Which factors increase the risk of an infant becoming an overweight child?

**Evidence-based answer**

Variables that increase the risk of overweight in childhood include formula feeding, high birth weight, high rate of weight gain in the first 4 months of life, low socioeconomic status, and maternal obesity (strength of recommendation [SOR]: A, systematic reviews and consistent cohort studies). No single risk factor predicts overweight, and not all infants with risk factors become overweight children.

**Evidence summary**

The Centers for Disease Control and Prevention defines overweight in children as weight-for-length greater than the 95th percentile for sex in children younger than 24 months and body mass index (BMI) greater than the 95th percentile for age and sex in children >24 months.

**Breastfeeding is protective**

Breastfed infants are less likely to be overweight later in life than infants fed formula. A meta-analysis of 9 studies found that 7 showed a significantly lower risk of overweight among children who were breastfed (odds ratio [OR]=0.78; 95% confidence interval [CI], 0.71-0.85). Four of the studies demonstrated that longer duration of breastfeeding offered greater protection than shorter duration. Two of the 4 studies defined longer duration as more than 6 months, 1 defined it as more than 3 months, and 1 examined breastfeeding for periods of less than 1 week, 1 week to 1 month, 2 to 3 months, 4 to 6 months, 7 to 9 months, and longer than 9 months, showing a duration-dependent decrease in risk. The other studies in the meta-analysis evaluated never-breastfed vs ever-breastfed infants.

**Higher birth weight increases risk**

Several meta-analyses report that birth weight is an early risk factor for later overweight. One found a positive association between birth weight and overweight in childhood in 9 of 11 studies. Another meta-analysis found a positive association in 25 of 28 studies that examined birth weight and BMI in childhood. These descriptive meta-analyses didn’t calculate pooled odds ratios (ORs) because of heterogeneity of the ages included and methods used to measure obesity.

A high rate of weight gain in infancy is also a risk factor for later overweight. One descriptive meta-analysis reported that 13 of 15 studies found a positive association between weight gain in the first year of life and overweight later in childhood, although overall OR and relative risk weren’t reported. A large cohort study found that each 100 g per month increase in weight gain above the mean...
(820 g per month) during the first 4 months of life increased the odds of overweight at 7 years of age by 38% (OR=1.38; 95% CI, 1.32-1.44).5

Socioeconomic status is a factor
Low socioeconomic status in infancy or early childhood increases the risk of childhood overweight, perhaps because of less breastfeeding and more smoking, among other factors.6,7 Socioeconomic status was determined using the International Standard Classification of Occupations; children whose parents worked at unskilled manual labor jobs or were unemployed were considered in the lowest socioeconomic group.6,7

A Brazilian study found that children born in the lowest socioeconomic group had BMI measurements at 18 years of age that were an average of 1.21 kg/m² higher than children in the highest socioeconomic group (P<.05). The study controlled for birth weight, maternal smoking, gestational age, and level of schooling eventually achieved by the child.8

Maternal overweight or obesity during the child’s infancy also increases the risk of childhood overweight.9,10 Infants of obese parents were more likely to be overweight at 7 years, compared with children whose mothers were normal weight (OR=10.44; 95% CI, 5.11-21.23).9

Recommendations
The American Academy of Pediatrics (AAP) cites prevention of overweight as a potential benefit of breastfeeding.11 The American Academy of Family Physicians notes that obese mothers should be especially encouraged to breastfeed.12 The American Medical Association-AAP Expert Panel recommends breastfeeding; safe, free movement; and no television for infants to decrease the risk of later overweight.13

References

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