

The Effectiveness of Education Models to Increase Exclusive Breastfeeding Practices: A Scoping Review

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ABSTRACT

Background: Experts recommend exclusive breastfeeding for the first six months of life to achieve optimal growth and health. However, this practice has not yet become widespread, and global growth rates remain relatively low. Various educational breastfeeding models have been widely implemented to help mothers succeed in exclusive breastfeeding. This study aims to explore and summarize the evidence for effective education models to increase exclusive breastfeeding.

Method: A comprehensive search was conducted across three databases (PubMed, ScienceDirect, and Scopus). The PRISMA guidelines were used to select 20 peer-reviewed studies published between January 2016 and December 2025 that met the inclusion criteria. Data were extracted on education models, intervention objectives, and behavioral outcomes.

Result: The results of the study showed that self-disclosure in MSM was influenced by Mothers need access to skilled, practical help and counseling support from trained health workers and counselors to implement optimal breastfeeding practices. A combination of antenatal and postnatal interventions, including home visits and media education such as flipcharts, booklets, videos, educational kits, telephone, SMS text messages, and WeChat support, can also increase exclusive breastfeeding at 6 months. The choice of breastfeeding education model influences the practice of exclusive breastfeeding. Therefore, it is important to consider the available time, resources, and media to support mothers in providing exclusive breastfeeding and achieving their breastfeeding education goals.

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INTRODUCTION

Health experts highly recommend exclusive breastfeeding (EBF). However, this practice has not yet become widespread, and global growth rates remain relatively low. The World Health Organization (WHO) reported in 2021 that only 44% of infants aged 0-6 months worldwide received exclusive breastfeeding during the 2015-2020 period.(1) The global target for exclusive breastfeeding in 2030 is 70%.(2) Meanwhile, in low and middle-income countries, only 37% of children under 6 months of age are exclusively breastfed.(3) In Indonesia, the projected EBF coverage for 2024 is 69.26%.(4) which still falls significantly below the national strategic target of 80%.(5)

Exclusive breastfeeding for the infant's first 6 months of life benefits both the infant and mother and is essential for optimal growth and health because of the extraordinary benefits of breast milk.(6) Breast milk protects children from infection, reduces the risk of

gastrointestinal infections, respiratory disease, and behavioral problems.(7)(8)(9)(10) Breastfeeding also protects against otitis media, likely protects against type 2 diabetes and overweight and obesity, and possibly protects against type 1 diabetes. It has also been found to potentially improve the infant's IQ by 2-3 percentage points.(11) The benefits of postpartum mothers who exclusively breastfeed are faster uterine involution, acts as a natural contraceptive (lactational amenorrhea method), a slimmer body weight, increasing the bond between breastfeeding mother and baby,(12) and reducing a mother's likelihood of breast and ovarian cancers.(11)

Past studies have shown that exclusive breastfeeding for infants aged 0-6 months can be achieved through various promotional and intervention efforts.(13) The World Health Organization (WHO) launched the Ten Steps to Successful Breastfeeding (Ten Steps) framework in 1989, which was later incorporated into UNICEF's Baby-Friendly Hospital Initiative (BFHI) in 1991. In line with

this, the Indonesian government implemented the Ten Steps to Successful Breastfeeding policy. Although no Indonesian hospitals are currently BFHI-accredited, the WHO/UNICEF Ten Steps (updated in 2018) have been adopted in Indonesia's national regulation of maternity facilities since 2012.(14) However, most BFHI/Ten Steps implementation domains were categorized as complex, and the policy, organizational, and community settings for the intervention overlapped across most domains. For example, implementing Steps 3 (antenatal education) and 10 (breastfeeding support after discharge) would require both continuity of care and implementation across the health system.(15) Nevertheless, breastfeeding promotion programs and policies may be able to save the lives of millions of infants and children, particularly in resource-limited areas where proper child nutrition and pediatric health services are not easily accessible.(16) There is also sufficient evidence to suggest that breastfeeding interventions are essential to increase the duration and exclusivity of breastfeeding.

As various factors influence breastfeeding practices, interventions that promote breastfeeding typically address individual, social, political, and financial aspects.(17) Various educational breastfeeding models have been widely implemented to help mothers succeed in exclusive breastfeeding. Health professionals with training in breastfeeding education, including midwives, nurses, and doctors, and trained volunteers, can deliver education sessions and provide counselling and peer support to increase the number of women who start breastfeeding their infants. However, more high-quality research is needed to understand which interventions are likely to be effective in different population groups. More studies are needed in low- and middle-income countries to determine which strategies will encourage women to start exclusive breastfeeding after giving birth.(18)

Scoping reviews are a useful tool in the emerging field of evidence synthesis.(19) Therefore, this scoping review was conducted to explore and summarize the evidence regarding breastfeeding educational intervention models aimed at improving exclusive breastfeeding practices. This study analyzes studies published between 2016 and December 2025 to identify and synthesize effective intervention characteristics that promote EBF. The target population for breastfeeding education includes pregnant women and those in the postpartum period. This scoping review aims to identify which intervention models can improve exclusive breastfeeding practices. Key areas of focus include when mothers should receive education on exclusive breastfeeding, who can deliver this education, how the education should be delivered, the frequency of

sessions, the necessary educational materials and media, and the theoretical basis for delivering breastfeeding education.

METHOD

This systematic scoping review examined the characteristics, delivery mechanisms, and outcomes of breastfeeding education interventions designed to increase exclusive breastfeeding. The review aimed to explore and synthesize evidence from primary research that utilized various breastfeeding education intervention models to evaluate their effects on exclusive breastfeeding behavior. Key characteristics of breastfeeding education interventions were identified following a rigorous process of literature screening, data extraction, and critical quality appraisal. Although this is not a meta-analysis, this review adhered to the PRISMA 2020 guidelines for the selection process.

Study design

This systematic scoping review aimed to evaluate the role of breastfeeding education interventions in increasing exclusive breastfeeding. The primary objective was to assess how these interventions affect key individual-level outcomes, including behaviors related to exclusive breastfeeding. To ensure methodological rigor and comparability across studies, this review exclusively included experimental studies, including randomized controlled trials (RCTs) and quasi-experimental designs. Studies that employed observational, qualitative, or mixed-methods approaches were excluded. Notably, this review did not employ meta-analytic techniques, but it synthesized experimental evidence to identify mechanisms and outcomes associated with breastfeeding education intervention models.

Search strategy

The search strategy followed a structured process consisting of the steps below:

1. Core keywords were generated based on research questions and insights from previous relevant studies.
2. Synonyms, related terms, and spelling variations were identified systematically to ensure comprehensiveness.
3. The Boolean operator OR was used to connect synonymous terms within each concept.
4. Different conceptual groups were combined using the Boolean operator AND to construct the final search string.

Table 1. Search input

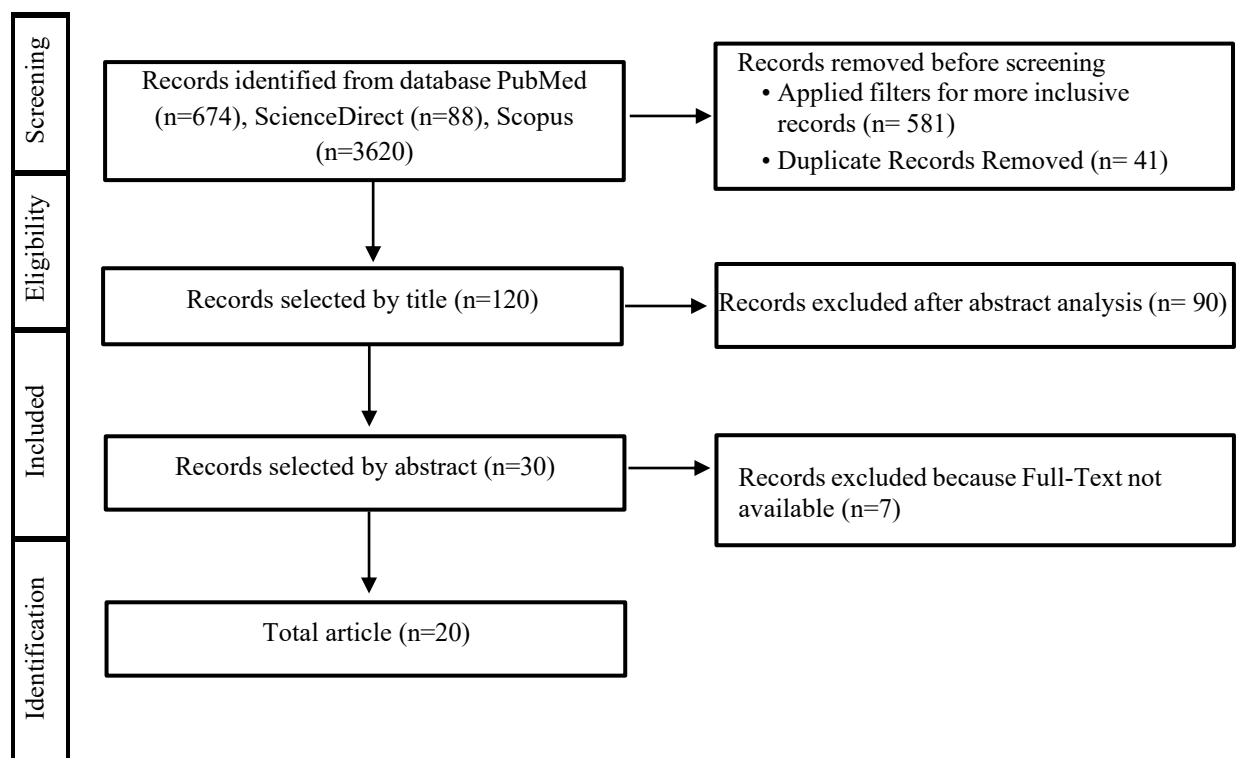
Database	Search String
PubMed	("breastfeeding" OR "lactation") AND ("education model" OR "intervention") AND ("exclusive breastfeeding") NOT (review)
ScienceDirect	("intervention for exclusive breastfeeding") AND ("model" OR "education") NOT (review)
Scopus	("education" OR "intervention") AND (breastfeeding OR lactation) AND ("exclusive breastfeeding") NOT (review)

Database selection

A literature search was conducted across three prominent academic databases: PubMed, ScienceDirect, and Scopus to ensure a comprehensive and replicable review process. These databases were selected for their extensive coverage of interdisciplinary health, medical, and social science literature relevant to breastfeeding education interventions. The search period was restricted to publications from 2016 to 2025 to reflect the most recent advancements in breastfeeding education models. The final database search was completed on 31 December 2025.

Search strings were developed by combining relevant keywords using Boolean operators (AND, OR, and NOT) to maximize sensitivity while maintaining specificity. Each search string was tailored to the syntax of

the respective databases, and review articles (including systematic scoping reviews, scoping reviews, and meta-analyses) were excluded to focus solely on the original intervention studies. The refined queries aimed to capture studies addressing breastfeeding education interventions to increase exclusive breastfeeding. Table 1 presents the final search strings and the number of articles retrieved per database after applying the initial filters and exclusion criteria. A comprehensive search strategy was developed using controlled vocabularies and synonyms (e.g., breastfeeding, lactation, education model, intervention, exclusive breastfeeding). The full search strings, synonym generation, and pre-search validation process are provided in Supplementary File Table 1 to ensure transparency and reproducibility.

**Figure 1.** Sampling

Criteria for inclusion and exclusion

The following inclusion criteria were used in this study: published between 2016 and 2025 to ensure relevance to current breastfeeding education interventions; experimental studies with clearly described interventions and measurable outcomes, where outcomes could be assessed using objective indicators (e.g., duration of successful EBF, measured in weeks or months up to the 6-month postpartum mark); the interventions explicitly aimed to promote exclusive breastfeeding, such as improving knowledge, attitudes, motivation, self-efficacy, and exclusive breastfeeding practices; utilized an educational intervention model (e.g., when mothers should receive education on exclusive breastfeeding, who can deliver this education, how the education should be delivered, the frequency of sessions, the necessary educational materials and media, and the theoretical basis for delivering breastfeeding education); the intervention tools or platforms were accessible to the general population or specific communities (not limited to clinical or hospital-based interventions); and full-text articles were available in English and retrieved through academic databases, as English remains the dominant language of high-impact scientific publications. Although this decision may introduce a risk of language bias, it was deemed necessary to ensure consistency, accessibility, and feasibility of appraisal within the research team's expertise.

Studies were excluded if they were systematic scoping reviews, scoping reviews, meta-analyses, protocols, editorials, or commentaries; they did not contain empirical data or measurable outcomes related to changes in exclusive breastfeeding behavior; the intervention did not include any exclusive breastfeeding behavior component, or only addressed education without implementing it in the intervention; the primary focus was on existing breastfeeding management rather than improving exclusive breastfeeding practices; the breastfeeding education model used was not described in sufficient detail to assess its effectiveness or relevance; and the study population was not clearly defined or the study design did not provide adequate methodological rigor (e.g., unclear sample size, no control/comparison group, or unvalidated outcomes).

Study selection

The study selection process consisted of three stages. First, duplicate articles were identified and removed using Mendeley. Then, titles and abstracts were evaluated for relevance using predefined inclusion and exclusion criteria. Subsequently, abstract screening was performed, and studies that focused on exclusive breastfeeding practices or breastfeeding education interventions, were

peer-reviewed, and were published in English were included. The exclusion criteria were systematic scoping reviews, meta-analyses, general reviews, protocols, or studies not directly related to exclusive breastfeeding or breastfeeding education model interventions. Any disagreements between the reviewers were resolved through discussion and consensus. A third reviewer was consulted when necessary.

This study identified 4,382 articles from three source databases. After duplicates were removed, 581 articles were screened. Title screening subsequently reduced the pool to 120 articles. The abstract screening further narrowed the selection to 30 articles. After a final assessment of availability, 20 articles were retained for full review (Fig. 1).

In this review, the classification of exclusive breastfeeding practices follows the WHO's definition. Exclusive breastfeeding is defined by the WHO as feeding the infant only mother's milk, with no other food or drink, including water, but allowing oral rehydration solutions, vitamins, minerals, or other medicines when needed.(20)

Data extraction

The data extraction process was conducted independently by each author using Atlas.TI 9. Various components of the studies were extracted and analyzed. The data chart included details such as author name, publication year, study design, country, objectives, sample size, population, types of model education, setting, intervention duration, content, outcome measures, and facilitators and barriers to exclusive breastfeeding. All authors validated the extracted data, and any discrepancies were addressed through discussion to ensure the accuracy and comprehensiveness of the information.

Data analysis

After the final selection of eligible articles, a structured analysis was conducted to synthesize findings relevant to the research questions. The analysis comprised the following stages:

a . Categorization

The included studies were systematically categorized based on several key attributes: study origin, research objective, assessment methods, target population, intervention approach, and breastfeeding education model used. Additionally, each study was coded according to the targeted intervention outcome (exclusive breastfeeding practice) and the magnitude of change reported (percentage increases or mean differences).

b. Thematic analysis

A thematic analysis structured mapping process was employed to identify educational breastfeeding models associated with specific intervention domains. Studies were grouped according to the primary outcome targeted (exclusive breastfeeding practice) and breastfeeding educational intervention model, such as when mothers should receive education on exclusive breastfeeding, who can deliver this education, how the education should be delivered, the frequency of sessions, the necessary educational materials and media, and the theoretical basis for delivering breastfeeding education, were analyzed for their prevalence and association with these outcomes.

c. Comparative analysis

Comparative analyses were conducted across studies with similar outcomes to identify recurring patterns. Interventions that effectively improved behavior were contrasted with those targeting knowledge or attitudinal changes to assess the consistency of education mechanisms across different domains. This approach facilitated the identification of domain-specific strategies and potential transferability of intervention models.

d. Interpretive synthesis

The findings were further synthesized to explore the mechanisms underlying how certain educational patterns contribute to behavioral change. Where available,

the theoretical justifications or explanatory frameworks provided by the original studies were examined to contextualize the observed outcomes. By following this rigorous and systematic process, this review offers a comprehensive overview of how breastfeeding education is employed in behavior change interventions, emphasizing the mechanisms of engagement and observed outcomes in improving the practice of exclusive breastfeeding.

RESULT AND DISCUSSION

Characteristics of the studies

A total of 20 articles were deemed eligible for full review after applying the inclusion and exclusion criteria and screening abstracts. Two authors independently conducted the review process for all selected studies to ensure consistency in quality assessment and research design standards. Any discrepancies in interpretation were resolved by discussion and consensus. The articles were subsequently organized according to their characteristics and their thematic relevance to the research objectives (Table 2).

This systematic scoping review included 20 studies conducted across diverse geographical settings: China, Ethiopia, India, Malaysia, Spain, Saudi Arabia, Lebanon, Croatia, Brazil, Myanmar, Taiwan, Bangladesh, and Nigeria. Of the 20 studies included, 17 were randomized controlled trials (RCTs), and 3 were quasi-experimental studies (Table 2).

Table 2. Characteristics of the studies

Authors	Study origin	Assessment method	Objective	Intervention target
Gu, 2016(21)	China	RCT	Investigate the effects of a Theory of Planned Behavior (TPB) based intervention program on exclusive breastfeeding.	Primiparous women, until six months postpartum
Abdulahi, 2021(22)	Ethiopia	RCT	Evaluate the effects of a breastfeeding education and support intervention (BFESI), early initiation (EI), and exclusive breastfeeding (EBF) practices.	Pregnant women in their second or third trimester until five months postpartum
Gupta, 2019(23)	India	RCT	Evaluate the effect of breastfeeding counseling and breastfeeding support by trained counselors during the antenatal period at the health facility and the postnatal period at home on breastfeeding practices during the first six months of life.	Pregnant women from 18 to 22 weeks of pregnancy, until six months postpartum
Admasu, 2022(24)	Ethiopia	RCT	Determine the effect of maternal nutrition education on early initiation and exclusive breastfeeding practice.	Pregnant women from 26 to 32 weeks of pregnancy, until six months postpartum
Che' Muda, 2019(25)	Malaysia	Quasi-experimental	Determine the association of postnatal breastfeeding education with knowledge, attitude, and exclusive breastfeeding practice at six months after childbirth.	Postpartum women, until six months postpartum
Santamaría-Martín, 2022(26)	Spain	RCT	Evaluate the effects of the PROLACT group educational intervention for increasing the proportion of mother-child dyads with exclusive breastfeeding at 6 months.	Postpartum women, until six months postpartum

Alahmed, 2024(27)	Saudi Arabia	Quasi-experimental	Evaluate the effects of Web-Based Breastfeeding Educational Resource (WEBBER) on exclusive breastfeeding at one month after birth.	Primiparous women, until one month postpartum
Nabulsi, 2019(28)	Lebanon	RCT	Investigate the effect of a multi-component breastfeeding support intervention delivered in hospital and home settings on six months of exclusive breastfeeding (EBF).	Pregnant women the first or second trimester, until six months postpartum
Puharić, 2020(29)	Croatia	RCT	Investigate the effect of the combined intervention on exclusive breastfeeding.	Pregnant women from around 20 to 32 weeks, until six months postpartum
Dodou, 2023(30)	Brazil	RCT	Assess the effect of a long-term educational intervention by telephone on breastfeeding duration rates.	Postpartum women, until 180 days postpartum
Hmone, 2023(31)	Myanmar	RCT	Evaluate the impact of mobile phone text messages on breastfeeding practices.	Pregnant women from around 28 to 34 weeks, until six months postpartum
Rodríguez-Gallego, 2024(32)	Spain	RCT	Evaluate the effects of supporting breastfeeding during the postpartum period in promoting exclusive breastfeeding.	Postpartum women, until six months postpartum
Gilano, 2025(33)	Ethiopia	RCT	Evaluate the impact of mobile health (mHealth) interventions on exclusive breastfeeding (EBF).	Pregnant women from around 24 to 28 weeks, until six months postpartum
Tseng, 2020(34)	Taiwan	RCT	Develop an integrated breastfeeding education program grounded in self-efficacy theory, and evaluate the intervention's effect.	Pregnant women from around 12 to 32 weeks, until six months postpartum
Ara, 2018(35)	Bangladesh	RCT	Evaluate the impact of peer counselling on early initiation of breastfeeding (EIBF) and exclusive breastfeeding (EBF).	Pregnant women in their third trimester, until six months postpartum
Billah, 2022(36)	Bangladesh	RCT	Assess the effect of electronic job aid-supported nutrition counselling and practical demonstration on EBF.	Pregnant women in their third trimester, until five months postpartum
Beyene, 2025(37)	Ethiopia	RCT	Evaluate the impact of immediate postpartum counseling on early initiation of breastfeeding rates and exclusive breastfeeding.	Postpartum women, until six months postpartum
Ogundairo, 2024(38)	Nigeria	Quasi-experimental	Assess the effect of a drama intervention on BFSE, initiation, and EBF of pregnant women.	Pregnant women in their third postpartum
Wu, 2020(39)	China	RCT	Assess the effect of WeChat on improving breastfeeding practices.	Pregnant women from around 11 to 37 weeks, until six months postpartum
Souza, 2020(40)	Brazil	RCT	Assess the effect of a breastfeeding educational intervention on the counseling provided to postpartum women.	Postpartum women, until 60 days postpartum

Synthesis of the studies

The 20 studies analyzed reported the positive effect of breastfeeding education interventions on exclusive breastfeeding practices (Table 3). The results showed that exclusive breastfeeding was achieved in 42.0% of the sample with individual instruction and group education ,(21) 68.3% of the sample provided breastfeeding education and support intervention (BFESI) by breastfeeding peer supporters with home visits (22), 88.10% of the sample with prenatal counseling at the hospital and postpartum home visits (23), 74.1% of the sample who received nutritional education from the prenatal to postnatal periods,(24) and in 44.1% of the sample provided with postnatal breastfeeding education

through home visits.(25) Moreover, interventions such as breastfeeding workshops (26), Web-Based Breastfeeding Educational Resources (WEBBER),(27) and combining education with peers and professional breastfeeding support (28) were proven to be effective in supporting exclusive breastfeeding at 22.4%, 66%, and 35.2%, respectively. Combined antenatal and postnatal interventions, involving proactive telephone support and a breastfeeding booklet, also enabled 64% of the sample to achieve exclusive breastfeeding.(29) The studies also reported that exclusive breastfeeding was achieved in 39.5% of the sample that received telephone-centered motivational interviews (30) and 66.3% of the sample that received SMS text messages.(31) Other interventions, such

as breastfeeding peer support groups through social networks via Facebook™ and/or WhatsApp™, were found to be 63.4% effective in supporting exclusive breastfeeding.(32) Similarly, mHealth support interventions that included breastfeeding information and reminders supported 73% of the sample to achieve exclusive breastfeeding.(33) Additionally, breastfeeding classes, mindfulness trainings, and engaging fathers enabled 94% of the sample to achieve exclusive breastfeeding.(34) Interventions such as peer counselling from female volunteers (73%),(35) breastfeeding counselling and practical demonstration using an electronic job aid (83%)(36), postnatal breastfeeding counselling (43.2%)(37), drama-based interventions (43.2%)(38), WeChat through smartphones (46.3%)(39), breastfeeding education with Educational Kits (*Kit Educativo para Aleitamento Materno*, KEAM) (86.5%) also showed positive effects on exclusive breastfeeding.(40)

Intervention models and their effectiveness

The 20 included studies (Table 3) has shown that the practice of exclusive breastfeeding can be improved through breastfeeding workshops (26), breastfeeding peer support,(22) prenatal counseling at the hospital and postpartum home visits,(23) home visit postnatal breastfeeding education (22–25), combining education with peers and professional breastfeeding support,(28) a combined antenatal and postnatal intervention,(29) motivational interviews,(30) breastfeeding support groups and peer support groups in social networks via Facebook™ and/or WhatsApp™,(32) telephone counselling,(21) SMS text messages,(31) Mobile health support (mHealth),(33), WeChat,(39) Web-Based Breastfeeding Educational Resources,(27) drama-based interventions (38), and breastfeeding education with Educational Kits (*Kit Educativo para Aleitamento Materno*, KEAM). (40)

The studies showed that breastfeeding education can be conducted during the prenatal and postnatal periods, and with varying frequencies. Some were conducted during the last trimester of pregnancy.(22) the first week after childbirth, (25) on the 1st or 2nd, 6th or 7th and 15th day after birth and thereafter monthly until the infant is five months old. (22) or on the 3rd, 7th, 15th day and 2nd, 3rd, 4th, 5th and 6th months after birth.(23) Other studies provided breastfeeding education during 10 scheduled visits between the third trimester and 6 months after delivery, comprising three sessions in the last trimester of pregnancy, three in the first month after delivery (one within 48 hours of delivery, one 10–14 days after, and one 24–28 days after), and four in the second to sixth months.(35)

The breastfeeding education materials typically include the advantages of breastfeeding for the infant and the mother, the duration of breastfeeding, colostrum, breastfeeding elements, breast anatomy, breastfeeding physiology, effective feeding, problems with breastfeeding, breast milk expression, breast milk storage, and complementary feeding. If the mothers had problems with breastfeeding, practical demonstrations and training were provided with demonstrations of the correct latching position and breastmilk expression technique, techniques for preparing for work and management of breastmilk (breastmilk expression, storing breastmilk), the lactation amenorrhea method, and other family planning options. (22–27) Some studies also focused on theories that support exclusive breastfeeding, such as the Theory of Planned Behavior (TPB),(21) the Health Belief Model,(31) and Self-efficacy theory-based breastfeeding.(34)

Table 3. Effect of breastfeeding education models

Authors	Model education	Intervention approach	Intervention output	Intervention outcomes
Gu, 2016(21)	Individual instruction and group education at hospital and - continued telephone counselling at home	Theory of Planned Behavior (TPB)-based intervention program by three nurses who had been trained: - First three days postpartum (at hospital): Individual instruction and support, group education, watching a video for information about EBF, practice for breastfeeding position and latching-on, discussion - After delivery to 6 weeks (at home): Telephone counselling to follow up on BF practice and solve any EBF problems - At 6 weeks postpartum/ regular check-up (at hospital): discussion, re-informed about EBF.	Behavior	Intervention group (IG) versus control group (CG): - Exclusive breastfeeding five months: 42.0% vs 10.2%

		- During 6 weeks to 3 months (at home): Individual EBF advice by telephone support - During 3 to 6 months postpartum (at home): Telephone counselling for preparing for returning to work and management of expressed breast milk		
Abdulahi, 2021(22)	Breastfeeding education and support intervention (BFESI) by breastfeeding peer supporters, with home visit	Breastfeeding Education and Support Intervention (BFESI) by Women's Development Army (WDA) leaders who are trained breastfeeding peer supporters: - Home visits (antenatal visits: during the 8th and 9th month), peer-supporters encouraged delivery at the nearby health center, and emphasized the importance of initiating breastfeeding - Visits after delivery were scheduled on the 1st or 2nd, 6th or 7th, and 15th day, and thereafter monthly until the infant was five months old.	Behavior, knowledge, attitude, child morbidity.	Intervention group (IG) versus control group (CG): - Exclusive breast feeding five months: 68.3% vs 54.8%; - Good knowledge about breastfeeding (69.1 vs 65.1) - Positive attitude towards breastfeeding (75.5 vs 43.8) - Infant Growth and Nutritional Status: no difference between IG vs CG - Infant Morbidity: no difference between IG vs CG
Gupta, 2019 (23)	Prenatal counseling at the hospital and postpartum home visits	- Breastfeeding counseling by two nutritionists who had been trained: - 2 antenatal visits (counseling sessions) in the hospital - 8 postpartum home visits for counseling were scheduled: on the 3rd, 7th, 15th day and 2nd, 3rd, 4th, 5th and 6th months after birth	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding six months: 88.10% vs 50.0%
Admasu, 2022 (24)	Nutrition education prenatal and postnatal	Nutrition education by a health professional (BSc Nurse) was given once a week for 3 weeks in the local language, with posters, manuals, and discussion. Additionally, one educational session in the third postpartum month.	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding six months: 74.1% vs 60.6 %
Che' Muda, 2019(25)	Home visit postnatal breastfeeding education	- Home visit and interpersonal face-to-face health education talk using the postnatal breastfeeding education flipchart and breastfeeding diary. - Home visit was conducted one week after childbirth, health education session lasted roughly 30 minutes.	Behavior, Knowledge, Attitude	Intervention group (IG) versus control group (CG): - Exclusive breastfeeding six months: 44.1% vs 26.3%, $p = 0.046$ - Knowledge: 31.22 vs 30.11 - Attitude: 34.71 vs 18.56
Santamaría-Martín, 2022(26)	Breastfeeding workshop	- The PROLACT intervention is an educational group intervention based on 2-hour breastfeeding workshops over 6 weekly sessions.	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding six months: 22.4% vs 8.8%
Alahmed, 2024(27)	Web-Based Breastfeeding Educational Resource (WEBBER)	- The website contains evidence-based information about breastfeeding, with two barcodes (linked to the website and linked to a video demonstrating how to navigate the website) to use the website during the routine breastfeeding educational sessions in the hospital. - WEBBER's content, images, and layout adapt to Saudi Arabian culture and linguistics. For example, cartoon images featuring modestly dressed characters align with Saudi culture.	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding one months: 66% vs 26%
Nabulsi, 2019(28)	Combining education with peer and	- Antenatal breastfeeding education, followed by peer and professional support on the first day postpartum in the hospital, and continued	Behavior	Intervention group (IG) versus control group (CG):

	professional breastfeeding support	- with home visits on days three, seven, and fifteen postpartum, and then monthly for six months. - Lactation support was provided mainly face-to-face, but could also happen via telephone. - Media education given through a booklet.		Exclusive breastfeeding six months: 35.2% vs 28.1%
Puharić, 2020(29)	Combined antenatal and postnatal intervention, involving proactive telephone support and a breastfeeding booklet	- Intervention group (IG): received a breastfeeding booklet and a general pregnancy booklet, followed by four proactive telephone calls – one in pregnancy and three after delivery, at 2, 6, and 10 weeks. - Active control group (ACG) – received a general pregnancy booklet, followed by four proactive telephone calls – one in pregnancy and three after delivery, at 2, 6 and 10 weeks. - Standard care group (SCG) – received standard care and did not receive any written materials or phone calls before or after birth.	Behavior	Intervention group (IG) versus Active control group (ACG) versus Standard care group (SCG): Exclusive breastfeeding six months: IG vs ACG vs SCG= 64% vs 3% vs 16%
Dodou, 2023(30)	Telephone centered, motivational interview	- Breastfeeding education was delivered through telephone- centered methods based on the principles of self-efficacy and with a motivational interview approach given at 7, 30, 90 and 150 days postpartum. - Motivational interview with the “evoke-inform-evoke” strategy.	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding 180 days: 39.5% vs 16.3%
Hmone, 2023(31)	SMS text messages	- Educational material was sent through SMS text messages supporting appropriate breastfeeding and timely complementary feeding. - Messages were tailored to the stage of gestation and the infant’s age in weeks. - Conducted over 38 weeks, from recruitment to 6 months postpartum, received breastfeeding promotional text messages 3 times/week, sent messages in the evening - Each text message had approximately 160 Myanmar characters, using the Zaw Gyifont, the most used Myanmar font.	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding six months: IG vs CG= 66.3% vs 41.9%
Rodríguez-Gallego, 2024(32)	Meeting in the breastfeeding, support group, peer support in the group, social network via Facebook™ and/or WhatsApp™	- Attend monthly two-hour in-person and/or virtual group sessions called breastfeeding support groups, where a midwife acts as leader and moderator. - Each month, women are offered support by an organized and proactive professional. In addition to the monthly meetings, participants can interact with each other, other breastfeeding women, and referral midwives through Facebook™ and/or WhatsApp™ groups created specifically for this purpose.	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding six months: IG vs CG= 63.4% vs 47.9%
Gilano, 2025(33)	mHealth support, including breastfeeding information and reminders	- Health information messages were sent biweekly (every two weeks) for 9 months without interruption. Reminder messages were sent one day before each appointment. - The app was set to deliver messages at 7:00 AM local time.	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding six months: IG vs CG= 73% vs 51%
Tseng, 2020(34)	Breastfeeding class, mindfulness training, engage fathers	- The program was comprised of three 2.5-hour sessions, which were delivered once each week at 34-, 35-, and 36- weeks’ gestation. Each session included 4–5 couples. - The first session covered breastfeeding theory, simulated models, and engaging fathers. - The second session of the breastfeeding program involved two parts: 1) mindfulness training, and 2) the breastfeeding mother and	Behavior	Intervention group (IG) versus control group (CG): Exclusive breastfeeding six months: IG vs CG= 94% vs. 76.7%

			father/partner sharing their breastfeeding expectations.		
		-	The third session was a 2.5-hour breastfeeding simulation class.		
Ara, 2018(35)	Peer counselling from female volunteers	-	10 scheduled visits between the third trimester and 6 months after delivery, three in the last trimester of pregnancy.	Behavior	Intervention group (IG) versus control group (CG):
		-	Fortnightly group meetings were organized with the participation of pregnant women, lactating mothers, and their family members.		- Early Initiation of Breastfeeding (EIBF): IC vs CG= 89.1% vs. 77.4%
					- Exclusive breastfeeding six months: IG vs CG= 73% vs. 27%
Billah, 2022(36)	Breastfeeding counselling and practical demonstration using an electronic job aid	-	Counselling during pregnancy, at 7 months of gestation and then at 8–9 months, postpartum period counselling within 2 weeks of a live birth, followed by monthly visits for up to 6 months of the infant's age.	Behavior	Exclusive breastfeeding five months: IG vs CG= 83% vs. 68%
		-	Counselling with an Android application incorporating breastfeeding counselling modules, including images and short texts to aid, compatible with running online and offline.		
Beyene, 2025(37)	Breastfeeding counselling postnatal	-	Four trained senior midwives (counselors) trained on the package of immediate postnatal exclusive breastfeeding counseling and were supported in providing the counseling to women. The counseling given for intervention was based on the individual mother's circumstances.	Behavior	- Early initiation of breastfeeding: IG vs CG: 54.1% vs. 45.9%,
					- Exclusive breastfeeding six months: IG vs CG= 43.2% vs. 22.9%
Ogundairo, 2024(38)	A drama-based intervention	-	The recorded 80-minute four-episode drama-based intervention was aired over two weeks in the open village squares.	Behavior	- Exclusive breastfeeding six months: IG vs CG= 43.2% vs. 22.9%
Wu, 2020(39)	WeChat through smartphone	-	Breastfeeding knowledge and promotion information is provided weekly through a WeChat official account from the third month of pregnancy to 6 months postpartum.	Behavior	Exclusive breastfeeding 4-5 months: IG vs CG= 46.3% vs. 42.2%
		-	There was a special module called Ke Xue Wei Yang (Optimal Feeding) within the WeChat Official. There were 4 components: feeding messages, a feeding knowledge competition, a baby growth chart, and an online forum.		
Souza, 2020(40)	Breastfeeding educational with Educational Kit (<i>Kit Educativo para Aleitamento Materno</i> , KEAM).	-	<i>Kit Educativo em Aleitamento Materno</i> (KEAM) included: (1) Didactic doll; (2) Illustrative card on possible BF positions; (3) Illustrative card on correct baby's latch-on; (4) Didactic breast; (5) Illustrative card on how to do a circular massage and BM extraction; (6) Didactic material on the capacity of the baby's stomach; (7) Protective breast shells; (8) <i>Latch Assist</i> and <i>Niplette</i> ; (9) Breast gel protector; (10) Illustrative card on 100% purified lanolin; (11) Illustrative card on the importance of exposing the breasts to a sunbath; (12) Illustrative card on manual and mechanical extraction of breastmilk (BM); (13) Container for storing BM; (14) Cup for the provision of BM; (15) Illustrative card on how to store, prepare, and provide BM in the cup (if necessary and after the mother's return to work).	Behavior	Exclusive 60 days: IG vs CG= 86.5% vs. 44.2%

Discussion

The analysis showed that access to skilled practical support and counseling from trained health workers and counsellors is essential for optimal breastfeeding.(23) Breastfeeding educators can help mothers to breastfeed through providing hands-on assistance and practical guidance within 24 hours postpartum and check mothers' breastfeeding skills level before they discharge.(41) Breastfeeding education interventions can be conducted by trained personnel such as midwives,(32) nurses (21–24), (29)(30), nutritionists,(23) peer supporters,(22) and peer counselling from locally recruited and trained community female volunteers.(35) The results of this review align with those of systematic reviews, which found that health workers' competence is essential for providing breastfeeding education. Competence is a holistic term referring to a person's ability to do something successfully and achieve the desired result. Health professionals' competence can be based on interests and experiences influenced by motivation and attitudes, which include, in addition to the knowledge and skills required by the job, the individual's personality, attitudes, and values.(42)

The review also found that delivering a combined antenatal and postnatal intervention, involving proactive telephone support, can increase exclusive breastfeeding at 6 months.(29) Another study conducted 10 scheduled visits between the third trimester and 6 months after delivery: three in the last trimester of pregnancy, three in the first month after delivery (one within 48 hours of delivery, one 10–14 days after, and one 24–28 days after), and four visits in the second to sixth months, to effectively improve exclusive breastfeeding. Counselors were free to make and receive additional contact with the intervention group if the mothers required additional support. Counseling was given at home, and other family members were included. The duration of each visit was typically 20–40 min. (35) Such approaches increased the mothers' ability to provide exclusive breastfeeding.

Furthermore, the use of different media in breastfeeding education can improve exclusive breastfeeding practices for up to six months after childbirth.

Moreover, the intervention based on the Self-Efficacy Theory yielded the highest success rates for exclusive breastfeeding up to 6 months, as it empowers mothers through vicarious experiences and verbal persuasion. The program consisted of three 2.5-hour sessions, delivered once each week at 34-, 35-, and 36-weeks' gestation. Each session included 4–5 couples. The first session covered the benefits of breastfeeding, breast changes during lactation, baby positioning, latch-on skills,

Breastfeeding education can incorporate modules featuring postnatal breastfeeding education flipcharts and breastfeeding diary pamphlets for self-monitoring. The pamphlet would demonstrate the breastfeeding journey from birth to six months. The important milestones in breastfeeding are illustrated in the diary, along with a checklist of breastfeeding practices and notes on breastfeeding education, including positioning and latching, methods of expression, and storing breastmilk.(25)

Another form of educational breastfeeding media is the Educational Kit (Kit Educativo para Aleitamento Materno, KEAM). This educational kit uses the soft-hard technology, which relates to well-structured knowledge, such as work processes or specific fields of knowledge. KEAM, with its soft-hard technology, provides verbal, visual, and tactile stimulation in a dialogical, intersubjective context that positively influences learning by creating practical experiences with breastfeeding. This educational approach is known to be related to the evolution of the human mind and of knowledge about certain situations of social life, to the centrality of the individual in distinguishing objects in long-term memory, and to reflexive positioning about one's own experienced reality.(40)

Next, this review found that regarding digital interventions, the choice of digital features influenced both the magnitude and the type of health outcomes achieved. Therefore, it is important to align platform design with the intended behavioral goals.(43) Technology can be used as a health education strategy to strengthen in breastfeeding support, such as through the Web-Based Breastfeeding Educational Resource (WEBBER),(27) mHealth support,(33) social network via Facebook™ and/or WhatsApp™,(32) practical demonstration using an electronic job aid,(36) telephone interventions,(30) SMS text messages,(31) drama-based intervention,(38) and booklet.(29) A drama-based intervention incorporated the four drivers of BFSE, such as personal accomplishment, verbal persuasion, vicarious experience and physiological affection, has also proved to increase the breastfeeding self-efficacy.(38)

and infant cues related to feeding. The second session of the breastfeeding program involved two parts: 1) mindfulness training, and 2) the breastfeeding mother and father/partner sharing their breastfeeding expectations. The third session was a 2.5-hour breastfeeding simulation class using a weighted, lifelike baby and recorded infant crying sounds. By adopting breastfeeding simulation education, participants had hands-on experience (performance accomplishment), observed other mothers' breastfeeding

practices (vicarious learning), were encouraged and worked with their partners (verbal persuasion), and were aware of their emotional responses during the simulation (emotional arousal).(34)

The implications of the findings of this review are that: (1) improving the knowledge, skills and confidence of health workers regarding exclusive breastfeeding will improve their ability to provide breastfeeding education; (2) breastfeeding education should be conducted from the antenatal to postnatal period (during the six-month exclusive breastfeeding period); and (3) breastfeeding education media can utilize technology such as flipcharts, booklets, educational kits, video dramas, web-based applications, mobile health support, electronic job aids, telephone interventions, and SMS text messages. This review also has the following implications for policymakers: (1) there needs to be more educational and training opportunities for healthcare professionals; (2) greater antenatal and postnatal counseling support is needed; and (3) supportive breastfeeding education media is essential. Future research on breastfeeding education can integrate psychological interventions to improve exclusive breastfeeding practice.

CONCLUSION

Continuous breastfeeding education from pregnancy through postpartum has a more positive effect on the success of exclusive breastfeeding, with education provided not only to mothers but also to partners. Overall, the choice of breastfeeding education model influences exclusive breastfeeding practices, highlighting the importance of considering educational media and educational goals. Future studies should explore how breastfeeding education should be integrated with psychological interventions to improve exclusive breastfeeding practices.

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Conflict of Interest

The authors declare that there's no conflict of interest.

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