International Journal of Contemporary Pediatrics
Akram H et al. Int J Contemp Pediatr. 2025 May;12(5):859-864
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20251114

Review Article

Bottle feeding in a breastfeeding world: unravelling the determinants shaping infant feeding choices

Huzaifa Akram*, Mamta Verma, R. Velmurugan, Anamika Khatri, Pragati Kumari

Nursing College, All India Institute of Medical Sciences, Bhopal, Madhya Pradesh, India

Received: 10 March 2025
Accepted: 09 April 2025

***Correspondence:**
Huzaifa Akram,
E-mail: huzaifakram02@gmail.com

ABSTRACT

While WHO and UNICEF recommend breastfeeding as a preferred method of nutrition for infants due to its numerous health benefits, bottle feeding continues to be a common practice due to various factors, including personal, social, and environmental influences. These influences make bottle feeding a more practical or convenient option for many mothers. This discussion delves into the multifaceted determinants behind this practice. The aim of this review is to deepen the understanding of the context in which feeding choices are made and highlight the need to create supportive environments that help parents make the best possible decisions for their children's health and well-being.

Keywords: Bottle feeding, Infant feeding, Determinants

INTRODUCTION

How we feed our infants can have a considerable impact not only on their health but also on the well-being of mothers and the overall health of our communities. The World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) strongly recommend breastfeeding as the optimal method of nutrition for infants, that should be initiated within the first hour of life and continued exclusively for six months, supplemented by suitable complementary foods until two years of age.[1,2] Breastfeeding is essential for the overall development of a child and has a wide range of nutritional, immunological, and psychological advantages. While universal exclusive breastfeeding for infants under 24 months could prevent over 820,000 annual deaths among children under five, the current global rate of the practice stands at just 44%, which is significantly below the World Health Organization's recommendations.[1] Globally, various directives have been adopted, such as the International Code of Marketing of Breastmilk Substitutes, the Global Strategy for Infant and Young Child Feeding, and the Baby-Friendly Hospital Initiative (BFHI), with the aim to promote breastfeeding by regulating the marketing of breastmilk substitutes to prevent misleading information, encouraging optimal feeding practices, and establishing supportive environments in healthcare settings to enhance both infant and maternal health.[3–5]

Despite these measures, suboptimal infant feeding practices, including bottle feeding, persist across the world. Bottle feeding is defined as the administration of any liquid (including breastmilk) or semi-solid food to infants or young children via a bottle fitted with a teat or nipple, often serving as a substitute or complement to breastfeeding.[6] This feeding method enables caregivers to nourish the child without relying on direct lactation. Although a convenient method of feeding, bottles carry a number of drawbacks for a child. It can increase the risk of dental caries and rapid weight gain, leading to childhood obesity.[7] It can also have a negative impact on essential oral functions, including chewing and sucking, contributing to dental malocclusion.[8] Furthermore, bottle-feeding is associated with higher rates of morbidity and mortality from poor sanitation and inadequate hygiene, resulting in gastrointestinal infections, allergic tendencies, and respiratory infections.[9,10] The practice can

also contribute to nutritional issues such as malnutrition, which is attributed to about 2.7 million child deaths.[1]

Given the numerous health risks and other adverse effects associated with bottle-feeding, the World Health Organization strongly advises mothers to priorities breastfeeding. Regardless of the continuous efforts, bottle-feeding remains a widespread practice, with 57% of mothers of children under five years of age practicing it globally.[11]

WHAT DRIVES THE CHOICES BEHIND BOTTLE FEEDING?

The decision to bottle-feed is not merely a personal choice but is influenced by a range of complex and interrelated determinants, which may include sociodemographic characteristics of a mother such as age, level of education, employment status, economic conditions, etc. Additionally, cultural beliefs and traditional practices of a family play a significant role because, in some communities, people may view bottle-feeding as a more convenient or modern practice. Psychosocial influences can further impact a mother's feeding choices. Understanding all these determinants is crucial in order to develop effective interventions for the promotion of breastfeeding and reduce the prevalence of bottle feeding.

SOCIODEMOGRAPHIC DETERMINANTS

Sociodemographic characteristics of the mother as well as the child play a crucial role in the selection of feeding methods. Maternal age, education, occupation, type of family, place of residence, age of the child, and socioeconomic status dramatically impact feeding choices.

Young mothers are more likely to practice bottle feeding, probably due to a lack of experience, peer influences, insufficient support, and other related factors. Additionally, adolescent and first-time mothers may lack confidence in their ability to breastfeed, leading them to adopt bottle feeding as a seemingly easier alternative.[12]

Mothers who lack knowledge about the benefits of breastfeeding and the risks associated with bottle feeding are more likely to opt for the latter. This ignorance can often be attributed to a lack of education, limited exposure to breastfeeding awareness campaigns, and inadequate antenatal or postnatal counselling.[13,14]

Working mothers may be inclined towards bottle-feeding due to various factors like demanding workloads, workplace exertion, short maternity leave, and lack of time and privacy for breastfeeding at the workplace.[10,12,15,16] However, some studies have also shown a higher prevalence of this practice among homemaker mothers which could be due to perceived convenience, lack of breastfeeding support or knowledge, cultural norms, and the demands of household responsibilities.[17,18]

Family structure also plays a role in determining feeding practices. Mothers living in nuclear families may have a higher prevalence of bottle feeding due to limited support and increased childcare responsibilities without assistance.[19] Conversely, mothers in joint families may resort to it due to a lack of individualized attention to the infant's needs or reliance on older family members' advice.

Differences in cultural norms, accessibility to healthcare facilities for breastfeeding counselling, and lifestyle factors may influence the choice of feeding methods among rural and urban mothers.[20,21] The easy access to formula feed and bottles increases the likelihood of practicing bottle feeding among urban mothers, whereas mothers living in rural areas are more likely to practice breastfeeding for infants due to their traditional practices and limited access to alternatives.[11]

Socioeconomic status also plays a significant role in determining feeding methods. Some studies suggest a higher prevalence of bottle feeding in the upper class likely due to the affordability of formula milk, a perception of bottle feeding as a modern and convenient option, and increased exposure to commercial advertising promoting infant formula.[22,23] The practice may, however, vary among the socioeconomic classes in different areas.

Furthermore, the likelihood of bottle feeding tends to increase as the child grows older.[24] We can attribute this shift to factors such as a mother's return to work, perceived insufficiency of breast milk, the introduction of complementary feeding, and societal expectations of transitioning the child from breastfeeding to bottle or cup feeding.

OBSTETRIC DETERMINANTS

Bottle-feeding is found to be more common among multigravida mothers having more than one child and those who deliver via C-section.[12,25] Multigravida mothers may find it a more convenient option as they balance the demands of caring for multiple children. Their previous experiences with breastfeeding can also influence their decision to opt for bottle feeding. However, first-time mothers may adopt it as a seemingly more effortless alternative due to a lack of confidence in their ability to breastfeed.[26]

Mothers often experience physical discomfort, limited mobility, and fatigue after Caesarean section deliveries, which can make breastfeeding difficult and lead them to prefer the convenience of bottle feeding. Additionally, postnatal complications such as delayed lactation, maternal infections, the need for medications that are

incompatible with breastfeeding, etc., may contribute to the decision.

PHYSICAL DETERMINANTS

Physical determinants related to the mother or child can influence the feeding choices and can often compel mothers to opt for bottle feeding. Maternal conditions such as breast abscess, mastitis, breast engorgement or the presence of flat or inverted nipples can create difficulties in effective breastfeeding. Chronic health conditions like diabetes, hypertension, or infections may also impact a mother's ability to breastfeed exclusively. All these factors make bottle feeding a more convenient alternative. In addition, actual or perceived inadequacy of breastmilk can also be a contributing factor.[13,16,27,28]

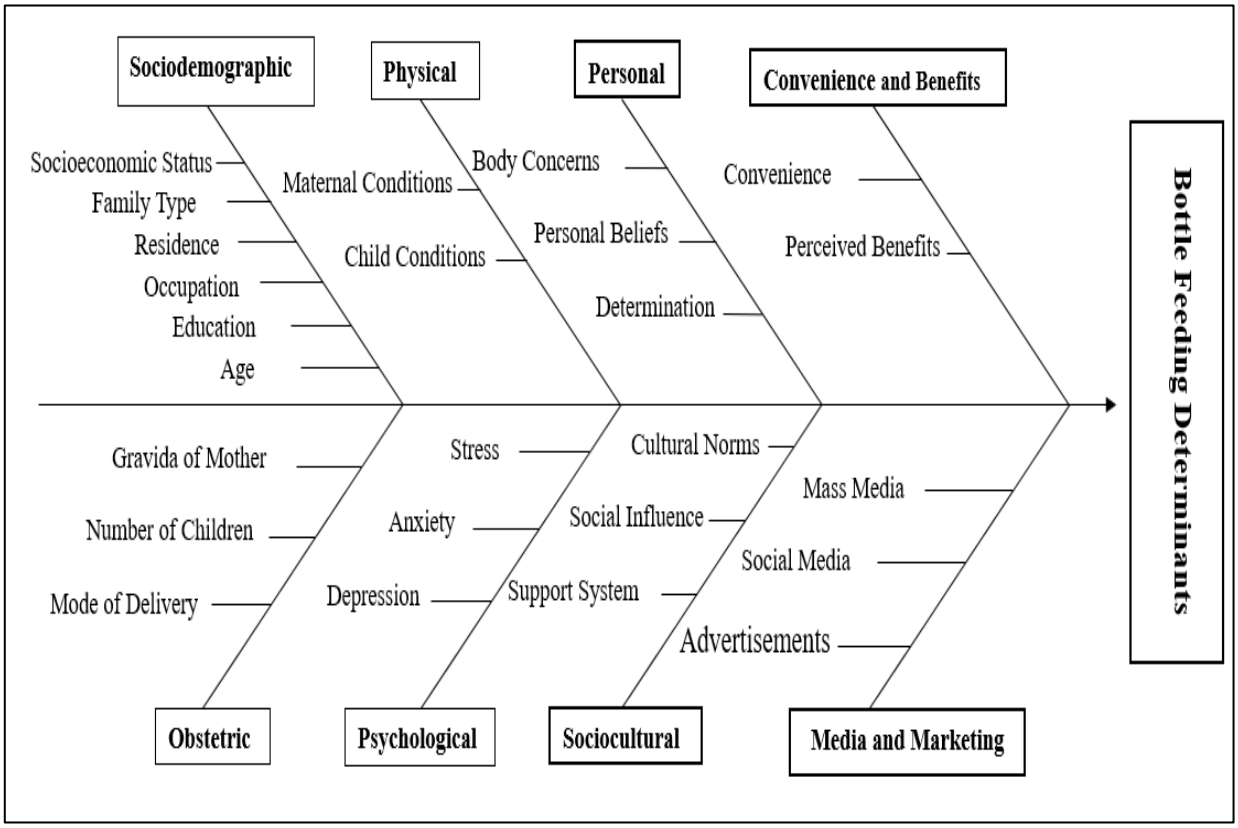

Figure 1: Determinants of bottle feeding.

Various child-related factors may also shape the feeding choices of a mother. For instance, premature newborns often face issues with breastfeeding due to their underdeveloped sucking reflex, which necessitates the use of bottle feeding. Hospitalisation of infants can be an influencing factor. Many anatomical difficulties and complications, such as cleft lip or palate that affect the infant's ability to latch and effectively extract milk from the breast may also contribute to bottle feeding.[16]

These factors collectively underscore the complex interplay of maternal and infant health in determining feeding practices.

PSYCHOLOGICAL DETERMINANTS

Existing psychological conditions can have a profound impact on a mother's ability to initiate and sustain breastfeeding. Mental health issues can create significant emotional and physiological barriers that discourage mothers from engaging in exclusive breastfeeding.[29] Mothers with high levels of stress or anxiety and postpartum depression often experience fatigue and feelings of detachment, making it challenging for them to maintain latching. In such cases, bottle feeding may be perceived as a more convenient alternative that allows mothers to share feeding responsibilities with other family members or caregivers.

PERSONAL DETERMINANTS

Personal determinants/factors such as concern about body image, desire to become pregnant, personal beliefs, and lack of determination may influence the feeding choices of a mother. Worries about the change in the appearance of breasts, the perception that a bottle is a more modern method of feeding, or personal discomfort and embarrassment associated with breastfeeding, etc., can further shape a mother's feeding decisions.[30–34] These factors, often intertwined with cultural norms and

individual preferences, play a crucial role in determining whether a mother opts for bottle feeding over breastfeeding.

SOCIOCULTURAL DETERMINANTS AND PEER INFLUENCE

Cultural expectations of privacy and modesty can have a notable impact on breastfeeding behaviour, particularly in public settings because of fear of exposure that might make mothers opt for bottle feeding.[16,33] In many cultures, feeding decisions are not solely individual choices but are influenced by the opinions of family members, peers, and the broader community. Mothers may be influenced by relatives, friends, neighbours, etc., who view bottle feeding as a more convenient or socially acceptable option. Cultural traditions, generational practices, and deeply rooted family beliefs about infant nutrition contribute to a mother's feeding decisions, often shaping her confidence and commitment to a particular feeding method.

In addition, the degree of support a mother obtains from her spouse and extended family members can be a determining factor in whether she continues breastfeeding or transitions to bottle feeding. A lack of encouragement or active discouragement from spouse or key family members may make breastfeeding more challenging, leading to an increased likelihood of bottle feeding.[13]

Perceived convenience and benefits of bottle feeding

The intention to seek assistance from other caregivers and the perception that bottle feeding offers a more convenient and flexible option play a significant role in shaping a mother's decision regarding infant feeding practices.[14] Many mothers believe that bottle feeding allows them to share caregiving responsibilities with family members, babysitters, or daycare providers, making it an attractive option, especially when they have work commitments, household duties, or other obligations that limit their availability for direct breastfeeding.

Furthermore, some mothers may perceive bottle feeding as a nutritionally reliable alternative. The notion that formula or other bottle-fed alternatives provide adequate nutrition, promote healthy growth or even boost immunity can reinforce the decision to opt for bottle-feeding over breastfeeding.[16,35]

MEDIA AND MARKETING DETERMINANTS

Mass media, including television, radio, online platforms, and print advertisements, play a crucial role in shaping public perceptions and influencing maternal feeding choices.[35] Advertisements for infant formula and feeding products may often present bottle feeding as a convenient, hassle-free, and nutritionally adequate alternative to breastfeeding which can, in turn, reinforce the belief that it is an efficient and more practical choice to nourish the infants, particularly for working mothers or those with busy lifestyles. Marketing strategies by formula companies emphasize the added vitamins, minerals, and immunity-boosting properties of formula milk, which creates a perception that it is as good as (or even superior to) breastmilk.

In recent years, social media has played a vital role in promoting bottle feeding. Social media influencers, parenting bloggers, and online content creators have a considerable influence over their audiences because of their perceived authenticity and relatability.[36] Many share their personal experiences, recommend products, and offer practical tips that highlight how easy bottle feeding can be. Their messages may often present bottle feeding as a way to maintain independence, juggle work responsibilities, or allow other caregivers to get involved in caring for the baby. With so many people on digital platforms, these endorsements can significantly affect mothers who are looking for guidance and support.

While media has helped normalize bottle feeding, it is also to be noted that it has been influential in raising awareness about the benefits of breastfeeding, focusing on why it is essential and encouraging mothers to start and keep it up for the best health outcomes for their infants. Research has shown that exposure to such media is positively associated with the timely initiation of breastfeeding.[21,37] This suggests that while marketing can influence feeding choices among mothers, awareness campaigns through media can help them make well-informed decisions despite commercial pressures.

Empowering breastfeeding: actions for a healthier tomorrow

It can be concluded that the practice of bottle feeding is influenced by a myriad of determinants, including sociodemographic characteristics, physical and psychological factors, sociocultural beliefs and norms, peer and family influence, marketing strategies, mass media portrayals, perceived convenience, and personal attitudes toward breastfeeding.

In order to promote breastfeeding effectively, it is important for healthcare providers and policymakers to understand the determinants that influence a mother's feeding choices. Antenatal and postnatal counselling needs to be strengthened to promote optimal feeding practices. Community awareness campaigns are important. Educational interventions should target not only mothers but also extended family members. Creating supportive environments for nursing mothers, such as ensuring workplace privacy, providing adequate maternity leave, and offering breastfeeding-friendly public spaces, is essential. Strong regulations on the marketing of feeding bottles and formula, along with positive media campaigns, are also crucial. Additionally, enhancing family and community support would

empower mothers to make informed feeding choices, fostering an environment where breastfeeding is encouraged.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Ibrahim C, Bookari K, Sacre Y, Hanna-Wakim L, Hoteit M. Breastfeeding practices, infant formula use, complementary feeding and childhood malnutrition: an updated overview of the Eastern Mediterranean Landscape. Nutrients. 2022;14(19):4201.
2. UNICEF. Breastfeeding: a_mothers_gift_for_every_ child. Available at: https://www.unicef.org/media. Accessed on 5th January 2025.
3. Wayback Machine: International Code of Marketing of Breastmilk Substitutes, 2006. Available at: https://web.archive. Accessed on 6 January 2025.
4. Global strategy for infant and young child feeding. Available at: https://www.who.int/publication. Accessed on 5 December 2024.
5. Baby-Friendly Hospital Initiative | UNICEF. Available at: https://www.unicef.org. Accessed on 5 January 2025.
6. Bottle feeding rate 0-23 months (%). Available at: https://www.who.int. Accessed on 5 January 2025.
7. Li R, Magadia J, Fein SB, Grummer-Strawn LM. Risk of Bottle-feeding for Rapid Weight Gain During the First Year of Life. Archives of Pediatrics & Adolescent Medicine. 2012;166(5):431–6.
8. Ganesh M, Tandon S, Sajida B. Prolonged feeding practice and its effects on developing dentition. J Indian Soc Pedod Prev Dent. 2005;23(3):141–5.
9. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, Onis M de, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. The Lancet. 2013;382(9890):427–51.
10. Hunde BM, Sitotaw IK, Elema TB. Magnitude of bottle-feeding practice and associated factors among mothers of 0–24 months' children in Asella town, Oromia region, Ethiopia. BMC Nutrition. 2023;9(1):79.
11. Getachew D, Getachew E, Yirsaw AN, Ayele HS, Andargie GA, Lakew AA, et al. Prevalence of Bottle-Feeding Practice and Associated Factors Among Mothers of Children Under Five in the World, 2024: Systematic Review and Meta-Analysis. Reproductive, Female and Child Health. 2024;3(4):70002.
12. Mihret Y, Endalew F, Almaw H, Linger M. Sociodemographic Factors Associated with Bottle Feeding Practices in Infants Under Two Years of Age: A hospital-based study in Woldia, Ethiopia. Cent Asian J Glob Health. 2012;9(1):440.
13. Makwana NK. Determinants of bottle feeding among 0-24 months children. Pediatric Review: Int J Pediat Res. 2020;7(1):14–21.
14. Kebebe T, Assaye H. Intention, magnitude and factors associated with bottle feeding among mothers of 0–23 months old children in Holeta town, Central Ethiopia: a cross-sectional study. BMC Nutrition. 2017;3(1):53.
15. Birhan G, Mohammed S, Tenia S, Alem A, Alemante A, Belyneh A. Prevalence of bottle-feeding practice and its associated factors among mothers of infants less than six months at addis ababa public health centers, Addis Ababa, Ethiopia, 2022. J Health Care Comm. 2024;9(2):1–11.
16. Telang S, Gajbe M, Sonkusare Y, Meshram R, Chakranarayan H. A study to identify the influencing factors for the use of bottle feeding among the mothers of under-five children in the selected areas of Nagpur city. Int J Res Paediatric Nurs. 2022;4(1):31–5.
17. Shamim S, Jamalvi SW, Naz F. Determinants of bottle use amongst economically disadvantaged mothers. J Ayub Med Coll Abbottabad. 2006;18(1):48–51.
18. Winikoff B, Laukaran VH. Breast feeding and bottle-feeding controversies in the developing world: evidence from a study in four countries. Social Sci & Med. 1989;29(7):859–68.
19. Athavale P, Hoeft K, Dalal RM, Bondre AP, Mukherjee P, Sokal-Gutierrez K. A qualitative assessment of barriers and facilitators to implementing recommended infant nutrition practices in Mumbai, India. J Health, Pop and Nut. 2020;39(1):7.
20. Yadav YS, Yadav S, Rathi S, Dhaneria M, Singh P. Comparison of Infant feeding practices among rural and urban mothers: an observational study. International J of Med Res and Review. 2015;3(6):547–53.
21. Patel A, Badhoniya N, Khadse S, Senarath U, Agho KE, Dibley MJ, et al. Infant and young child feeding indicators and determinants of poor feeding practices in India: secondary data analysis of National Family Health Survey 2005-06. Food Nutr Bull. 2010;31(2):314–33.
22. Hazir T, Akram DS, Nisar YB, Kazmi N, Agho KE, Abbasi S, et al. Determinants of suboptimal breast-feeding practices in Pakistan. Public Health Nutrition. 2013;16(4):659–72.
23. Mihrshahi S, Kabir I, Roy SK, Agho KE, Senarath U, Dibley MJ, et al. Determinants of infant and young child feeding practices in Bangladesh: secondary data analysis of Demographic and Health Survey 2004. Food Nutr Bull. 2010;31(2):295–313.
24. Berde AS. Factors Associated with Bottle Feeding in Namibia: Findings from Namibia 2013 Demographic and Health Survey. J Tropical Pediat. 2018;64(6):460–7.
25. Mekonen EG. Bottle-feeding practice and its associated factors among mothers of children aged 0

to 23 months in sub-Saharan Africa: a multi-level analysis of demographic and health surveys (2015–2022). BMC Public Health. 2024;24(1):1712.
26. Kera AM, Zewdie A, Akafu W, Kidane R, Tamirat M. Formula feeding and associated factors among mothers with infants 0–6 months old in Mettu Town, Southwest Ethiopia. Food Sci & Nutr. 2023;11(7):4136–45.
27. Rahman A, Akter F. Reasons for formula feeding among rural Bangladeshi mothers: A qualitative exploration. PLoS One. 2019;14(2):211761.
28. Hackett KM, Mukta US, Jalal CSB, Sellen DW. A qualitative study exploring perceived barriers to infant feeding and caregiving among adolescent girls and young women in rural Bangladesh. BMC Public Health. 2015;15(1):771.
29. Dennis CL, McQueen K. The Relationship Between Infant-Feeding Outcomes and Postpartum Depression: A Qualitative Systematic Review. Pediatrics. 2009;123(4):736–51.
30. Brown A, Rance J, Warren L. Body image concerns during pregnancy are associated with a shorter breast-feeding duration. Midwifery. 2015 Jan;31(1):80–9.
31. General (US) O of the S, Prevention (US) C for DC and, Health (US) O on W. Barriers to Breastfeeding in the United States. In: The Surgeon General's Call to Action to Support Breastfeeding. Office of the Surgeon General (US); 2011. Available at: https://www.ncbi.nlm.nih.gov. Accessed on 12 August 2024.
32. Johnston ML, Esposito N. Barriers and facilitators for breastfeeding among working women in the United States. J Obstetric, Gynecol Neonatal Nurs. 2007;36(1):9–20.
33. New survey of mums reveals perceived barriers to breastfeeding. Available at: https://www.gov.uk/government. breastfeeding. Accessed on 9 January 2025.
34. Abdelazeem EA, Ouda WES, Ismail SS. Barriers of breastfeeding in the first year of life: An assessment study. Current Pediatric Research. 2022. Available at: https://www.currentpediatrics. Accessed on 9 January 2025.
35. Horwood C, Luthuli S, Pereira-Kotze C, Haskins L, Kingston G, Dlamini-Nqeketo S, et al. An exploration of pregnant women and mothers' attitudes, perceptions and experiences of formula feeding and formula marketing, and the factors that influence decision-making about infant feeding in South Africa. BMC Public Health. 2022;22(1):393.
36. WHO reveals shocking extent of exploitative formula milk marketing. Available at: https://www.who.int/news/item/28-04-2022-who-reveals-shocking-extent-of-exploitative-formula-milk-marketing. Accessed on 9 January 2025.
37. Dibley MJ, Roy SK, Senarath U, Patel A, Tiwari K, Agho KE, et al. Across-country comparisons of selected infant and young child feeding indicators and associated factors in four South Asian Countries. Food Nutr Bull. 2010;31(2):366–79.

Cite this article as: Akram H, Verma M, Velmurugan R, Khatri A, Kumari P. Bottle feeding in a breastfeeding world: unravelling the determinants shaping infant feeding choices. Int J Contemp Pediatr 2025;12:859-64.