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**Promotion, protection and support of breastfeeding
in Greece**

Thesis

Prague, May 2010



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Date of defense: 7.6.2010

Proclamation

I declare that the given elaborate has been written by myself and only the given sources and literature have been used. I also give a permission that my thesis is to be used for study purposes.

In Prague on May 9th, 2010

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ABBREVIATIONS

American Academy of Pediatrics(AAP)

Celiac disease(CD)

Economic and Social Council of the United Nations (ECOSOC)

Global Initiative for Mother Support (GIMS)

Human immunodeficiency virus (HIV)

Intelligence quotient(IQ)

International Board of Certified Lactation Consultants (IBCLCs)

International Lactation Consultant Association (ILCA)

La Leche League International (LLLl)

Sudden Infant Death Syndrome(SIDS)

United Nations International Children's Emergency Fund (UNICEF)

World Alliance for Breastfeeding Action (WABA)

World Health Organization(WHO)

Introduction

Breastfeeding is the feeding of an infant or young child with breast milk directly from female human breasts (i.e., via lactation). Babies have a suckling reflex that enables them to suck and swallow milk. Most mothers can breastfeed for six months or more, without the addition of infant formula or solid foods.

Emphasizing the value of breastfeeding for both mothers and children, the World Health Organization (WHO) and the American Academy of Pediatrics (AAP) both recommend exclusive breastfeeding for the first six months of life and then complementary foods with breastfeeding for at least one year (AAP) and up to two years or more (WHO). While recognizing the superiority of breastfeeding, regulating authorities also work to minimize the risks of artificial feeding.

Maternal milk is a live tissue containing many nutrients and immune substances. Breastfeeding actively protects the newborn against infections and establishes a unique bonding experience between mother and infant and increases maternal role attainment. Although an enormous breastfeeding campaign is conducted worldwide, there is a long way ahead, in order the lactation objectives set by the world scientific community to be achieved. Lack of information and social reasons are considered the main breastfeeding obstacles in industrialized societies. Job responsibilities as well as various prejudices enhance mother to interrupt breastfeeding or not to breastfeed at all. Even further, and despite the progress in this field, many women do not quit smoking and alcohol drinking during the last semester of pregnancy and lactation. The recording of beliefs and needs of the modern mother will allow substantial interventions towards strengthening of breastfeeding and prejudice dissolution on this matter.[1]

In my thesis I will focus on breastfeeding, its promotion by organizations around the world, its benefits for the mother and the infant, the possible difficulties that may arise with it and its support by institutions, in my home country, Greece.

1. Breastfeeding physiology

1.1. Reproductive hormones

Reproductive hormones are important in the development of the breast in puberty and in lactation. Oestrogen promotes the growth of the gland and ducts, while progesterone stimulates the development of milk producing cells. Prolactin, released from the posterior pituitary gland, stimulates milk production. Oxytocin, released from the anterior pituitary gland, stimulates milk production. Oxytocin, released in response to suckling, causes milk ejection from the lactating breast (let-down reflex) [2]

The breasts become fully developed under the influence of oestrogen, progesterone and prolactin during pregnancy. Prolactin causes the production of milk, and oxytocin release (via the suckling reflex) causes the contraction of smooth muscle cells in the ducts to eject the milk from the nipple. The first secretion of the mammary gland after delivery is colostrum. It contains more protein and less fat than subsequent milk, and contains antibodies that impart some passive immunity to the infant. Most of the time it takes 1 – 3 days after delivery for milk production to reach appreciable levels. The expulsion of the placenta at delivery initiates milk production and causes the drop in circulating oestrogens and progesterone.

At birth, prolactin levels remain high, while the delivery of the placenta results in a sudden drop in progesterone, oestrogen, and HPL levels. This abrupt withdrawal of progesterone in the presence of high prolactin levels stimulates the copious milk production and this stage is called lactogenesis II.

When the breast is stimulated, prolactin levels in the blood rise, peak in about 45 minutes, and return to the pre-breastfeeding state about three hours later. The release of prolactin triggers the cells in the alveoli to make milk. Prolactin also transfers to the breast milk. Some research indicates that prolactin in milk is higher at times of higher milk production, and lower when breasts are fuller, and that the highest levels tend to occur between 2 a.m. and 6 a.m.

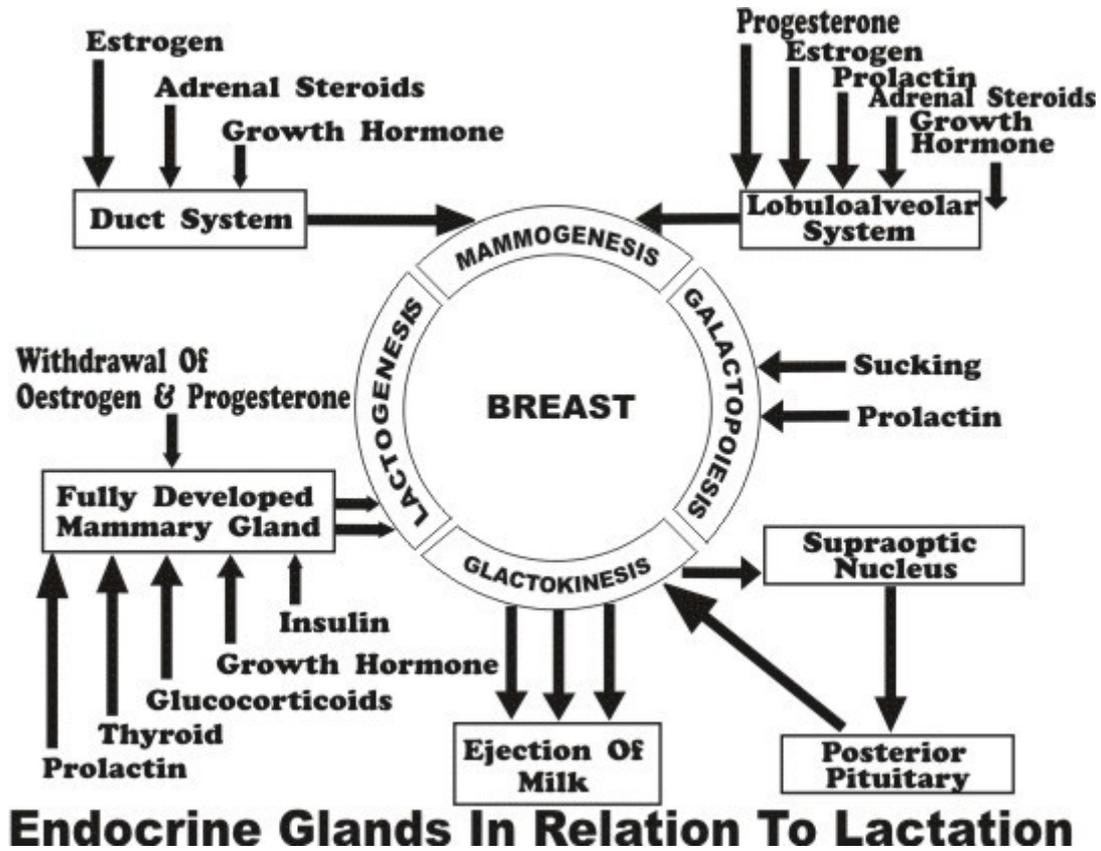
[2]<http://en.wikipedia.org/wiki/Lactation>

Other hormones—notably insulin, thyroxine, and cortisol—are also involved, but their roles are not yet well understood. Although biochemical markers indicate that Lactogenesis II begins about 30–40 hours after birth, mothers do not typically begin feeling increased breast fullness (the sensation of milk "coming in the breast") until 50–73 hours (2–3 days) after birth.

1.2 Colostrum

Colostrum is the first milk a breastfed baby receives. It contains higher amounts of white blood cells and antibodies than mature milk, and is especially high in [immunoglobulin A \(IgA\)](#), which coats the lining of the baby's immature intestines, and helps to prevent germs from invading the baby's system. Secretory IgA also helps prevent food allergies. Over the first two weeks after the birth, colostrum production slowly gives way to mature breast milk.

Fig 1.



From <http://www.holistic-herbalist.com/image-files/breastmilkproduction-1.jpg>

2. Benefits for the mother

Immediate and long term advantages of breastfeeding regarding the mother's health have been documented by the International Baby Food and Action Network.

2.1 Immediate Health Benefits

- Uterus returns to normal size more quickly and mother has reduced blood loss
- Exclusive breastfeeding delays the return of fertility in most women
- Reduced insulin needs in diabetic mothers
- Psychological benefits of increased self-confidence and enhanced bonding with infant
- Helps mother get needed rest by requiring that she sit or lie down with baby every few hours to feed

Breastfeeding releases oxytocin and prolactin, hormones that relax the mother and make her feel more nurturing toward her baby. Breastfeeding soon after giving birth increases the mother's oxytocin levels, making her uterus contract more quickly and reducing bleeding. Pitocin, a synthetic hormone used to make the uterus contract during and after labour, is structurally modelled on oxytocin.

2.2 Long-term Health Benefits

- Earlier return to pre-pregnancy weight, with no return of weight once weaning occurs
- Reduced risk of breast, ovarian, and endometrial cancers
- Reduced risk of osteoporosis and bone fracture

Breastfeeding is a cost effective way of feeding an infant, and provides the best nourishment for a child at a small nutrient cost to the mother. Frequent and exclusive breastfeeding can delay the return of fertility through lactational amenorrhoea though

breastfeeding is an imperfect means of birth control. Breastfeeding may delay the return to fertility for some women by suppressing ovulation. A breastfeeding woman may not ovulate, or have regular periods, during the entire lactation period. The period in which ovulation is absent differs for each woman. This lactational amenorrhoea has been used as an imperfect form of natural contraception, with a greater than 98% effectiveness during the first six months after birth if specific nursing behaviours are followed. It is possible for some women to ovulate within two months after birth while fully breastfeeding.

During breastfeeding beneficial hormones are released into the mother's body and the maternal bond can be strengthened. Breastfeeding is possible throughout pregnancy, but generally milk production will be reduced at some point.

Hormones released during breastfeeding help to strengthen the maternal bond.

- As the fat accumulated during pregnancy is used to produce milk, extended breastfeeding—at least 6 months—can help mothers lose weight. However, weight loss is highly variable among lactating women; monitoring the diet and increasing the amount/intensity of exercise are more reliable ways of losing weight. The 2007 review for the AHRQ found that the effect of breastfeeding in mothers on return-to-pre-pregnancy weight was negligible, and the effect of breastfeeding on post-partum weight loss was unclear.[3]
- Reduced risk of breast cancer, ovarian cancer, and endometrial cancer.
- Reduced risk of heart disease.
- Breastfeeding diabetic mothers require less insulin.
- Reduced risk of post-partum bleeding.

According to Malmo University study published in 2009, women who breast fed for a longer duration have a lower risk for contracting rheumatoid arthritis than women who breast fed for a shorter duration or who had never breast fed.[4]

[3]<http://www.ahrq.gov/clinic/tp/brfouttp.htm>

[4]Pikwer M, Bergström U, Nilsson JA, *et al* (2009). "Breast feeding, but not use of oral contraceptives, is associated with a reduced risk of rheumatoid arthritis". *Ann Rheum Dis* **68** (4): 526–30. [doi:10.1136/ard.2007.084707](https://doi.org/10.1136/ard.2007.084707).

[PMID 18477739](https://pubmed.ncbi.nlm.nih.gov/18477739/).

Although the 2007 review for the AHRQ found "no relationship between a history of lactation and the risk of osteoporosis mothers who breastfeed longer than eight months benefit from bone re-mineralisation.[5]

[5]Ip, S., Chung, M., Raman, G., Chew, P., Magula, N., DeVine, D., et al. (2007). ["Breastfeeding and maternal and infant health outcomes in developed countries"](#) , Evidence Report/Technology Assessment

3.Benefits for the infant

3.1 Immediate Health Benefits for Breastfed Infants

Human milk is made to meet the specific needs of human babies, and it changes as the baby grows to offer the best combination of nutrients that make it easy for baby to digest and use.

- Increased resistance to infections
- Earlier development of the infant immune system
- Decreased risk of ear infections
- Decreased risk of diarrhoea
- Decreased risk of SIDS (Sudden Infant Death Syndrome)
- Decreased risk of hospitalization due to serious illness
- Necrotizing enterocolitis(NEC) is an acute inflammatory disease in the intestines of infants. Necrosis or death of intestinal tissue may follow. It is mainly found in premature births. In one study of 926 pre term infants, NEC developed in 51 infants (5.5%). The death rate from necrotizing enterocolitis was 26%. NEC was found to be six to ten times more common in infants fed formula exclusively, and three times more common in infants fed a mixture of breast milk and formula, compared with exclusive breastfeeding. In infants born at more than 30 weeks, NC was twenty times more common in infants fed exclusively on formula.
- A 2007 meta-analysis of four randomized controlled trials found "a marginally statistically significant association" between breastfeeding and a reduction in the risk of NEC.[6]

[6][Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, Trikalinos T, Lau J., "Breastfeeding and maternal and infant health outcomes in developed countries". Evid Rep Technol Assess \(Full Rep\). 2007 \(153\):1-186.](#)

- During breastfeeding antibodies pass to the baby. Breast milk contains several anti-infective factors such as bile salt stimulated lipase (protecting against amoebic infections), lactoferrin (which binds to iron and inhibits the growth of intestinal bacteria and immunoglobulin A protecting against micro-organisms).
- Among the studies showing that breastfed infants have a lower risk of infection than non-breastfed infants are:
 - In a 1993 University of Texas Medical Branch study, a longer period of breastfeeding was associated with a shorter duration of some middle ear infections (otitis media with effusion) in the first two years of life.
 - A 1995 study of 87 infants found that breastfed babies had half the incidence of diarrhoeal illness, 19% fewer cases of any otitis media infection, and 80% fewer prolonged cases of otitis media than formula fed babies in the first twelve months of life.
 - Breastfeeding appeared to reduce symptoms of upper respiratory tract infections in premature infants up to seven months after release from hospital in a 2002 study of 39 infants.
 - A 2004 case control study found that breastfeeding reduced the risk of acquiring urinary tract infections in infants up to seven months of age, with the protection strongest immediately after birth.
 - The 2007 review for AHRQ found that breastfeeding reduced the risk of acute otitis media, non-specific gastroenteritis, and severe lower respiratory tract infections.

3.2 Long-term Health Benefits for Breastfed Infants

Infants breastfed for nine months grew up to be significantly more intelligent than infants breastfed for one month or less, according to a new study in the Journal of the American Medical Association. Results from the study of more than 3,000 young men and women from Copenhagen, Denmark, strongly support the long suggested, but never proven, conclusion that the act of breastfeeding not only makes babies healthier, but smarter, too.

"We are really quite certain that what we are seeing here is the effect of the duration of breastfeeding on an individual's intelligence," said June Machover Reinisch of the Kinsey Institute for Research in Sex, Gender and Reproduction, one of the authors of the study. "The question that remains is what exactly is the aspect of breastfeeding that results in the greater intelligence."

Scientific research, such as the studies summarized in a 2007 review for the U.S. Agency for Health Care Research and Quality(AHRQ) and a 2007 review for the WHO, has found many benefits to breastfeeding for the infant. [7]

- Less childhood obesity
- Reduced risk of some chronic diseases that develop during childhood including: juvenile diabetes, childhood cancers and allergic disease/asthma
- Enhanced neurological development that may result in higher IQ s and better eyesight
- Suckling at the breast promotes good jaw development and encourages the growth of straight, healthy teeth

[7]Horta BL, Bahl R, Martines JC, Victora CG (2007). [*Evidence on the long-term effects of breastfeeding: systematic reviews and meta-analyses*](#). WHO Geneva.

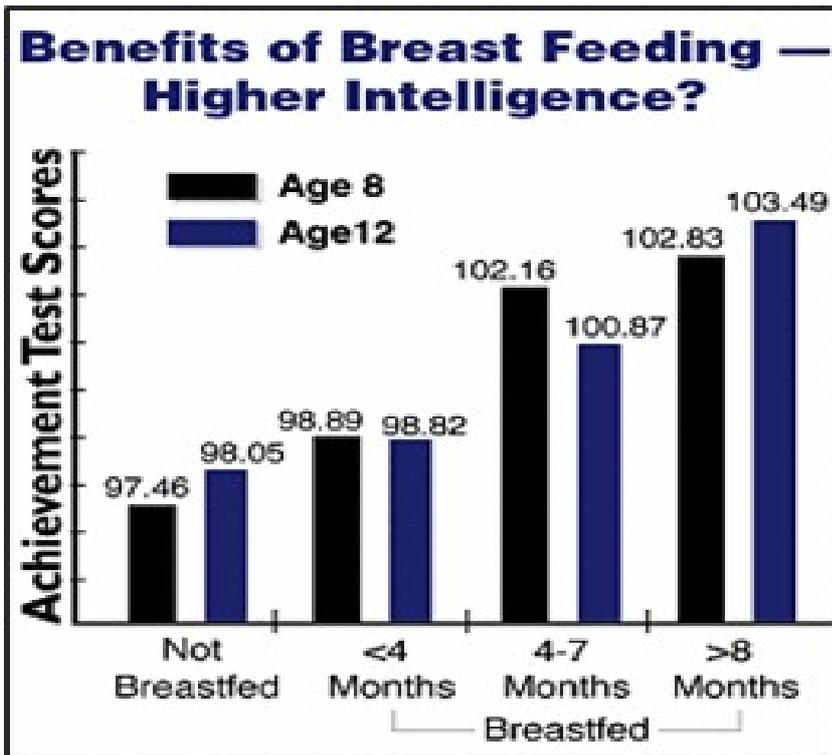


Fig 2. Benefits of breastfeeding From Horwood J, Fergusson DM. Breast-feeding and later cognitive and academic outcomes. From *the Christchurch Health and Development Study*, Christchurch School of Medicine, New Zealand, 1997.

In children who are at risk for developing allergic diseases (defined as at least one parent or sibling having atopy), atopic syndrome can be prevented or delayed through exclusive breastfeeding for four months[8], though these benefits may not be present after four months of age. However, the key factor may be the age at which non-breastmilk is introduced rather than duration of breastfeeding. Atopic dermatitis the most common form of eczema, can be reduced through exclusive breastfeeding beyond 12 weeks in individuals with a family history of atopy, but when breastfeeding beyond 12 weeks is combined with other foods incidents of eczema rise irrespective of family history.

Breastfed babies have better arousal from sleep at 2–3 months. This coincides with the peak incidence of sudden infant syndrome. Study conducted in University of Münster has shown that breastfeeding reduces the risk of sudden infant death syndrome by approximately 50% at all ages throughout infancy. [9]

Studies examining whether breastfeeding in infants is associated with higher intelligence later in life include:

- Horwood, Darlow and Mogridge (2001) tested the intelligence quotient(IQ) scores of 280 low birthweight children at seven or eight years of age. Those who were breastfed for more than eight months had verbal IQ scores 6 points higher (which was significantly higher) than comparable children breastfed for less time. They concluded that these findings added to a growing body of evidence to suggest that breast milk feeding may have small long term benefits for child cognitive development.

[8][Pediatrics](#). 2008 Jan;121(1):183-91.Effects of early nutritional interventions on the development of atopic disease in infants and children: the role of maternal dietary restriction, breastfeeding, timing of introduction of complementary foods, and hydrolyzed formulas.[Greer FR](#), [Sicherer SH](#), [Burks AW](#); [American Academy of Pediatrics Committee on Nutrition](#); [American Academy of Pediatrics Section on Allergy and Immunology](#).

[9][Pediatrics](#). 2009 Mar;123(3):e406-10. “Does breastfeeding reduce the risk of sudden infant death syndrome?”[Vennemann MM](#), [Bajanowski T](#), [Brinkmann B](#), [Jorch G](#), [Yücesan K](#), [Sauerland C](#), [Mitchell EA](#); [GeSID Study Group](#).PD, University of Münster, Institute of Legal Medicine, Röntgenstrasse 23, D-48149 Münster, Germany. mechtild.vennemann@ukmuenster.de

- In 2006, Der and colleagues, having performed a prospective cohort study, sibling pairs analysis, and meta-analysis concluded that breastfeeding has little or no effect on intelligence in children. The researchers found that most of the observed association between breast feeding and cognitive development is the result of confounding by maternal intelligence.
- In the largest randomized trial ever conducted in the area of human lactation, between 1996 and 1997 maternity hospitals and polyclinics in Belarus were randomized to receive or not receive breastfeeding promotion modelled on the WHO/UNICEF Baby Friendly Hospital Initiative. Of 13,889 infants born at these hospitals and polyclinics and followed up in 2002-2005, those who had been born in hospitals and polyclinics receiving breastfeeding promotion had IQ s that were 2.9-7.5 points higher (which was significantly higher). Since (among other reasons) a randomized trial should control for maternal IQ, the authors concluded in a 2008 paper that the data provide strong evidence that prolonged and exclusive breastfeeding improves children's cognitive development.

Infants exclusively breastfed have less chance of developing diabetes mellitus type 1 than peers with a shorter duration of breastfeeding and an earlier exposure to cow milk and solid foods. Breastfeeding also appears to protect against diabetes mellitus type 2 at least in part due to its effects on the child's weight.[10]

Breastfeeding appears to reduce the risk of extreme obesity in children aged 39 to 42 months. The protective effect of breastfeeding against obesity is consistent, though small, across many studies, and appears to increase with the duration of breastfeeding.

[10]Mayer-Davis EJ, Dabelea D, Lamichhane AP, *et al.* (2008). "Breast-feeding and type 2 diabetes in the youth of three ethnic groups: the Search for diabetes in youth case-control study". *Diabetes Care* PEDIATRICS Vol. 118 No. 4 October 2006, pp. 1510-1518 (doi:10.1542/peds.2006-0690)

Several studies showed breastfeeding to have lowered the risk of asthma, protect against allergies, and provide improved protection for babies against respiratory and intestinal infections.

A review of the association between breastfeeding and celiac disease (CD) concluded that breast feeding while introducing gluten to the diet reduced the risk of CD. The study was unable to determine if breastfeeding merely delayed symptoms or offered life-long protection.

Breastfeeding may decrease the risk of cardiovascular disease in later life, as indicated by lower cholesterol and C-reactive protein levels in adult women who had been breastfed as infants. Although a 2001 study suggested that adults who had been breastfed as infants had lower arterial distensibility than adults who had not been breastfed as infants, the 2007 review for the WHO concluded that breastfed infants "experienced lower mean blood pressure" later in life. Nevertheless, the 2007 review for the AHRQ found that "the relationship between breastfeeding and cardiovascular diseases was unclear.

4. Breastfeeding difficulties

While breastfeeding is a natural human activity, difficulties are not uncommon. Putting the baby to the breast as soon as possible after the birth helps to avoid many problems. The AAP breastfeeding policy says: "Delay weighing, measuring, bathing, needle-sticks, and eye prophylaxis until after the first feeding is completed." Many breastfeeding difficulties can be resolved with proper hospital procedures, properly trained midwives, doctors and hospital staff, and lactation consultants. There are some situations in which breastfeeding may be harmful to the infant, including infection with HIV and acute poisoning by environmental contaminants such as lead. The Institute of Medicine has reported that breast surgery, including breast implants or breast reduction surgery, reduces the chances that a woman will have sufficient milk to breast feed. [11] Rarely, a mother may not be able to produce breast milk because of a prolactin deficiency. This may be caused by Sheehan's syndrome, an uncommon result of a sudden drop in blood pressure during childbirth typically due to haemorrhage. In developed countries, many working mothers do not breast feed their children due to work pressures. For example, a mother may need to schedule for frequent pumping breaks, and find a clean, private and quiet place at work for pumping. These inconveniences may cause mothers to give up on breast feeding and use infant formula instead.

[11] "[Breast Surgery Likely to Cause Breastfeeding Problems](http://www.breastimplantinfo.org/augment/brstfdg122000.html)". The Implant Information Project of the Nat. Research Center for Women & Families. February 2008. <http://www.breastimplantinfo.org/augment/brstfdg122000.html>

As breastfeeding can transmit HIV from mother to child, UNAIDS recommends avoidance of all breastfeeding where formula feeding is acceptable, feasible, affordable and safe. The qualifications are important. Some constituents of breast milk may protect from infection. High levels of certain polyunsaturated fatty acids (eicosadienoic, arachidonic and gamma linoleic acids) are associated with a reduced risk of child infection when nursed by HIV-positive mothers. Arachidonic acid and gamma-linolenic acid may also reduce viral shedding of the HIV virus in breast milk. Due to this, in underdeveloped nations infant mortality rates are lower when HIV-positive mothers breastfeed their newborns than when they use infant formula. However, differences in infant mortality rates have not been reported in better resourced areas. Treating infants prophylactically with lamivudine (3TC) can help to decrease the transmission of HIV from mother to child by breastfeeding. If free or subsidized formula is given to HIV-infected mothers, recommendations have been made to minimize the drawbacks such as possible disclosure of the mother's HIV status.[12]

[12]Coutsoudis A, Goga AE, Rollins N, Coovadia HM (2002). "[Free formula milk for infants of HIV-infected women: blessing or curse?](#)". *Health Policy and Planning* 17 (2): 154–160. doi:10.1093/heapol/17.2.154. PMID 12000775. <http://heapol.oxfordjournals.org/cgi/reprint/17/2/154>.

5. Breastfeeding techniques

There are many books and videos to advise mothers about breastfeeding. Lactation consultants in hospitals or private practice, and volunteer organisations of breastfeeding mothers such as La Leche League International also provide advice and support. In the half hour after birth, the baby's suckling reflex is strongest, and the baby is more alert, so it is the ideal time to start breastfeeding. Early breast-feeding is associated with fewer night time feeding problems.[13]

5.1 Time and place for breastfeeding

Breastfeeding at least every two to three hours helps to maintain milk production. For most women, eight breastfeeding or pumping sessions every 24 hours keeps their milk production high. Newborn babies may feed more often than this: 10 to 12 breastfeeding sessions every 24 hours is common, and some may even feed 18 times a day. Feeding a baby "on demand" (sometimes referred to as "on cue"), means feeding when the baby shows signs of hunger feeding this way rather than by the clock helps to maintain milk production and ensure the baby's needs for milk and comfort are being met. However, it may be important to recognize whether a baby is truly hungry, as breastfeeding too frequently may mean the child receives a disproportionately high amount of foremilk, and not enough hindmilk.

"Experienced breastfeeding mothers learn that the sucking patterns and needs of babies vary. While some infants' sucking needs are met primarily during feedings, other babies may need additional sucking at the breast soon after a feeding even though they are not really hungry. Babies may also nurse when they are lonely, frightened or in pain."

[13]<http://rehydrate.org/breastfeed/index.html>

"Comforting and meeting sucking needs at the breast is nature's original design. Pacifiers (dummies, soothers) are a substitute for the mother when she can't be available. Other reasons to pacify a baby primarily at the breast include superior oral-facial development, prolonged lactational amenorrhoea, avoidance of nipple confusion and stimulation of an adequate milk supply to ensure higher rates of breastfeeding success."^[14]

Most US states now have laws that allow a mother to breastfeed her baby anywhere she is allowed to be. In hospitals, rooming in care permits the baby to stay with the mother and improves the ease of breastfeeding. Some commercial establishments provide breastfeeding rooms, although laws generally specify that mothers may breastfeed anywhere, without requiring them to go to a special area. Dedicated breastfeeding rooms are generally preferred by women who are expressing milk while away from their baby.

[14]<http://en.wikipedia.org/wiki/Breastfeeding>

5.2 Latching on, feeding and positioning

Correct positioning and technique for latching on can prevent nipple soreness and allow the baby to obtain enough milk. The "rooting reflex" is the baby's natural tendency to turn towards the breast with the mouth open wide; mothers sometimes make use of this by gently stroking the baby's cheek or lips with their nipple in order to induce the baby to move into position for a breastfeeding session, then quickly moving baby onto the breast while baby's mouth is wide open. In order to prevent nipple soreness and allow the baby to get enough milk, a large part of the breast and areola need to enter the baby's mouth. To help the baby latch on well, wait until the baby's mouth opens wide, then bring the baby up towards the nipple quickly, so that the baby has a mouthful of nipple and areola. The nipple should be at the back of the baby's throat, with the baby's tongue lying flat in its mouth. Inverted or flat nipples can be massaged so that the baby will have more to latch onto.

Pain in the nipple or breast is linked to incorrect breastfeeding techniques. Failure to latch on is one of the main reasons for ineffective feeding and can lead to infant health concerns. A 2006 study found that inadequate parental education, incorrect breastfeeding techniques, or both were associated with higher rates of preventable hospital admissions in newborns.[15]

The baby may pull away from the nipple after a few minutes or after a much longer period of time. Normal feeds at the breast can last a few sucks (newborns), from 10 to 20 minutes or even longer (on demand). Sometimes, after the finishing of a breast, the mother may offer the other breast.

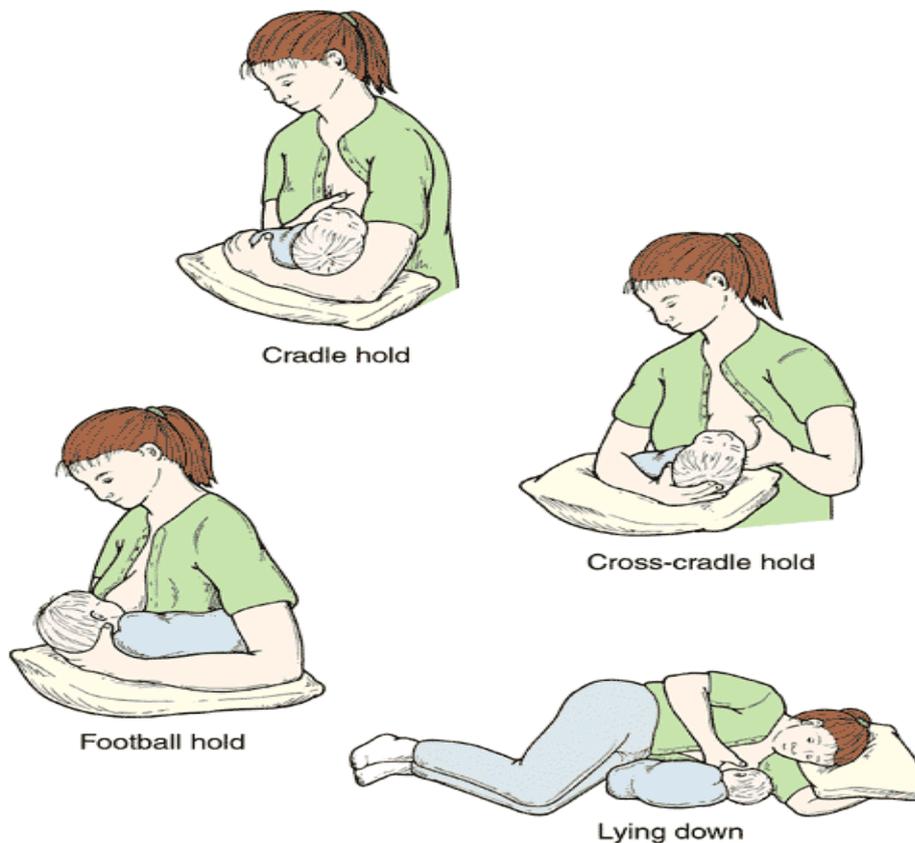
While most women breastfeed their child in the cradling position, there are many ways to hold the feeding baby. It depends on the mother and child's comfort and the feeding preference of the baby. Some babies prefer one breast to the other, but the mother should offer both breasts at every nursing with her newborn.

[15]Paul I, Lehman E, Hollenbeak C, Maisels M (2006). "Preventable newborn readmissions since passage of the Newborns' and Mothers' Health Protection Act". *Pediatrics*: 2349–58. [doi:10.1542/peds.2006-2043](https://doi.org/10.1542/peds.2006-2043).

When tandem breastfeeding, the mother is unable to move the baby from one breast to another and comfort can be more of an issue. As tandem breastfeeding brings extra strain to the arms, especially as the babies grow, many mothers of twins recommend the use of more supporting pillows.

Fig.3

Breast-Feeding Positions



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5.3 Exclusive breastfeeding

Exclusive breastfeeding is defined as "an infant's consumption of human milk with no supplementation of any type (no water, no juice, no non-human milk, and no foods) except for vitamins, minerals, and medications.[16]" National and international guidelines recommend that all infants be breastfed exclusively for the first six months of life. Breastfeeding may continue with the addition of appropriate foods, for two years or more.

[16]Gartner LM, et al. (2005). "[Breastfeeding and the use of human milk \[policy statement\]](#)". *Pediatrics AAP PEDIATRICS* Vol. 115 No. 2 February 2005, pp. 496-506 (doi:10.1542/peds.2004-2491) [PMID 15687461](#)

Exclusively breastfed infants feed anywhere from 6 to 14 times a day. Newborns consume from 30 to 90 ml (1 to 3 US fluid ounces) per feed. After the age of four weeks, babies consume about 120ml (4 US fluid ounces) per feed. Each baby is different, but as it grows the amount will increase. It is important to recognize the baby's hunger signs. It is assumed that the baby knows how much milk it needs and it is therefore advised that the baby should dictate the number, frequency, and length of each feed. The supply of milk from the breast is determined by the number and length of these feeds or the amount of milk expressed. The birth weight of the baby may affect its feeding habits, and mothers may be influenced by what they perceive its requirements to be. For example, a baby born small for gestational age may lead a mother to believe that her child needs to feed more than if it larger; they should, however, go by the demands of the baby rather than what they feel is necessary.

While it can be hard to measure how much food a breastfed baby consumes, babies normally feed to meet their own requirements. Babies that fail to eat enough may exhibit symptoms of failure to thrive. If necessary, it is possible to estimate feeding from wet and soiled nappies (dippers): 8 wet cloth or 5–6 wet disposable, and 2–5 soiled per 24 hours suggests an acceptable amount of input for newborns older than 5–6 days old. After 2–3 months, stool frequency is a less accurate measure of adequate input as some normal infants may go up to 10 days between stools. Babies can also be weighed before and after feeds.

5.4 Mixed feeding

Predominant or mixed breastfeeding means feeding breast milk along with infant formula, baby food and even water, depending on the age of the child. Babies feed differently with artificial teats than from a breast. With the breast, the infant's tongue massages the milk out rather than sucking, and the nipple does not go as far into the mouth; with an artificial teat, an infant will suck harder and the milk may come in more rapidly. Therefore, mixing breastfeeding and bottle-feeding (or using a pacifier) before the baby is used to feeding from its mother can result in the infant preferring the bottle to the breast. Orthodontic teats, which are generally slightly longer, are

closer to the nipple. Some mothers supplement feed with a small syringe or flexible cup to reduce the risk of artificial nipple preference.

5.5 Tandem breastfeeding

Feeding two children at the same time is called *tandem breastfeeding*. The most common reason for tandem breastfeeding is the birth of twins, although women with closely spaced children can and do continue to nurse the older as well as the younger. As the appetite and feeding habits of each baby may not be the same, this could mean feeding each according to their own individual needs, and can also include breastfeeding them together, one on each breast.

In cases of triplets or more, it is a challenge for a mother to organize feeding around the appetites of all the babies. While breasts can respond to the demand and produce large quantities of milk, it is common for women to use alternatives. However, some mothers have been able to breastfeed triplets successfully.^[17]

Tandem breastfeeding may also occur when a woman has a baby while breastfeeding an older child. During the late stages of pregnancy the milk will change to colostrum, and some older nursings will continue to feed even with this change, while others may wean due to the change in taste or drop in supply. Feeding a child while being pregnant with another can also be considered a form of tandem feeding for the nursing mother, as she also provides the nutrition for two.

[17]Grunberg R (1992). "[Breastfeeding multiples: Breastfeeding triplets](http://www.la lecheleague.org/NB/NBSepOct92p135.html)". *New Beginnings* 9: 135–6.
<http://www.la lecheleague.org/NB/NBSepOct92p135.html>

Suggestions for comfortable feeding positions



'Football hold': babies on pillows, legs behind.



Babies criss-crossed and supported by pillows and mother's arms.



Babies parallel to mother's body.



Babies facing the same direction.

Drawings by Daphne Paley-Smith

Fig. 4

6. Organizational promotion

La Leche League is an international organisation with a basic philosophy, regarding breast-feeding, summarized in the following statements:

- Mothering through breastfeeding is the most natural and effective way of understanding and satisfying the needs of the baby.
- Mother and baby need to be together early and often to establish a satisfying relationship and an adequate milk supply.
- In the early years the baby has an intense need to be with his mother which is as basic as his need for food.
- Breast milk is the superior infant food.
- For the healthy, full-term baby, breast milk is the only food necessary until the baby shows signs of needing solids, about the middle of the first year after birth.
- Ideally the breastfeeding relationship will continue until the baby outgrows the need.
- Alert and active participation by the mother in childbirth is a help in getting breastfeeding off to a good start.
- Breastfeeding is enhanced and the nursing couple sustained by the loving support, help, and companionship of the baby's father. A father's unique relationship with his baby is an important element in the child's development from early infancy.
- Good nutrition means eating a well-balanced and varied diet of foods in as close to their natural state as possible.
- From infancy on, children need loving guidance which reflects acceptance of their capabilities and sensitivity to their feelings.

La Leche League was founded to give information and encouragement, mainly through personal help, to all mothers who want to breastfeed their babies. While complementing the care of the physician and other health care professionals, it recognizes the unique importance of one mother helping another to perceive the

needs of her child and to learn the best means of fulfilling those needs. [18]

Another organisation that targets promotion and support of breast-feeding is the International Lactation Consultant Association (ILCA). ILCA is the professional association for International Board of Certified Lactation Consultants (IBCLCs) and other health care professionals who care for breastfeeding families. Their vision is a worldwide network of lactation professionals and their mission is to advance the profession of lactation consulting worldwide through leadership, advocacy, professional development, and research. [19]

The World Alliance for Breastfeeding Action (WABA) is another global network of individuals & organisations concerned with the protection, promotion & support of breastfeeding worldwide.

WABA action is based on the Innocenti Declaration, the Ten Links for Nurturing the Future and the Global Strategy for Infant and Young Child Feeding. WABA is in consultative status with UNICEF and an NGO in Special Consultative Status with the Economic and Social Council of the United Nations (ECOSOC).[20] Global Initiative for Mother Support (GIMS) for Breastfeeding is a global initiative that focuses on women's needs and rights to adequate and accurate information, support and health care services before, during and after childbirth. The initiative takes a holistic view of women's reproductive cycle, and promotes various measures to help mothers and their infants experience optimal breastfeeding.

[18] [La Leche League Mission](#)". *LLL.org*. La Leche League International. July 19, 2006.

(<http://www.llli.org/mission.html?m=1,0,2>)

[19] <http://www.ilca.org/i4a/pages/index.cfm?pageid=1>

[20] <http://www.waba.org.my/>

Fig. 5



La Leche League Greece is a member of La Leche League International (LLLI). LLLI is a non-profit organisation, non-religious and non-sectarian international organisation, which offers information, support and encouragement to mothers who want to breastfeed.

LLLI was founded in 1956 in the United States by seven mothers who realised that often successful breastfeeding needs a bit more than just a mother's desire to breastfeed - it needs information, support and encouragement.

Volunteer breastfeeding counsellors (Leaders) run support groups which meet monthly. At present there are 12 such groups (Greek or English speaking) in Athens, Thessaloniki, Larissa, Volo and Mytilini, but as new Leaders are accredited, new Groups are set up. [21]

[21]<http://www.llli.org/Greece.html>

6.1 Guidelines

There are several guidelines suggested by AAP that summarize the concepts for providing an optimal breastfeeding environment. [22]

General

- Promote, support, and protect breastfeeding enthusiastically. In consideration of the extensively published evidence for improved health and developmental outcomes in breastfed infants and their mothers, a strong position on behalf of breastfeeding is warranted.
- Promote breastfeeding as a cultural norm and encourage family and societal support for breastfeeding.
- Recognize the effect of cultural diversity on breastfeeding attitudes and practices and encourage variations, if appropriate, that effectively promote and support breastfeeding in different cultures.

Education

- Become knowledgeable and skilled in the physiology and the current clinical management of breastfeeding.
- Encourage development of formal training in breastfeeding and lactation in medical schools, in residency and fellowship training programs, and for practising paediatricians.
- Use every opportunity to provide age-appropriate breastfeeding education to children and adults in the medical setting and in outreach programs for student and parent groups.

Clinical Practice

- Work collaboratively with the obstetric community to ensure that women receive accurate and sufficient information throughout the perinatal period to make a fully informed decision about infant feeding.
- Work collaboratively with the dental community to ensure that women are encouraged to continue to breastfeed and use good oral health practices. Infants should receive an oral health-risk assessment by the paediatrician between 6 months and 1 year of age and/or referred to a dentist for evaluation and treatment if at risk of dental caries or other oral health problems.
- Promote hospital policies and procedures that facilitate breastfeeding. Work actively toward eliminating hospital policies and practices that discourage breastfeeding (eg, promotion of infant formula in hospitals including infant formula discharge packs and formula discount coupons, separation of mother and infant, inappropriate infant feeding images, and lack of adequate encouragement and support of breastfeeding by all health care staff). Encourage hospitals to provide in-depth training in breastfeeding for all health care staff (including physicians) and have lactation experts available at all times.
- Provide effective breast pumps and private lactation areas for all breastfeeding mothers (patients and staff) in ambulatory and inpatient areas of the hospital.
- Develop office practices that promote and support breastfeeding by using the guidelines and materials provided by the AAP Breastfeeding Promotion in Physicians' Office Practices program.
- Become familiar with local breastfeeding resources (eg, WIC clinics, breastfeeding medical and nursing specialists, lactation educators and consultants, lay support groups, and breast-pump rental stations) so that

patients can be referred appropriately. When specialized breastfeeding services are used, the essential role of the paediatrician as the infant's primary health care professional within the framework of the medical home needs to be clarified for parents.

- Encourage adequate, routine insurance coverage for necessary breastfeeding services and supplies, including the time required by paediatricians and other licensed health care professionals to assess and manage breastfeeding and the cost for the rental of breast pumps.
- Develop and maintain effective communication and coordination with other health care professionals to ensure optimal breastfeeding education, support, and counselling. AAP and WIC breastfeeding coordinators can facilitate collaborative relationships and develop programs in the community and in professional organizations for support of breastfeeding.
- Advise mothers to continue their breast self-examinations on a monthly basis throughout lactation and to continue to have annual clinical breast examinations by their physicians.

Society

- Encourage the media to portray breastfeeding as positive and normative.
- Encourage employers to provide appropriate facilities and adequate time in the workplace for breastfeeding and/or milk expression.
- Encourage child care providers to support breastfeeding and the use of expressed human milk provided by the parent.
- Support the efforts of parents and the courts to ensure continuation of breastfeeding in separation and custody proceedings.
- Provide counsel to adoptive mothers who decide to breastfeed through induced

lactation, a process requiring professional support and encouragement.

- Encourage development and approval of governmental policies and legislation that are supportive of a mother's choice to breastfeed.

Research

- Promote continued basic and clinical research in the field of breastfeeding. Encourage investigators and funding agencies to pursue studies that further delineate the scientific understandings of lactation and breastfeeding that lead to improved clinical practice in this medical field.[23]

The Baby-Friendly Hospital Initiative

The Baby-Friendly Hospital Initiative (BFHI) is the translational tool developed by WHO and UNICEF to promote breastfeeding (BF) in maternity wards worldwide.

BFHI was officially launched in the 1980s based on a “common sense” approach and it is summarized in the following steps:

The 10 steps

- Written BF promotion policies
- BF training for all health personnel
- Prenatal BF promotion
- BF initiation within 30 min post-partum
- BF counselling to mothers in maternity wards
- Breast milk only for newborns
- Rooming in
- BF on demand
- No baby bottles or pacifiers
- Community-based postnatal BF support[24]

[23]American Academy of Pediatrics, Breastfeeding Promotion in Physicians' Office Practices Program. Elk Grove Village, IL: American Academy of Pediatrics; 2001, 2004

[24]Evidence Based Breast-Feeding Promotion: The Baby-Friendly Hospital Initiative·Rafael Pérez-Escamilla

Connecticut National Institutes of Health EXPORT Center of Excellence for Eliminating Health Disparities among Latinos and Department of Nutritional Sciences, University of Connecticut, Storrs CT 06269-4017

However, along with the recommendations and for breastfeeding there are few occasions and conditions when the breast-feeding is contraindicated, as suggested by the EU policy.^[25]

These include:

- Infants with galactosaemia, a rare inborn error of metabolism. Infants with phenylketonuria can be partially breastfed.
- Infants born to mothers affected by HTLV I and II infections.
- Infants of mothers with HIV/AIDS where suitable replacement infant formula is acceptable, feasible, affordable, safe and sustainable should not be breastfed.

However, if suitable replacement feeding is not acceptable, feasible, affordable, safe and sustainable, and if a safe source of donor breast milk is not available, the safest alternative is exclusive breastfeeding for the first months of life, until the infant is developmentally ready to obtain its full nutrient requirement with transitional and family foods.^[26]

To promote breast-feeding, in 1995 the Greek government distributed information leaflets pertaining to "Baby Friendly Hospitals" and the "Ten Steps to Successful Breast-feeding". Although this initiative resulted in increasing significantly breast-feeding rates in many countries, information regarding compliance with these guidelines is not available in Greece.

[25]<http://www.euro.who.int/document/e57592.pdf>

[26]http://www.burlo.trieste.it/old_site/Burlo%20English%20version/Activities/EUpolicy06.pdf

6.2 Research on prevalence of breastfeeding in Greece

It is noted that 4- 6 months is the recommended duration of breastfeeding, according to international guidelines. Nevertheless, large discrepancies are reported among different countries and monitoring systems inefficient and unreliable. The data are scarce, not only on exclusive breastfeeding but also on demographic, socio-economic, psychosocial and medical determinants of breastfeeding patterns . Breastfeeding rates at 6 months after delivery range from 12 % to 51.3 %, while rates for exclusive breastfeeding are considerably lower . Great efforts are made worldwide to increase these rates. In Greece breastfeeding rates are of the lowest in the world. A discrepancy between breastfeeding desire and final breastfeeding duration is reported, which finding is consistent with previous studies.[30]

A major research study has been performed by the laboratory of Biopharmaceutics and Pharmacokinetics and School of Pharmacy in University of Athens in order to determine the prevalence, examination of the influence of hospital practices and investigation of potential determinants of breast-feeding in Athens.[28]

Patients and Methods: Three hundred twelve mothers provided information regarding feeding practices at certain maternity hospitals in Athens, at 40 days and 6 months post-partum. Multiple logistic regression analysis was performed to evaluate the association between the initiation and maintenance of breast-feeding and potential risk factors.

Results: Although almost 90% of newborn infants were given a breast milk substitute one or more times during the first 2 days at the maternity hospital, the exclusive breast-feeding percentage on the last day of hospital stay reached 85%.

Breast-feeding and exclusive breast-feeding percentages dropped to 55% and 35%, respectively, at 40 days post-partum and to 16% and 12%, respectively, at 6 months post-partum. While in the hospital, 3% of mothers initiated breast-feeding within 1 hour of labour, only 34% were informed about the advantages of breast-feeding by health professionals and 42% were trained to breast-feed by the midwives.

"Rooming-in" was not practised in the private hospitals. The educational level was positively associated with the initiation of breast-feeding [odds ratio (OR):1.36, confidence interval (CI):1.02-1.81], the mother's body mass index was negatively associated with the maintenance of breast-feeding for 40 days (OR:0.56, CI:0.32-0.98) and 6 months (OR:0.28, CI:0.06-1.26) and a caesarean section was negatively associated with the initiation (OR:0.24, CI:0.11-0.49) and maintenance of breast-feeding (OR:0.42, CI:0.20-0.89).

Conclusions: Breast-feeding is not appropriately supported in certain maternity hospitals in Athens, and this is probably the cause of observed low breast-feeding prevalence.[29]

[29]Breast-feeding in Athens, Greece: Factors Associated With Its Initiation and Duration Theoflogiannakou, Melina; Skouroliahou, Maria; Gounaris, Antonis; Panagiotakos, Demosthenis; Markantonis, Sophia L.

6.3 Research on women's attitudes towards breastfeeding in a province of Greece

Regarding breastfeeding advantages, most of women consider that emotional bond with the child and cancer prevention are the most important on behalf of mother, while psychological development and immune system enhancement are the main advantages on behalf of the child . There was no significant difference in breastfeeding attitudes between employed and unemployed mothers. The vast majority of women (81 %) considered hepatitis B carriage, breast anatomical problems and breast infections as breastfeeding contraindications.

According to the findings, the vast majority of candidate mothers desire to breastfeed. Moreover, 4 out of 5 mothers reported that they had breastfed their children, although the mean duration of breastfeeding was 2 weeks. A small percentage (17%) had breastfed their children for 6 months.

According to their statement most women that breastfed their children adopted a healthier diet than usual. No data about specific or just an enriched diet were obtained. Few women reported alcohol drinking during lactation.

As for smoking, according to the findings of the present study, one out of 4 women continues to smoke during lactation.

According to the findings of the present studies, knowledge of the great advantages of breastfeeding is well established among mothers. Emotional bonding between mother and child and normal psychomotor development are the most frequently mentioned, as well as the prevention of maternal cancer. Most women in this survey reported that breast anatomical problems and infections (e.g mastitis, abscess, or inverted nipples) are such contraindications, as well as hepatitis B.

The findings of the presented studies in chapters of research, showed that women are familiar with breastfeeding benefits. Nevertheless, lack of information and social reasons often discourage breastfeeding. More information is necessary directed to the future mothers regarding breastfeeding contraindications although the latter are extremely rare. Health professionals should be kept informed of the novel evidence in

breastfeeding and care about the promotion of this natural and beneficial, process. [31]

Discussion

Greece is one of the countries that support the guidelines and promote the breastfeeding practices. However, except for the information that mothers receive in private clinics, in the public domain, lack of information and social reasons are considered the main breastfeeding obstacles. Job responsibilities as well as various prejudices enhance mother to interrupt breastfeeding or not to breastfeed at all. Even further, and despite the progress in this field, the number of women in Athens, as stated from statistics of public hospitals, who do not quit smoking and alcohol drinking during the last semester of pregnancy and lactation has led to the decrease of breastfeeding, despite the precautions and general information.

No safety limits for breastfeeding mothers are established in alcohol consumption. The latter has been correlated with infant developmental disorders. Alcohol itself rather diminishes milk quantity, despite the traditional beliefs of many cultures that encourages lactating women to drink alcohol to optimize breast milk production and infant nutrition.

Prevalence of maternal smoking ranges from 6 to 22 % worldwide. The highest rates in quitting smoking during pregnancy are observed in Japan. A lot of progress is made towards this direction in the last years. Smoking during pregnancy and lactation is related to respiratory problems, child nervousness and infant diarrhoeas.

Various studies report that women who had breastfed their offspring are less vulnerable to breast, ovarian or endometrial cancer. Hardly any disadvantages can be found in breastfeeding. Contraindications are extremely rare and the low iron concentration is the only weakness of its composition. All other “disadvantages” are related to mother’s professional and social life. Maternal fatigue, however, should always be taken into account, in terms that most mothers work nowadays in western societies, even though a working mother can breastfeed her baby in the appropriately modified working place. Breast milk pumps are available and milk can be stored. However, no statistical difference was observed between employed and unemployed mothers in regard to breastfeeding attitudes in the study of women’s attitudes

towards breastfeeding in a province of Greece .

Maternal milk is the richest food in substances of high biological value (proteins, vitamins, minerals, fat and sugar). These nutrients are administered in balance with the infant's demands breast milk contains antibodies, which protects the newborn against infections and other diseases (e.g cancer) as well. On the other hand, breastfeeding is important for the psychomotor development of the newborn. Attachment to breast strengthens the bond between mother and child and contributes to psychological health of both mother and child.

According to recent data these problems can nowadays be successfully handled. As for hepatitis B is considered no longer as a contraindication. However, it is necessary all the suggested precaution measures to be taken (administration of γ -globulin and newborn vaccination) and breastfeeding is interrupted if nipples haemorrhage is present. The same goes for hepatitis C, while HIV transmission is possible, so HIV infected mothers are advised not to breastfeed.

The evidence is growing that breastfeeding is among the most important lifelong benefits a mother can give to her child. After completion of this paper work,my personal view has come up to be supportive of breast-feeding in most cases,when the particular technique doesn't carry any danger (eg.HIV transmission) for the mother and the infant. Many organizations already support this institution and several established foundations promote globally breast-feeding. There is still a lot to be done so that even in the developing countries where educational and financial resources are limited, a mother will have the opportunity to learn the basic ways she can take care of her child beginning with providing it with the protection coming out of her own body.

Conclusion

More than one million infants worldwide die every year because they are not breastfed or are given other foods too early. Millions more live in poor health, contract preventable diseases, and battle malnutrition. Although the magnitude of this death and disease is far greater in the developing world, there are great numbers of infants in Greece that suffer the ill effects of suboptimal feeding practices. A decreased risk of diarrhoea, respiratory and ear infections, and allergic skin disorders are among the many benefits of breastfeeding to infants in the industrialized world.

These benefits could translate into millions of dollars of savings to our health care system through decreased hospitalizations and paediatric clinic visits. For diarrhoea alone, approximately 200,000 children, most of whom are young infants, are hospitalized each year, in US alone, at a cost of more than half a billion dollars. Many of these cases of diarrhoea could have been prevented with breastfeeding. The cost savings to the health care system could be enormous if breastfeeding duration increased, given that ear infections alone cost billions of dollars a year. It is a rare exception when a woman cannot breastfeed her baby for physical or medical reasons. Yet, a woman's ability to feel self confident and secure with her decision to breastfeed is challenged by her family and friends, the media, and health care providers. Much has been done in the past few years to strengthen the sources of support for women to breastfeed. Although the hospital is not and should not be the only place a mother receives support for breastfeeding, hospitals provide a unique and critical link between the breastfeeding support provided prior to and after delivery.

Summary

In this work, I have tried to address the issue of breastfeeding regarding the physiology of the lactation, the health benefits for mothers and infants, women's attitudes to breastfeeding and prevalence of breastfeeding in Greece and breastfeeding promotion from organizations in the world and in Greece.

However several difficulties may arise with decision for breastfeeding and certain contraindications have been cited in this work as suggested by international and European organisations including La Leche League International and WHO/UNICEF (Baby-Friendly Hospital Initiative).

Support and promotion of breastfeeding in Greece is described using the reference to research performed in University of Athens concluding that since maternal milk is extremely valuable nutritionally to the infant, promotion and support of breastfeeding should be even more elaborated to avoid malnutrition and severe medical conditions in the infants, to help the mother attach to the infant early in its life and to reduce the financial load of formula-feeding effects to the society.

List of tables and graphs(figures)

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Fig.5 La Leche League International

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