single pregnancies, advise women to use sunflower, safflower, or canola oil, and other sources of these fatty acids.

**Source:** Brown JE and Carlson M. 2000. Nutrition and multifetal pregnancy. JADA 100 (3): 343-348.

### **No Effect of Early Nutrition on Growth at 7-8 Years of Age**

Previous studies in preterm babies have reported that early nutrition affects development at 7-8 years of age. In particular, preterm boys who are fed special preterm formulas have higher verbal and overall IQ scores, compared to boys fed standard infant formula (no effects seen in girls). The same researchers now report that type of feeding in the first 4 weeks of life has no long-term effect on growth or body proportions at 7-8 years of age.

These observations come from multicenter clinical trials in the United Kingdom, where 926 preterm infants were randomly assigned to receive either preterm formula, standard formula, or banked donor human milk. In some of the trials, the infants received these feedings as their only source of nutrition and in other trials, as a supplement to their own mother's breast milk. Despite faster growth in early infancy, babies fed the preterm formula did not maintain this advantage later on, compared to babies fed standard formula or banked donor milk. The length of the intervention (4 weeks) may have been too short to see any lasting effects on growth. The authors suggest that the period after a full-term birth may be more critical in programming growth than the period before birth. This hypothesis remains to be proven in future studies.

**Source:** Morley R. and Lucas A. 2000. Randomized diet in the neonatal period and growth performance until 7.5-8 years of age in preterm children. AJCN 71: 822-8

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