

The Importance of *Infant Nutrition*

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Abstract: With lifetime health consequences to the individual and society, infant nutrition is recognized by health-care, government, and humanitarian agencies as a global health issue. Infant malnutrition has been linked to long-term poor health, specifically the inability to perform physical work, as well as chronic adulthood diseases, representing loss of human talent and resources and a prohibitive healthcare price tag. Ensuring adequate nourishment in the sensitive window of infancy, the first 12 months of life when brain growth, organ maturation, and bone density are increasing at a rapid pace, is a humanitarian, as well as a financial resource imperative. Primary stakeholders who influence a pregnant woman and new mother's feeding choices include childbirth educators, obstetrical and health department personnel, as well as advertising campaigns through public service announcements, media and print.

Keywords: infant nutrition, malnutrition, brain development, parent teaching

Evidence is mounting on the causal role infant nutrition plays in long term quality of life related to brain growth, immune function, morbidity and mortality. The infant brain, doubling in size in the first year of life and 80% of adult size by the age of three, is dependent on adequate nutrition for optimum development (Urban Child Institute, 2015). And addressing the importance of adequate infant nutrition

supporting lifetime mental and physical health is proving to be a global education for governmental and humanitarian leaders. For the first time in the history of the Human Rights Council, child right to health was at the center of the debate in Geneva, Switzerland with infant nutrition a primary topic (Office of the High Commissioner for Human Rights, 2012).

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Defined as the first year of life, infancy is a critical period for rapid brain growth that requires adequate nutrition. Malnourishment contributes to inadequate brain growth with lasting behavioral and cognitive deficits, including slower language and fine motor development, lower IQ, and poorer school performance (National Center for Infants, Toddlers, & Families, 2013). To combat the problem of malnutrition, the World Health Organization [WHO] advocates initiation of breastfeeding within the first hour of birth and exclusive breastfeeding for the first six months. The American Academy of Pediatrics (2013) recommends exclusive breastfeeding with vitamin D supplementation to prevent rickets, a softening and weakening of the bones due to a vitamin D deficiency, for the first six months of life and continuing through the first year of life, or if infant formula feeding, one with iron supplementation. But for the first full year, only breastfeeding or infant formula should be offered to the infant to ensure adequate nutrients for vital organ and brain growth (American Academy of Pediatrics [AAP], 2015; Center for Disease Control [CDC]; WHO, 2015).

Research shows that malnutrition is the single biggest contributor to infant mortality under the age of five with irreversible effects on brain, height, weight, and organ growth (Mother and Child Health and Education Trust, 2015). With key brain structures continuing to develop during the first three years of life, lack of essential nutrients limits maturity that should occur within this window of time. The cerebel-

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lum, responsible for motor skills and balance, begins to mature around the 24th week of gestation, tripling in size during the infant's first year of life. Inadequate nutrition can have irreversible effects on the developing cerebellum, as well as reducing the threshold for seizures and permanently altering the brain (Cabral, Priel, Silva Araujo, Torres, de Lima, & do Vale, 2011).

Breastmilk has been called the Superfood for babies, and breastfeeding immediately after giving birth has been attributed to saving the lives of 95 babies every hour or 830,000 infants annually (National Center for Infants, Toddlers, & Families, 2013). Yet, only 39% of children less than six months of age in the developing world are exclusively breastfed (Unicef.org, 2015). Efforts to increase the number of mothers who breastfeed and extend the length of time of breastfeeding can be addressed while providing guidance to pregnant women.

In fact, studies show that the pregnant woman's questions regarding breastfeeding are left unanswered by health-care personnel, and that only 25% of pregnant women have their concerns regarding breastfeeding addressed with instruction targeted at limited demographics despite evidence that breastfeeding teaching is needed across the age, ethnic, and economic strata (Archabald, Lundsberg, Triche, Norwitz, & Illuzzi, 2011). With limited health dollars, breastfeeding is not only optimal food for infants, but also readily available and cost effective, and the Surgeon General's Call to Action to Support Breastfeeding focuses attention on the necessity of breastfeeding support (WHO.org, 2015b).

Despite the well documented maternal and infant breastfeeding benefits, support must be provided to mothers who are feeding with infant formula. With more than half of the world's newborns fed breastmilk substitutes, or infant formula, the necessity of teaching proper technique for safe preparation, storage, and feeding is a major health concern. (Unicef.org. 2015). But, mothers do not always understand how to prepare formula, over diluting to stretch limited funds or over concentrating to ensure weight gain, with the infant suffering through weight loss or possible kidney damage through too much protein. Respecting choice and equipping mothers with the information needed to successfully feed her infant promotes healthy feeding practices that lead to adequate calories that contribute to weight gain and organ growth.

Yet, numerous studies have indicated that mothers are not taught how to prepare, store, and feed with infant formula, and in one study 88% of those surveyed reported



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never having a discussion regarding bottle and formula preparation (Battersby, 2010; Hancock & Brown, 2010; Labiner-Wolfe, Fein, Shealy, 2008). Not only is the formula fed infant at risk, but also the infant fed pumped breastmilk stored and prepared unsafely is at risk (Murray, 2013). Thus, safety issues regarding length of time bottled breast or formula can be given at a feeding, hand washing before bottle preparation, and proper warming can prevent feeding-associated infections (Murray).

An important nutritional consideration is iron deficiency, a condition clearly linked to cognitive deficits in young children. Iron is critical for maintaining an adequate number of oxygen-carrying red blood cells, which in turn are necessary to fuel brain growth (National Center for Infants, Toddlers, & Families, 2013). Exclusively breastfed infants are at risk of developing iron deficiency anemia (IDA) at 4 months and are, therefore, supplemented with 1mg/kg/day until sufficient iron-containing foods are introduced into their diet (U.S. Department of Health and Human Services, 2011). In addition to iron supplementation for breast and formula fed infants, early foods, beginning at six months, should include a source of iron, either fortified infant cereal or meat, but foods high in fat or sugar (sugar-sweetened beverages, French fries, and candy) should not be given to infants (AAP.org, 2013). Universal screening for IDA at 12 months of age with electronic documentation that anemia has been adequately treated, once diagnosed, is recommended (U.S. Department of Health and Human Services).

Nurses and childbirth educators are key stakeholders in shaping a pregnant woman's choice of infant feeding (Chastain & Lipke, 2014), as well as midwives, obstetricians and other health professionals who have routine prenatal contact. Engaging women prenatally and postpartum in meaningful conversations regarding feeding choices and practices reveals questions, concerns, and misunderstandings easily clarified

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with effective teaching, as well as promoting women's confidence in personal choices and decision making. Anytime a mother is empowered in her decision making, her infant benefits in improved care.

Drawing attention to the critical needs of the most vulnerable members of society is a hallmark of human compassion. Identifying evidence-based practice and supporting mothers' intention to breastfeed, respecting the choice to formula feed, as well as being informed on the specifics of infant nutrition undergird efforts to improve infant nutrition globally. Deliberate open-ended conversations between obstetrician, midwife, clinic nurses and childbirth educators and pregnant women regarding practical infant feeding instruction is needed. Conversations empower women to believe they can successfully provide adequate nourishment for their infant. Additional research into ways to educate and encourage parents on the importance of prenatal as well as infant nutrition is needed. Innovative teaching methods shared among childbirth educators regarding infant nutrition presented to mothers in a variety of settings would promote a collaborative community beneficial to women and their infants.

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