

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



Television Viewing Habits of WIC Children and Overweight

Previous research has found an association between watching TV and overweight in school-age children and youth. The purpose of this study was to determine if a similar relationship between TV and overweight exists in younger children. In addition, the authors were interested in determining if having a TV in the child's bedroom increases the risk of overweight in preschoolers.

The study included 2761 children served through the New York State Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in 1999 and 2000. About 35% were white, 33% were Hispanic, and 23% were African American. The parents completed a questionnaire that included questions about the amount of TV/videotape his/her child usually watches and whether the child has a TV in his/her bedroom. The main outcome was risk of overweight, defined as having a body mass index (BMI) > the 85th percentile. Data were analyzed using logistics regression, controlling for ethnicity, parental education, and the child's age and gender.

In this population, 37% of the children were at risk of overweight or overweight (BMI > 85th percentile). As might be expected, percentage of children watching any TV increased with age, from 82% of the one-year olds to 98% of the four-year olds. Black children spent more time watching TV/videotapes than the other ethnic groups (black: 17.5 hrs; Hispanic: 15 hrs; white: 12.5 hrs per week). Time spent watching TV had a small but significant effect on the risk of overweight (Odds ratio: 1.06, 95% C.I. 1.01-1.15, $p < 0.03$). Fifty-one percent of the black children, 50% of the Hispanic children, and 20% of the white children had a TV in their bedrooms. Having a TV in the child's bedroom was associated with significantly more time spent watching TV (about 4.6 hrs. more per week) and increased the risk of overweight (Odds ratio: 1.31, 95% C.I. 1.01-1.65).

Having a TV in the child's bedroom may be more strongly related to overweight than amount of time spent watching TV, because the latter is difficult to measure accurately in a questionnaire. However, finding an association between having a TV in the bedroom and overweight does not mean a cause-and-effect relationship exists or that moving the TV alone would be a successful intervention. Low-income children who have a TV in their bedrooms may live in smaller, more crowded apartments that necessitate sharing one room among several household members. These children may also live in poorer neighborhoods where access to safe play areas is relatively more limited. The same conditions could also explain the ethnicity effects seen in this study. While it may be helpful for health providers to ask about preschooler TV viewing habits (and location of the TV), additional information is needed to plan effective interventions to increase physical activity and lower the risk of overweight in this population.

Source: Dennison BA, Erb TA, Jenkins PL. Television viewing and television in bedroom associated with overweight risk among low-income preschool children. *Pediatrics* 2002; 109: 1028-1035.

Sorting through Studies of Breastfeeding and Intelligence

Mothers may choose to breastfeed their babies for a variety of reasons, including a belief that breastfeeding promotes intelligence. But how strong is the evidence that links breastfeeding with measures of intelligence and other cognitive outcomes? The main problem with most studies is that babies cannot usually be randomly assigned to either a breast-fed or bottle-fed group. Therefore, psychosocial differences that drive a mother's decision to breastfeed, as well as the components of breast milk, may affect infant development. In a few studies with preterm infants, researchers have been able to assign groups randomly due to the availability of banked human milk. However, because preterm infants have increased nutritional needs and potentially different developmental outcomes than term infants, findings from these studies may not apply to all infants.

The authors of this paper have prepared a "best evidence" review of studies from 1966 through Feb. 2001 that reported on the relationship of breastfeeding to intelligence. Before reviewing the papers, the authors set criteria to evaluate the overall design of each study (prospective, retrospective, or case-control) and its merit based on seven points: 1) sample size; 2) target population (preterm or term); 3) quality of feeding data; 4) control of confounders (i.e., socioeconomic status and home stimulation of child); 5) appropriate cognitive outcome measures (> 1 outcome examined at 2 yrs. or older); 6) observers doing assessment were unaware of feeding group (i.e., "blinded"); and 7) comparison of test results with population norms or standards. Under quality of feeding data (# 3), four points were considered essential: 1) study must state whether babies were exclusively or partially breastfed; 2) feeding data were collected during infancy and for more than the first few weeks; 3) the mother or child's health record was the source of the feeding data; and 4) breastfed infants received breast milk for at least one month.

Of the 40 papers located with a Medline search, 68% concluded that breastfeeding promotes intelligence. However, only 9 of these 40 studies met the four essential quality of feeding data criteria. Among these 9 studies, 4 reported a positive link between breastfeeding and cognitive development; 5 found no significant relationship. Of these 9 studies, only 2 actually met all other criteria. One of these studies found positive results; the other found no effect of breastfeeding.

The authors conclude that, although the majority of studies suggest breastfeeding promotes

greater intelligence, evidence from the higher quality studies is not so convincing. Others have reviewed the evidence before and concluded that breastfeeding does promote intelligence. This study applies stricter criteria than those reviews. However, since the authors relied only on published papers to judge a study's merit, some important details of the study design might have been omitted due to journal space limitations. In addition to careful study design and description, future researchers should also pay more attention to identifying circumstances in which breastfeeding might be expected to have its greatest impact.

Source: Jain A, Concato J, Leventhal JM. How good is the evidence linking breastfeeding and intelligence? *Pediatrics*. 2002; 109: 1044-1053.

Getting a Handle on Alcohol and Drug Use During Pregnancy

Mothers who abuse alcohol or drugs during pregnancy are commonly expected to deny or underreport use to avoid the stigma or loss of child custody. To understand the effects of substances on infant development, some researchers have suggested that a retrospective interview (i.e., postpartum interview about prenatal use patterns) may yield a better estimate of exposure to alcohol and drugs than prospective interviews (i.e., interview conducted during pregnancy). In fact, women do tend to report higher levels of substance use when interviewed 5 years postpartum, compared to interviews conducted prenatally. This study compares accuracy of prenatal vs. postpartum interviews in assessing alcohol, drug, and tobacco use and the relationship to infant outcomes.

The study design involved detailed interviews during pregnancy and a follow-up interview of 354 mothers at 13 months postpartum. At each prenatal visit, the mothers recalled their daily intake of alcoholic beverages during the previous two weeks and number of days per month that they used cocaine, marijuana, opiates, depressants, and other stimulants. At the postpartum visit, the mothers recalled daily alcohol and other substance use during a typical week in their previous pregnancy. To judge the relative accuracy of prenatal vs. postpartum reports, the researchers compared alcohol substance, and tobacco use to a battery of tests measuring infant neurological development, as well as birth weight and gestational age. Excluded from the study were very low birth weight infants and those with neural tube defects, chromosomal abnormalities, or gestational age < 32 weeks. Although details on recruitment are limited, the sample consisted of inner-city African American mothers, 84% of whom were receiving welfare.

As expected, retrospective interviews yielded higher estimates of prenatal use than the prospective interviews for alcohol and all other substances, except tobacco. The discrepancy between the two time points was particularly notable for the heaviest users. Nevertheless, alcohol and tobacco use estimated by prospective interviews was more strongly correlated with infant developmental scores than the mother's retrospective recall. In fact, many of the correlations between alcohol and infant development were not evident at all with only the retrospective interview data. Cocaine use estimated at either time point was correlated about the same to lower birth weight and gestational age. Only heavy cocaine use was correlated with lower infant developmental scores. Marijuana use—assessed either prospectively or retrospectively—was not related to pregnancy outcomes or infant development. Note, however, only 17% reporting abstaining from alcohol during pregnancy, whereas 81% denied using cocaine and 79% denied using marijuana.

This study has some important implications for researchers and practitioners. First, to

determine how prenatal exposure to substances affects infants, assessing patterns of use appears to be more accurate during pregnancy than at one year postpartum. Second, binge drinking (i.e., 6 drinks on 2.3 days of the week) may underlie the adverse effects of alcohol seen in this population. When averaged over a week, the amount needed to have adverse effects would appear to be relatively low. Therefore, practitioners need to screen for binge drinking, as well as average daily intake of alcohol.

Source: Jacobson SW, Chiodo LM, Sokol RJ, Jacobson JL. Validity of maternal report of prenatal alcohol, cocaine, and smoking in relation to neurobehavioral outcome. *Pediatrics* 2002; 109: 815-825.

First Trimester Weight Gain is Related to Birth Weight

Although total prenatal weight gain is clearly related to birth weight, less is known about the relative importance of early weight gain (i.e., in the first trimester). Previous studies examining first trimester weight gain have relied on the mother's report of her pre-pregnancy weight rather than a measured weight. To examine the effects of early weight gain on birth weight, this study uses data from the Diana Project, which was a prospective, observational study of factors affecting pregnancy outcomes.

The sample included 389 women who were weighed before pregnancy, every 3 months during pregnancy, and between 6 to 8 weeks postpartum. Infant weight was measured on a digital scale shortly after birth. However, the pediatrician apparently measured infant length at the 2-week follow-up visit, by laying the infant on sheet of paper and measuring the distance from heel to head. Unfortunately, the accuracy of infant lengths measured in that way is questionable. Data were analyzed controlling for gestational age, parity and mother's age and pre-pregnancy body mass index. Weight gain in the first and second trimester was significantly and independently associated with birth weight. Women who lost weight in the first trimester gave birth to babies that weighed 211 gm less than infants of mothers gaining above the median (> 2.7 kg). The findings suggest that early weight gain may be more important than previously thought. However, since many practitioners must rely on the mother's report of her pre-pregnancy weight, identifying early inadequate weight gain is still a challenge.

Source: Brown JE, Murtaugh MA, Jacobs DR, Margellos HC. Variation in newborn size according to pregnancy weight change by trimester. *Am J Clin Nutr* 2002; 76: 205-9.

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