

Maternal & Infant Nutrition Briefs



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Pediatricians Make a Statement about Juice

Ginger for Relief of Morning Sickness

Does Early Exposure to Flavor Affects Food Acceptance?

Breast Pumping after C-Section Not Effective

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



Pediatricians Make a Statement about Juice

In a recent issue of *Pediatrics*, the American Academy of Pediatrics (AAP) published its recommendations on the use of juice for infants, children, and teens. The statement begins with some background information on recent trends, labeling requirements, and nutritional composition of juice. The AAP notes that children under 12 years of age account for only 18% of the population but drink 28% of the juice and juice drinks in this country. While the vitamin C and flavonoids in juice may have positive long-term health effects, fruit juice has no nutritional benefit at all for infants under 6 months of age and no advantage over whole fruit for older infants and children. The AAP also discusses how the sugars in juice—sucrose, glucose, fructose, and sorbitol—are absorbed. Sorbitol is not well-absorbed and, in excessive amounts, can result in bloating, abdominal pain, and diarrhea. Fructose is not as well absorbed in juices containing more fructose than glucose (i.e., as in apple or pear juice), compared to juices with equal amounts of fructose and glucose. The relatively high carbohydrate content in juice (11-16 g/100mL) makes juice particularly unsuitable for use in rehydrating children or managing diarrhea. Another concern involves the safety of unpasteurized juices that may contain *Escherichia coli*, *Salmonella*, and *Cryptosporidium*. Finally, the AAP cites studies that have linked excessive juice intakes to undernutrition, obesity, and dental caries. Their recommendations for infants, children, and youth include the following:

- No juice before six months of age.
- No juice to infants at bedtime or from a bottle or easily transportable cup.
- Limit juice to 4-6 oz for children 1-6 yrs. and 8-12 oz for children 7-18 yrs.
- Encourage whole fruit to meet recommended daily intakes of fruit.
- No unpasteurized juice for infants, children, and teens.
- Evaluate juice intake in cases of malnutrition, dental caries, and chronic diarrhea.
- Educate parents about the use of fruit juice and juice drinks.

Source: American Academy of Pediatrics. The use and misuse of fruit juice in pediatrics. *Pediatrics* 2001; 107(5): 1210-1213.

Ginger for Relief of Morning Sickness

Although morning sickness is common, little is known about the effectiveness or safety of home remedies for this complaint of pregnancy. Only one clinical trial has studied the effect of ginger among women who were experiencing severe nausea and vomiting during pregnancy. The purpose of this study was to examine the effectiveness of ginger on milder cases of morning sickness.

The study was meticulously designed and carried out in a hospital in Thailand. Seventy healthy women who began their prenatal care at less than 17 weeks and had experienced morning sickness were randomly assigned to take capsules containing 250 mg of ginger 4 times a day or a placebo. None had used any other medication or remedy for their nausea and vomiting. Neither the women nor the physicians in charge knew which treatment was assigned. The women took the ginger or placebo capsules for four days and kept daily records on the severity of their symptoms and episodes of vomiting. Compliance was good in both groups: 86% of the controls and 100% of the ginger group took at least 8 capsules.

Compared to the controls, women who took ginger for 4 days reported significant improvement in nausea ($p < 0.014$) and fewer episodes of vomiting (ginger: 37.5% vs. placebo: 65.7%, $p < 0.021$). Among those taking ginger, there was one complaint of abdominal discomfort, one case of heartburn, and one case of diarrhea. The rates of preterm and cesarean deliveries were similar among the groups. All babies were born healthy and without birth defects.

The findings of this study were similar to those of the other clinical trial; that is, ginger appears effective in relieving the symptoms of morning sickness. However, we still do not know how ginger works to alleviate nausea and vomiting. Also, some experts are concerned that ginger might interfere with the binding of testosterone to its receptor and in the long-term, affect differentiation of the infant's brain. The authors conclude that, although results thus far are promising, a larger study is needed to determine the safety of ginger during pregnancy.

Source: Vutyavanich T, Kraissarin T, Ruangsri R. Ginger for nausea and vomiting in pregnancy: randomized, double-masked, placebo-controlled trial. *Obstet Gynecol* 2001; 97: 577-82.

Does Early Exposure to Flavor Affects Food Acceptance?

For centuries, mothers have believed that certain experiences during pregnancy or breastfeeding could shape their child's character. Studies have shown that babies appear to recognize a variety of sounds that they heard while still in the womb. Some people have wondered whether fetuses can also learn about flavors and smells. Flavors from the mother's diet do pass into the amniotic fluid and are swallowed by the fetus. Some of these same flavors also pass into the breast milk. What effect might early exposure to a variety of flavors have on acceptance of new foods during weaning?

To answer that question, researchers studied the effects of exposure to carrot juice during pregnancy or breastfeeding on infant acceptance of carrots during weaning. Pregnant women

who planned to breastfeed were randomly assigned to one of the following groups: 1) carrot juice during pregnancy (n=16); 2) carrot juice during breastfeeding (n=17); or 3) water only during both periods (n=14, controls). Mothers in the experimental groups drank 300 ml of carrot juice 4 days a week for 3 weeks, either during the last trimester of pregnancy or the first 2 months postpartum. Four weeks after cereal was introduced to the infants, the mothers and their babies participated in two videotaped feeding sessions using either cereal mixed with water or cereal mixed with carrot juice. Trained observers and the mothers rated the infant's reaction when given carrot juice for the first time.

Analysis of the videotapes revealed significant group differences in infant reactions to the carrot-flavored vs. plain cereal. During the first two minutes of feeding, babies exposed to carrot juice prenatally or during breastfeeding showed fewer grimaces and negative facial responses to the carrot-flavored vs. the plain cereal. In contrast, the control babies tended to respond more negatively to the carrot-flavored cereal, compared to plain cereal. According to the mothers, infants exposed to carrot juice prenatally appeared to like carrot-flavored cereal better than the plain version. Although babies exposed to carrots, compared to controls, tended to eat more carrot-flavored than plain cereal, the differences were not significant.

This study is the first to show that prenatal and early postnatal experiences with flavor may influence an infant's response to solid food. Although the article claims that mothers were unaware of study's purpose, they may have guessed and, through subtle cues to their infants, influenced the baby's response. The researchers might have controlled that bias either by having the mother wear a partial mask (as they have done in other studies) or having a babysitter who was truly unaware of the group assignment feed the child. More research is needed to learn how early experiences with new foods influence later food likes and dislikes.

Source: Mennella JA, Jagnow CP, Beauchamp GK. Prenatal and postnatal flavor learning by human infants. *Pediatrics* 2001; 107: e88. At www.pediatrics.org/cgi/content/full/107/6/e88. Accessed 6/7/01.

Breast Pumping after C-Section Not Effective

For the success of long-term breastfeeding, mothers need to be assured of their ability to nurse their babies. Sometimes, mothers experience a delay in producing a plentiful supply of real milk. That delay can erode a mother's confidence, leading to early termination of breastfeeding. Mothers who have had a cesarean delivery are at greater risk in experiencing such delays and are often advised to stimulate milk production by pumping their breasts in the early postpartum period. The rationale behind pumping is mimic breastfeeding and increase the milk supply in women whose babies are not nursing well. However, the impact of that practice on the supply of milk and duration of breastfeeding among women having cesarean deliveries is not known.

Therefore, the authors of this study randomly assigned healthy mothers who had had cesarean sections and were planning to breastfeed to either a breast pumping (n=30) or control group (n=30). The pumping group used a Lactina double pump 3 times a day for 10-15 minutes each time between 24-72 hours postpartum. The expressed colostrum was then fed to the baby with a syringe. The control group merely placed the breast shield on their breasts for the same length of time. Both groups received breastfeeding and encouragement support from trained staff at a Baby Friendly hospital. There were no differences in frequency of breastfeeding or amount of time spent breastfeeding among the two groups. Follow-up of

breastfeeding outcomes was made at 7-10 days postpartum, 6 months, and 10 months.

One of the main outcomes evaluated in the early postpartum period was milk transfer, measured by the difference in infant weight before and after a feeding. Milk transfer is not strictly equal to milk production, because some milk may remain in the mother's breast after a feeding. However, due to the nature of the study, the researchers were unable to estimate total milk production, because that would have required pumping the breasts of all women.

Contrary to what was expected, breast pumping did not increase milk transfer in the early postpartum period. In fact, among primiparas or first-time mothers, there was evidence that pumping may have interfered with breastfeeding and even, shortened the duration of breastfeeding overall. The sample size of primiparas was too small to determine definitively the effects of pumping on that group of women. Although the authors were not certain why breast pumping was ineffective, women who pumped experienced significantly more breast pain during the intervention than the controls. The women who pumped may also have been somewhat discouraged to see how little they were able to express (0.1-1.0 ml).

Based on their results, the authors concluded that pumping before the onset of lactation does not appear to improve breastfeeding outcomes and may even be detrimental in primiparas. Since this study was conducted in a relatively supportive environment among well-educated women, outcomes could be worse in other situations. More research is needed to formulate optimal recommendations for women who are risk of delay in the onset of lactation.

Source: Chapman DJ, Young S, Ferris AM, Perez-Escamilla R. Impact of breast pumping on lactogenesis stage II after a cesarean delivery: a randomized clinical trial. *Pediatrics* 2001; 107: e94

At www.pediatrics.org/cgi/content/full/107/6/e94 Accessed 6/7/01

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