

Opinion

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Volume 2 : Issue 2

Article Ref. #: 1000PNNOJ2112

Article History

Received: June 30th, 2015

Accepted: August 3rd, 2015

Published: August 3rd, 2015

Citation

Softic S. Infant formula: fast food for babies. *Pediatr Neonatal Nurs Open J.* 2015; 2(2): 72-74. doi: [10.17140/PNNOJ-2-112](https://doi.org/10.17140/PNNOJ-2-112)

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Infant Formula: Fast Food for Babies

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ABBREVIATIONS: WIC: Special Supplemental Nutrition Program for Women, Infants and Children; AAP: American Academy of Pediatrics.

Pediatric obesity is a declared epidemic with enormous consequences.^{1,2} There are many risk factors for being overweight, including frequent consumption of fast food. Fast food is cheap, calorie-dense, and easily accessible. Infant formulas closely resemble some of these characteristics and thus may contribute to expansion of pediatric obesity epidemic.

Infant formulas are designed to resemble growth and developmental parameters of breast fed babies. According to the statement by American Academy of Pediatrics (AAP), Work Group on Breastfeeding "The breast-fed infant is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development, and all other short- and long-term outcomes".³ In spite of their meticulous engineering over the last half century, human milk is far superior form of nutrition for most infants, as it serves a dual function of providing the optimal nutrition for growth and development, as well as disease protection.⁴ Furthermore, breast feeding provides numerous benefits to the infant, mother and the society in general. One of these benefits is being the only approved intervention during infancy to decrease the likelihood of developing obesity.⁵ It could be argued, however, since breast fed infant is the reference point, breast feeding does not protect against obesity, but rather that formula feeding increases the risk of being overweight. It is from this limited perspective that infant formulas may resemble some of the characteristics of fast food, such as being cheap, calorie-dense and easily accessible and contribute to the development of pediatric obesity.

Infant formulas are relatively cheap, especially when calculated on a per meal basis. An average six-month old that weighs 17 pounds and consumes 90 kcal/kg/day, requires approximately 34 ounces of mixed formula or about five ounces of formula powder per day. An average price for a thirteen ounce can of formula is fifteen dollars. Thus, the total daily formula expense comes to five dollars, or about 1.67 dollars per meal! Many impoverished families, unable to afford ongoing formula expenses, may qualify for state and federal programs, such as Special Supplemental Nutrition Program for Women, Infants and Children (WIC), which provides free formula. In fact, over half of all infant formulas sold in the United States are obtained through WIC.⁶ Furthermore, formula companies commonly give a significant amount of formula as free samples to new and expecting mothers, as their advertising campaign,^{7,8} thus further decreasing the cost of acquiring infant formula.

Although breast milk and standard infant formulas both contain 20 kilocalories per ounce, formula fed infants tend to consume more calories. Overfeeding is a common issue with bottle fed babies.⁹ This likely stems from a lack of self-regulation,¹⁰⁻¹² as the size of a bottle fed infant's meal is somewhat predetermined by caregivers. Breast fed infants, on the other hand, determine their own portion size, as well as maternal milk production by the intensity of their suckling.¹³ Breast feeding is also an active process requiring generation of negative intra-oral pressure, while bottle feeding is a relatively passive process. As a result, infants with craniofacial abnormalities who fail breast feeding may do well with bottle feeding.¹⁴ Health-

care providers have long recognized these feeding differences and thus common recommendation for breast fed neonate is to feed on demand, every 2-3 hours, while formula fed infants may feed every 3-4 hours. In addition to overfeeding, another reason for longer time interval between feeds is that formula is more difficult to digest leading to prolonged gastric emptying and thus producing longer satiety.¹⁵ The overfeeding effects of bottle fed infants have been quantified and in one study it resulted in six fold increased odds of obesity at 3 years of age, especially if solid food intake was initiated before 4 months of age.¹⁶

Infant formulas are easily accessible at all major stores. Moreover, a larger pool of care-providers other than the mother is available to offer feedings. This presents greater convenience and allows for feeding in places where breast feeding might not be socially acceptable. On the other hand, breast feeding initially is a more time consuming process and – like home cooking – in the beginning, it may take more time. However, with experience breast feeding mothers have stated that breast feeding becomes easier, more enjoyable and even restful.¹⁷

Some well recognized complications of pediatric obesity include a myriad of health problems such as insulin resistance, type 2 diabetes, non-alcoholic fatty liver disease, hyperlipidemia, sleep apnea, pseudotumor cerebri, orthopedic complications,¹⁸ as well as social rejection and scrutiny,^{19,20} diminished education potential,²¹ and a higher likelihood of living in poverty.²² The full extent of its negative implications is difficult to appreciate, as obesity impinges on every aspect of a child's life and its consequences are likely to extend far beyond childhood.²³ Some even fear that as a consequence of pediatric obesity this generation of American children might be the first in history to have shorter life expectancy than their parents.²⁴ Due to the magnitude of this effect, it might be argued that the formula industry will “catch up” and engineer a lower-calorie alternative. This is not likely to occur, however, since both breast milk and infant formulas already contain equivalent quantity of calories per ounce, the amount required for optimal brain development. Calorie reduction as a mode of obesity prevention is not a recommended intervention during infancy, so lower-calorie alternative is not a plausible solution.

Healthcare professionals need to continue encouraging exclusive breast feeding during the first six months and continued breastfeeding for up to two years of age.²⁰ One often overlooked reason for this recommendation is that it may help decrease the risk of developing obesity. It might be difficult to imagine that the choice others make for us early on might have such a profound effect, however, studies indicate that infancy may be a crucial time when predisposition to obesity develops.²⁵⁻²⁷ Pediatrician's voices must therefore be strong and clear to match the advertising campaigns by the formula industry. Pediatricians should advocate for breast feeding as zealously as they do for any other health-protecting and behaviour enhancing practice – for example vaccinations, safe car seats, a smoke-free

environment, and injury prevention – on behalf of society's largest vulnerable population group.

If we accept breast feeding as the norm against which every other foods for infants must be measured, then it should not be considered protective against obesity. Rather, other feeding methods must be recognized to increase the risk of being overweight, if their growth outcomes exceed those of breast fed infants. Health care providers should recognize this difference and provide anticipatory guidance indicating that infant formula feeding increases the risk of developing obesity and use it as a tool in an attempt to increase consumption of the most natural food source for infants, human milk.

ACKNOWLEDGEMENTS

The author would like to thank Stephen C. Woods, PhD and Aaron E. Carroll, MD for their review of the manuscript.

COMPETING INTERESTS

There are no conflicts of interest or financial disclosures pertaining to this submission.

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