The association of infant feeding practices with the development of adipose tissue, in particular excessive adipose tissue or obesity, has been previously identified. In this review, a critical assessment of selected research findings is performed with an emphasis on adipose tissue measurement methods.

Measurement of adiposity is complex in living humans, especially in children, and no single method is ideal. While various methods have been used to measure adipose tissue, the most advantageous methods that are most feasible in children are dual-energy X-ray absorptiometry and skinfold thickness measurement. For clinical purposes and for epidemiological studies, even these two methods may be difficult to implement, and a surrogate of adiposity tissue measurement, based on the simple measurements of weight and height, is often necessary. The most frequently chosen surrogate is body mass index defined by the weight in kg divided by the height in meters squared (kg/m²) and adjusted for age and sex. This measurement performs well at classifying individuals as obese, and has often been used in studies of the association of infant feeding practices and subsequent development of adipose tissue.

A possible protective effect of breastfeeding on the subsequent development of obesity is one of the infant feeding practices that has been most studied. While many early studies were inconsistent, more recent observational studies are more convergent in suggesting a negative association between breastfeeding or duration of breastfeeding with the later risk for obesity in children and adults [1]. The limitation of these observational studies is that mothers who chose to breastfeed may be different from mothers who chose not to breastfeed in ways that are related to other behaviors associated with obesity. In order to address this confounding factor, one study used a randomized design
of breastfeeding promotion and did not demonstrate a difference in the risk for subsequent obesity [2]. This finding suggests that the association between breastfeeding and a decreased risk for obesity described in observational studies may be the result of unknown or unmeasured confounding factors.

Rapid infancy weight gain as a risk factor for the later development of obesity is another factor that has been extensively studied. Most studies are consistent in describing this association up to adulthood and with various more direct measurements of adiposity in addition to body mass index [3]. Early results from randomized studies that provided different concentrations of protein in formula resulting in different rates of infancy weight gain suggest that these differences in weight gain were associated with differences in weight status at age 2 years [4], therefore implying that this association may be causal. However, these findings need to be confirmed together with long-term safety data before they are translated into clinical practice.

One factor that may contribute to rapid infancy weight gain may be nonadherence to the guidelines of the American Academy of Pediatrics to exclusively feed breast milk, or formula for non-breastfed infants, for a minimum of 4, but preferably 6 months [5]. Studies that have assessed if early introduction of weaning food is associated with the subsequent development of adipose tissue have yielded inconsistent results.

In summary, observational studies suggest that breastfeeding and the prevention of rapid infancy weight gain may be associated with a lower risk for subsequent obesity, but randomized experimental evidence is insufficient to translate these findings into clinical practice of obesity prevention. However, breastfeeding promotion remains an important public health priority because of its health benefits other than obesity prevention. Further research will help define if interventions targeted at feeding practice during the critical period of infancy could have a long-term effect in preventing obesity.

References