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Breast Is Best. Part 1. Merits of Mother's Milk

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I vividly recall my grandmother telling me, when I was a teenager, about the phenomenal amount of milk my mother produced when I was born—so much that she donated her excess milk to the baby of a less fortunate mother. This, of course, is not at all unusual, since lactation varies considerably in humans as in other mammals.

However, human beings are unique among mammals in many ways, and one difference is our ability to devise tools for doing almost any task, including feeding our young. Evidence of alternative feeding methods dates back to prehistory: spouted feeding cups have been found at grave sites that date to 2000 BC.[1] (p. 2)

Today, in the world's industrialized nations, we have an abundance of scientifically derived breast-milk substitutes, disposable bottles, and other conveniences that make breast-feeding unnecessary. Why, then, has the practice of breast-feeding increased in the last 15 years among women in virtually all Western industrial nations?

In the first part of this two-part review of breast-feeding, we will examine some of the reasons women choose to nurse their children and some of the obstacles they encounter. Later, we will review some of the demographic data on breast-feeding in the modern world, analyze current trends, and consider medical contraindications for breast-feeding.

Breast-feeding Versus Bottle-feeding

The superiority of breast milk for the nourishment of full-term infants is almost universally acknowledged today. However, this was not always so. M.G. Schwab, a British nutritionist, notes that, when the bottle was introduced at the end of the nineteenth century, it was seen as part of the greater social freedom women were beginning to achieve, and the practice was adopted with alacrity, especially in cities.[2] The popularity of the "pocket wet nurse" encouraged development of the infant-formula business. By the time of World War II, cow's milk products were widely accepted as "the proper, hygienic and civilised food for infants."[2]

After the war, bottle-feeding was promoted as the "modern" (and therefore better) way to nourish babies, not only by the infant-formula industry but by hospitals, nurses, nutritionists, and the popular press.[2] During this period, the bottle became the preferred method of infant nutrition in the US. Physicians were often noncommittal, leaving the mother who wished to nurse with little encouragement or support from her doctor. Ruth A. Lawrence, professor of pediatrics and obstetrics and gynecology, University of Rochester, New York, notes that students of pediatrics have traditionally received no formal training in the management of breast-feeding.[1] (p. 1) She suggests that some pediatricians during this period may have been uncomfortable recommending breast-feeding because the amount of milk the baby ingested could not be "clinically measured and volumetrically controlled with scientific precision."[1] (p. 1)

Despite the apparent lack of support offered by many pediatricians, the

American Academy of Pediatrics has supported breast-feeding for over 30 years, according to Jeff Molter, a representative for the academy.[3] One of the most well known American pediatricians, Benjamin Spock, presented a gentle, though persuasive, argument for breast-feeding in the 1945 edition of his classic book, *The Common Sense Book of Baby and Child Care*.[4] Among other advantages, Spock notes that "breast feeding is natural. On general principle, it's safer to do things the natural way unless you are absolutely sure you have a better way."

In the mid-1950s, grass-roots women's organizations, such as La Leche League International, began to be active in the US and in other industrialized nations. These groups were usually started by educated women who decided to breast-feed their babies and were appalled at how little information was available from medical professionals. La Leche League first published its handbook, *The Womanly Art of Breastfeeding*,[5] in 1958. A list of organizations that currently provide information about breast-feeding and offer support for nursing mothers is given in Table 1.

In the 1960s, many people began to question the emphasis on technology in Western culture, giving rise in the US to a "back-to-nature" movement. At the same time, the women's movement was gaining momentum, and feminists became interested in women's health issues, including breast-feeding. Support groups for nursing mothers sprang up throughout the US and Western Europe. In addition, growing scientific evidence that breast-feeding provides unique health benefits for infants began to draw more medical professionals into the ranks of breast-feeding advocates. The trend away from breast-feeding in Western industrialized nations was reversed in a surprisingly short time period.[6] (p. 309-45)

We will return to this subject later, when we examine statistics on worldwide breast-feeding trends. For now, let's review the biological basis of breast-feeding and consider some of the medical and psychological advantages attributed to it.

Physiology

Lactation—the production and secretion of milk for the nourishment of offspring—is an integral part of human reproduction. In her book *Breastfeeding: A Guide for the Medical Profession*, Lawrence reviews the physiological changes associated with lactation.[1] (p. 43-63) The growth and cellular changes in the mammary gland that accompany puberty, menstruation, pregnancy, and lactation are governed by hormonal action. During pregnancy, levels of prolactin (a principal hormone in lactation) rise; in the presence of estrogens (which also rise during gestation), prolactin prepares the breast for lactation. After childbirth, the levels of estrogens decline abruptly. Without the mitigating presence of the estrogens, prolactin stimulates milk production, known as the maternal "prolactin reflex."

Successful breast-feeding depends on maternal *and* infant reflexes. Rooting and suckling are two infant reflexes that allow the baby to nurse: by rooting, the infant seeks the breast, and by suckling obtains milk. In turn, suckling stimulates the release of the maternal hormones prolactin and oxytocin. Prolactin continues to stimulate milk production, while oxytocin is responsible for milk ejection, known as the maternal "let-down reflex." This mechanism of stimulus and hormonal response is so sensitive that nipple stimulation and suckling can induce lactation in a woman who has never been pregnant. Thus, some non-biological mothers have been able to successfully nurse their adopted infants.[1] (p. 409),[7] Even grandmothers over the age of 60 have acted as surrogate nursing mothers.

In the first few days after childbirth, the mother produces not milk, but colostrum, a thick, yellow fluid rich in protein, fat-soluble vitamins, minerals, and antibodies and low in fat.[1] (p. 68) The

Table 1: Selected list of organizations concerned with breast-feeding.

American Academy of Pediatrics
Publications Department
P.O. Box 1034
Evanston, IL 60204

American College of Nurse-Midwives
1522 K Street, NW, Suite 1120
Washington, DC 20005

American College of Obstetricians and Gynecologists
600 Maryland Avenue, SW
Suite 300-East
Washington, DC 20024

American Dietetic Association
430 North Michigan Avenue
Chicago, IL 60611

American Public Health Association Clearinghouse on Infant Feeding and Maternal Nutrition
1015 Fifteenth Street, NW
Washington, DC 20005

Campaign on Infant Feeding
20 rue Rochechouart
75009 Paris
France

Childbirth Education Foundation
P.O. Box 5
Richboro, PA 18954

Health Education Associates
211 S. Easton Road
Glenside, PA 19038

Infant Formula Action Coalition
310 E. 38th Street, Suite 301
Minneapolis, MN 55409

Infant Formula Council
5775 Peachtree-Dunwoody Road, Suite 500-D
Atlanta, GA 30342

International Baby Food Action Network
CP 157
1211 Geneva 19
Switzerland

International Childbirth Education Association
P.O. Box 20048
Minneapolis, MN 55420

Lact-Aid International, Inc.
P.O. Box 1066
Athens, TN 80206

La Leche League International, Inc.
9616 Minneapolis Avenue
Franklin Park, IL 60131

National Child Nutrition Project
101 North 33rd Street
Philadelphia, PA 19104

National Childbirth Trust Breastfeeding Promotion Group
9 Queensborough Terrace
London W2 3TB, UK

Nordic Infant Feeding Association
Postbok 3395, Sagene
Oslo 4, Norway

Society for Nutrition Education
1736 Franklin Street
Oakland, CA 94612

UNICEF
866 United Nations Plaza
New York, NY 10017

World Health Organization
20 Avenue Appia
1211 Geneva 27
Switzerland

importance of colostrum for the health of the newborn has only recently been recognized.

The volume of milk a mother produces is related to the frequency and strength of the baby's suckling and is usually tuned to the baby's needs. According to Derrick B. Jelliffe and E.F. Patrice Jelliffe, Division of Population, Family and International Health, University of California at Los Angeles (UCLA), the volume produced by the average well-nourished mother in the first six months is 600 to 700 milliliters per day (2½ to 3 cups), although with considerable variation.[8] Other factors that affect milk volume include the mother's emotional state and her nutritional status.

Breast-feeding provides a number of physical benefits to the mother. Oxytocin stimulates contraction of the myometrium and involution of the uterus, speeding the return of the uterus to its pre-pregnancy size.[1] (p. 51) Also, a nursing mother who does not increase her caloric intake can lose weight more easily than a nonnursing mother. (However, Lawrence cautions that the nursing mother who wishes to lose weight should eat nourishing foods and avoid empty calories and fad diets).[1] (p. 234)

Another important benefit of lactation is that it suppresses the reproductive function, possibly due to the nursing mother's high prolactin levels.[1] (p. 429-30) In a woman who is exclusively breast-feeding her child *and* who is breast-feeding on demand (instead of on a set schedule), conception is fairly unlikely to occur. In traditional cultures where this pattern of breast-feeding is prevalent, women rely on the contraceptive role of breast-feeding for appropriate child spacing, according to Lawrence[1] (p. 432) and Jelliffe and Jelliffe.[6]

(p. 126) However, where breast-feeding follows a more rigid schedule or is supplemented with formula, practices common in Western cultures, women who wish to avoid pregnancy must take additional contraceptive measures.

Audrey J. Naylor, San Diego Lactation Program, Mercy Hospital, California, points out that, although breast-feeding is a natural process, it is nonetheless one that must be learned by the mother and the baby.[9] Adjusting to breast-feeding is not always easy, and for the new mother it can be discouraging. Breasts can become engorged and tender, nipples raw and cracked. Breast-feeding can be tiring, and it is time-consuming. However, once adjusted mentally and physically to the demands of breast-feeding, many mothers report that it is really easier than bottle-feeding. A breast-feeding mother need not bother with sterilizing, refrigerating, or heating bottles or mixing formula, and there is always a fresh supply of milk at hand, even when traveling.

It is worth noting, however, that bottle-feeding is considerably easier than it used to be. The case for the greater convenience of breast-feeding has lessened somewhat with the introduction of the disposable bottle and premixed formulas. Although expensive, these new technologies do eliminate much of the drudgery of bottle-feeding and make it more convenient to travel with a bottle-fed infant.

Biochemistry and Nutritional Contents

Chemical analysis of human breast milk is somewhat complicated by the fact that its composition varies among women.[8] Also, composition of milk from one mother varies over the course of a day and during the course of a single feeding. The concentration of certain constituents may change dramatically over the weeks and months the mother feeds her child. For this reason, researchers who study milk components, such as Gerald E. Gaull, Department of Pediatrics, Mount Sinai School of Medicine, City University of New York, and colleagues, often pool milk donated by a number of mothers.[10]

Much analysis has been done comparing the constituents in human milk and in cow's milk (the basis for most infant formulas). Donald E. George and Emanuel Lebenthal, Division of Gastroenterology and Nutrition, Buffalo Children's Hospital, State University of New York, note that the actual protein content of breast milk is less than half that found in cow's milk, and the proteins found are very different.[11] Cow's milk has a higher proportion of casein, and human milk a higher proportion of whey proteins, especially lactalbumin, lactoferrin, and lysozyme.[11] Gaull and colleagues note that human milk differs from cow's milk in both quantity and quality of protein and that "the smaller quantities provided by human milk are of a quality that is more available biologically."[10] (p. 106)

Other components of breast milk are water, lipids, and cholesterol.[11] The lipids in breast milk are more easily digested by the infant than those in cow's milk because of their composition. Breast milk also contains lipases—enzymes that break down the lipids and make them more digestible.[12]

The high cholesterol content of breast milk has been the subject of considerable controversy. Some researchers claim that the high dietary levels in early infancy protect against elevations in plasma cholesterol later in life.[13] Others claim that there is no protective effect.[14] This controversy remains unresolved, and the role of high cholesterol in human breast milk is not understood.[1] (p. 78)

Breast milk also contains carbohydrates (primarily lactose), nucleotides, minerals, salts, vitamins, hormones, prostaglandins, and bile salts (also thought to aid digestion of lipids).

The high proportion of lactose in human milk might surprise those familiar with the high incidence of lactose intolerance in the world, a condition I discussed in a previous article.[15] The only infants with permanent lactose intoler-

ance are those with genetic lactase deficiency, an extremely rare disorder. Transient lactose intolerance sometimes occurs in premature infants and infants recovering from severe diarrhea.[1] (p. 330-1)

Active immune-system components in human milk, according to W.B. Pittard, Department of Pediatrics, Case Western Reserve University School of Medicine, Cleveland, Ohio, include immunoglobulins A and G, macrophages, immunocompetent B and T lymphocytes, neutrophils, and epithelial cells.[16] The roles these agents play in the anti-infective activity of breast milk are addressed later in the essay. And Graham Carpenter, Departments of Biochemistry and Medicine, Vanderbilt University School of Medicine, Nashville, Tennessee, has identified epidermal growth factor in breast milk.[17]

Clearly, there are ingredients in breast milk that no formula manufacturer can duplicate; although the role of each component is not completely understood, there are observed differences between breast-fed and formula-fed infants that reflect the unique composition of breast milk. In sections that follow, we will consider some of these differences, including the frequency of infections, allergies, and learning disabilities; growth rates; and psychological aspects. First, we will look at the importance of diet for the breast-feeding mother.

The Lactating Mother's Diet

Most physicians would agree that a lactating mother needs to have a well-balanced diet. Jelliffe and Jelliffe caution that it is difficult to evaluate the impact of malnutrition on milk content and volume, because in all women these factors vary with the time of day, the number of weeks since the birth of the child, and the psychological state of the mother.[6] (p. 77) Nonetheless, they note that the volume of milk decreases in undernourished mothers, ceasing altogether in cases of extreme malnutrition.[8] Protein levels in human milk are similar in inadequately nourished and well-nourished women, although two specific amino acids, lysine and methionine, are lower in undernourished women. Fat may be considerably reduced in the breast milk of women poorly nourished during pregnancy and lactation, while lactose levels vary surprisingly little with diet.

H.S. Dang, Health Physics Division, Bhabha Atomic Research Center, BARC Hospital, Bombay, India, and colleagues studied concentrations of trace elements in the breast milk of economically poor Indian women. They found that infants who showed signs of malnutrition were receiving milk that was very low in copper, zinc, and manganese.[18] They recommended supplementing the breast-fed baby's diet in low-income groups and stressed the need for good maternal nutrition.

Most pediatricians recommend supplementing the lactating mother's diet with vitamins, especially if her dietary intake of water-soluble vitamins is low. The need to supplement the baby's diet is not usually so clear cut. Substances that appear to be present in breast milk in quantities lower than standard required amounts are iron and vitamins D and K. Samuel J. Fomon and Ronald G. Strauss, Department of Pediatrics, University of Iowa Hospital and Clinics, Iowa City, suggest that exclusively breast-fed babies should receive supplements of all three of these essential nutrients.[19] Gaull and colleagues concur that an injection of water-soluble vitamin K at birth is important for preventing vitamin K deficiency in some breast-fed infants.[10] Additional vitamin K supplements may be critical for breast-fed infants with alpha-1-antitrypsin deficiency, an extremely rare genetic disorder.[20,21]

Although views conflict on the need to supplement with fat-soluble vitamin D, those who support supplementation present compelling evidence. Lauren Cosgrove and Allen Dietrich, Department of Community and Family Medicine, Dartmouth Medical School, Hanover, New Hampshire, report a case of nutritional rickets, attributed to inade-

quate vitamin D, in an otherwise healthy breast-fed baby; in a 10-year retrospective literature search, they found 63 similar cases.[22] Cosgrove and Dietrich suggest that routine vitamin D supplementation in breast-fed children may be advisable. Marja Ala-Houhala, Department of Pediatrics, University Central Hospital of Tampere, Finland, found that, in a country with scant sunlight in winter, breast-feeding alone or with only maternal supplementation may lead to very low vitamin D levels in the child. Ala-Houhala recommends a vitamin D supplement of 400 international units per day for breast-fed infants.[23] Bonny L. Specker and colleagues, University of Cincinnati Medical Center, Ohio, estimated that, for adequate serum levels of vitamin D, an exclusively breast-fed infant should receive sunlight exposure of 30 minutes per week wearing only a diaper or two hours per week fully clothed but without a hat.[24]

Researchers also disagree about supplementation with iron. Although breast milk has very low levels of iron, breast-fed babies show little evidence of iron deficiency.[25,26] The iron content of human milk is thought to have a high bioavailability.[26] Gaull and colleagues contend that, if the mother is well nourished during pregnancy, the baby will have sufficient stores of iron.[10] M.A. Siimes and colleagues, Department of Pediatrics, Children's Hospital, University of Helsinki, Finland, showed that iron supplementation of the mother's diet had no effect on the breast-feeding child's iron intake.[26] They therefore recommend iron supplementation of the breast-feeding infant's diet, starting at six months.

Anti-infective Activity

Physicians have long been aware that infants who are exclusively breast-fed are more resistant than bottle-fed infants to some infections, especially gastroenteritis,[27,28] respiratory tract infections,[29] and otitis media (middle ear infections).[30,31] The traditional explanation is that breast-feeding is more hygienic than bottle-feeding, particularly when refrigeration is not available and sterilization techniques are unknown.[6] (p. 84-5) However, there is mounting evidence that breast milk plays a much more active role in preventing infection.

The immune-system components in breast milk—secretory IgA (sIgA), leukocytes, lysozyme, and possibly lactoferrin—may protect against infection in a number of ways. G.V. Jatsyk and colleagues, Institute of Pediatrics, Academy of Medical Sciences, Moscow, have confirmed the stability of sIgA in the baby's intestine, and they suggest that it protects the mucosa against viruses and bacteria.[32] Other researchers have suggested that certain leukocytes, such as macrophages, might protect against infection through phagocytic action;[16,33] lysozyme might protect by breaking down bacterial cell walls;[33] and lactoferrin may inhibit growth of some bacteria.[16]

Specific antiviral and antibacterial antibodies have been found in breast milk. Lymphocytes may also be effectively transferred through the mother's milk to her infant.[33] Hajime Yoshioka and colleagues, Department of Pediatrics, Asahikawa Medical College, Japan, have shown that breast milk contains a substance that promotes the growth of harmless bifidobacteria and suppresses growth of coliform and other pathogenic organisms in the newborn intestine.[34]

K. Borch-Johnsen, Department of Pediatrics, Steno Memorial Hospital, Denmark, and colleagues have correlated breast-feeding practices with the incidence of childhood insulin-dependent diabetes mellitus (IDDM) in Norway and Sweden from 1938 to 1982. The incidence of IDDM correlates inversely with the frequency of breast-feeding. The authors suggest that breast milk may protect genetically susceptible infants against a virus that causes IDDM.[35]

Despite the preponderance of evidence that breast milk has unique anti-infective properties, some studies have shown that there is little difference in incidence of illness in breast-fed versus

bottle-fed infants in developed countries. Marvin S. Eiger and colleagues, Mount Sinai and New York University Schools of Medicine, New York, suggest that "when appropriate hygienic measures are taken and statistical biases eliminated, differences in morbidity between bottle-fed and breast-fed babies are relatively minor."[36] Such "statistical biases" might include the mother's level of education, the family's social and economic status, or the kind of breast-milk substitute used.

In a very recent study, Jean-Pierre Habicht, Division of Nutritional Sciences, Cornell University, Ithaca, New York, and colleagues analyzed data collected from mothers in peninsular Malaysia. They conclude that, even when statistical biases are eliminated, it is clear that breast-feeding saves lives.[37]

Anti-allergic Activity

In a previous essay,[38] I discussed the work of U.M. Saarinen and colleagues at Children's Hospital, University of Helsinki, Finland, that suggests that exclusive breast-feeding for six months protects against the expression of hereditary allergies in babies of parents with allergies.[39] Although there is considerable controversy over the ultimate efficacy of breast-feeding in preventing this kind of allergy, it does seem to delay onset of some allergies. Bengt Björkstén, Department of Pediatrics, University of Uppsala, Sweden, notes that delaying onset of an allergy, which can lessen severity of allergic disease, is of great value in itself and justifies a strong recommendation for breast-feeding.[40]

Allergic sensitization of the breast-fed infant can occur in response to trace foods consumed by the mother, most often cow's milk, but also including egg, wheat, citrus fruit, and chocolate.[41] John W. Gerrard and Mehdi Shenassa, Department of Pediatrics, University of Saskatchewan, Saskatoon, Canada, nonetheless recommend that children of parents with allergies be breast-fed, stressing that the mother should avoid the foods likely to sensitize the child.[41]

Growth of Breast-fed Infants

Growth rates slightly below established standards have been reported in exclusively breast-fed infants three to six months of age by a number of researchers: Burris Duncan and colleagues, Department of Pediatrics, University of Arizona College of Medicine, Tucson;[42] R.K. Chandra, Department of Pediatrics, Memorial University of Newfoundland, St. John's, Canada;[43] Nancy E. Hitchcock and colleagues, Princess Margaret Children's Medical Research Foundation, Perth, Australia;[44] and R.G. Whitehead and A.A. Paul, Dunn Nutritional Laboratory, Cambridge, UK.[45]

Although it is possible that the slower weight gain in the second three months in breast-fed babies reflects insufficient nourishment, researchers seem to agree that this is not often the case. Indeed, some experts view this trend as a sign that bottle-fed infants are often overfed.[1] (p. 275) Some even suggest that the tendency to overfeed bottle-fed infants may contribute to a greater incidence of obesity later in life. Michael S. Kramer, Departments of Pediatrics and Epidemiology and Health, McGill University Faculty of Medicine, Montreal, Canada, conducted case-controlled studies of 639 patients 12-to-18 years old and found evidence that breast-feeding protects against later obesity.[46]

Although Duncan and colleagues suggest that more research should be done to determine the implications of the slower growth rate in breast-fed babies,[42] all of these researchers suggest that existing growth standards (based on data from bottle- and breast-fed babies) may be inappropriate for evaluating growth in exclusively breast-fed babies.[42-45] Whitehead and Paul found that the standards commonly used (Iowa, Harvard, National Center for Health Statistics-US, Ministry of Health-UK, Tanner, and The Netherlands) are not consistent, in any case, for infants less than four-to-five months old.[45] Lawrence includes various growth tables

based on data from healthy breast-fed infants.[1] (p. 276-9)

Energy and protein intake by exclusively breast-fed babies was measured by Nancy F. Butte and colleagues, Children's Nutrition Research Center, Department of Pediatrics, Baylor College of Medicine, Houston, Texas.[47] Growth was determined to be satisfactory despite the finding that intake levels were significantly lower than the existing standards. These authors also suggest that standard energy and protein intakes and allowances should be reevaluated.

Learning Disabilities

Although inconclusive, some evidence exists that breast-fed babies have a lower incidence of learning disabilities. John H. Menkes, clinical professor of pediatrics, UCLA, examined infant feeding histories of 29 children with specific learning disorders.[48] Only 14 percent of these children had been breast-fed, compared with 33 percent in the community as a whole.

Bryan Rodgers, research officer, MRC Unit on Environmental Factors in Mental and Physical Illness, London School of Economics, UK, examined statistics from a 1946 birth cohort in the British National Survey of Health and Development.[49] He concluded that there is a higher incidence of "intellectual impairment" among adults who were bottle-fed as infants. Brent Taylor and Jane Wadsworth, Department of Child Health, University of Bristol, UK, also examined data from a large British cohort, assessing the effect of breast-feeding on children's developmental test scores at age five years.[50] They found a correlation between a history of bottle-feeding and reduced performance on developmental tests. They were unable to rule out the possibility that breast-feeding has a positive impact on intellectual development. In these studies, it is difficult to identify and control for confounding factors (such as genetic predisposition, personality influences, socioeconomic status, and so forth); however, the consistency of these results is interesting.

Psychological Aspects

Some advocates of breast-feeding have suggested that the physical closeness and eye contact that are naturally a part of nursing a baby are important in reinforcing the maternal-infant bond. Studies by Marshall H. Klaus and John H. Kennell, Case Western Reserve University School of Medicine, Cleveland, Ohio, on the importance of early contact in the formation of the parent-infant bond[51] have added weight to efforts by women and health professionals to change birth practices in the US. Today many hospitals permit fathers to attend the births and allow mothers to nurse their infants immediately after birth. Studies show that mothers who have early contact with their infants are more likely to nurse and more likely to nurse successfully.[1] (p. 143)

Successful breast-feeding, as we discussed earlier, depends on the mutual stimulation of reflexes in the mother and in the infant. There is ample evidence that the mother's flow of milk (the let-down reflex) can be disrupted by anxiety and stress.[1] (p. 288),[6] (p. 9-25) A woman who does not receive encouragement and support during the sometimes trying period when nursing is being established may fall into a common cycle of failure—the nervous mother's milk does not flow, the hungry child's cries become more desperate, the mother becomes more upset, and the flow continues to be disrupted. If she substitutes a bottle, the frequency of the suckling stimulus is reduced, milk is not drained, milk production shuts down, and it becomes more and more unlikely that this mother will breast-feed her baby.

Mothers who have nursed their infants are perhaps the best advocates of the psychological benefits of nursing. In *Breast-feeding Handbook*, Johanna Goldfarb, pediatrician, Hershey Medical Center, Pennsylvania, and Edith Tibbetts, breast-feeding counselor, point out that most of

the professional literature describing the psychological aspects of breast-feeding has been written by women who have nursed their own children.[52]

Summary

The proponents of breast-feeding stress its nutritional superiority to formula and its accompanying advantages to the health and development of the infant; the presence of immunologic factors that transfer immune capability to the baby; the psychological advantages (for mother *and* child) of physical closeness, touching, and eye contact; the physical benefits to the mother of speeding recovery and weight loss; and the role of breast-feeding as a natural contraceptive (particularly as a means of child spacing in preindustrial societies, where nursing still follows a pattern that effectively suppresses ovulation and menstruation). It is clear that successful breast-feeding is tied to the emotional and psychological state of the mother and the nature of the interaction between mother and child.

In Part 2 of this essay, we will consider some of the medical contraindications for breast-feeding, review demographic data on the prevalence of breast-feeding among different socioeconomic groups, and look at the research literature on the subject of breast-feeding.

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