AN ASSESSMENT OF THE IMPORTANCE OF BREAST-FEEDING AND ITS IMPACT ON INFANTS

Submitted to- Mr. Rahul Sharma

By- Dhruv Dharoch

RESEARCH QUESTION & OBJECTIVES

- Research questions is:-What proportion of mothers breastfeed their babies and what is the effect of breast milk and infant formula on infant's health and what makes breast milk so important?

- Objectives:-

1) What is the composition of breast milk?
2) Why is breast milk so important and why so many Indian mothers aren't able to breastfeed?
3) What is the impact of infant formulas on infants health (short term & long term)

METHODOLOGY

- This study is a descriptive study, which utilizes a structured search of articles based on keywords, wherein relevant studies were retrieved from well recognized databases presented on the Google Scholar, PubMed, Cochrane Library, ScienceDirect & GOI websites.
- Inclusion criteria:
- 1. Relevant articles published after 2000 which were available for public use
- 2. Studies published in the English language.

COMPOSITION OF BREAST MILK

- **Basic composition-** There is 87% water, protein is 1.5%, 3.5% lipids and 7% carbohydrates in human milk as per a paper "Human Milk Composition: Nutrients and Bioactive Factors" by Olivia Ballard and Ardythe L. Morrow.
- **Macronutrient Content of the milk-** The overall carbohydrate, fat and protein content in human milk is robust even in different population despite differences in nutritional intake by mothers. Probiotics and other bio factors.
- **Micronutrient Content of the milk-** There are few vitamins and minerals found in breastmilk. Vitamins like Vitamin B12, Vitamin D, Vitamin C and Vitamin A are present in good quantities. Vitamin E, Vitamin K, Folate, Thiamin (B1), Riboflavin (B2), Niacin (B3), and Pantothenic Acid (B5) are all present in breast milk.

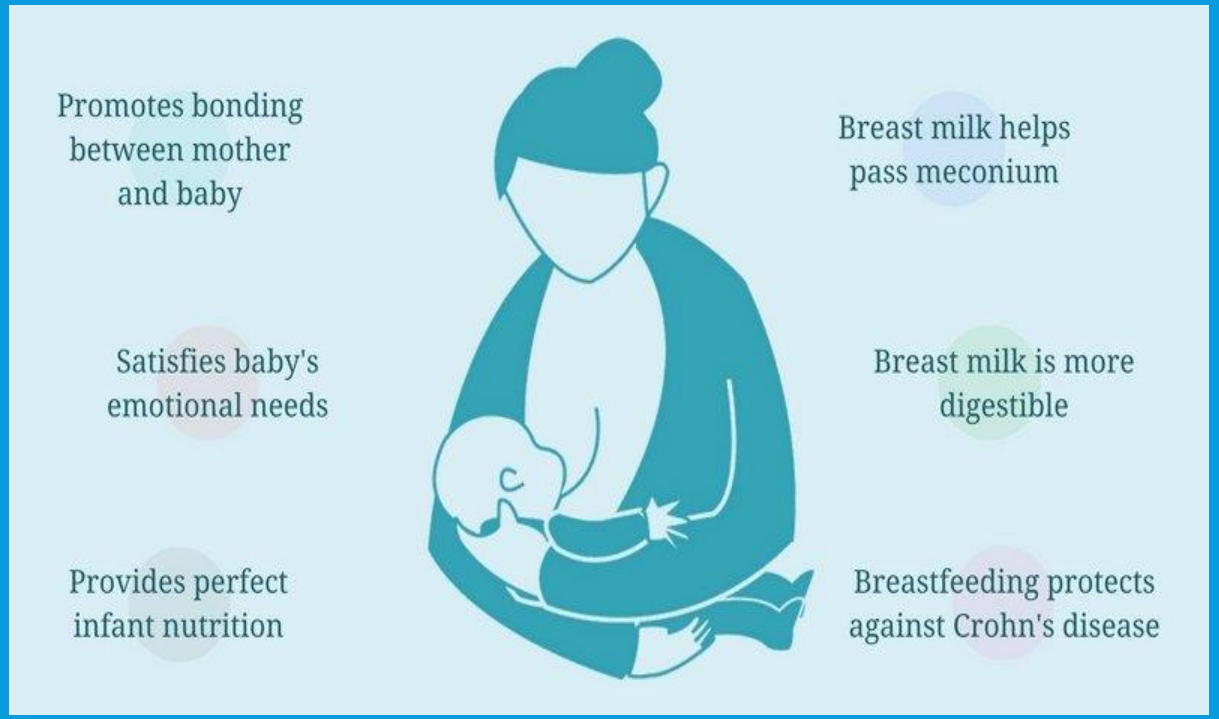
COMPOSITION OF BREAST MILK

	Stage of lactation			
	Transitional, 5–17 d	**Early, 18–46 d**	**Established, 4–6 mo**	***P***
Minerals,[2] mmol/L				
Calcium	6.56 ± 1.22	6.64 ± 0.90	6.37 ± 0.84	0.15
Magnesium	0.93 ± 0.18[b]	0.93 ± 0.16[b]	1.45 ± 0.22[a]	<0.00
Potassium	15.1 ± 2.1[a]	13.4 ± 1.8[b]	11.0 ± 1.4[c]	<0.00
Sodium	6.35 ± 1.44[a]	5.41 ± 1.17[b]	4.17 ± 0.96[c]	<0.00
Trace elements,[2] µmol/L				
Copper	9.24 ± 1.81[a]	7.24 ± 1.51[b]	4.13 ± 1.25[c]	<0.00
Iron	10.0 ± 7.9[a]	10.4 ± 8.0[a]	5.73 ± 4.48[b]	<0.00
Manganese	0.21 ± 0.15[a]	0.20 ± 0.17[a,b]	0.14 ± 0.13[b]	0.002
Rubidium	13.1 ± 2.9[a]	12.3 ± 2.7[a]	9.48 ± 2.22[b]	<0.00
Selenium	0.21 ± 0.06[a]	0.21 ± 0.08[a]	0.17 ± 0.07[b]	<0.00
Strontium	0.50 ± 0.16	0.53 ± 0.18	0.52 ± 0.16	0.59
Zinc	66.7 ± 14.4[a]	53.0 ± 17.7[b]	20.0 ± 11.9[c]	<0.00

Guatemalan mothers' breast milk mineral and trace element concentrations at 3 stages of lactation.- Source- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3586783/

IMPORTANCE OF BREAST MILK

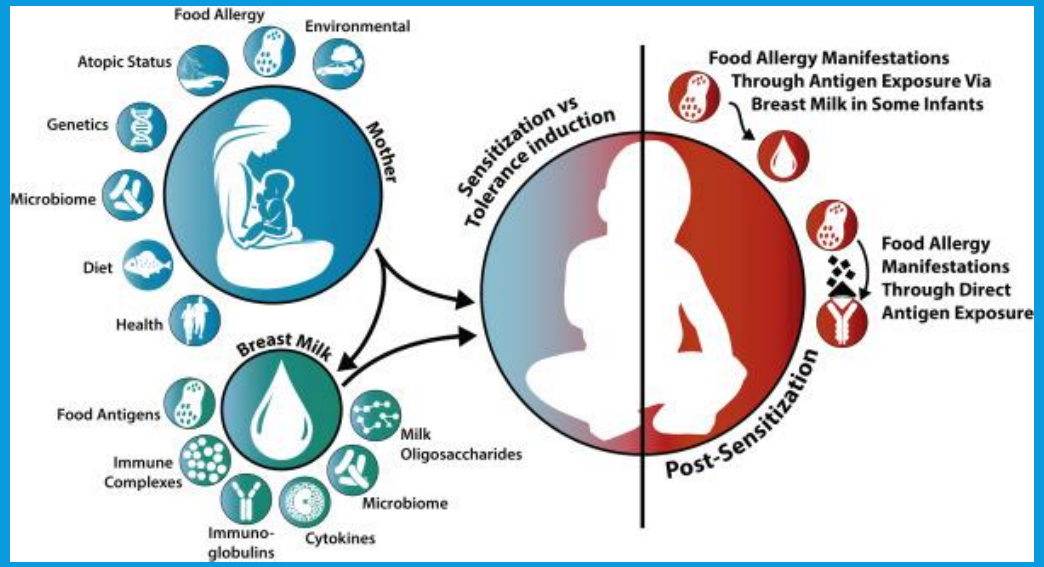
- Health benefits to mother
- Health benefits to baby
- Economic benefits
- Disease resistance
- Ideal source of nutrition
- Neurological development of baby
- Benefits due to composition



Source- https://www.icliniq.com/articles/newborn-and-baby/benefits-of-breastfeeding-and-a-few-tips-to-new-mothers

EFFECTS OF NON CONSUMPTION OF BREAST MILK

- Many diseases are linked
- Growth of infants
- Bonding between mother and baby
- Neurodevelopment
- Effects whole life
- Economic effect



Source- https://www.annallergy.org/article/S1081-1206(19)30321-7/fulltext

IMPACT OF INFANT FORMULA
(CAN IT REALLY REPLACE BREAST MILK?)

- The American Academy of Pediatrics recommends fortified breast milk for preterm infants.
- ESPHGAN recommends preterm infants who are formula fed should receive special post- discharge formula with high contents of protein, minerals, trace elements and energy as well as long chain polyunsaturated fatty acid supply at least until a postconceptional age of 40 weeks.

Source- https://cen.acs.org/food/food-ingredients/infant-formula-scientists-make-like/99/i1

THANK YOU