BREASTFEEDING

Breastfeeding Promotion and Early Child Development: Comments on Woodward and Liberty, Pérez-Escamilla, Lawrence, and Greiner

Michael S. Kramer, MD

McGill University Faculty of Medicine, the Institute of Human Development and Child and Youth Health, Canadian Institutes of Health Research, Canada

March 2008, 2e éd.

Introduction

Breastfeeding has been reported to have a number of health advantages for both the mother and the child, some of which are more solidly established than others. The evidence that breastfeeding protects against gastrointestinal and respiratory infection is strong and consistent, with major implications for morbidity and even mortality, particularly in developing-country settings. Because these infections rarely have life-and-death consequences in industrialized countries, however, the major recent focus in such countries has been on the potential role of breastfeeding in protecting over the long term against adult chronic diseases (including obesity, coronary heart disease and both type 1 and type 2 diabetes), and specifically, its potentially

©2008-2026 ABILIO | BREASTFEEDING

beneficial effects on neurocognitive development and behaviour. Because of the practical and ethical difficulties in randomizing healthy human infants to be breastfed vs. formula-fed or to different durations or exclusivity of breastfeeding, the scientific evidence bearing on these outcomes is based almost exclusively on observational (non-experimental) studies. It is in this context that the papers by Woodward and Liberty, Pérez-Escamilla, Lawrence, and Greiner have attempted to review the available evidence. The first three of these four papers summarize the literature linking infant feeding to early child development, while the fourth focuses on health services and policies to protect, support and promote breastfeeding in developed-country settings.

Research and Conclusions

In their paper, Woodward and Liberty point out the difficulty of making causal inferences in observational studies due to potentially confounding differences in maternal mental health and "nurturance," which can affect feeding choice and can also have causal influences on child development independent of infant feeding. Although the authors claim that random assignment of two different feeding groups has not been possible, such an experimental study has indeed been carried out by Lucas and his colleagues, who compared banked human milk, preterm formula and term formula given to preterm infants; the results indicate improved cognitive development in those who received banked breast milk.[1] The authors cite studies suggesting emotional benefits for the mother who breastfeeds, improved maternal-infant attachment, improved alertness and orientation of the infants, and reduced duration of crying (although the latter has not been supported by other studies). The authors point out the limited evidence bearing on long-term benefits for behaviour and mental health of the offspring. They also state that maternal alcohol and medication use reduce the quality of the breast milk and may thereby adversely affect infant behaviour, but to my knowledge, the doses ingested through this route have not been linked to such adverse effects.

Pérez-Escamilla briefly reviews the rather consistent finding of higher IQs in breastfed infants, even after adjusting for socioeconomic status (including maternal education). Although he emphasizes the potential etiologic role of long-chain polyunsaturated fatty acids (LCPUFAs) in explaining this effect, Cochrane reviews suggest the evidence is not so clear-cut, either in term[2] or preterm[3] infants. As Pérez-Escamilla points out, data regarding breastfeeding and motor development are few and even less conclusive. He concludes with a review of the evidence suggesting that breastfeeding has a long-term protective effect against obesity and speculates

that such a protective effect may be due to improved appetite regulation resulting from the rising fat concentration during breastfeeding. Pérez-Escamilla concludes by calling for more research on some of the school/academic and long-term behavioural and psychosocial developmental outcomes in breastfed vs. formula-fed infants.

Lawrence reviews some of the same evidence bearing on breastfeeding and neurocognitive development and evidence from the long-term New Zealand cohort study suggesting an improved parent-child relationship. Like the authors of the previous two papers, Lawrence makes the claim that "it is not possible to randomly assign mothers and infants to treatment groups or to control the duration of the process." In fact, however, Morrow et al.[4] in Mexico, Dewey and her colleagues in Honduras[5,6], and we in Belarus[7] have all managed to experimentally allocate groups of mothers and infants to experimental vs. control interventions that affect the duration and/or and exclusivity of breastfeeding. And as already mentioned, Lucas and his colleagues randomly assigned a group of preterm infants to banked human milk vs. preterm formula vs. term formula.[1] Experimental designs are therefore possible in this domain and probably should be used more frequently in future investigations.

Finally, Greiner's paper focuses on clinical- and public-health policies that protect, support and promote breastfeeding. He appropriately emphasizes the importance of the World Health Assembly's International Code of Marketing of Breast Milk Substitutes and of political "climate," maternal employment policy and the WHO/UNICEF Baby-Friendly Hospital Initiative (BFHI). Unfortunately, Greiner fails to cite some of the best evidence available on this topic, i.e. evidence from randomized controlled trials and meta-analyses of randomized trials. Based on this evidence, some of the interventions he advocates are far better supported than others. The evidence favouring on-demand feeding, hospital rooming-in and postnatal support is strong.[8,9] On the other hand, trials of glucose or formula supplementation suggest no detrimental effect on breastfeeding duration.[10-12] Greiner correctly points out how difficult it is to "tease out" the precise components of complex promotional programs that have an impact. But countries like Norway and Sweden have shown what can be achieved with active enforcement of the international code, enlightened maternal-leave policies and widespread societal support for breastfeeding.

Implications for Services

Clinical services and public-health policies that favour the initiation, exclusivity and duration of breastfeeding are likely to yield important benefits for early child development. Benefits have been reported both in preterm and in healthy term infants, but whether they are due to biological components (e.g. LCPUFAs) in human milk or to the enhanced maternal-infant interaction accorded by breastfeeding is unclear. Although the magnitude of the beneficial effect is small at the individual level, the potential impact on the overall population of infants and young children is of major public-health importance. Countries like Norway and Sweden have shown that clinical and societal support for breastfeeding can yield enormous dividends.

References

1. Lucas A, Morley R, Cole TJ, Lister G, Leeson-Pagne C. Breast milk and subsequent intelligence quotient in children born preterm. *Lancet* 1992;339(8788):261-264.
2. Simmer K. Longchain polyunsaturated fatty acid supplementation in infants born at term. *Cochrane Database of Systematic Reviews* 2001;4:CD000376.
3. Simmer K, Patole S. Longchain polyunsaturated fatty acid supplementation in preterm infants. *Cochrane Database of Systematic Reviews* 2004;1:CD000375.
4. Morrow AL, Guerrero ML, Shults J, Calva JJ, Lutter C, Bravo J, Ruiz-Palacios G, Morrow RC, Butterfoss FD. Efficacy of home-based peer counselling to promote exclusive breastfeeding: a randomised controlled trial. *Lancet* 1999;353(9160):1226-1231.
5. Cohen RJ, Brown KH, Canahuati J, Rivera LL, Dewey KG. Effects of age of introduction of complementary foods on infant breast milk intake, total energy intake, and growth: a randomized intervention study in Honduras. *Lancet* 1994;344(8918):288-293.
6. Dewey KG, Cohen RJ, Brown KH, Rivera LL. Effects of exclusive breastfeeding for four versus six months on maternal nutritional status and infant motor development: Results of two randomized trials in Honduras. *Journal of Nutrition* 2001;131(2):262-267.
7. Kramer MS, Chalmers B, Hodnett ED, Sevkovskaya Z, Dzikovich I, Shapiro S, Collet JP, Vanilovich I, Mezen I, Ducruet T, Shishko G, Zubovich V, Mknuik D, Gluchanina E, Dombrovskiy V, Ustinovitch A, Kot T, Bogdanovich N, Ovchinikova L, Helsing E. Promotion of breastfeeding intervention trial (PROBIT): A randomized trial in the Republic of Belarus. *JAMA - Journal of the American Medical Association* 2001;285(4):413-420.
8. Pérez-Escamilla R, Pollitt E, Lönnerdal B, Dewey KG. Infant feeding policies in maternity wards and their effect on breast-feeding success: an analytical overview. *American Journal of Public Health* 1994;84(1):89-97.
9. Sikorski J, Renfrew MJ, Pindoria S, Wade A. Support for breastfeeding mothers: a systematic review. *Paediatric and Perinatal Epidemiology* 2003;17(4):407-417.
10. Gray-Donald K, Kramer MS, Munday S, Leduc DG. Effect of formula supplementation in the hospital on the duration of breast-feeding: a controlled clinical trial. *Pediatrics* 1985;75(3):514-518.
11. Cronenwett L, Stukel T, Kearney M, Barrett J, Covington C, Del Monte K, Reinhardt R, Rippe L. Single daily bottle use in the early weeks postpartum and breast-feeding outcomes. *Pediatrics* 1992;90(5):760-766.
12. Schubiger G, Schwarz U, Tönz O, for the Neonatal Study Group. UNICEF/WHO baby-friendly hospital initiative: does the use of bottles and pacifiers in the neonatal nursery prevent successful breastfeeding? *European Journal of Pediatrics* 1997;156(11):874-877.

©2008-2026 ABILIO | BREASTFEEDING