



Editorial

Preventing Infant Obesity - It's Never too Soon to Start

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Obesity in early childhood tracks to later childhood, with associated risks for adverse outcomes such as heart disease evident as early as age 3 [1]. According to the Centers for Disease Control and Prevention [2], 10.4% of US children aged 2-5 years are obese (BMI for age \geq 95th percentile). Remarkably, the rate for infants under age 2 is estimated to be even higher at 12.5% [3]. Although an Expert Committee recently declined to recommend energy restriction as a means to reduce weight in infants [4], it is nevertheless true that overweight status in infancy carries its own co-morbidities [5]. While child obesity may not be the inevitable outcome, overweight infants and toddlers have a heightened risk for staying overweight as they grow older [6,7]. It is true that the causes of child obesity are many, and the constellation of factors that predict infant obesity is no less complex. But it has become increasingly evident that *rapid weight gain during infancy*, especially over the first six months, is a significant risk factor for later obesity [8,9]. Coupled with the alarming rate of infant overweight that is now evident, it would seem imperative that preventing accelerated weight gain during the first year of postpartum life is critical. While efforts aimed at preventing obesity among preschoolers are laudable and regrettably necessary [10], the trends already evident in 2-5-year-old children mandate that interventions be implemented that precede the preschool years, namely birth to age 2.

A recent Committee Report of the US Institute of Medicine (IOM) highlighted the need for efforts to prevent obesity in the early years, and concluded that healthcare providers, childcare workers, government officials, and members of the community at large, all have a role in shaping the lives of infants, toddlers, and preschool children [11]. In all likelihood, a systems approach is arguably the most fruitful strategy for preventing child obesity at the societal level [12]. Indeed, in recognizing that single strategy obesity prevention, initiatives have had limited success; the IOM also recommends that integrated multifactorial approaches using the best available evidence be implemented [13]. However,

the IOM Committee also acknowledged that as the primary caregivers, parents have the greatest influence in affecting the developing child's early environment [11]. At no time is the influence of the primary caregiver greater than in infancy, when virtually all aspects of the infant's nurturance are controlled by the primary caregiver -in most instances the mother. For this reason, mothers would seem to be the agents who are in the best position to shape the infant's early environment in a manner that discourages rapid early weight gain.

Nader et al. [12] have recently identified seven Key Behavior Intervention Targets aimed at supporting healthy infants, to wit, preventing early obesity. Their thesis, buttressed by two recent IOM reports [11,14], is that intervention is necessary before, during, and after pregnancy, and that a systems framework is best suited to promote healthy parent and child outcomes through early interventions. Specifically, their intervention targets are: 1) Initiate and maintain breastfeeding; 2) Appropriate introduction of other beverages and foods; 3) Support for healthy sleep patterns; 4) Support for appropriate soothing, not always using food; 5) Support for motor development; 6) Avoid screen time; and 7) Avoid excessive weight gain in infancy [12].

The publication of this set of Targets, as well as recent appeals to change our healthcare focus in infancy, from correcting "failure to thrive" to the preventing of early obesity [15], serve to substantiate the validity of these strategies. Indeed, some emergent results are already available that show such multifactorial approaches are in fact effective in reducing obesity proneness. For example, an Australian study reported success in extending the duration of breastfeeding by mothers, delaying the introduction of solid foods, and increasing the use of "tummy time" within the first postpartum year [16]. More important, toddler BMI at 2-years was significantly lower in their intervention group, with only 11.2% of the intervention group versus 14.1% of the control group categorized as overweight or obese [17]. Results from a pilot study in the US are also promising. In addition to supporting breastfeeding by mothers where applicable, the investigators tested the effectiveness of separately and collectively providing an "introducing solids" intervention versus a "soothe-without-feeding for sleeping" intervention. Their results showed that infants whose mothers received the dual intervention had a mean weight-for-length at the 33rd percentile at 12-months, compared to the control infants who were at the 50th percentile [18].

To generate the most successful results then, interventions need to start early, and be placed within a family context to address facets of the caregiving environment that are associated with excess infant weight gain, ideally using home visits. *Why*

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target the caregiving environment? Because the caregiving environment plays a dominant role in the development of the young child's eating and physical activity patterns- patterns that track across the growing years into adulthood. *Why target mothers?* Because mothers are their children's first teachers, role models, and family food gatekeepers, and create the lifestyle environment within the home that strongly influences the health-related behaviors of their developing infants. *Why use home visits?* Because home visits have long been used successfully to promote healthy child development, and have recently been shown to be effective in improving children's weight-related nutrient intake and activity patterns [19]. *Why use a multifactorial approach?* Because overfeeding, low physical activity, and too little sleep are clearly associated with childhood obesity risk, and the most successful results are likely to be generated by addressing multiple lifestyle practices in a family context [20-22]. As the IOM, Academy of Nutrition and Dietetics, American Academy of Pediatrics, and other expert groups have emphasized, community nutrition intervention programs must include parent training, nutrition education, promotion of physical activity, and individualized counseling, if they are to reach the goal of healthy weights for the majority of our children [4,13,21]. Infancy, if not pregnancy, is the time to begin.

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