

## 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*



### **Parental Smoking Linked to Poor Dietary Intake of Low-Income Children**

Many studies have shown that prenatal and passive exposure to smoking has adverse health effects on children, including low birth weight, infant mortality, otitis media, respiratory infections, asthma, and lower breast milk volumes leading to slower infant growth rates. The research also indicates that smokers are more likely than nonsmokers to have dietary patterns deviating from the current Dietary Guidelines. Since parents are known to influence the food selection of their children, the link between parental smoking and the quality of children's diet seems likely but until recently has not been demonstrated (1).

To determine if parental smoking is related to dietary intakes of children, Johnson and co-workers used data from the 1989 and 1990 United States Department of Agriculture Nationwide Food Consumption Survey-Continuing Survey of Food Intakes of Individuals (NFCS-CSFII). The sample included children ages 2-17 yrs. living with one or both parents in households at or below 185% of the poverty level. Parental smoking was defined as the sum of the average number of cigarettes smoked per day by both parents (or only one in single-parent households). For each child in this study, three days of dietary intakes were analyzed for total energy, percent of energy from fat, percent of energy from saturated fat, and cholesterol. The researchers also calculated the average nutrients per 1000 kcals for protein, fiber, and 14 vitamins and minerals. The relationship between parental smoking and children's dietary quality was examined using analysis of covariance, controlling for race, maternal occupation, and maternal age.

Parental smoking was related to vitamin A and fiber per 1000 kcal, total energy, percent of energy from saturated fat, sodium, and cholesterol. These relationships were significant among children whose parents smoked 11 or more cigarettes per day. The researchers also found that parents smoking more than 20 cigarettes per day spent relatively less on food vs. nonfood items, compared to other households. These observations are consistent with the

notion that cigarettes compete with food in low-income households and may explain why parental smoking is linked to poorer quality of children's diets. These findings may open the door to more discussion on whether or not the Women, Infants, and Child (WIC) Supplemental Nutrition Program should drop "passive smoking" as a predisposing risk factor for low-income infants and children (2).

**Sources:**

- (1) Johnson, R., M. Wang, M. Smith, and G. Connolly et. al. ( 1996). The association between parental smoking and the diet quality of low-income children. *Pediatrics*. 97: 312-317.
- (2) Committee on Scientific Evaluation of WIC Nutrition Risk Criteria, Food and Nutrition Board, Institute of Medicine, National Academy of Sciences (1996) *JADA* 96: 925-930.

**Expert Committee makes Recommendations on Promoting Breastfeeding**

In 1994, three branches within the California Department of Health Services formed a Statewide Breastfeeding Promotion Committee to make recommendations on what can be done to increase incidence and duration of breastfeeding in California. The Women, Infants, Children (WIC) Supplemental Nutrition, Maternal and Child Health (MCH), and Children's Medical Services (CMS) Branches have worked tirelessly over the past two years with lactation consultants and other experts from academia, hospitals, managed care, public agencies, local WIC programs, and community organizations to formulate recommendations. Their final report *Breastfeeding: Investing in California's Future* was released in November of 1996.

This report includes recent data on breastfeeding trends in California and the U.S., a literature review on the benefits of breastfeeding, and prioritized recommendations on steps to promote breastfeeding in California. The committee identified 3 overriding recommendations: 1) establish an Office of Breastfeeding Promotion within the Department of Health Services; 2) design all breastfeeding promotion activities to be culturally relevant to California's diverse populations; and 3) accept no money or goods from manufacturers of artificial baby milk in implementing the recommendations of this report. Seventeen other recommendations from 6 strategic areas--professional education, health care systems, public education, mother-to-mother support, workplace and educational centers, and research--are briefly described below.

- Ensure that all mothers have access to culturally-appropriate breastfeeding information and services
- Develop an overriding state policy so that health care institutions and plans will facilitate breastfeeding
- Integrate appropriate and culturally relevant breastfeeding training into the curriculum at health-related professional schools
- Adopt and implement model standards for breastfeeding promotion and support through the WIC program
- Develop a social marketing campaign to promote breastfeeding
- Develop incentives for health-providers to receive continuing education in breastfeeding
- Work with businesses and others to promote breastfeeding friendly workplaces
- Evaluate the cost savings and other benefits of increased breastfeeding to different sectors
- Develop a partnership with the media to promote breastfeeding images
- Evaluate the cost effectiveness of different strategies to promote breastfeeding
- Incorporate breastfeeding education into the science and health curricula of schools
- Support research on risk factors for early termination of breastfeeding
- Recommend legislation to support breastfeeding by working mothers

- Ensure that effective mother-to-mother support is accessible for all breastfeeding women
- Develop a means to evaluate breastfeeding incidence and duration on an on-going basis
- Encourage breastfeeding promotion through local coalitions
- Conduct a needs assessment to assist in planning and targeting breastfeeding programs

**Source:** Breastfeeding Promotion Committee Report to the California Department of Health Services Primary Care and Family Health. (1996) Breastfeeding: Investing in California's Future.

### **Breastfeeding Advice for Women with Breast Implants**

Although 1-2 million women have undergone surgery for breast implants, relatively little is known about the effects of augmentation surgery on breastfeeding. A retrospective study from Texas Children's Hospital in Houston provides additional evidence that insufficient lactation may be more common among women with implants, compared to women who have not had augmentation surgery.

In that study, the investigator identified 42 women who had a history of breast implant surgery from more than 5000 maternal-infant lactation records maintained by the Texas Children's Lactation Program. The cases were matched with 42 controls who were similar in age, parity, previous breastfeeding experience and time that breastfeeding was initiated after delivery.

In selecting controls, the investigator was blinded to the lactation outcomes of both groups. Lactation management protocols, similar for all mother-infant pairs, consisted of intensive instruction and monitoring by a lactation consultant in the hospital and follow-up by phone after discharge at least every other week up to 3 months postpartum. Insufficient breastfeeding was defined as little or no onset of lactogenesis after delivery and/or an infant growth rate of less than 20 g/ day with exclusive breastfeeding.

Case and control infants were similar in birth weight and gestational age. Of the women with implants, 67% had insufficient lactation compared with 7% of the women without implants ( $p < 0.001$ ). Moreover, the type of incision, specifically the periareolar approach, was significantly related to lactation insufficiency ( $p < 0.01$ ). In interpreting these results, one should be cautious in extrapolating the failure rates to the general population. The women who were referred to and followed through the Texas Lactation Program were probably not representative of the population at large. However, based on the findings discussed in this paper, health providers should query pregnant women with implants about the surgical techniques used, loss of nipple sensation, actual placement of the implants, preexisting problems leading to the surgery, and past problems with implants. Now that a new blood test has been developed to measure antibodies produced in response to silicon leakage, health practitioners may soon have additional tools to use when advising women with breast implants who wish to breastfeed.

**Source:** Hurst, N. (1996). Lactation after augmentation mammoplasty. *Obstetrics and Gynecology* 87:30-4.

### **Energy Intake Does Not Correct Effects of Smoking on Birth Weight**

Although some women quit smoking when they get pregnant, about 20% of all pregnant women continue smoking after their first trimester. Maternal smoking slows fetal growth directly by reducing tissue uptake and placental transfer of nutrients and oxygen. Smoking

might also affect fetal growth indirectly by reducing the mother's appetite and energy intake. Women who smoke during pregnancy gain less weight than nonsmokers. Since the 1970's, some have suggested that nutritional supplements might override the adverse effects of smoking on fetal growth. The purpose of this study was to determine whether lower energy intake in pregnant smokers might be a significant factor affecting birth weight.

The study involves a retrospective comparison of 601 nonsmoking and 729 smoking, healthy pregnant women who delivered babies without complications between 1979-89 in Canada. All women received dietary counseling during their pregnancies. Average energy and protein intakes were calculated from the initial diet history form completed by a dietitian and 3-day measured food records collected at regular visits throughout the pregnancy. Small-for gestational age (SGA) was defined as birth weight falling below the 10th percentile specific for infant sex and age.

Smokers consumed an average of 13.8 cigarettes per day. They also reported higher energy intakes for similar activity levels and were 3 times more likely to have an SGA infant, compared to nonsmokers. In nonsmokers only, energy intake and maternal weight gains were significantly correlated ( $r = 0.22$ ,  $p < 0.0001$ ). While dietary intakes were positively related to birth weight (about + 6 g for every 100 kcal per day), the negative effect of smoking on birth weight (- 205 gm) clearly had a greater impact on birth weight. The researchers estimated that if all women who smoke during pregnancy were to quit early in their pregnancies, 30.8% of the SGA births could be averted. Similarly, if pregravid underweight and prenatal low weight gains could be corrected, the incidence of SGA would drop by 16.7% and 15.3 %, respectively. The implications of this study are that a major portion of SGA births would still occur, even if dietary intakes were increased before or during pregnancy in smokers.

**Source:** Muscati, S.K., K. Koski, K. Gray-Donald. (1997) Increased energy intake in pregnant smokers does not prevent fetal growth retardation. *Journal of Nutrition* 126: 2984-2989.

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