

# Breast milk: an ancient tradition and an innovative investment for any community

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## Abstract

Breast milk, with nutritional but also functional components, is a real biological system. According to present knowledge, it is associated not only with improved parameters of growth, but also to a better neuronal-behavioral development.

The importance of breastfeeding and the increasing evidence about the risks of not doing so has put the support, promotion, and protection of breastfeeding at the forefront of many government and public health policies.

The use of resources and the effort to promote and support breastfeeding should be the first investment for the health of children around the world.

**Keywords:** breastfeeding, breastfeeding support and promotion

## Breastfeeding: an ancient tradition

The development of science and the economy depends on the introduction of technological innovations and new innovative methods. But the value of innovation for public health depends on its impact on promoting health.

Breastfeeding is not innovative, but although it has existed for 250-300 million years, its benefits have not yet surpassed by more innovative ways of infant feeding.

Innovation is about making changes, but when it comes to public health, it is not enough that innovation is something

new: it is necessary to demonstrate that it is something useful.

## Breastfeeding as epigenetic factor

Breast milk, with nutritional but also functional components, is a real biological system. According to present knowledge, it is associated not only with improved parameters of growth, but also to a better neuronal-behavioral development. It is also associated with the prevention of some acute and chronic diseases. For example it is known the protective effect of breastfeeding against obesity and type 2 diabetes. A systematic meta-analysis showed that breastfeeding may reduce the risk of obesity in school-children of 16-18%, and the risk of type 2 diabetes of 11-55%, compared with formula feeding (regardless of the biological and sociodemographic confounding variables)<sup>[1]</sup>. The relationship between nutrition in early life and genome may allow to understand the underlying mechanisms of disease that have high impact on individual health.

The risk of developing obesity depends on the interaction between genotype and individual lifestyles, but also environment and nutrition during fetal life and in the early ages of life are very important<sup>[2]</sup>. The epigenetic regulation of specific genes may become crucial in determining the individual risk for obesity.

Out of several variants identified in the PPAR $\gamma$ 2 gene, the most common is the Pro12Ala substitution at codon 12. This polymorphism has been shown to be as-

sociated with reduced ability to transactivate responsive promoters and, in adults, with higher BMI, waist circumference, and obesity risk. In a recent study, the PPAR $\gamma$  Ala12 allele was associated with higher adiposity indexes (BMI, waist circumference and the sum of skin-folds) in adolescent who had not been breast-fed. However, this association was not seen in children who had been breast-fed (even for a short period). This result supports the hypothesis whereby breastfeeding has a beneficial effect on the obesity risk later in life in a genetically predisposed group. One potential hypothesis is that breast milk/breast-feeding supplies factors such as prostaglandin J2, a natural PPARG2 transcriptional activity observed in Ala12 allele could be, therefore, compensated for by breast milk<sup>[3]</sup>.

The possibility that early infant feeding has long-term effects on blood cholesterol levels is supported by many studies. Breastfeeding seems to be associated with increased mean total cholesterol and LDL cholesterol levels in infancy but lower levels in adulthood/adult life. The high cholesterol content of breast milk may well be responsible. High cholesterol intake in infancy reduces endogenous synthesis of cholesterol, probably by down-regulation of hepatic hydroxymethyl glutaryl coenzyme A reductase<sup>[4]</sup>.

Many other positive and protective effects of human milk have been demonstrated in prevention of allergies, ear infections, infectious diseases and leukemia.

Breast milk is functionally positive not only for the child but also for the mother. Women with deleterious BRCA1 mutations who have breast-fed for a cumulative total of more than one year have a statistically significantly reduced risk of breast cancer.

## **Breastfeeding: an innovative investment for any community**

Considered the important role of human milk in the development of each one, support and promotion of breastfeeding should be a priority for each community. There has been significant reliable evidence produced over recent years to show that breastfeeding is a major contributor to public health and has an important role to play in reducing health inequalities even in the industrialised countries of the world.

Structured breastfeeding programmes in maternity services shown to improve breastfeeding rates.

The importance of breastfeeding and the increasing evidence about the risks of not doing so has put the support, promotion, and protection of breastfeeding at the forefront of many government and public health policies.

The Baby Friendly Initiative, for example, is a worldwide programme of the World Health Organization and UNICEF. It was established in 1992 to encourage maternity hospitals to implement the Ten Steps to Successful Breastfeeding and to practise in accordance with the International Code of Marketing of Breastmilk Substitutes.

To help in the implementation of this initiative, different tools and materials were developed, field-tested and provided, including a course for maternity staff, a self-appraisal tool and an external assessment tool. Since its launching BFHI has grown, with more than 152 countries around the world implementing the initiative. The initiative has measurable and proven impact, increasing the likelihood of babies being exclusively breastfed for the first six months.

To promote and support breastfeeding, WHO / UNICEF have developed and outlined a specific training. The course 20 hours is a concrete example of how to spread and standardize the preparation of

the staff of the maternity wards about breastfeeding.

The aim of this course is that staff member will confidently support mothers with early and exclusive breastfeeding, and that this facility moves towards achieving Baby-friendly designation. Significant improvements in breastfeeding know-edge as a result of the 20-hour course occurred in all areas tested<sup>[5]</sup>.

### Conclusion

In conclusion, the use of resources and the effort to promote and support breastfeeding should be the first investment for the health of children around the world.

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