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Factors Influencing Maternal Decision-Making on Infant Feeding Practices

Whitney N. Hamilton

Abstract

The decision to formula feed or breastfeed a child typically begins with an established prenatal intention. This chapter will examine the multiple dimensions influencing maternal decision-making in regards to the feeding practices of infants including 1) individual maternal characteristics, 2) organizational factors, 3) hospital/provider recommendations, and 4) systematic/policy factors. The chapter will also examine the impact of infant feeding practices on early infant and childhood health outcomes. Research has demonstrated the benefits of breastfeeding on infants and early childhood which includes but is not limited to protection against common illnesses and infections, improved IQ, and even increased school attendance. Moreover, the World Health Assembly global nutrition objectives focus on encouraging breastfeeding support across all sectors in addition to implementing tailored community-based approaches, limiting the excessive marketing of infant formula, and enforcing supportive breastfeeding legislation. The aim of this chapter is to provide an overview of the dynamic interplay between individual, interpersonal, community, and societal factors, such as policies that impact breastfeeding rates and more specifically the health of infants.

Keywords: infant feeding, breastfeeding, health outcomes

1. Introduction

Key Points

- The World Health Organization recommends mothers exclusively breastfeed their children for the first 6 months of life and thereafter, supplement nutritious foods and breastmilk for up to 2 years and beyond in order for children and mothers to reap the optimal health benefits associated with breastfeeding.
- Despite the known health and economic benefits of breastfeeding, global breastfeeding prevalence remains an underachieved target, where less than 40% of infants are globally breastfed according to the WHO's recommendations [1].
- The World Health Assembly (WHA) has a goal of increasing the prevalence of exclusive breastfeeding to at least 50% by the year 2025 [1].
- In order to increase global breastfeeding prevalence understanding and addressing the individual maternal characteristics, community, organizational, and political factors affecting breastfeeding practices is crucial.

Breastfeeding is a child's first barrier against death and disease, providing protection against respiratory infection, gastrointestinal illness, and other adverse health outcomes [1–3]. Breastfeeding has also been associated with increased IQ, school attendance, as well as higher income in adult life [2, 3] The World Health Organization recommends infants exclusively receive breastmilk for the first 6 months of life and consume nutritionally adequate foods in addition to breastmilk for 2 years and beyond in order for children and mothers to reap the optimal health benefits associated with breastfeeding [1]. Nearly 1 million deaths of children under the age of 5 worldwide could be averted through breastfeeding alone, if families adhered to the World Health Organization's breastfeeding recommendation [2]. Improving maternal compliance to optimal breastfeeding recommendations can also reduce a mother's risk of ovarian cancer, heart disease, and diabetes and prevent approximately 20,000 maternal deaths from breast cancer alone. Breastfeeding also delays the return of the menstrual cycle which can help with birth spacing. Global adherence to optimal breastfeeding practices can lead to an array of health benefits coupled with economic benefits contributing to a worldwide economic savings of 300 billion U.S. dollars [1, 2].



The World Health Assembly (WHA), which is the governing body of the World Health Organization, recognizes the benefits of breastfeeding and has set a goal of increasing the prevalence of exclusive breastfeeding to at least 50% by the year 2025. In addition to the WHA breastfeeding objective, the **Global Breastfeeding Collective**, a partnership of non-governmental organizations, academic institutions, and donors, led by UNICEF and WHO, seeks to work alongside WHA to accelerate progress toward reaching the breastfeeding targets and improve overall rates of breastfeeding initiation and continuation for 2 years [4]. The World Bank Investment Framework for Nutrition estimates that by reaching the WHA breastfeeding targets in 2025, would prevent over 500,000 child deaths as well as save approximately \$300 billion as a result of improved child development and survival rates [5].

Despite the recognized benefits of breastfeeding, only 38% of infants worldwide are exclusively breastfed for 6 months [4]. The maternal decision on infant feeding practices begins with an established prenatal intention to breast or formula feed. Macro-level factors such as media broadcasting, infant formula marketing, and breastfeeding legislation interact with the micro-level factors which include hospitals, workplaces, and cultural norms that are supportive or discouraging to a woman's intent to breastfeed [6].

The prevalence of breastfeeding remains variable around the world due to the lack of necessary support for a mother to sustain breastfeeding [7]. Economic pressures, societal factors, and the lack of positive media coverage on breastfeeding has resulted in a cultural shift that does not fully support breastfeeding and are cited reasons for reduced breastfeeding rates globally [8]. The excessive marketing, support of, and reliance on infant formula has created a new culture and standard for infant feeding practices [8].

2. Breastfeeding prevalence

As aforementioned, the overall rate of exclusive breastfeeding for infants under 6 months of age is slightly less than 40% despite the known benefits of breastfeeding [4]. However, the least developed countries have experienced the greatest improvement in exclusive breastfeeding rates, where exclusive breastfeeding prevalence at 6 months increased from 38% in 2000 to 50% in 2012 [9]. In such developing countries a majority of infants are also still breastfeeding at 1 year in contrast to the approximate 20% in developed countries and the less than 1% still breastfeeding in the UK [3, 4]. According to the World Health Organization, only 23 countries have achieved at least 60% of infants less than 6 months being exclusively breastfed and nearly 40% of countries have breastfeeding initiation rates above 80%. In Africa, approximately 70% of countries have extended duration rates of continued breastfeeding for at least 1 year. In contrast, only four countries in the Americas have reached such high rates of breastfeeding duration at 1 year. The duration of breastfeeding for 2 years dramatically drops to 45% and no country in the Americas experiences a continued breastfeeding duration of 2 years [4].

The high initiation rate and reduced duration rate suggest many mothers intend to breastfeed but may face barriers to continue breastfeeding. The most commonly cited breastfeeding barriers as indicated in research include misinformation regarding the specific benefits of breastfeeding, social norms, lack of spousal and family support, child-birth complications, maternal employment, and lack of healthcare provider breastfeeding recommendations [10]. **The Global Breastfeeding Collective’s Call to Action** highlights seven priorities to improve global breastfeeding prevalence including 1) funding breastfeeding programs, 2) eliminating the promotion of infant formula, 3) enacting legislation to protect the rights of breastfeeding women, 4) providing breastfeeding support and maternity services, 5) improving community support for breastfeeding, 6) developing systems to monitor and improve breastfeeding programs and 7) disseminating accurate information on the significance of breastfeeding (see **Table 1**) [11].



Exclusive breastfeeding	The practice of giving an infant only breastmilk for the first 6 months of life (no additional food or water) [1].
Optimal breastfeeding	Exclusively breastfeeding an infant for the first 6 months of life followed by continued breastfeeding supplementary to nutritious food for 2 years of age and beyond [1].

Table 1.
Key breastfeeding terminology.

3. Determinants of breastfeeding in developing and developed countries

Unique factors exist in developing and developed countries that influence breastfeeding behaviors. Research illustrates child and maternal morbidities such as infant colic and maternal infection are critical factors influencing breastfeeding in developing countries in contrast to developed countries. In developing countries, mothers who experience breast infections, swelling, pain, and/or chronic conditions or had infants with congenital or acquired disease were less likely to breastfeed [12, 13]. Environmental factors also have a great influence on breastfeeding in developing countries due to the limited availability of electricity to refrigerate breastmilk and the fear of contamination due to unsanitary feeding environments prevalent in some underdeveloped areas [12, 13]. Unlike developing countries that face major challenges associated directly with maternal and child health, major influences of breastfeeding practices in developed countries stem from health systems, political, and societal factors. However, in both developing and developed countries there is an interaction between individual maternal characteristics, interpersonal, community, and societal factors, such as policies and legislation that impact a mother’s decision to start and continue breastfeeding [12, 13]. It may be difficult for mothers to sustain breastfeeding even after initiating due to sociodemographic, social-cultural, and systematic factors that are not supportive of breastfeeding practices (see **Figure 1** below).

3.1 Maternal characteristics

Correlates of breastfeeding initiation and duration as indicated in research include maternal marital status, vaginal delivery, previous live birth, multiple live birth (plurality), smoking and drinking habits, prenatal care within the first trimester, conversation with a healthcare provider about breastfeeding, and birth intendedness [14, 15]. Additional factors associated with breastfeeding behaviors include maternal age, race and ethnicity, level of educational

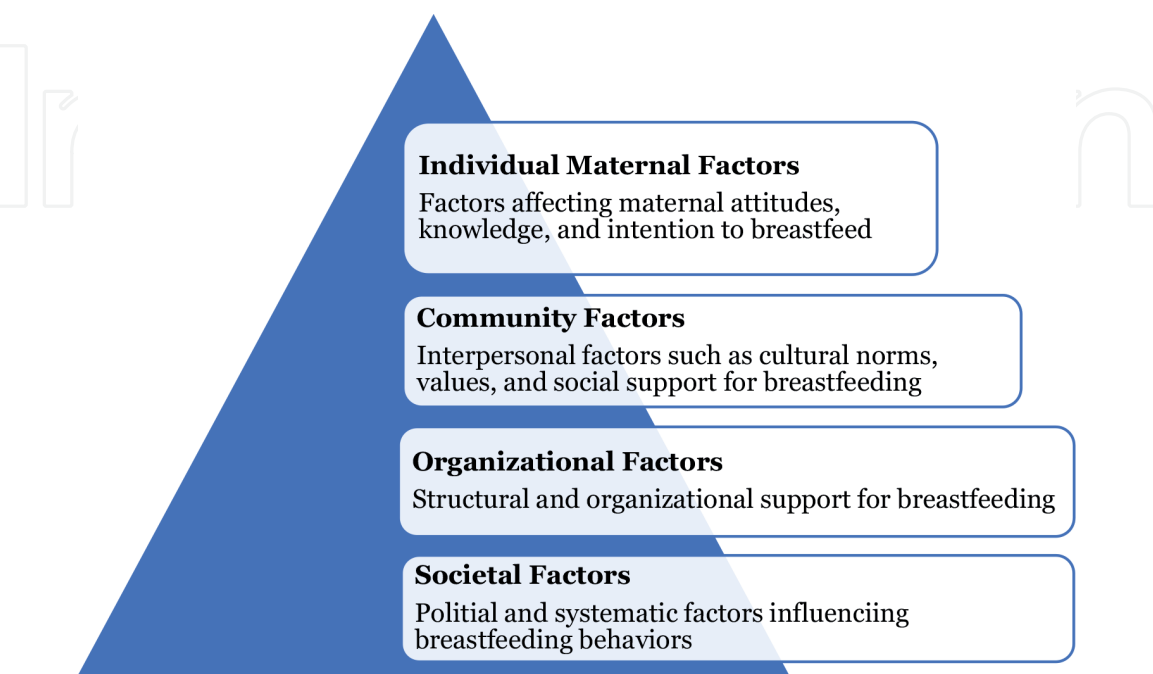


Figure 1.
Social determinants of breastfeeding.

attainment, employment status, annual household income, and Body Mass Index (BMI) [14, 15]. Teenage mothers, specifically those who had a cesarean section, experienced postpartum depression, and/or perceived an inadequate supply of breastmilk reported a shorter duration of exclusive breastfeeding. The ethnicity of mothers also has a significant association with duration of exclusive breastfeeding, which could be related to the traditions of various ethnicities in addition to religious recommendations and views [14, 15]. For example, in the U.S., black women have the lowest breastfeeding initiation and duration rates of all ethnicities [14]. The racial breastfeeding disparity among black women in the U.S. persists due to several cultural misperceptions. For instance, a common cultural belief prevalent in the black community is that the addition of cereal to an infant's bottle will help the infant sleep longer [16]. Furthermore, a mother's pre-existing health issues including obesity, experiencing multiple pregnancy complications, or giving birth to a premature child were also associated with a shorter duration of exclusive breastfeeding [15]. A mother's lack of knowledge regarding breastfeeding, limited breastfeeding guidance, poor family and social support are also associated with a lack or shorter duration of exclusive breastfeeding.

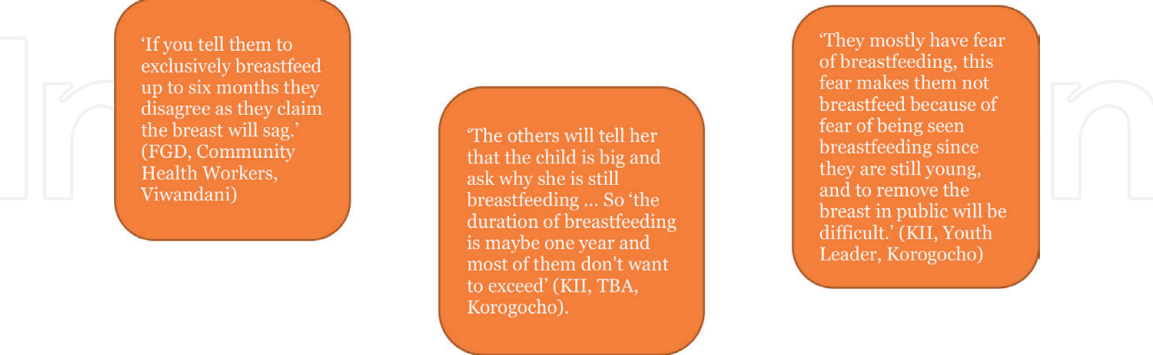


In contrast, the likelihood of breastfeeding is higher among mothers who received a high school diploma, married, and older at childbirth. Married mothers are more likely to breastfeed because they are more likely to receive spousal support that helps overcome breastfeeding challenges. Other factors that significantly improve the duration of exclusive breastfeeding include a singleton pregnancy, breastfeeding friendly birthing facility, natural vaginal delivery, babies' proper weight gain during breastfeeding, and the calmness of the infant [15].

3.2 Community factors (cultural values and norms)

3.2.1 Common misperceptions and attitudes toward breastfeeding

The following are actual quotes from various members of global communities illustrating common misconceptions associated with breastfeeding [17].



Cultural attitudes, lack of public acceptance, and social norms which sexualize breasts may discourage women from breastfeeding in public [10]. Interventions promoting behavior change with regards to breastfeeding should focus on dispelling the negative cultural beliefs and practices that result in suboptimal breastfeeding practices. Infant feeding practices are strongly influenced by family members and spouses who may not be well informed about optimal breastfeeding practices. In some communities, breastfeeding in public is perceived as a culturally unacceptable practice. Therefore, disseminating tailored communication messages addressing prevailing misperceptions that build on the positive aspects of breastfeeding while involving spouses and other family members is also critical in shifting the negative perceptions of breastfeeding.



3.3 Organizational factors

3.3.1 Hospital/provider recommendations

Pediatricians, obstetricians, and other healthcare workers are usually the most trusted and credible source on infant health and nutrition [18]. The practices of maternity hospitals regarding breastfeeding and the recommendation of health providers contribute to a mother’s decision to breastfeed. New mothers may lack the confidence or relevant knowledge regarding breastfeeding and health workers

can play an important role by providing lactation guidance and helping to resolve challenges [1]. Lactation issues that may arise can be addressed through breast-feeding support and counseling. Thus, healthcare workers should be adequately trained to support breastfeeding and help mothers manage common lactation barriers and challenges. The support of healthcare providers enables women to attain the confidence and skills needed to successfully and optimally breastfeed.



However, when health care workers provide expectant and/or new mothers with infant formula promotion materials they mistakably reduce an infant’s likelihood of being breastfeed. Studies show mothers who receive discharge packages contain- ing items useful for breastfeeding are more likely to breastfeed than mothers who receive discharge packages including free formula samples and coupons [18]. The sooner a mother opts out of breastfeeding, the more formula is purchased, which creates an incentive for formula companies to market infant formula to women even before giving birth which is usually when prenatal intention to breast or formula feed is established.

The practices of maternity hospitals regarding breastfeeding as well as the attitudes and information provided by healthcare workers regarding infant feed- ing largely influences infant feeding behaviors. Health providers and maternity facilities that disseminate information regarding the benefits of breastfeeding as well as provide useful breastfeeding resources have the potential to significantly increase breastfeeding prevalence [18]. In 1991, the WHO and UNICEF initiated the Baby-Friendly Hospital Initiative, with the goal of improving maternity facilities to better support and promote breastfeeding. A facility must follow the “Ten Steps to Successful Breastfeeding” (described in **Table 2** below) in order to be designated as a “Baby-friendly” facility [1] (**Table 3**).

1. Fund breastfeeding programs that will build advocacy and garner political support for breastfeeding.
2. Regulate the promotion of infant formula.
3. Enact legislation to protect the rights of breastfeeding women and advocate for paid maternity leave.
4. Provide breastfeeding support and maternity services, including lactation counseling and peer support programs.
5. Improve community support for breastfeeding and integrate the voices of mothers, spouses and their families into breastfeeding advocacy campaigns.
6. Develop systems to monitor and improve breastfeeding programs.
7. Disseminate accurate information on the value and significance of breastfeeding.

Table 2.
The World Health Assembly call to action to support breastfeeding [11].

1. Have a written breastfeeding policy that is communicated to all health care staff.
2. Train all health care staff in the skills necessary to implement this policy.
3. Inform all new mothers about the benefits of exclusive breastfeeding
4. Assist mothers in initiating breastfeeding within a half hour of an infant's birth
5. Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.
6. Do not give infants any food or drink other than breastmilk, unless supplemental food is medically necessary
7. Allow mothers and infants to room-in or stay in the same room at all times during their stay in the facility
8. Encourage breastfeeding on demand.
9. Do not give pacifiers or artificial nipples to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them upon discharge from the hospital or birth center

Table 3.
Ten steps to successful breastfeeding [1].

3.4 Societal factors

3.4.1 Legislation

Policies that protect and support breastfeeding are necessary in order to enable a mother’s decision to initiate and sustain breastfeeding. A majority of the approximate 1 million women who are employed full-time around the world do not benefit from supportive workplace policies regarding breastfeeding [2, 4]. The large prevalence and increase of women working outside the home is often cited for the low rates of breastfeeding indicating the necessity of workplace policies to support working mothers [7]. It is necessary that a woman has the time, space, privacy, and place to express milk in the workplace and in public areas [10]. Legislation in support of a women’s choice to breastfeed can help overcome employment barriers and aid in the return of breastfeeding becoming the societal norm and standard feeding practice [10].



The lack of legislative accommodation in the workplace is a significant predictor of shorter duration of exclusive breastfeeding. Key workplace barriers include the lack of flexibility for milk expression in the work schedule, lack of accommodations such as a nursing room equipped to enable mothers to pump or store breastmilk, and concerns about employer or co-worker support [10]. Additional workplace barriers include the perception that breastfeeding may hinder a mother's job performance, lack of privacy for expressing breast milk or for breastfeeding, and the inability to find a child care facility near the workplace, the high cost of day care, insurance regulations, employer building codes, and other rules that may limit infants and children in the workplace. Studies illustrate that supportive work site environments that provide a private place to express milk and access to a quality breast pump helps women to continue breastfeeding upon return to work [19].

Workplace policies such as paid breaks for expressing milk, the provision of lactation rooms, and public awareness of the breastfeeding policies, have the ability to improve the ability of mothers to sustain breastfeeding while working. Using data from 182 countries, Atabay and colleagues (2015) found the prevalence of exclusive breastfeeding among infants 6 months and younger was nearly 9 percentage points higher in countries with guaranteed paid breastfeeding work breaks compared to those without paid breaks [9]. Another study conducted in 2014, found 136 out of 176 countries, or approximately 71% of the world, provided mothers the right to take paid breaks during the workday in order to provide breastmilk for their child until 6 months following birth while four countries permitted shorter or unpaid breastfeeding breaks. However, 51 countries, the remaining 29% of the world, did not have policies that protected the right of mothers to breastfeed [9].

Further, research illustrates extended maternity leave is associated with higher prevalence of exclusive breastfeeding because women are able to continue breastfeeding without choosing between employment and providing breastmilk for her child. A report by the International Labor Organization found that in most developed countries 75–100% of pay was guaranteed for up to 16 weeks of maternity leave. In over 70 countries, employers are paid through social security systems in order to decrease cost burdens [20]. The United States does not have a universal policy that guarantees paid maternity leave and also has one of the lowest rates of breastfeeding and one of the highest rates of infant mortality among developed countries. A study examining 16 countries found maternity leave policies increase breastfeeding prevalence and prevent one to two neonatal deaths per 2000 live births [21]. In Norway, mothers can take up to 42 weeks of maternity leave with full pay or receive 80% pay for 52 weeks. More than 97% of Norwegian women initiate breastfeeding and 80% continue to do so until at least 3 months; this is largely different from the 79% of American women who initiate breastfeeding and the 41% who still exclusively breastfeed at 3 months [20, 22]. Other interventions implemented in Norway to encourage breastfeeding include the availability of breastfeeding informational material, training health workers to help mothers have positive breastfeeding experiences, and establishing support groups where mother are able collectively share breastfeeding experiences [22]. Norwegian mothers who are employed are entitled to 60- to 90-minute daily breaks and can even leave to breastfeed their infant or have their infant brought to work. Supportive workplace policies are needed in order to improve breastfeeding rates and achieve the maximum benefits breastfeeding can offer [20].

3.4.2 Infant formula marketing

Women entering the labor force and the promotion of large-scale infant formula brands have drastically altered infant feeding practices. The provision of free infant formula samples in maternity facilities and the promotion of breastmilk substitutes by the media and healthcare providers have been shown to reduce breastfeeding prevalence [23]. Research indicates the use of infant formula is twice as high among mothers who have viewed and recalled an infant formula advertisement compared to mothers who had not viewed the advertisements [23].

The media, including marketing and advertisements, influence social norms, which are the shared beliefs regarding the acceptable behaviors within a social group [23]. The media also influences the attitudes toward behaviors and tend to appeal to prevalent values and perceptions in order to generate views and boost profits. For example, in 1997, Tabitha Walrond, a young black mother, was convicted of negligent homicide after her 2-month old child died from malnutrition. The mother was unaware that her breast reduction surgery from years prior would result in an insufficient supply of breastmilk. Years later, Walrond's case was depicted on a popular TV show, "Chicago Hope," which depicted breastfeeding to be potentially fatal. However, the episode portrayed white and middle-class parents (a more "appealing" demographic) who were being criminally investigated following the death of a breastfed child as a result of malnutrition. Rather than illustrating the -Friendly Hospital Initiative as an effort to enable successful breastfeeding the episode suggested the initiative was forcing mothers to breastfeed leading to infant deaths as a result of malnourishment. Alarmingly, the episode was also found to be a ploy by pharmaceutical companies to inform the public of the risks associated with breastfeeding [24].

Infant formula advertisements also appeal to common maternal experiences and concerns often suggesting breastmilk substitutes have ingredients that improve infant intelligence, solve digestive issues, and even help infants sleep through the night. Such claims have not been substantiated by research. However, research has recognized the association of breastfeeding with higher intelligence and reduced risk of gastrointestinal illness among many other health benefits. Digestive issues such as colic are no less prevalent in formula fed than breastfed infants and formula fed infants have not been found to sleep more than breastfed infants. Hunger is one of many reasons infants cry, thusly, infant formula is not associated with a reduced response of infant crying [23].

Further, media is often driven by profits and audience appeals. The external pressures stemming from the aggressive marketing of infant formula and media messages regarding formula can affect a mother's intent to breastfeed and provide the most optimal form of nutrition to her child [25]. The excessive marketing of infant formula and inaccurate portrayal of breastfeeding can undermine the significance of breastfeeding by spreading biased information and diminishing a mother's confidence in her ability to breastfeed. Infant formula is often portrayed to be as good as breastfeeding and a viable solution to a convenient lifestyle for working mothers. The labels displayed on infant formula often include descriptions such as "gold standard" and images depicting happy infants. This type of labeling implies positive health and developmental benefits, while ignoring the potential economic and health consequences associated with formula feeding [23]. However, families of breastfed infants can experience economic advantages in addition to health benefits. Infant formula can cost over \$1500 throughout an infant's first year of life, however, women who breastfeed

avoid the substantial cost burden [10]. Breastfed infants also require less medical attention rendering decreased medical expenses and fewer missed days of work for parents. A study found that a group of formula-fed infants had accrued \$68,000 in health care costs over a 6-month timeframe, while an equal number of breastfeeding babies accrued only \$4000 of similar medical expenses [26]. Breastfeeding is also better for the environment because less waste is produced compared to the waste created by formula products and bottle supplies. The media can play an integral role in disseminating such accurate and positive messages regarding breastfeeding. Media campaigns that are short, tailored to the needs and values of the audience, and displayed through the appropriate channel (e.g., radio, television, social media) that reaches and appeals to the target audience are most successful.

However, formula companies tend to make unsubstantiated claims regarding breastmilk substitutes and use trusted healthcare workers to promote infant formula. The provision of free infant formula samples in maternity facilities and the promotion of breastmilk substitutes by the media and healthcare providers have also been shown to reduce breastfeeding prevalence [23]. Infant formula companies attract new consumers by providing free samples and information on breastmilk substitutes to expectant and new mothers through providers and hospital facilities. Physicians are usually the most undisputed consultant on infant health and nutrition, making them a prime vehicle for promoting infant formula. Formula companies give doctors free or discounted products in exchange for physicians recommending and encouraging their brand of infant formula to expectant and new mothers. Many hospitals provide new mothers with packages containing free infant formula and coupons upon hospital discharge [23].

The marketing tactics employed by formula companies sparked international disapproval based on the assertion formula marketing led to preventable infant deaths. The international opposition prompted the WHO and UNICEF to develop the International Code of Marketing of Breastmilk Substitutes. The Code prohibits the unethical marketing of infant formula as equal to or superior to breastmilk and restricts the promotion of infant formula by medical practices [18]. Distributing accurate, unbiased information regarding the benefits of and importance of breastfeeding through the media as well as healthcare workers is critical to improving breastfeeding prevalence and reducing the dispersion of false information and misperceptions regarding the significance of breastfeeding.

4. Conclusion

Breastfeeding is considered the single most effective solution to preventing deaths of children under the age of five globally [26]. Considering the substantial economic and health savings that breastfeeding alone provides, exclusive breastfeeding should be supported and promoted within families, communities, workplaces, and hospital facilities that provide care to mothers and their infants. Understanding and addressing the dynamic interplay between individual, interpersonal, community, organizational and societal factors, such as policies and legislation that impact breastfeeding rates and the health of infants is key to improving breastfeeding prevalence. Below is an example of evidence-informed approaches used to improve the prevalence of exclusive breastfeeding that can be adapted and applied in both developing and developed countries.

5. Key strategies employed to increase global exclusive breastfeeding prevalence

Increasing Breastfeeding Prevalence in Cambodia

Over the span of a decade, Cambodia’s breastfeeding rates increased from 11% in 2000 to 74% by 2010. Implementing the following recommendations that were informed by evidence in Cambodia can accelerate the progress towards reaching exclusive breastfeeding targets. The key strategies employed in Cambodia to increase breastfeeding rates included:

- Recognizing breastfeeding as a key strategy to child-survival interventions;
- Including breastfeeding promotion in all infant and children initiatives;
- Regulating the marketing of infant and children products;
- Initiating a “Baby-Friendly Child Initiative” involving the Baby-friendly Hospital Initiative and establishing maternal peer support groups and counseling services to support breastfeeding;
- Disseminating breastfeeding information through appropriate channels including popular TV and radio shows as well as launching a national breastfeeding advocacy campaign with high political officials [17].



Conflict of interest


The author declares no conflict of interest.

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