

Maternal & Infant Nutrition Briefs



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



Does Morning Sickness Prevent Mothers from Eating Harmful Foods?

Nausea and vomiting are common, annoying side-effects of many pregnancies. Many providers view mild nausea and vomiting as favorable indicators that normal hormonal changes are occurring. Whether or not mild "morning sickness" serves a purpose is not known. Yet, recently, Margie Profet grabbed headlines by proposing that the purpose of "morning sickness" is to protect women against miscarriages and other adverse pregnancy outcomes by decreasing the mother's intake of bitter or pungent vegetables and other "harmful" foods. According to Profet, these foods specifically include broccoli, brussels sprouts, cabbage, cauliflower, eggplant, kale, spinach, romaine lettuce, mushrooms, black pepper, coffee, cola, and tea. While seemingly unlikely, Profet's theory could not be easily refuted due to the lack of scientific studies.

In a recent issue of the American Journal of Obstetrics and Gynecology, Brown and co-workers tested the theory with data from the Diana Project, a population-based prospective study of dietary and other factors related to pregnancy outcomes. The researchers examined the following questions: 1) Do pregnant women with nausea and vomiting avoid Profet's "harmful foods" more than women without nausea and vomiting? and 2) Do women who consume more of these foods have poorer pregnancy outcomes than women who consume less? Data on dietary intake, illnesses during the first 2 months after conception, and pregnancy outcomes were available for 546 women who were followed prior to conception through 6 to 8 weeks postpartum. Of these women, 452 delivered live-born infants, without birth defects. Adverse outcomes for the other 94 included miscarriages, fetal death, and minor or major birth defects. Using t-tests, the researchers found no significant differences in mean intakes of all "harmful" foods combined or of any particular food among pregnant women with (n=436) and without nausea and vomiting (n=113). In logistic regressions, mean intakes of all or each "harmful" food did not predict adverse pregnancy outcomes.

These results provide some scientific basis to discredit Margie Profet's thesis that morning sickness keeps women from eating certain vegetables and foods that would cause miscarriages and birth defects. However, one needs to keep in mind that the scope of the analysis in this paper was narrowly defined, and the conclusions do not extend to other potential relationships between maternal diet and pregnancy outcomes.

Sources:

- 1) Profet, M. (1995) *Protecting your Baby-to-be: Preventing Birth Defects in the First Trimester*. Reading (MA): Addison-Wesley, 1995.
- 2) Brown, J., E. Kahn, T. J. Hartman. (1997) Profet, profits, and proof: Do nausea and vomiting of early pregnancy protect women from "harmful" vegetables? *Am. J. Obstetrics. Gynecol.* 176: 179-81.

Early Prenatal Gain Adds Up To Greater Postpartum Weight

In 1990, the National Academy of Sciences recommended a total weight gain of 7 to 18 kg during pregnancy, depending on maternal pregravid weight. The main goal of the guidelines was to promote adequate fetal growth. Insufficient data were available to make recommendations on the timing of weight gain to minimize postpartum weight retention. Yet, longitudinal studies in the U.S. have found that maternal weight increases by 1.5 to 2 kg from one pregnancy to the next. With increasing rates of obesity in this country, the question of how to maximize birth weight while minimizing postpartum weight retention is very important.

The purpose of this study was to examine the effect of timing of weight gain on birth weight and postpartum weight retention. The data came from the Prenatal Nutrition Counseling Program of Prince Edward Island, Canada. The sample included 371 healthy, low-income white women who were followed during their pregnancies between 1979 and 1989. Cases were excluded if the women smoked; used alcohol or drugs; were under 16 or over 40 yrs.; or had premature deliveries, pregnancy complications, or other health problems. All women were weighed on admission to the program and at 20 wks, 30 wks, < 1 wk. before delivery, and 6 wks. postpartum. Pregravid weight was categorized into three groups as a percentage of standard weight defined by the Metropolitan Life Insurance tables: underweight (<90%); normal (90-120%); and overweight (>120%). Postpartum weight retention (PPWR) was defined as the difference between maternal weight at 6 weeks postpartum and pregravid weight.

PPWR averaged 5.3 kg, with 75% of the women retaining more than 2.5 kg at 6 wks. postpartum. Most women retaining more than 2.5 kg had prenatal weight gains exceeding 12 kg. Early maternal weight gain (< 20 weeks) was a strong predictor of PPWR. However, the strongest predictors of infant birth weight were gestational length, parity, infant gender, and maternal weight gain occurring between 21-30 weeks. The authors note that weight gain during the final 10 weeks of pregnancy depends on the length of gestation and for that reason, appears relatively less significant in the regression than weight gained earlier. On the average, high weight retainers gained more than low weight retainers during the first 20 weeks of pregnancy by 6.2 kg in overweight women and 3.3 kg in normal and underweight women.

Based on these findings, the authors recommend that normal and overweight women attain the larger portion of their total weight gain after 20 weeks. This recommendation translates into gains of 3-4 kg from weeks 0-20 and 4-5 kg for weeks 21-30 and >31 weeks for normal weight women. For overweight women, a mean weight gain of 9-10 kg occurring mostly after

20 weeks minimizes weight retention at 6 weeks postpartum.

Source: Muscati, S. K., K. Gray-Donald, and K.G. Koski. (1996) Timing of weight gain during pregnancy: promoting fetal growth and minimizing maternal weight retention. *Int. J. of Obesity and Related Metabolic Disorders* 20:526-32.

Using Videos to Teach Teens about Feeding Babies With Love

In 1993, teenagers gave birth to 12.9% of the infants in the U.S. While physically able to bear children, many teens are not well-prepared for the demands of parenthood. Children of economically disadvantaged teens are at the greatest risk of poor outcomes that stem from inadequate parenting. Mealtime provides an excellent opportunity to teach parenting skills to teens with infants. Positive communication that occurs between the mother and baby at mealtimes forms the basis for emotional attachment and social development. Since teens are often heavily influenced by the behavior of their peers, videotapes of teens and their babies may be an effective way to model good nutrition and responsive communication between mother and child. A paper in *Pediatrics* discusses changes in attitudes and behavior in African-American teens who viewed a culturally-sensitive videotape, entitled "Feeding Your Baby With Love".

Researchers from the University of Maryland in Baltimore worked with an advisory council of African-American teen mothers to develop the scenes and messages included in the videotape. The filming was done in the homes of the same teen mothers and featured realistic, challenging feeding situations with children, who ranged from one to 21 months of age. To test the effectiveness of the videotape, the researchers recruited 64 first-time African-American teen mothers and their infants from urban high schools, WIC, and other services. All mothers and babies were videotaped during a mid-day meal occurring in a laboratory setting. No observers were present during the session. Afterwards, the mothers completed a 52-item questionnaire that examined attitudes toward mealtime communication and nutritional and developmental needs of young children. The mothers were then randomly assigned to receive the intervention or serve as controls. Only mothers in the intervention group watched the 15-minute video and received a copy to take home. Two weeks later, all mothers and infants returned to the laboratory where they were videotaped and completed the questionnaire again. A trained rater, who was blinded to the group assignments, viewed the videotapes of the feeding situations and scored the mothers on the amount of communication, quality of verbalization, and amount of creativity expressed during the mealtimes.

At the first visit, no differences were observed in attitudes and behaviors between the intervention and control groups. No changes over time occurred in the controls. However, mothers who had viewed the video reported more favorable attitudes toward mealtimes ($p = 0.001$) and communicated more with their babies ($p = 0.04$) at the second visit, compared to their first visit. No data are available to determine whether these changes were sustained over time. Also, 97% of the mothers in the study were in school and therefore represent a select group. A further limitation of the videotape "Feeding your Baby with Love" is that mealtime scenes of the youngest infants show bottle-feeding, rather than breast-feeding. The choice of these scenes, rather than others, is probably due to the preference of the teens to depict this behavior in the video. Thus, the efficacy of using videotapes to change behavior among higher risk teens--and to encourage breast-feeding-- remains to be established.

Source: Black, M., and L. Teti (1997) Promoting mealtime communication between

adolescent mothers and their infants through videotape. *Pediatrics* 99: 432-437.

Do Pacifiers Shorten the Duration of Breast-feeding?

Pacifiers are associated with shorter duration of breast-feeding in epidemiological studies. Because pacifier use is widespread among some cultures, further understanding of how pacifiers are linked to duration is important to promote breast-feeding effectively. Specifically, previous studies have not clearly ruled out reverse causation, i.e. whether breast-feeding problems lead to pacifier use. Another possibility is that pacifier use is an indicator of other maternal or infant behavioral characteristics that shorten duration of breast-feeding.

To sort out the complex factors involved in pacifier use and early weaning, researchers from Brazil used both epidemiological and ethnographic approaches. Between January to December of 1993, they tracked infant feeding patterns and pacifier use among a cohort of 655 babies at 1, 3, and 6 months after birth (96.8% successfully tracked). Stratifying the cohort by mother's age, education, and neighborhood, the researchers randomly drew a subsample of 80 mother-infant dyads to be observed in their homes. Because pacifier use might be an indication of breast-feeding problems rather than cause, all women reporting difficulties in the first month were excluded from the analysis. Intense (day and night) pacifier use at one month strongly increased the risk of stopping breast-feeding within 6 months by 2.5 times. However, of 12 nonusers at 1 month who stopped breast-feeding between 1 and 3 months, half started using pacifiers after full weaning. The ethnographic data indicated that pacifier use was very positively regarded in this population. Moreover, mothers who strongly encouraged their infants to accept pacifiers also had more rigid breast-feeding and parenting styles (i.e., scheduled feedings, delays in comforting crying infants, less interaction with the baby, etc.) than mothers who pushed pacifiers less. Mothers who pushed pacifiers also tended to be more sensitive to social criticisms, embarrassed by breast-feeding, and more cued into mechanical aspects of their baby's growth.

This study provides an excellent example of how epidemiological studies alone could miss key factors, important in breast-feeding promotion. The authors conclude that a campaign specifically aimed at reducing pacifier use in this setting would be doomed for failure, unless it also helps mothers deal with the challenges of nursing and addresses their anxieties.

Source: Victora, C, D. Behague, F. Baros, M. Olinto, and E. Weiderpass. (1997) Pacifier use and short breastfeeding duration: cause, consequence, or coincidence. *Pediatrics* 99: 445-453.

Maternal and Infant Nutrition Briefs is a research-based newsletter prepared by Dr. Lucia Kaiser (llkaiser@ucdavis.edu), a Cooperative Extension Specialist in the Department of Nutrition, University of California at Davis. This newsletter is written for health professionals interested in nutrition of mothers and young children.

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