

# Breastfeeding, Malta 2002

Simon Attard Montalto

## Abstract

Although the scientific and economic benefits in support of breastfeeding over formula feeds is overwhelming, Malta retains one of the lowest rates for breastfeeding in almost all developed and several under-developed countries.

Recently, this rate had begun to improve: from just 45% of maltese mothers breastfeeding (exclusively or mixed feeding) at the time of discharge from St. Luke's Hospital in 1995, to 64% in 2000. Nevertheless, this improvement was not sustained and only 18% of maltese mothers were still exclusively or part-breastfeeding 9 months after delivery in 2000. Of greater concern is the apparent reversal of the improving trend with a decrease to 56% total/partial breastfeeding at discharge from hospital in the first half of 2002. This article reviews the reasons for these low rates and discusses the efforts being made to improve the situation.

## Introduction

In the context of infant feeding, the adage 'Breast is Best' is oft-quoted by health professionals but, alas, often without any real conviction. But is breast feeding truly best, even in this age of high quality, aptly researched formula feeds? Certainly, the past two decades have witnessed an increasing plethora of scientific data confirming the superiority of breast milk over all types of formula milks. This has resulted in an ever-increasing trend toward breastfeeding in most developed countries<sup>1</sup>, an achievement that has been based on combined changes in social acceptability, cultural tolerance, facilitatory legislation for the workplace, as well as national and international education at all levels<sup>2</sup>. The impetus for the promotion of breastfeeding has come from several institutions including the World Health

Organisation (WHO), amongst others. National health departments have, in the main but with varying commitment, taken on this responsibility with the establishment of national breastfeeding committees and programmes. Malta is no exception, although the changing trend toward breastfeeding has yet to gather momentum and the breastfeeding rate remains bottom of the European league table. Indeed, as shown in table 1, in 1995 just 45% of maltese mothers breastfed (including exclusive breast or mixed feeding) at the time of discharge from St. Luke's hospital 3, and that this rate dropped precipitously to 20% by the first month of life 4. The rates for gozitan mothers were approximately 5-10% less, whereas those for infants born in private institutions approximately 10-20% higher. These figures had improved in 2000, when up to 64% of mothers offered their newborns either exclusive breast milk or mixed feeds on discharge from the maternity unit at St. Luke's<sup>3</sup>. Disappointingly, this improvement was not sustained and, of this cohort in 2000, 35% still exclusively or part-breastfed 2 months after delivery, and just 18% seven months later<sup>4</sup>. Furthermore, the breastfeeding rate at discharge has since dropped further to 56% in the first six months in 2002<sup>3</sup>. These dismal figures stem from several factors and can only improve with widespread changes in socio-cultural attitudes, national education and support facilities in the hospital, home and at work. This article discusses those issues that need to be addressed if the percentage of maltese infants receiving the benefits of breast milk is to increase.

## The benefits of breast milk

Although modern formula milks are undoubtedly a satisfactory food source for newborns, they are designed to 'mirror' the natural gold standard, breast milk<sup>3</sup>: in some respects they compare well; in others they fall well short of this standard (see table 2). Certainly for all except those infants with rare metabolic disorders such as phenylketonuria, breast milk confers undisputed advantages and the dictum breast is best applies.

## Macro and micronutrients

In general, formula milk feeds provide protein, carbohydrate, fat, electrolytes, trace elements and vitamins in amounts comparable to breast milk<sup>5</sup>. However, the concentrations of these nutrients in artificial feeds are exactly that - artificial. They are not sensitive and do not vary with the

**Simon Attard Montalto** MBChB, MD (L'pool), FRCP, FRCPCH, DCH  
Chairman, Dept of Paediatrics, St. Luke's Hospital,  
Gwardamangia, Malta

Email: [simon.attard-montaldo@gov.mt](mailto:simon.attard-montaldo@gov.mt)

*On behalf of the Breastfeeding Policy  
Monitoring Committee (BPMC)*

changing needs of the infant. For formula-fed infants, nutrient adjustments only occur on changing from one milk to another (an inadvisable practice) or with the introduction of 'follow on' feeds. In contrast, the breast is sensitive to the daily changes in infant nutrient requirements and adjusts accordingly<sup>6</sup>. Nutrients in breast milk are supplied in a nutritionally adequate package with a sufficient energy and nutrient profile to support normal growth<sup>5</sup>. Additional foodstuffs are not necessary until the age of six months when weaning foodstuffs fortified with iron can be introduced. The only exceptions to this statement is the need for additional vitamin K at birth to all newborns, iron supplements for low birth weight infants, iron and multivitamin supplements for premature infants, and vitamin D supplements to breast fed infants born to specific vitamin D-deficient populations with dark skin and low sunshine exposure (not applicable to maltese infants)<sup>7,8</sup>.

It is important to note that breast fed infants thrive as designed by nature: they gain weight at a slightly slower pace and are proportionately leaner compared with formula-fed infants in the second six months of life<sup>9</sup>. This is due to biological self regulation but can, at times, result in some concern when plotting weights on man-made growth charts. Indeed, WHO is currently producing appropriate centile charts for breast fed infants alone, and these will represent the biological norms<sup>7</sup>. Confirmation of appropriate growth using these charts will rapidly allay any fears that mothers commonly have relating to the adequacy of volume and nutritional content of their milk. Indeed, the mammary gland is given nutritional priority, even at the expense of maternal reserves, such that breast milk is only ever deficient in severely malnourished mothers.

### Immunocompetence

One of the most significant omissions from formula milks is the immunocompetence provided by breast milk<sup>10</sup> (table 3). Indeed, no currently available formula milk can or does provide any significant immune protection to the young infant. This is not just relevant to developing and poorer countries but also applies to infants born in 'privileged societies'. This is clearly shown by the reduction in infective illnesses and especially those of the respiratory and gastrointestinal tracts including gastroenteritis, in breast-fed versus formula-fed infants in populations in both disadvantaged and industrialised

countries<sup>11</sup>. The greater protective effect against diarrhoeal diseases is also noted in infants exclusively breast fed for six months compared with those similarly fed for just four months or less<sup>11</sup>. The immunoprotective effects of breast milk are also manifest in preterm infants who, despite their inherent immuno-incompetence, have significantly lower risks of infection and necrotising enterocolitis if given fortified breast milk<sup>8</sup>. In addition, this protective effect is sustained for several years, even after breastfeeding has been discontinued<sup>11</sup>. Breast milk also offers additional protection against immune-mediated diseases such as insulin dependent diabetes, coeliac disease, inflammatory bowel disease and some childhood cancers, probably through complex gene-environment interactions<sup>12</sup>. This is thought to be the positive result of lymphokines, leukotrienes, leucocytes, cytokines and nucleotides present in abundant quantities in breast milk and whose levels fluctuate with changes in the infants' own developing immune system<sup>10</sup>.

### Growth-regulatory effects

Likewise, breast but not formula milk, provides growth-regulatory effects in the form of hormones, growth modulators and growth factors (table 3). These include oxytocin, prolactin, cortisol, thyroxine and others which cross into breast milk and provide important growth regulators for the growing infant<sup>10</sup>. In addition, neurodevelopment and, in particular, visual and cognitive outcome, has been shown to be improved in breast fed infants<sup>13</sup>. However, whether this is due to a direct nutritional effect of breast milk or secondary to a combination of genetic, environmental and enhanced educational levels in breastfeeding mothers, remains unclear.

### Maternal benefits

The physical contact required for successful breastfeeding creates a unique bond between the mother and her offspring with undisputed physical and psychological benefits for both<sup>14</sup>. 'Bonding' results from the skin-to-skin contact, promotes lactation and forms the basis of 'kangaroo nursing'<sup>15</sup> adopted as the norm by several 'Mother and Baby Friendly' units<sup>16</sup>. Postpartum weight loss is greater in mothers who breastfeed, especially if this is maintained for six months<sup>17</sup>. Mothers who have breastfed have a significantly reduced chance of hip and spinal fractures due to osteoporosis in their post menopausal

**Table 1:** Percentage of mothers breast or mixed feeding in Malta and Gozo

Year:	1995		1998		2000		2002	
Total births:	5,117		4,653		4,377		1,870*	
Days from birth:	3	30	3	30	3	30	3	30
St Luke's: (80-87% of all deliveries)	45	20	48	26	64	35	56	-
Gozo hospital: (8-10% of all deliveries)	29	15	31	19	35	22	32	-
Private hospitals: (7-11% of all deliveries)	55	45	64	51	75	55	73	-

\* figure refers to first six months of 2002

**Table 2:** Comparison between breast milk and formula feeds

Parameter	Breast milk	Formula feeds
Macronutrients	ideal (rare exceptions), sensitive to changing needs	most emulate breast milk, not sensitive to change
Micronutrients	ideal (rare exceptions), sensitive to changing needs	fortified to mirror breast, not sensitive to change
Vitamins	ideal (rare exceptions), sensitive to changing needs	fortified to mirror breast, not sensitive to change
Immunity	complex and effective (table 3)	absent
Growth factors	hormones	absent
	growth regulators	absent

period<sup>18</sup>. Furthermore, those mothers have a reduced risk of premenopausal breast cancer, the leading cause of cancer deaths in women<sup>14,19</sup>, and evidence is growing to show that a similar risk reduction occurs with ovarian cancer<sup>20</sup>. Obesity in later life may also be less of a problem in breastfeeding mothers<sup>21</sup>.

### Economic benefits

Breastfeeding is not only healthy, but is also financially prudent<sup>22</sup>. At an average price of Lm1.80 per tin, formula feeding for the first twelve months will cost approximately Lm190 per child per year. Nappies, at an average cost of Lm3.50 for 32 nappies, will add a further Lm180. The increased number of stools in breast fed infants may result in an increased expenditure on nappies of approximately Lm50 per year. Hence, the annual cost of milk feed plus nappies alone will amount to LM230 for breast fed and Lm370 for formula fed infants. Furthermore, these figures do not account for the long term economic benefits obtained through the reduction in infections and later illnesses in the breast fed infant<sup>12,22</sup>.

### Problems associated with breastfeeding

Breast milk confers no disadvantages to the suckling infant, except for those with rare metabolic diseases. Indeed, problems associated with breastfeeding are rarely of any nutritional significance and most can be easily surpassed. The common concern of breast feeding mothers regarding the possible inadequacy of their milk, is readily overcome by plotting their infants progress on an appropriate weight centile chart. In Malta, these are included in all infant record booklets<sup>9,23</sup>. Failure to thrive and hypernatraemic dehydration are extremely unusual complications and arise in the unsupported mothers where follow-up has been inadequate<sup>24</sup>. In contrast, increased jaundice in the first few days/weeks is common but physiological. The increased number of daily (but non offensive) stools may result in an increased expenditure on nappies but one that is hugely offset by the overall cost-saving on formula milk (see above). Maternal complications such as engorgement and blocked ducts are common but easily overcome with appropriate management. Mastitis occurs in less than 2.5% of nursing mothers and is only associated with breast abscess formation in <10% of affected individuals<sup>24,25</sup>.

### Contra-indications to breastfeeding

There are very few situations in which breastfeeding is not advisable and these include: mothers in developed but not underdeveloped countries who are HIV and HTLV1 positive; mothers who are infected with TB, malaria and CMV; maternal drug therapy including cytotoxics, lithium, isoniazid, antithyroid drugs and substance abuse; maternal diseases such as breast cancer and neuropsychoses<sup>26</sup>.

### Successful breastfeeding at the International and National level WHO/UNICEF initiative

The Baby Friendly Hospital Initiative, a joint WHO/UNICEF sponsored effort was launched in 1989 in order to promote breastfeeding on an international level<sup>16</sup>. This initiative lays down ten criteria, outlining policies and procedures in order to provide all mothers with full knowledge, choice, advice and assistance for successful breastfeeding. This initiative has been adopted by several National Childbirth Movements and is the ideal toward which all units should strive. Indeed, the primary remit of the Breastfeeding Policy Monitoring Committee (BPMC) established in Malta in 2000 is to promote breastfeeding whilst introducing WHO guidelines.

### Education and support services

Breastfeeding is a learned skill which requires dedicated, professionally supervised time to master. The educational process should involve midwifery, nursing, medical and ancillary health workers, as well as the general public. It should encompass national promotional campaigns and supportive media coverage that, sadly, is not always forthcoming (see, for example, reference 27). For the expectant mother, greater emphasis should be directed to breastfeeding, both before and after birth during ante and postnatal classes. Common problems such as cracked nipples, engorgement, poor positioning, etc, will result in the failure of breastfeeding if not addressed early and appropriately. Hence, all maternity units should be staffed with appropriately informed health care workers, and adequately equipped with support services including lactation counsellors.

**Table 3:** *The immunoprotective properties of breast milk*

<b>Parameter</b>	<b>Immune function</b>
<b>Proteins</b>	
sIgA, IgM, IgG	direct, 'classical' protection against bacteria and viral agents; enhance newborn immune system maturation
lactoferrin	bactericidal, antiviral, anti-inflammatory properties; prostaglandin & cytokine (IL-1,2,6, TNF $\alpha$ ) modulation, complement, natural killer cell & macrophage activation; free radical scavenging stimulation of probiotic bacteria
lysozyme	promotes bacterial lysis & binding; enhances IgA production; macrophage activation
casein	inhibits microbial adhesion to mucosae; promotes probiotic bacteria
<b>Sugars</b>	
oligosaccharides	microbial ligands; anti-enterotoxin effects
glycoconjugates	microbial and viral ligands; prevent bacterial & viral binding
<b>Fats</b>	
free fatty acids	anti-infective properties (bacterial, viral and protozoa)
<b>Other nutrients</b>	
nucleotides	enhance gut, T-cell & NK cell maturation/activity; encourage probiotics
vitamin A, C, E	anti-inflammatory, oxygen free radical scavenging
<b>Enzymes</b>	
lipases	produces FFA with antiprotozoal and antibacterial activity
catalase	anti-inflammatory by degrading peroxides
peroxidases	anti-inflammatory by preventing peroxidation
hydrolase	anti-inflammatory and protects against necrotising enterocolitis
<b>Hormones</b>	
prolactin	enhances development of T and B lymphocytes, gut lymphoid tissue
cortisol	promotes intestinal maturation and defence mechanisms
thyroxine	promotes intestinal maturation and defence mechanisms
insulin	promotes intestinal maturation and defence mechanisms
growth factors	promotes intestinal maturation and defence mechanisms
<b>Cells</b>	
macrophages	microbial phagocytosis; lymphokine, cytokine production
lymphocytes	microbial phagocytosis; lymphokine, cytokine production
<b>Cytokines</b>	
IL-8,10,12, IFN $\gamma$	modulate function and maturation of newborn immune system
IL-1,6, TNF $\alpha$	encourage defence mechanisms in mammary gland

## Support in the workplace

Up to 50% of women of reproductive age are gainfully employed in the United States, and many return to work after childbirth. The same trends are being observed in other countries including Malta, hence the need for adequate advice and support services in the workplace<sup>28</sup>. These will often entail new legislation similar to the Family and Medical Leave Act in the US, whereby employers are duty bound to provide appropriate allowances, leave and on-site facilities for nursing mothers.

## Socio-cultural changes

At the cultural/national level, education needs to commence in school and instruction given as to what are socially acceptable norms, such that local and cultural taboos against breastfeeding

(particularly in public) are abolished. This should go hand-in-hand with tolerance for local customs so that nursing mothers can breastfeed outside their home without offending other members of the public.

## The ideal practice

Scientifically, medically and economically breast milk is best for all barring an extremely small minority of infants and should be advocated exclusively up to the age of six months<sup>17</sup>. Breastfeeding can continue up to the age of 1-2 years, with weaning, i.e. the use of supplemented semi-solid feeds, introduced at six months. Early weaning tends to displace breastfeeding and does not confer any growth advantage over exclusive breast feeding<sup>7</sup>.

## Conclusion

Undoubtedly, every mother would like to provide the best for her infant. Equally, every infant would like to have the best for him/herself. The evidence is such that, supposing the establishment of a Newborn Union to support the rights of the (say) less-than-twos, there is no doubt that 'The right to breast milk' would be on page one of their manifesto! In practice, we have a duty to act as surrogate lobbyists for this fictitious union of fledglings, and should actively promote the adage 'Breast is Best'. As advocates for good and better health, we should strive toward a situation where all newborns are offered a trial of breastfeeding, as a minimum, and promote the environmental milieu to ensure that this trial has every chance of success. Ultimately, it would be rather optimistic to assume that even the best formula milk, however well researched over the past seventy years or so, can hope to equal breast milk which has had the advantage of several million years in the evolutionary melting pot in order to attain its present, undoubtedly successful formula.

## Acknowledgements

I am extremely grateful to all members of the Breastfeeding Policy Monitoring Committee (BPMC), namely Maria Ellul, Margaret Abela, Carmen Ellul, Raffaella Farrugia, Helen Borg, Lucienne Pace and Yvette Azzopardi. I am also indebted for the data provided by Dr Lina Janulova, National Obstetric Information System, and Dr Miriam Gatt, Department of Health Information.

## References

1. Wright AL. The rise of breastfeeding in the United States. *Pediatric Clinics of North America* 2001; 48 (I): 1-12.
2. Ryan AS. The resurgence of breastfeeding in the United States. *Pediatrics* 1997; 99: E12.
3. Janulova L. National Obstetric Information System (NOIS), Malta. 1995-2002.
4. Gatt M. Dept. of Health Information, Malta (Personal communication 2002).
5. Picciano MF. Nutrient composition of human milk. *Pediatric Clinics of North America* 2001; 48 (I): 53-67.
6. Hytten FE. Clinical and chemical studies in human lactation: III Diurnal variations in major constituents of milk. *British Journal of Medicine* 1954; i: 179.
7. Dewey KG. Nutrition, growth and complementary feeding of the breastfed infant. *Pediatric Clinics of North America* 2001; 48 (I): 87-104.
8. Schanler RJ. The use of human milk for premature infants. *Pediatric Clinics of North America* 2001; 48 (I): 207-220.
9. Powers NG. How to assess slow growth in the breastfed infant. *Pediatric Clinics of North America* 2001; 48 (II): 345-364.
10. Hamosh M. Bioactive factors in human milk. *Pediatric Clinics of North America* 2001; 48 (I): 69-86.
11. Heinig MJ. Host defence benefits of breastfeeding for the infant: Effect of breastfeeding duration and exclusivity. *Pediatric Clinics of North America* 2001; 48 (I): 105-124.
12. Davis MK. Breastfeeding and chronic disease in childhood and adolescence. *Pediatric Clinics of North America* 2001; 48 (I): 125-142.
13. Reynolds A. Breastfeeding and brain development. *Pediatric Clinics of North America* 2001; 48 (I): 159-172.
14. Labbok MH. Effects of breastfeeding on the mother. *Pediatric Clinics of North America* 2001; 48 (I): 143-158.
15. Kirsten GF, Bergman NJ, Hann FM. Kangaroo mother care in the nursery. *Pediatric Clinics of North America* 2001; 48 (II): 443-452.
16. Naylor AJ. Baby Friendly Hospital Initiative: Protecting, promoting and supporting breastfeeding in the twenty-first century. *Pediatric Clinics of North America* 2001; 48 (I): 475-484.
17. WHO. The optimal duration of exclusive breastfeeding. WHO Press release No.7; April 2001.
18. Lopez J, Gonzalez G, Reyes V, et al. Bone turnover and density in healthy women during breastfeeding and after weaning. *Osteoporosis International* 1996; 6: 153-159.
19. Brinton LA, Potischman NA, Swanson CA, et al. Breastfeeding and breast cancer risk. *Cancer Causes Control* 1995; 6: 199-208.
20. Rosenblatt KA, Thomas DB: WHO collaborative study of neoplasia and steroid contraceptives: Lactation and the risk of epithelial ovarian cancer. *International Journal of Epidemiology* 1993; 22: 192-1967.
21. Butte NF. The role of breastfeeding in obesity. *Pediatric Clinics of North America* 2001; 48 (I): 189-198.
22. Ball TM, Bennett DM. The economic impact of breastfeeding. *Pediatric Clinics of North America* 2001; 48 (I): 253-262.
23. Dept of Primary Health, Health Promotion and Health. Guide to your health. Government Press, Malta. 2001.
24. Berens PD. Prenatal, intrapartum and postpartum support of the lactating mother. *Pediatric Clinics of North America* 2001; 48 (II): 365-376.
25. Wight NE. Management of common breastfeeding problems. *Pediatric Clinics of North America* 2001; 48 (II): 321-344.
26. Lawrence RM, Lawrence RA. Given the benefits of breastfeeding, what contradictions exist? *Pediatric Clinics of North America* 2001; 48 (I): 235-252.
27. Caruana Galizia D. The crying cow. *The Malta Independent* on Sunday 24th October 1999.
28. Meek JY. Breastfeeding in the workplace. *Pediatric Clinics of North America* 2001; 48 (II): 461-474.



## Corinthia Group Prize in Paediatrics

This year's Corinthia Group Prize in Paediatrics was awarded to Dr Maryanne Caruana who obtained the highest marks in the combined fourth and final year examinations in Paediatrics. Dr Caruana also placed first, overall, in this year's final examinations. Whilst congratulating Dr Caruana for her achievement, we were also extremely grateful to the Corinthia Group for their stalwart support of the Academic Department of Paediatrics, including their ongoing commitment toward the Annual Prize in Paediatrics .

*Photo: Dr Maryanne Caruana receiving a cheque for Lm100 from Dr Paul Vassallo Agius on behalf of the Corinthia Group*