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BREASTFEEDING AND ALTERNATIVE FEEDING METHODS IN THE INDIAN POPULATION: PRACTICES, DETERMINANTS, AND CLINICAL IMPLICATIONS

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ABSTRACT

Background: Breastfeeding is a cornerstone of infant health and survival, with WHO recommending exclusive breastfeeding (EBF) up to 6 months followed by continued breastfeeding with appropriate complementary feeding. [1][2] In India, EBF rates remain suboptimal despite national-level policies and programs. [1][3]

Objective: To review **breastfeeding practices, determinants, and alternative feeding methods** in the Indian population, with emphasis on implications for clinical practice and health-system policy. [1][4][3]

Methods: Narrative review of nationally representative surveys (NFHS-4 and NFHS-5), Indian Infant and Young Child Feeding (IYCF) guidelines, and peer-reviewed studies on breastfeeding and alternative feeding methods published between 2015 and 2025. [1][4][5][6]

Results: In India, the proportion of infants exclusively breastfed up to 6 months increased from **31.3% (NFHS-4) to 43% (NFHS-5)**, but over half of infants still do not meet the WHO-recommended EBF duration. [1][3] Early initiation of breastfeeding (within 1 hour) has improved but remains below target in many states. [4][3] Major barriers include maternal employment, lack of support, misinformation, and increasing use of bottle-feeding and commercial formula. [7][3] When breastfeeding is not medically or practically feasible, acceptable alternatives include **expressed breastmilk (ebm) via cup/bowl or bottle, pasteurized donor human milk (PDHM)**, and, when strictly necessary, **commercial infant**

formula under paediatric guidance. [8] [9][5][6]

CONCLUSION: Strengthening facility-and community-based support for breastfeeding, scaling up human-milk banking, and regulating formula-marketing can improve optimal breastfeeding and safe alternative-feeding practices in India. [1][3][6]

KEYWORDS: Breastfeeding; exclusive breastfeeding; alternative feeding methods; infant nutrition; complementary feeding; India.

1. INTRODUCTION

Breastfeeding is the biological norm for infant feeding and is associated with reduced mortality, morbidity, and long-term health benefits for both mother and child. [2][3] The World Health Organization (WHO) recommends **exclusive breastfeeding (EBF) for the first 6 months of life**, followed by continued breastfeeding with age-appropriate complementary foods up to 2 years or beyond. [2][4]

In India, despite a long-established cultural tradition of breastfeeding, nationally representative data show that **EBF prevalence remains well below the global target.** [1][3] The National Guidelines on Infant and Young Child Feeding (2006) and the Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) Act (IMS Act, 1992) aim to protect and support breastfeeding; however implementation has been patchy. [3][5]

Commonly recognized **barriers in India** include early return-to-work, lack of maternity-leave support, inadequate counselling during antenatal and postnatal care, and growing commercial-formula and bottle-feeding use. [7][3] In some settings, mothers may be **physically unable** to breastfeed (e.g., severe illness, preterm infants, HIV where formula is safer, or surgical complications), necessitating safe alternative feeding methods. [8][10]

The aim of this article is to provide a **complete review** of **breastfeeding practices, determinants, and alternative feeding methods** in the Indian population, with emphasis on clinical-decision-making and policy-level priorities. [1][4][6]

2. METHODS

This article is based on a **narrative review** of national-level breastfeeding-related surveys, Indian Infant and Young Child Feeding (IYCF) guidelines, and peer-reviewed studies on breastfeeding and alternative feeding methods published between 2015 and 2025. [1][4][5] We searched **PubMed,WHO-IRIS, and Ministry of Health and Family Welfare (MoHFW)**

repositories using the key terms *breastfeeding, exclusive breastfeeding, alternative feeding, expressed breast milk, donor human milk, India*. [1][4][6]

We included:

National-representative datasets (NFHS-4 and NFHS-5) on EBF and early-initiation of breastfeeding. [1][3]

Indian national guidelines and training modules on Infant and Young Child Feeding issued by the Ministry of Health and Family Welfare (MAA/NHM-IYCF materials). [5][6]

Observational and cross-sectional studies on breastfeeding practices and complementary feeding from different Indian states. [11][4]

Clinical and policy-oriented reviews on alternatives to breastfeeding, including expressed breastmilk, cup/bowl-feeding, and commercial formula. [8][9][10]

Articles were synthesized by **EBF prevalence, timing of initiation, barriers, and alternative feeding methods** relevant to Indian practice. [1][4]

3. RESULTS

3.1. Breastfeeding practices in India

Recent analyses of **NFHS-4 and NFHS-5 data** show that only **31.3% of infants were exclusively breastfed up to 6 months in NFHS-4**, rising to **43% in NFHS-5**, still far below the WHO-recommended universal-EBF target. [1][3] By 2 months of age, the proportion of infants exclusively breastfed was **66.7% (NFHS-4) and 70.4% (NFHS-5)**, indicating reasonable early-feeding behaviour but a sharp drop-off by 6 months. [1]

Geographic variation is marked: EBF rates at 6 months were higher in **Chhattisgarh (71%), Haryana (69.5%), and Jharkhand (61.7%)** and lower in **Meghalaya (23%), Manipur (24.5%), West Bengal (25.4%), and Uttarakhand (25.5%).** [1] Rural-based studies show mixed results; in one cross-sectional survey from central India, **58.6% of mothers practiced exclusive breastfeeding**, with **78.3% initiating breastfeeding within 6 hours of delivery.** [11] Early initiation of breastfeeding (within 1 hour of birth) has improved over time but remains below target nationally. [4][3] NFHS-3 reported **24.5% early initiation**, while DLHS-3 and later datasets show gradual improvement to around **40%**, still insufficient for optimal neonatal protection. [3]

3.2. Determinants of breastfeeding practices

Multiple factors influence EBF and complementary-feeding practices in India. [1][4][12]

Sociodemographic factors: Lower maternal education, lower socioeconomic status, and

rural residence are associated with **poorer EBF and early-formula use.** [1][11] Higher maternal education and income are linked to **better complementary-feeding practices and continuation of breastfeeding up to 2 years.** [4][3]

Health-system and cultural factors: Inadequate counselling in antenatal and postnatal care, early hospital-discharge without lactation-support, and strong family-peer pressure to introduce "supplementary feeds" reduce EBF duration. [11][4] Bottle-feeding and commercial-formula use are increasing, with NFHS-4 data showing that **about 20% of infants 6–9 months are bottle-fed.** [7][3]

3.3. Alternative feeding methods when breastfeeding is not feasible

When breastfeeding is not possible or medically contraindicated, several **alternative methods of feeding breastmilk or suitable substitutes** exist. [8][9][10]

Alternative method	Indications and notes in India
Expressed breastmilk (EBM) by cup/bowl or bottle	Suitable when mother is well but separated from baby (e.g., working-mothers, sick-mothers with stable infants). Cup/bowl-feeding is recommended over bottle-feeding to reduce nipple-confusion, dental-caries risk, and over-use of commercial formula. [8][13]
Pumping and storage of mother's own milk	Electric or manual breastpumps allow mothers to express and store breastmilk for later use; hygienic handling and appropriate storage (room-temperature, refrigeration, freezing) are essential. [9][13]
Pasteurized donor human milk (PDHM)	PDHM from human-milk banks (e.g., in tertiary-care newborn-intensive-care units) is preferred for preterm, low-birth-weight, or sick neonates whose mothers have low- or no-milk output. [8][10]
Commercial infant formula	When mother's own milk and donor-milk are unavailable and breastfeeding is contraindicated, **age-appropriate commercial formula** may be used under paediatric guidance, with strict adherence to hygiene and WHO-IMS-Act provisions. [9][3][6]
Cow-milk-based formula or other modified feeds	In some resource-constrained settings, modified cow-milk-based preparations are used, but these are **not equivalent to breastmilk or commercial formula** and require careful monitoring for nutritional adequacy. [10][12]

Indian IYCF-training modules emphasize that **mother's own milk, expressed and fed by cup or bowl, is the preferred alternative to direct breastfeeding.** [5][6] Bottle-feeding is actively discouraged, and formula-marketing is regulated under the IMS Act to prevent commercial pressures against optimal breastfeeding. [3][6]

4. DISCUSSION

This review highlights that **breastfeeding is widely practiced but suboptimally implemented** in India. [1][3] The increase in **EBF up to 6 months from 31.3% to 43% between NFHS-4 and NFHS-5** reflects progress, but over half of Indian infants still do not

receive the WHO-recommended EBF duration. [1][3] Early initiation of breastfeeding remains below target, with only about 40% of infants breastfed within 1 hour of birth in some datasets, despite evidence that early-neonatal skin-to-skin contact and immediate breastfeeding reduce early-neonatal mortality and morbidity. [4][3]

Sociodemographic and structural barriers—**low maternal education, gender-related decision-making constraints, early return-to-work, limited maternity-leave, and poor counselling in antenatal and postnatal care**—underpin low-EBF rates. [1][11][4] Concurrently, the **rising use of bottles and commercial formula** threatens to erode traditional breastfeeding culture and increase risk of diarrhoea, malnutrition, and dental problems. [7][3]

Clinically, when breastfeeding is **physically or medically not feasible** (e.g., critically ill mother, preterm or low-birth-weight infants, some HIV-exposed infants, or surgical complications), **expressed breastmilk (cup-feeding or, when necessary, bottle-feeding) and PDHM are the preferred alternatives.** [8][10] Cup- and bowl-feeding minimise nipple-confusion and can be taught through structured lactation-support programs in maternity-homes and newborn-units. [13] Commercial formula should be reserved for **clearly defined indications** and always prescribed with appropriate counselling on hygiene, preparation, and follow-up to avoid over-dilution or under-feeding. [9][6]

From a public-health perspective, **scaling up human-milk banking, reinforcing IYCF-counselling in antenatal-care and PMSMA-type free-check-up-programs, and enforcing the IMS Act regulations** are critical to sustaining and improving breastfeeding and safe-alternative-feeding practices. [3][5][6] Training nurses, ASHAs, and traditional birth attendants in lactation-support and alternative-feeding methods (including cup-feeding and EBM-handling) can bridge gaps between policy and practice, especially in rural and semi-urban areas. [4][6]

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